

glossaries-extra and bib2gls: An Introductory Guide

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2018-08-18

This document is an introductory guide to `bib2gls` and the `glossaries-extra` package to help you get started. For further information, including more complex commands and settings, see the main `bib2gls` user manual (`bib2gls.pdf`, in the same directory as this document), the `glossaries-extra` user manual, (distributed with the `glossaries-extra` package [4]) and the `glossaries` user manual (distributed with the `glossaries` package [5]).

The `glossaries` package is the *base* package. The `glossaries-extra` package internally loads the `glossaries` package and extends it, providing extra options or modifying the base commands to increase flexibility. If you want to use `bib2gls`, you must load `glossaries-extra`, which provides the interface required by `bib2gls`. This document doesn't cover the other indexing methods described in the base package. If you get an undefined control sequence or unknown option error when trying out any of the examples here, check that you are using the latest versions of `glossaries`, `glossaries-extra` and `bib2gls`.

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1 Introduction

The glossaries package provides a way of defining terms, notation or abbreviations that can then be used in the document. This ensures consistent naming and formatting. (With the help of the hyperref package, it's also possible to create hyperlinks from the reference to a place in the document that provides a definition of the term, but more about that later.) Each entry (term, notation or abbreviation) is defined using:

```
\newglossaryentry{<label>}{<key=value list>}
```

Here's a simple example:

```
\documentclass{article}

\usepackage{glossaries}

\newglossaryentry{duck}% label
{% information about this term:
  name={duck},% display name
  description={a waterbird with webbed feet}% description
}

\newglossaryentry{goose}% label
{% information about this term:
  name={goose},% display name
  plural={geese},% plural form
  description={a large waterbird with a long neck, short legs,
    webbed feet and a short broad bill}
}

\begin{document}
The pond contained a \gls{duck} (\glsentrydesc{duck}) and
a \gls{goose} (\glsentrydesc{goose}). \Glspl{duck} and
\glspl{goose} are fowl.
\end{document}
```

The resulting text is:

The pond contained a duck (a waterbird with webbed feet) and a goose (a large waterbird with a long neck, short legs, webbed feet and a short broad bill). Ducks and geese are fowl.

For convenience, the text produced by commands such as `\gls` is called the *link text* (even if there are no hyperlinks).

The first argument of `\newglossaryentry` is a label that uniquely identifies the term (see section 1.1). The second argument is a comma-separated list of `<setting>=<value>` assignments. Each `<setting>` is referred to as a “key” in the glossaries manual or as a “field” in the `bib2gls` manual. A list of the available base keys can be found in the glossaries user manual. The `glossaries-extra` package provides some additional keys that are described in the `glossaries-extra` manual. The `bib2gls` user manual summarises all keys (fields) in section 4.3.

If the field value contains commas or equal signs the value must be grouped to hide those characters from the `<key>=<value>` parser.

The two main keys are `name` and `description`. The `name` identifies how the term should be displayed in the glossary (see section 4). It also provides the default singular term, if not explicitly given. The default plural is obtained by appending “s” to the singular form. If this isn’t correct (as with “geese”), then the plural form can be specified with the `plural` key.

The description (set with the `description` key) is usually only displayed in the glossary, but you can display it in the text using:

```
\glsentrydesc{<label>}
```

as in the above example. This simply expands to the value of the `description` field (or does nothing if there’s no entry associated with the given label).

The main command used to reference a term is:

```
\gls [<options>] {<label>} [<insert>]
```

In the above example, `\gls` just displays the singular form, but you can provide alternative text to use the first time a term is referenced (see section 1.2). The plural form is obtained with the `variant` command:

```
\glspl [<options>] {<label>} [<insert>]
```

There are other variants of `\gls` that perform case-changing. If you want to start a sentence with an entry then you can use:

```
\Gls [<options>] {<label>} [<insert>]
```

for the singular form and

```
\Glspl [<options>] {<label>} [<insert>]
```

for the plural form. For all capitals, use:

```
\GLS[⟨options⟩]{⟨label⟩}[⟨insert⟩]
```

for the singular form and


```
\GLSp1[⟨options⟩]{⟨label⟩}[⟨insert⟩]
```

for the plural form. Any mention of `\gls` and its variants in this guide or in the user manuals means that the comments applied to `\gls` also apply to the plural and case-changing versions.

The `⟨insert⟩` optional argument is provided to insert additional material. For example:

```
The \gls{goose} liked the \gls{duck}['s] hat.
```

which produces (assuming the above definitions):

The goose liked the duck's hat. 


In some cases, there may not be a noticeable difference between the above and the following:

```
The \gls{goose} liked the \gls{duck}'s hat.
```

It depends on other settings, such as whether or not hyperlinks have been enabled. (The inserted material is commonly moved inside the hyperlink.) Take care if you need a literal open square bracket following `\gls{⟨label⟩}` as you need to prevent it from being interpreted as the optional `⟨insert⟩` argument. For example:

```
The \gls{goose} liked the \gls{duck}{'s}] hat.
```

which now produces:

The goose liked the duck['s] hat. 

An alternative in this case could be to define:

```
\newcommand*{\missing}[1]{[#1]}
```

and then use:

```
The \gls{goose} liked the \gls{duck}\missing{'s} hat.
```

This conveniently hides the open square bracket from `\gls`.

Commands like `\gls` are robust. Commands like `\glsentrydesc` are expandable. (See section 1.9.) If you want the entry to appear in a PDF bookmark, you need to use an expandable command to reference it.

There are some helper commands that internally use `\newglossaryentry`, such as `\newabbreviation` (described in section 2) and `\glsxtrnewsymbol` (described in section 3). If the description contains explicit paragraph breaks then:

```
\longnewglossaryentry{<label>}{<key=value list>}{<description>}
```

is required instead.

1.1 Labels

The label used to identify the entry can't contain any special characters, such as % (percent), & (ampersand), # (hash), \$ (dollar), or ~ (tilde). Be careful of packages that make other characters active (such as `babel` with its shortcuts). If you are using `inputenc`, this also includes extended Latin characters and characters from other scripts. If you want to include UTF-8 characters in the label then you must use a \TeX engine with native Unicode support (that is, \XeTeX or \LuaTeX).

For example, with no UTF-8 support (not even `inputenc`):

```
\newglossaryentry{elite}% label (no UTF-8 support)
{
  name = {\e}lite},
  description = {group of people regarded as
the best of a particular society or organisation}
}
```

or with `inputenc`:

```
\newglossaryentry{elite}% label (UTF-8 not natively supported)
{
  name = {é}lite},
  description = {group of people regarded as
the best of a particular society or organisation}
}
```

Whereas with \XeTeX or \LuaTeX you can do:

```
\newglossaryentry{élite}% label (UTF-8 natively supported)
{
  name = {élite},
  description = {group of people regarded as
the best of a particular society or organisation}
}
```

You may have noticed the grouping of the initial (accented) letter in the ASCII example (`{\ 'e}lite`). This is necessary to ensure that the first-letter case-changing commands, such as `\Gls`, work. It also used to be required around the “é” with `inputenc`, but if you have up-to-date versions of `glossaries` and `datatool` then it should no longer be necessary. No special treatment is needed with $X_{\text{L}}\text{TeX}$ or LuaTeX where “é” is a single token.

If you can't use extended characters in the label (because you're not using $X_{\text{L}}\text{TeX}$ or LuaTeX), then simply stripping the accents to create an ASCII alternative may be sufficient, but take care if this may cause a conflict. For example:

```
\newglossaryentry{resume}% label
{
  name = {resume},
  description = {continue after an interruption}
}

\newglossaryentry{resumee}% label
{
  name = {r\ 'esum\ 'e},
  description = {summary of something or curriculum vitae}
}
```

For languages that use a non-Latin script, if you can't or don't want to use $X_{\text{L}}\text{TeX}$ or LuaTeX , then you need to decide the most appropriate ASCII naming scheme. For example:

```
\newglossaryentry{goose}% using translation for label
{
  name = {гусь},
  plural = {гуси},
  description = {...}
}
```

or


```
\newglossaryentry{hus}% using closest ASCII match for label
{
  name = {гусь},
  plural = {гуси},
  description = {...}
}
```

In addition to labels identifying entries, there are also labels that identify other things, such as a glossary, category or letter group. The same restrictions apply to those labels.

1.2 First Use

Each entry has a *first use flag* (boolean variable) that determines whether or not the entry has been referenced in the document. Commands like `\gls` and `\glspl` change the flag to indicate that the entry has been used. Commands like `\glsentrydesc` don't. Here's a modification of the earlier example document that provides different versions depending on whether or not the entry has already been referenced:

```
\documentclass{article}

\usepackage{glossaries}

\newglossaryentry{duck}% label
{% information about this term:
  name    = {Duck (noun)},% display name
  first   = {duck (quack, quack)},% first use singular
  firstplural = {ducks (quack, quack)},% first use plural
  text    = {duck},% subsequent use singular
  description = {a waterbird with webbed feet}% description
}

\newglossaryentry{goose}% label
{% information about this term:
  name    = {Goose (noun, pl. geese)},% display name
  first   = {goose (honk, honk)},% first use singular
  firstplural = {geese (honk, honk)},% first use plural
  text    = {goose},% subsequent use singular
  plural  = {geese},% subsequent use plural
  description={a large waterbird with a long neck, short legs,
  webbed feet and a short broad bill}
```

}

```

\begin{document}
The pond contained a \gls{duck}\footnote{\glsentryname{duck}:
\glsentrydesc{duck}} and two
\glspl{goose}\footnote{\glsentryname{goose}:
\glsentrydesc{goose}}. \Glspl{duck} and \glspl{goose} are fowl.
\end{document}

```

This now produces:

The pond contained a duck (quack, quack)¹ and two geese (honk, honk)².
Ducks and geese are fowl.

This uses:

```
\glsentryname{<label>}
```

which works in a similar way to `\glsentrydesc`. In this case, `\glsentryname` simply expands to the value of the `name` key. There's also a case-changing version:

```
\Glsentryname{<label>}
```

which changes the initial character to upper case, but (unlike `\glsentryname`) this command isn't expandable. If, for example, I had instead set the duck's `name` key using:

```
name = {duck (noun)}
```

then I would need to use `\Glsentryname{duck}` instead.

So on *first use*, `\gls` uses the value of the `first` key and `\glspl` uses the value of the `firstplural` key. On *subsequent use*, `\gls` uses the value of the `text` key and `\glspl` uses the value of the `plural` key. *Regular* abbreviations also follow this usage. *Non-regular* abbreviations follow a different behaviour for `\gls` (and its variants) that's determined by the abbreviation style.

If the first use for a particular group of terms always has the same pattern (such as following the term with a brief description or alternative representation), then it's simpler to use one of the automated methods provided, such as the abbreviation mechanism (section 2) or changing the formatting (section 5).

You can test if an entry has been used with:

```
\ifglsused{<label>}{<true>}{<false>}
```

¹Duck (noun): a waterbird with webbed feet

²Goose (noun, pl. geese): a large waterbird with a long neck, short legs, webbed feet and a short broad bill

This requires that the entry (identified by $\langle label \rangle$) is defined. If it isn't then neither $\langle true \rangle$ nor $\langle false \rangle$ is done and an error or warning occurs. Otherwise, the command will do $\langle true \rangle$ if the entry has been used or $\langle false \rangle$ if the entry hasn't been used.

When using `bib2gls`, entries are never defined on the first \LaTeX run, so you may instead prefer:

```
\GlsXtrIfUnusedOrUndefined{<label>}{<true>}{<false>}
```

which does $\langle true \rangle$ if either the entry hasn't been defined or hasn't been marked as used, otherwise it does $\langle false \rangle$.

Neither `\ifglsused` nor `\GlsXtrIfUnusedOrUndefined` should occur in the post-link hook as the entry will have already been used by that point. Instead, you need `\glsxtrif-wasfirstuse` (see section 5.1).

1.3 Categories

The `glossaries-extra` extension package provides the `category` key, which isn't available with just the base `glossaries` package. The value of this key must be a label as it's used to construct command names. You can choose whatever label you like (as long as it conforms to the valid labelling scheme, described in section 1.1). If you don't specify a category, then `\newglossaryentry` and `\longnewglossaryentry` assume `general`. The helper commands, such as `\newabbreviation`, have different defaults.

For example:

```
\newglossaryentry{amethyst}
{
  name = {amethyst},
  description = {a purple type of quartz},
  category = {mineral}
}
```

The value of the `category` field for a given entry can be obtained with:

```
\glscategory{<label>}
```

where $\langle label \rangle$ identifies the entry. This command is expandable and does nothing if the entry hasn't been defined. You can test the value of the `category` field using:

```
\glsifcategory{<label>}{<category>}{<true>}{<false>}
```

This checks if the `category` field for the entry given by $\langle label \rangle$ is set to $\langle category \rangle$, but doesn't perform any expansion. It generates an error if the entry doesn't exist (or warning with `undefaction={warn}`).

The category allows you to apply certain types of formatting, such as the post-link hook (section 5.1). For abbreviations, the category also governs the abbreviation style (see section 2) and can be used for filtering. Categories may be assigned *attributes* that can also be used to modify formatting or styles.

Unlike the post-link hook, which needs to be defined before an entry is *used* (with commands like `\gls`), some attributes need to be set before the entry is *defined*, so it's best to set them up as soon as possible in the preamble (after loading `glossaries-extra`).

1.4 Adding Extra Information

In addition to the `name` and `description` keys, there's also a `symbol` key which allows you to store an associated symbol. The value can be obtained with:

```
\glssymbol[⟨options⟩]{⟨label⟩}[⟨insert⟩]
```

(which is robust and recognises the post-link hook) or with:

```
\glsentrysymbol{⟨label⟩}
```

(which behaves like `\glsentrydesc` and `\glsentryname`). Neither of the above commands affect the first use flag. For example:

```
\documentclass{article}

\usepackage[hidelinks]{hyperref}
\usepackage{glossaries}

\newglossaryentry{pi}% label
{% settings:
  name    = {Archimedes' constant},
  symbol  = {\ensuremath{\pi}},
  description = {ratio of a circle's circumference to its
diameter}
}

\newglossaryentry{thetai}% label
{% settings:
  name    = {theta parameter},
  symbol  = {\ensuremath{\theta_i}},
  description = {one of the model parameters}
}

\begin{document}
\gls{pi} (\glssymbol{pi}). Compare  $\glssymbol{thetai}^2$ 
```

```
with $\glssymbol{\thetai}[^2]$.
\end{document}
```

This produces:

Archimedes' constant (π). Compare θ_i^2 with θ_i^2 .

Note that in this case there is now a difference between using the final optional `<insert>` argument and simply appending the extra material. This is a result of the hyperlink that causes an interruption between the subscript `_i` and the following superscript `^2`. (In this case, there's no target for the hyperlinks. That's covered in section 4.)

If you have additional information, such as a translation, associated image or citation, then you can supply this with the six user keys: `user1`, ..., `user6`. The value of the first field can be obtained with:

```
\glssuseri[<options>]{<label>}[<insert>]
```

(which behaves like `\glssymbol`) or with:

```
\glssentryuseri{<label>}
```

(which behaves like `\glssentrysymbol`). The other fields are similarly obtained using lower case Roman numerals, so the sixth field can be obtained with:

```
\glssuservi[<options>]{<label>}[<insert>]
```

(which behaves like `\glssymbol`) or with:

```
\glssentryuservi{<label>}
```

(which behaves like `\glssentrysymbol`). For example:

```
\newglossaryentry{polly.parrot}% label
{%
  name = {Polly Parrot},
  description = {Senior assistant at the International Society
of Duck and Geese},
  user1 = {British},% nationality
  user2 = {1970-12-31},% date of birth
  user3 = {female},% gender
  user4 = {43 The Lane, Some Town, Noshire AB1 2XY},% address
  user5 = {polly.parrot@example.com}% email
}
```

Alternatively you can define your own custom keys. If you don't need commands equivalent to `\glsymbol`, then you can use:

```
\glsaddstoragekey{<key>}{<default value>}{<no link cs>}
```

where `<key>` is the name of the new key, `<default value>` is the default value if the key isn't explicitly set and `<no link cs>` is the name of the command to access the field value (equivalent to `\glsentrysymbol`). If you want commands equivalent to `\glsymbol` that have the `<options>` and `<insert>` optional arguments and obey the post-link hook, then use

```
\glsaddkey{<key>}{<default value>}{<no link cs>}{<no link ucfirst cs>}{<link cs>}{<link ucfirst cs>}{<link allcaps cs>}
```

The first three arguments are as for `\glsaddstoragekey`. The next argument `<no link ucfirst cs>` is like `<no link cs>` but converts the first letter to upper case (analogous to `\Glsentryname`). The final three commands behave like `\glsymbol`, but `<link ucfirst cs>` converts the first letter to upper case and `<link allcaps cs>` converts the entire value to upper case.

The new keys must be defined before the entries are defined (and the key definitions must come before the first resource set if you use `bib2gls`). For example:

```
\glsaddstoragekey{nationality}{\Nationality}
\glsaddstoragekey{dateofbirth}{\DateOfBirth}
\glsaddstoragekey{gender}{\Gender}
\glsaddstoragekey{address}{\Address}
\glsaddstoragekey{email}{\Email}
\newglossaryentry{polly.parrot}% label
{
  name = {Polly Parrot},
  description = {Senior assistant at the International Society
of Duck and Geese},
  nationality = {British},% nationality
  dateofbirth = {1970-12-31},% date of birth
  gender = {female},% gender
  address = {43 The Lane, Some Town, Noshire AB1 2XY},% address
  email = {polly.parrot@example.com}% email
}
```

In addition to the commands like `\glsymbol` and `\glsentrysymbol`, there are other ways of accessing the field value or checking if the field has been set. In the commands listed below, the field label is the *internal* label. In some cases, this is the same as the key, but there are a few that have a different internal label. See Table 4.5 in the `bib2gls` user manual or Table 4.1 in the `glossaries` user manual. Custom fields provided with `\glsaddkey` or `\glsaddstoragekey` have matching key and internal field labels.

The glossaries-extra package provides a generic way of accessing a field, analogous to commands like `\glsentryname`:

```
\glsxtrusefield{⟨entry label⟩}{⟨field label⟩}
```

This expands to the field value if defined or does nothing if the entry or field isn't defined.

The base glossaries package provides:

```
\ifglshassymbol{⟨entry label⟩}{⟨true⟩}{⟨false⟩}
```

which tests if the `symbol` field has been assigned. There are similar commands for other common fields. For a more general purpose test, you can use:

```
\ifglshasfield{⟨field label⟩}{⟨entry label⟩}{⟨true⟩}{⟨false⟩}
```

which checks if the given entry (identified by `⟨entry label⟩`, which must be defined) has the field identified by `⟨field label⟩` set to a non-empty value. Within `⟨true⟩`, you can access the field value with:

```
\glscurrentfieldvalue
```

The glossaries-extra package provides a similar command:

```
\glsxtrifhasfield{⟨field label⟩}{⟨entry label⟩}{⟨true⟩}{⟨false⟩}
```

which doesn't test if the entry exists. The unstarred form adds implicit grouping around `⟨true⟩` or `⟨false⟩` (allowing nested use). The starred form `\glsxtrifhasfield*` doesn't. You can compare the field value with a string using:

```
\GlsXtrIfFieldEqStr{⟨field label⟩}{⟨entry label⟩}{⟨text⟩}{⟨true⟩}{⟨false⟩}
```

If you need the string to be (protected) fully expanded before comparison, you need:

```
\GlsXtrIfFieldEqXpStr{⟨field label⟩}{⟨entry label⟩}{⟨text⟩}{⟨true⟩}{⟨false⟩}
```

If you additionally need the field value (protected) fully expanded before comparison, use:

```
\GlsXtrIfXpFieldEqXpStr{⟨field label⟩}{⟨entry label⟩}{⟨text⟩}{⟨true⟩}{⟨false⟩}
```

For a complete list of field commands, see the glossaries-extra user manual.

The earlier duck and goose examples from section 1.2 can be rewritten to move the parenthetical material into separate keys:

```
\newglossaryentry{duck}% label
{% information about this term:
  name    = {duck},
  user1   = {noun},
  user2   = {quack, quack},
  description = a waterbird with webbed feet
```

```

}

\newglossaryentry{goose}% label
{% information about this term:
  name    = {goose},
  plural  = {geese},
  user1   = {noun},
  user2   = {honk, honk},
  description={a large waterbird with a long neck, short legs,
    webbed feet and a short broad bill}
}

```

The post-link hook and glossary style can then be modified to include the additional information. For example:

```

\glsdefpostlink{general}{%
  \glstrifwasfirstuse{\space(\glsentryuserii{\glslabel})}%
}

\glssetcategoryattribute{general}{glossname}{firsttuc}

\glsdefpostname{general}{%
  \space
  (\glsentryuseri{\glscurrententrylabel}%
  \GlsXtrIfXpFieldEqXpStr{plural}{\glscurrententrylabel}%
  {\glsentrytext{\glscurrententrylabel}s}{})%
  {, pl.\_ \glsentryplural\glscurrententrylabel}%
)%
}

```

The post-link hook appends the value of the `user2` field after the first use of `\gls` (or its variants). The `glossname` attribute converts the first letter of the `name` field to upper case when it's displayed in the glossary. The post-name hook appends (in parentheses) the value of the `user1` field and then checks if the plural form is the same as the singular form with "s" appended, and only displays the plural if they are different. See section 5 and section 4 for further details.

1.5 Accessibility Support

The base glossaries package is distributed with the supplementary `glossaries-accsupp` package, which uses the `accsupp` package [1] to provide accessibility support. With the `glossaries-extra` extension package, the `glossaries-accsupp` package needs to be loaded after `glossaries`

but before `glossaries-extra` sets up the accessibility integration support. The simplest way to do this is with `glossaries-extra`'s `accsupp` package option.

The accessibility support is provided through the PDF `ActualText` specification (via the `accsupp` package). If you need `E` or `Alt` instead of `ActualText` then redefine:

```
\glsaccsupp{<accessible text>}{<text>}
```

as appropriate. For example:

```
\renewcommand*{\glsaccsupp}[2]{%
  \BeginAccSupp{Alt={#1}}#2\EndAccSupp{}}%
}
```

The `glossaries-accsupp` package provides additional keys (see Table 4.4 in the `bib2gls` user manual or Chapter 18 of the `glossaries` user manual [5]). The main keys are `access`, which provides an alternative to the `name` field, `symbolaccess`, which provides an alternative to the `symbol` field and `shortaccess`, which provides an alternative to the `short` field, `firstaccess`, which provides an alternative to the `first` field, and `textaccess`, which provides an alternative to the `text` field. If any of the accessibility fields are unset, no accessibility support is provided for that field. For example:

```
\newglossaryentry{R}% label
{% settings:
  name      = {\ensuremath{\Re}},
  access    = {set of real numbers symbol},% name access
  textaccess = {set of real numbers},% text access
  firstaccess = {set of real numbers},% first access
  description = {set of real numbers}
}
```

This means that when the `name` field is displayed in the glossary, the corresponding accessibility text is “set of real numbers symbol”, but the link text for `\gls` is just “set of real numbers” (for both first use and subsequent use).

There are some category attributes that govern the default settings of some fields when using `\newabbreviation` (see section 2). If accessibility support is provided, there are some additional attributes (introduced to `glossaries-extra` version 1.31):

`accessinsertdots` This is a boolean attribute that behaves like `insertdots` but only applies to the `shortaccess` field, if it hasn't explicitly been set. This is useful for initialisms that should be read out as letters but the screen reader might interpret as a word. For example:

```
\glsssetcategoryattribute{initialism}{accessinsertdots}{true}
\newabbreviation[category=initialism]{pi}{PI}{Private Investigator}
```

This means that the short form appears as just “PI” in the document text, but the accessibility text is “P.I.” which prompts the screen reader to read it as an abbreviation instead of the word “pi”. Since the `shortaccess` field is an aid to the screen reader and doesn’t modify the visible text, there’s no check for the `retainfirstuseperiod` or `discardperiod` attributes for that field. This setting doesn’t affect the accessibility support for the `name`, `first` or `text` fields.

nameshortaccess This is a boolean attribute, where the value `true` indicates the attribute is set. If the `shortaccess` field is assigned (either explicitly with the key or implicitly through the use of the `accessinsertdots` attribute) and the `access` field isn’t specified, then if the `nameshortaccess` attribute is set this will copy the `shortaccess` field to the `access` field. For example:

```
\glsssetcategoryattribute{initialism}{accessinsertdots}{true}
\glsssetcategoryattribute{initialism}{nameshortaccess}{true}
\newabbreviation[category=initialism]{pi}{PI}{Private Investigator}
```

Abbreviations that behave like regular terms (such as `short-nolong`) may also need `textshortaccess` and `firstshortaccess` set.

textshortaccess Like `nameshortaccess`, but applies to the `textaccess` field.

firstshortaccess Like `firstshortaccess`, but applies to the `firstaccess` field.

accessaposplural If the `shortaccess` field is set (either explicitly with the key or implicitly through the use of the `accessinsertdots` attribute) and the `shortpluralaccess` field isn’t set, the `accessaposplural` boolean attribute behaves like `aposplural` but only applies to the `shortpluralaccess` field. If the `accessaposplural` attribute isn’t set but the `aposplural` attribute is set, then that’s used instead. If you want `aposplural` on but not apply it to `shortpluralaccess` then you need to set the `accessaposplural` attribute to `false`.

accessnoshortplural A boolean attribute like `accessaposplural` but analogous to `noshortplural` instead.

These attributes have no effect for entries that aren’t defined using `\newabbreviation`. (These attributes apply to `\newacronym` provided it internally uses `\newabbreviation`, which it does by default with `glossaries-extra`.)

1.6 Prefixes

The glossaries package is distributed with the supplementary glossaries–prefix package. This automatically loads glossaries, but if you are using glossaries-extra, it’s best loaded after. This supplementary package supplies extra keys and some commands analogous to `\gls`. The main purpose is to provide a different prefix to `\gls`, depending on whether it’s the first use or subsequent use. For example, if the first use starts with a vowel (or vowel sound), you may need “an `\gls{<label>}`” but if the subsequent use starts with a constant, you may need “a `\gls{<label>}`”. The prefix for the first use form specified in the `prefixfirst` field and the prefix for the subsequent use form is specified in the `prefix` field. If a space is required between the prefix and `\gls`, this needs to be included, as the prefixing system allows for prefixes like `l’` which shouldn’t be followed by a space.

To include the prefix, use:

```
\pgls[<options>]{<label>}[<insert>]
```

instead of `\gls`. For example:

```
\documentclass{book}

\usepackage{glossaries-extra}
\usepackage{glossaries-prefix}

\newabbreviation
  [prefixfirst={a~},prefix={an\space}]
  {svm}{SVM}{support vector machine}

\begin{document}
With a prefix: \pgls{svm} or \pgls{svm}.
Without a prefix: the \gls{svm}.
\end{document}
```

This produces:

With a prefix: a support vector machine (SVM) or an SVM. Without a prefix:
the SVM.



1.7 Spaces

With \LaTeX in general, spaces are sometimes significant and sometimes ignored. When defining entries, any spaces around the equal sign or comma are ignored. For example, if an entry is defined as

```
\newglossaryentry{sample}
{
  name = {sample} , description = {an example}
}
```

then

```
/\gls{sample}/
```

will produce

```
/sample/
```



(no spaces). Similarly with:

```
\newglossaryentry{sample}
{
  name = sample , description = {an example}
}
```

However, spaces at the start or end of the value if it's been enclosed in braces aren't ignored. For example, if the entry is now defined as:

```
\newglossaryentry{sample}
{
  name = { sample } , description = an example
}
```



then:

```
/\gls{sample}/
```

produces:

```
/ sample /
```



The spaces in this case have been retained. The unstarred version of `\longnewglossaryentry` appends extra code to the end of the description, which removes any trailing spaces (and also the post-description hook). The starred version `\longnewglossaryentry*` (only available with `glossaries-extra`) doesn't. In both cases any leading spaces are retained. For example, if the entry is defined as:

```
\longnewglossaryentry{sample}{name={sample}}{ an example }
```

X

then:

```
/\glsentrydesc{sample}/
```

produces:

```
 / an example/
```

☞

(trailing space removed), whereas if the entry is defined as:

```
\longnewglossaryentry*{sample}{name={sample}}{ an example }
```

X

then:

```
/\glsentrydesc{sample}/
```

produces:

```
 / an example /
```

☞

(leading and trailing spaces retained).

Spaces in labels are significant. For example, in `\gls{ duck }` the spaces are considered part of the label. If the entry was actually defined without spaces in the label then the entry referenced in `\gls{ duck }` won't be found.

1.8 Undefined References

If an entry that hasn't been defined is referenced with `\gls`, by default an error is triggered. For example:

```
\documentclass{article}

\usepackage{glossaries}

\begin{document}
A \gls{duck}.
\end{document}
```

This produces the error:

```
Glossary entry `duck' has not been defined.
```

If you instruct \LaTeX to ignore the error and continue, the result is

A .

The `glossaries-extra` package provides the option `undefaction={warn}`, which will convert the error to a warning. For example:

```
\documentclass{article}

\usepackage[undefaction=warn]{glossaries-extra}

\begin{document}
A \gls{duck}.
\end{document}
```

This now produces the warning:

```
Glossary entry `duck' has not been defined on input line 6
```

(There are also other warnings about an empty main glossary.) The result is now:

A ??.

This replaces the undefined reference with two question marks, just like undefined cross-references. Notice the difference between using `\ifglshasfield`:

```

\documentclass{article}

\usepackage[undefaction=warn]{glossaries-extra}

\begin{document}
A \gls{duck}
(\ifglshasfield{useri}{duck}{\glscurrentfieldvalue}{not set}).
\end{document}

```

which produces:

A ?? (??).

(and has two undefined warnings) and using `\glstrifhasfield`:

```

\documentclass{article}

\usepackage[undefaction=warn]{glossaries-extra}

\begin{document}
A \gls{duck}
(\glstrifhasfield{useri}{duck}{\glscurrentfieldvalue}{not set}).
\end{document}

```

which only has one undefined warning and produces:

A ?? (not set).

When you incorporate `bib2gls` into the build process (see section 7), the first \LaTeX run doesn't have any entries defined. One of the actions that the `record` option automatically performs is to switch on `undefaction={warn}`, which avoids undefined errors on the first \LaTeX run. For example:

```

\documentclass{article}

\usepackage[record]{glossaries-extra}

\begin{document}
A \gls{duck}
(\glstrifhasfield{useri}{duck}{\glscurrentfieldvalue}{not set}).
\end{document}

```

This produces the same result as the previous example, but there's only the one warning (about an undefined reference) and no warning about the empty main glossary.

1.9 Robust, Fragile and Expandable Commands

Commands like `\gls` are *robust*. This protects them from premature expansion in situations that would otherwise break the command. If content containing a robust command is written to an external file, the robust command itself is written instead of its definition. For example, consider the following document:

```
\documentclass{article}
\newcommand{\test}{some sample text}
\begin{document}
\tableofcontents
\section{\test}
\end{document}
```

In this case, `\test` is expandable. Its definition doesn't contain anything complicated. The `.toc` file (which is input by `\tableofcontents`) contains the line:

```
\contentsline {section}{\numberline {1}some sample text}{1}
```

So `\test` has been expanded to its definition when it was written to the `.toc` file. If `\test` is defined in terms of another command, that will also be expanded. For example:

```
\documentclass{article}
\newcommand{\sample}{\emph{sample}}
\newcommand{\test}{some \sample\text}
\begin{document}
\tableofcontents
\section{\test}
\end{document}
```

The `.toc` file now contains:

```
\contentsline {section}{\numberline {1}some \emph {sample}\text}{1}
```

So `\sample` has also been expanded but neither `\emph` nor `_` (backslash space) have been expanded. Robust commands don't expand. For example:

```
\documentclass{article}

\usepackage{glossaries}

\newglossaryentry{duck}
{
  name={duck},
  description={a waterbird with webbed feet}
}

\begin{document}
\tableofcontents
\section{\Gls{duck}: \glsentrydesc{duck}}
\end{document}
```

The `.toc` file now contains:

```
\contentsline {section}{\numberline {1}\Gls {duck}: a waterbird with
webbed feet}{1}
```

So `\Gls` doesn't expand, and the command itself is written to the `.toc` file, but `\glsentrydesc` does expand.

A *fragile* command is one that breaks (causes an error) when it's expanded in this type of context. One such command is `\footnote`. For example, the following won't work:

```
\documentclass{article}

\usepackage{glossaries}

\newglossaryentry{duck}
{
  name={duck},
  description={a waterbird with webbed feet}
}

\begin{document}
```

```
\tableofcontents
\section{\Gls{duck}\footnote{\glsentrydesc{duck}}}
\end{document}
```

X

This causes the error:

```
! Argument of \@sect has an extra }.
```

Inserting `\protect` before the command prevents the attempted expansion, which makes the command behave as though it was robust:

```
\section{\Gls{duck}\protect\footnote{\glsentrydesc{duck}}}
```

In this case, it's unlikely that you'd want the footnote to appear in the table of contents, so it would be better to use the optional argument:

```
\section[Duck]{\Gls{duck}\footnote{\glsentrydesc{duck}}}
```

✓

Now the `.toc` file is just:

```
\contentsline {section}{\numberline {1}Duck}{1}
```

If the `description` field contains a fragile command then `\glsentrydesc` will break in expandable contexts. For example, the following doesn't work:

```
\documentclass{article}

\usepackage{glossaries}

\newglossaryentry{duck}
{
  name={duck},
  description={a waterbird\footnote{a bird that lives on or
    near water} with webbed feet}
}

\begin{document}
\tableofcontents
\section{\Gls{duck}: \glsentrydesc{duck}}
\end{document}
```

X

This is a contrived example. In this case, it would be better to also define the term “waterbird”:

```
\documentclass{article}

\usepackage{glossaries}

\newglossaryentry{waterbird}
{
  name={waterbird},
  description={a bird that lives on or near water}
}

\newglossaryentry{duck}
{
  name={duck},
  description={a \gls{waterbird} with webbed feet}
}

\begin{document}
\tableofcontents
\section{\Gls{duck}: \glsentrydesc{duck}}
\end{document}
```

The .toc file now contains:

```
\contentsline {section}{\numberline {1}\Gls {duck}: a \gls {waterbird}
with webbed feet}{1}
```

The examples in this section are used to illustrate the differences between robust, fragile and expandable commands. In general, it’s better not to use commands like `\gls` in headings or captions (see section 6.1) and using commands like `\gls` in field values can be problematic (see section 6.2).

By default, most of the field values are expanded when the entry is defined. This allows for defining entries programmatically, but it can cause a problem if the value contains any fragile commands. For example:

```
\documentclass{article}
```

```

\usepackage{glossaries}

\newglossaryentry{duck}% label
{
  name = {duck},
  first = {duck\footnote{quack, quack}},
  description = {a waterbird with webbed feet}
}

\begin{document}
A \gls{duck}.
\end{document}

```

X

This causes the confusing error:

```

! Undefined control sequence.
\in@ #1#2->\begingroup \def \in@@

```

In order for this example to work, the fragile command must either be protected:

```

\newglossaryentry{duck}% label
{
  name = {duck},
  first = {duck\protect\footnote{quack, quack}},
  description = {a waterbird with webbed feet}
}

```

✓

or the expansion must first be switched off:

```

\glsnoexpandfields
\newglossaryentry{duck}% label
{
  name = {duck},
  first = {duck\footnote{quack, quack}},
  description = {a waterbird with webbed feet}
}

```

✓

1 Introduction

Since it's not possible to programmatically define entries with `bib2gls`, the expansion is automatically switched off as `bib2gls` writes `\glsnoexpandfields` to the `.gls.tex` file (although you can switch this feature off with `--expand-fields`).

The reason why `\footnote` didn't cause a problem in the `description` field *when the entry was defined* is that, by default, expansion isn't performed on the `name`, `description` and `symbol` fields, regardless of whether or not `\glsnoexpandfields` has been used. This only applies to the point when the entries are being defined. Unprotected fragile commands can still cause a problem if the value is later used in a problematic context (such as the earlier example where `\glsentrydesc` was used in a section heading).

2 Abbreviations

The abbreviation handling provided by the base glossaries package is quite restrictive and only one abbreviation style can be used for all abbreviations. The glossaries-extra package internally loads the glossaries package and extends it, providing new options and a better abbreviation mechanism that allows different styles per category.

The base glossaries package provides:

```
\newacronym[⟨key=value list⟩]{⟨label⟩}{⟨short⟩}{⟨long⟩}
```

The extension package glossaries-extra provides:

```
\newabbreviation[⟨key=value list⟩]{⟨label⟩}{⟨short⟩}{⟨long⟩}
```

which internally uses `\newglossaryentry` with the `category` set to `abbreviation` (which can be overridden in the optional `⟨key=value list⟩`). The glossaries-extra package also redefines `\newacronym` in terms of `\newabbreviation` so that it effectively behaves like:

```
\newabbreviation[⟨type=\acronymtype, category=acronym, ⟨key=value list⟩⟩  
{⟨label⟩}{⟨short⟩}{⟨long⟩}
```

This makes it easier to transfer over from the base glossaries package, but if you use `\newacronym` remember that the `category` is set to `acronym` instead of `abbreviation`.

In both cases, `⟨label⟩` is the entry's label used to identify the abbreviation in commands like `\gls`, `⟨short⟩` is the short form and `⟨long⟩` is the long form. Any additional settings, such as the `category` or `description` can be set in the optional argument.

The style must be set *before the abbreviations are defined* using:

```
\setabbreviationstyle[⟨category⟩]{⟨style-name⟩}
```

where `⟨category⟩` is the category label and `⟨style-name⟩` is the name of the style. If the optional argument is omitted, `abbreviation` is assumed. The glossaries-extra package automatically sets the default styles:

```
\setabbreviationstyle{long-short}  
\setabbreviationstyle[acronym]{short-nolong}
```

This means that if you don't explicitly set the style then any abbreviation defined with `\newacronym` will use the `short-nolong` style (unless you change the category in the optional argument) and other abbreviations will use the `long-short` style.

If these styles aren't suitable, then you need to change them. Any abbreviation that's defined with a category that hasn't been assigned a style will fallback on the style for the default abbreviation category. There are many predefined styles to choose from and they come with commands to help adjust the formatting. See the glossaries-extra user manual [4] for the complete list. The glossaries-extra package also comes with a sample document `sample-abbr-styles.pdf` demonstrating all the predefined styles.

The style determines whether the abbreviation is treated as a regular term. There are also some category attributes that govern abbreviations (see below and section 1.5). These should also be set before the abbreviation is defined.

Some of the styles set the `description` field (typically to the `<long>` form). The styles that end with `-desc` don't, and so that key must be set explicitly in the `<key=value list>` optional part.

Here's a simple example that uses both `\newabbreviation` and `\newacronym` to illustrate the difference:

```
\documentclass{article}

\usepackage{glossaries-extra}

\newabbreviation{tug}{TUG}{\TeX\ Users Group}
\newabbreviation{cldr}{CLDR}{Unicode Common Locale Data
Repository}

\newacronym{SIunit}{SI unit}{International System of Units}
\newacronym{ascii}{ASCII}{American Standard Code for
Information Interchange}

\begin{document}
First use: \gls{tug}, \gls{cldr}, \gls{SIunit}, \gls{ascii}.
Next use: \gls{tug}, \gls{cldr}, \gls{SIunit}, \gls{ascii}.
\end{document}
```

This produces:

First use: \TeX Users Group (TUG), Unicode Common Locale Data Repository
(CLDR), SI unit, ASCII. Next use: TUG, CLDR, SI unit, ASCII.



Note that the first use of `SIunit` and `ascii` only show the short form. This is because the default style for the acronym category is the `short-nolong` style, which doesn't show the long form with `\gls` (and its variants).

The final optional *<insert>* argument of commands like `\gls` is typically moved inside, depending on the style. For example:

```
\documentclass{article}

\usepackage{glossaries-extra}

\newabbreviation{svm}{SVM}{support vector machine}

\begin{document}
The \gls{svm}['s] parameters are\ldots
\end{document}
```

This produces:

The support vector machine’s (SVM) parameters are...



Compare this with:

```
The \gls{svm}'s parameters are\ldots
```



which produces:

The support vector machine (SVM)’s parameters are...



2.1 Only Long or Only Short

If you only want `\gls` to show the short form but not the long form (including on first use), use one of the `-nolong` styles (such as `short-nolong`). If you only want the long form and not the short form (including subsequent use), use one of the `-noshort` styles (such as `long-noshort`).

If you want only the long form on first use (without the short form) and only the short form subsequently then use one of the `-only` styles, such as `long-only-short-only`.

If you need to reshew the full form, you can reset the first use flag with:

```
\glsreset{<label>}
```

which will make the next instance of `\gls{<labe>}` act according to first use.

If you need an abbreviation in a caption or section title, see section 6.1.

Otherwise, if you want a *specific* instance to show only the short form, without modifying the first use flag, then use

```
\glstrshort[⟨options⟩]{⟨label⟩}
```

If you want a specific instance to show only the long form, without modifying the first use flag, then use

```
\glstrlong[⟨options⟩]{⟨label⟩}
```

If you want a specific instance to show both the long and short form, without modifying the first use flag, then use

```
\glstrfull[⟨options⟩]{⟨label⟩}
```

Depending on the style, this may not exactly match the format produced by the first use of `\gls{⟨label⟩}`. Don't use these commands for every use. Change the style instead, which will make it easier to modify the document at a later date.

If you find these commands quite long-winded, there are some shortcuts available with the `shortcuts` option, but as these may interfere with other packages, you might want to consider investigating your text editor settings as the more sophisticated ones provide ways of inserting commonly-used commands to save typing.

2.2 Plural Abbreviations

If the abbreviation represents something countable then the plural form can again be obtained with `\glspl`:


```
\documentclass{article}

\usepackage{glossaries-extra}

\newabbreviation{svm}{SVM}{support vector machine}

\begin{document}
First use: \glspl{svm}. Next use: \glspl{svm}.
\end{document}
```

This produces:

First use: support vector machines (SVMs). Next use: SVMs. 

The default plural short and long forms are obtained by appending the letter “s” after the singular form. These can be changed on an individual basis with the `shortplural` and `longplural` keys. For example:

```
\newabbreviation
[longplural={lower triangular matrices}]
{ltm}{LTM}{lower triangular matrix}
```


It may be that you prefer to keep the short plural form the same as the short singular value for all abbreviations within a particular category. You can implement this with the `noshortplural` attribute, which must be set to true before the abbreviations for that category are defined. For example:

```
\glsssetcategoryattribute{abbreviation}{noshortplural}{true}
\newabbreviation{svm}{SVM}{support vector machine}
```

Now:

First use: `\glspl{svm}`. Next use: `\glspl{svm}`.

produces:

First use: support vector machines (SVM). Next use: SVM. 

A related attribute is `aposplural` which inserts “ 's ” (apostrophe followed by “s”) to form the default short plural to help avoid ambiguity with lower case abbreviations where it might not be obvious that the “s” indicates a plural (rather than another letter in the abbreviation). Again, this needs to be set before the abbreviations for the given category (or categories) are defined (but check with your supervisor, publisher or editor as this usage is controversial).

2.3 Abbreviation Markup

The `markwords` attribute can be set to true to indicate that `\newabbreviation` should parse the long form and markup the words using:

```
\glsxtrword{<text>}
```

The words are separated with

```
\glsxtrwordsep
```

For example:

```
\glssetcategoryattribute{abbreviation}{markwords}{true}
\newabbreviation{ssl}{SSL}{Secure Sockets Layer}
```

This is essentially the same as

```
\newabbreviation{ssl}{SSL}{\glsxtrword{Secure}\glsxtrwordsep
\glsxtrword{Sockets}\glsxtrwordsep\glsxtrword{Layer}}
```

This is typically used with the `-hyphen` abbreviation styles. If the final optional *⟨insert⟩* argument of commands like `\gls` starts with a hyphen, `\glsxtrwordsep` is locally changed to a hyphen.

For example:

```
\documentclass{article}

\usepackage{glossaries-extra}


\setabbreviationstyle{long-hyphen-short-hyphen}

\glssetcategoryattribute{abbreviation}{markwords}{true}


\newabbreviation{ssl}{SSL}{Secure Sockets Layer}

\begin{document}
First use: \gls{ssl}[-enabled]. Next use: \gls{ssl}[-enabled].
\end{document}
```

This produces:

First use: Secure-Sockets-Layer-enabled (SSL-enabled). Next use: SSL-enabled. 

Compare this with:

First use: `\gls{ssl}-enabled`. Next use: `\gls{ssl}-enabled`. 


which instead produces:

First use: Secure Sockets Layer (SSL)-enabled. Next use: SSL-enabled. 

Whereas:

First use: `\gls{ssl}[enabled]`. Next use: `\gls{ssl}[enabled]`.

produces:

First use: Secure Sockets Layer enabled (SSL enabled). Next use: SSL enabled. 

Note that this is different to the result obtained with the `long-short` style which doesn't include the inserted material in the parentheses (and doesn't check if the inserted text starts with a hyphen).

There's a related attribute `markshortwords` which applies to the short form instead. This is only useful if the short form contains spaces.

Another markup-related attribute is `tagging`. In general, you don't need to explicitly set this attribute. Instead, you need to define a tagging command using:

```
\GlsXtrEnableInitialTagging{<category list>}{<cs>}
```

This (robustly) defines `<cs>` (a control sequence) to accept a single argument, which you need to use in the `<long>` part of the abbreviation definition (it's not inserted automatically).

The `\GlsXtrEnableInitialTagging` command also sets the `tagging` attribute to true for each of the listed categories, which ensures that `<cs>` uses

```
\glsxtrtagfont{<text>}
```

within the glossary (see section 4). Within the main text the command simply does its argument. For example:

```
\documentclass{article}
```

```
\usepackage{glossaries-extra}
```

```
\GlsXtrEnableInitialTagging{abbreviation}{\itag}
```

```
\newabbreviation{xml}{XML}{e\itag{x}tensible \itag{m}arkup
\itag{l}anguage}
```

```
\begin{document}
```

```
First use: \gls{xml}. Next use: \gls{xml}.
```

```
\end{document}
```

This produces:

First use: extensible markup language (XML). Next use: XML. 

This doesn't show the markup as the tagging command (`\itag` in this example) simply expands to its argument in the main document text. The difference is only evident in the glossary.

If all your abbreviations are defined in a separate file, it's useful to provide a definition of the tagging command with `\providecommand` to ensure it's defined if you decide not to use `\GlsXtrEnableInitialTagging`. With `bib2gls`, you can include it in the `@preamble`. For example:

```
@preamble{"\providecommand{\itag}[1]{#1}"}
```

2.4 Dotted Abbreviations

If an abbreviation ends with a full stop, it can be awkward when it appears at the end of a sentence, as you can end up with two dots by mistake. For example:

```
\documentclass{article}

\usepackage{glossaries-extra}

\newabbreviation{dante}{DANTE e.V.}
{Deutschsprachige Anwendervereinigung \TeX\usergroup}


\newabbreviation{gp}{G.P.}{General Practitioner}

\begin{document}
\gls{dante} is a local \TeX\usergroup.
The German-speaking local \TeX\usergroup is \gls{dante}.

A \gls{gp} is a medical doctor.
I went to my surgery to see the \gls{gp}.
\end{document}
```

This results in:

Deutschsprachige Anwendervereinigung \TeX e.V. (DANTE e.V.) is a local \TeX user group. The German-speaking local \TeX user group is DANTE e.V.. 

A General Practitioner (G.P.) is a medical doctor. I went to my surgery to see the G.P.. 

2 Abbreviations

The awkward double-dot is caused by the final dot in the short form followed by the sentence terminating full stop.

If the `discardperiod` attribute is set to true, the post-link hook will look ahead for a full stop. If it finds one, it will be discarded. For example:

```
\documentclass{article}

\usepackage{glossaries-extra}

\glssetcategoryattribute{abbreviationdot}{discardperiod}{true}

\newabbreviation[category=abbreviationdot]
{dante}{DANTE e.V.}{Deutschsprachige Anwendervereinigung \TeX\_{e.V.}}

\newabbreviation[category=abbreviationdot]
{gp}{G.P.}{General Practitioner}

\begin{document}
\gls{dante} is a local \TeX\_{user group.
The German-speaking local \TeX\_{user group is \gls{dante}.

A \gls{gp} is a medical doctor.
I went to my surgery to see the \gls{gp}.
\end{document}
```

This now results in:

Deutschsprachige Anwendervereinigung \TeX e.V. (DANTE e.V.) is a local \TeX user group. The German-speaking local \TeX user group is DANTE e.V.
A General Practitioner (G.P.) is a medical doctor. I went to my surgery to see the G.P.

This attribute only affects the *non-plural* commands, such as `\gls` and `\glsxtrshort`. If the last paragraph in the above example is changed to:

```
A \gls{gp} is a medical doctor.
I went to my surgery to see the \glspl{gp}.
```

then the result is:

A General Practitioner (G.P.) is a medical doctor. I went to my surgery to see the G.P.s.

2 Abbreviations

In this case there's no need to discard the terminating full stop as the plural form doesn't end with one. If the plural form also ends with a full stop (for example, if the `noshortplural` attribute is also set) then you additionally need to set the `pluraldiscardperiod` attribute.

The post-link hook is also applied to other commands, such as `\glxtrfull`, `\glxtrlong`, `\glxtrshort` and `\glssymbol`. For example:

```
I went to my surgery to see the \glxtrshort{gp}.
```


results in:

I went to my surgery to see the G.P. 

In some cases, this may be inappropriate, for example:

```
I went to my surgery to see the \glxtrlong{gp}.
```


results in:

I went to my surgery to see the General Practitioner 

In this case the terminating full stop shouldn't be discarded. There are several ways to prevent it. For example, moving the full stop into the `<insert>` argument:

```
I went to my surgery to see the \glxtrlong{gp}[.]
```

This results in:

I went to my surgery to see the General Practitioner. 

Alternatively, insert `\relax` before the full stop:

```
I went to my surgery to see the \glxtrlong{gp}\relax.
```

Depending on the abbreviation style, it may be inappropriate for the first use to discard the full stop. In this case, it's a bit of a nuisance to keep track of whether the term is being referenced for the first time. Instead, set the `retainfirstuseperiod` attribute to true.

If you have many abbreviations defined without dots and then you later decide to insert them, you may prefer an automated approach. This can be done by setting the `insertdots` attribute to true. For example:

```

\documentclass{article}

\usepackage{glossaries-extra}

\glssetcategoryattribute{initialism}{insertdots}{true}
\glssetcategoryattribute{initialism}{discardperiod}{true}
\glssetcategoryattribute{initialism}{retainfirstuseperiod}{true}

\setabbreviationstyle[initialism]{short-long}

\newabbreviation[category=initialism]
  {gp}{GP}{General Practitioner}

\begin{document}
Today I went to my surgery to see the \gls{gp}.
Tomorrow I'm going to my surgery to see the \gls{gp}.
\end{document}

```

This produces:

Today I went to my surgery to see the G.P. (General Practitioner). Tomorrow
I'm going to my surgery to see the G.P.



2.5 Translations

If an abbreviation needs to be accompanied by a translation, then you can use a custom field or one of the supplied user fields described in section 1.4 to store the translation. The `-user` abbreviation styles can be used to include the extra information if the field is set. The `user1` field is the default, but you can change this by redefining:

```
\glsxtruserfield
```

to the *internal* field name. (For example, `userii` for `user2`.) In the sample document below, the translation is supplied in the default `user1` field:

```

\documentclass{article}

\usepackage{glossaries-extra}

\setabbreviationstyle{long-short-user}

```



```
\newabbreviation[user1={ribonucleic acid}]
  {rna}{RNA}{ribonukleins\"aure}
```

```
\begin{document}
First use: \gls{rna}. Next use: \gls{rna}.
\end{document}
```

This produces:

First use: ribonukleinsäure (RNA, ribonucleic acid). Next use: RNA. ☞

If the field is empty, `long-short-user` behaves like `long-short`.

Here's an example where the native language is English:

```
\newabbreviation{iso}{ISO}
{International Organization for Standardization}
```

```
\newabbreviation[
  user1 = {Associa\c{c}\~ao Brasileria de Normas T\'ecnicas},
  user2 = {pt-BR},
  category = {foreignabbreviation}
]
{abnt}{ABNT}{Brazilian National Standards Organization}
```

```
\newabbreviation[
  user1 = {Deutsches Institut f\"ur Normung e.V.},
  user2 = {de-1996},
  category = {foreignabbreviation}
]{din}{DIN}{German Institute for Standardization}
```

The use of the custom `category` label `foreignabbrevaiation` means I can set up different abbreviation styles. For example:

```
\setabbreviationstyle{short-nolong}
\setabbreviationstyle[foreignabbreviation]{long-short-user}
```

This example differs from the previous one as there are now two foreign languages (Portuguese and German) with English as the native language. The previous had German as the native language and English as the sole foreign language. In this case, I've used the `user2` field to identify the language of the original text (stored in the `user1` field).

For example, suppose I'm using `babel` with the language options `british`, `brazilian` and `ngerman`:

```
\usepackage[main=british,brazilian,ngerman]{babel}
```

then I might want to modify `\glsxtruserparen` to use `\foreignlanguage`. This would be easier if the `user2` field used a recognised babel dialect label, but that's less consistent across documents. For example, in another document I might use `UKenglish` or just `english` (or perhaps use `polyglossia` instead).

The glossaries package loads `tracklang` [6], which provides:

```
\GetTrackedDialectFromLanguageTag{<language tag>}{<cs>}
```

If the given language tag matches a document dialect that's been tracked (by `tracklang`), this stores the *tracklang dialect label* in the control sequence `<cs>` otherwise it sets that control sequence to empty. The match requires that five properties of the language tag and `tracklang`'s dialect label are the same: root language, region, sub-language, variant and script. Some of these elements may be empty, in which case those elements must be empty for both. If the script is missing in either case, the default script for the given root language is assumed. For example, `Latn` for `en` (English).

The `tracklang` dialect label isn't always the same as babel's dialect label.

The simplest way to test if the `tracklang` label matches the babel label is to test for the existence of `\captions<label>`. For example, using `etoolbox`'s `\ifcsundef`:

```
\GetTrackedDialectFromLanguageTag{pt-BR}{\dialectlabel}
\ifdefempty\dialectlabel
{}% no exact match found
{% exact match found
  \ifcsundef{captions\dialectlabel}
  {}% not a recognised babel label
  {}% recognised babel label
}
```

In the “not a recognised babel label” argument, you can find out if the `tracklang` dialect label has a mapping to the closest known babel dialect label with:

```
\IfTrackedDialectHasMapping{<tracklang label>}{<true>}{<false>}
```

If true, you can fetch the corresponding babel label with:

```
\GetTrackedDialectToMapping{<tracklang label>}
```

If false, can try the root language label instead, which can be obtained with:

```
\TrackedLanguageFromDialect{<dialect>}
```

For example:

```
\GetTrackedDialectFromLanguageTag{pt-BR}{\dialectlabel}
\ifdefempty\dialectlabel
{}% no exact match found
{ }% exact match found
  \ifcsundef{captions\dialectlabel}
  { }% not a recognised babel label, use root language
  \edef\dialectlabel{\TrackedLanguageFromDialect\dialectlabel}%
  }%
  { }% recognised babel label
}
```

Consider the following document:

```
\documentclass{article}

\usepackage[british]{babel}
\usepackage{tracklang}

\begin{document}
\GetTrackedDialectFromLanguageTag{en-GB}{\trackeddialect}%
Tracked dialect label: \trackeddialect.
\IfTrackedDialectHasMapping{\trackeddialect}%
{Has mapping: \GetTrackedDialectToMapping{\trackeddialect}}%
{No mapping}.
Root language: \TrackedLanguageFromDialect{\trackeddialect}.
\end{document}
```

In this case the tracklang dialect label is the same as babel's dialect label. The above produces:

Tracked dialect label: british. No mapping. Root language: english.



Now consider this document:

```
\documentclass[en-MT]{article}

\usepackage[british][babel]
```

2 Abbreviations

```
\usepackage{tracklang}

\begin{document}
en-GB: \GetTrackedDialectFromLanguageTag{en-GB}{\trackeddialect}%
  Tracked dialect label: \trackeddialect.
\IfTrackedDialectHasMapping{\trackeddialect}%
{Has mapping: \GetTrackedDialectToMapping{\trackeddialect}}%
{No mapping}.
Root language: \TrackedLanguageFromDialect{\trackeddialect}.

en-MT: \GetTrackedDialectFromLanguageTag{en-MT}{\trackeddialect}%
  Tracked dialect label: \trackeddialect.
\IfTrackedDialectHasMapping{\trackeddialect}%
{Has mapping: \GetTrackedDialectToMapping{\trackeddialect}}%
{No mapping}.
Root language: \TrackedLanguageFromDialect{\trackeddialect}.
\end{document}
```

In this case the document requires Maltese English but `babel` doesn't have an associated dialect so `british` is used instead in `babel`'s options list. However, `tracklang` does recognise `en-MT` as a document class option, which allows extra localisation from other locale-sensitive packages. (For example, `datetime2` will use different time zone abbreviations.) If `tracklang` picks up document class options, these override any `babel` settings, but the mapping allows a way of accessing the captions hook provided by `babel`.

The above document produces:

```
en-GB: Tracked dialect label: . No mapping. Root language: .
en-MT: Tracked dialect label: maltaenglish. Has mapping: british. Root lan-
guage: english.
```

So now, even though `babel`'s `british` option has been used, `en-GB` isn't recognised as a tracked locale. Things are a little more complicated if the language tag is too specific compared to the `babel` dialect label. For example, while the dialect label `nswissgerman` identifies the region, the `ngerman` label doesn't.

```
\documentclass{article}

\usepackage[ngerman]{babel}
\usepackage{tracklang}

\begin{document}
\GetTrackedDialectFromLanguageTag{de-DE-1996}{\trackeddialect}%
Tracked dialect label: \trackeddialect.
```

```
\IfTrackedDialectHasMapping{\trackeddialect}%
{Has mapping: \GetTrackedDialectToMapping{\trackeddialect}}%
{No mapping}.
```

In this case no dialect label is found. The result is:

Tracked dialect label: . No mapping.

This is because the document doesn't have a dialect that matches both the language *and* region. As from tracklang version 1.3.6, `\GetTrackedDialectToMapping` sets:

```
\TrackedDialectClosestSubMatch
```

to the closest dialect label that has the same root language if the exact match isn't found. This will be empty if there's no tracked dialect with the given root language (and may also be empty if an exact match is found).

Returning to glossaries-extra with the original text stored in the `user1` field (identified by `\glxtruserfield` in the `long-short-user` style) and the language tag stored in the `user2` field, then if you have at least version 1.32 of glossaries-extra and version 1.3.6 of tracklang you can use:

```
\GlsXtrForeignText{<label>}{<text>}
```

to encapsulate `<text>` with:

```
\foreignlanguage{<language name>}{<text>}
```

where the field containing the appropriate locale tag is stored in the field given by:

```
\GlsXtrForeignTextField
```

which defaults to the `useri` internal field for the entry identified by `<label>` (corresponding to the `user2` field). For example:

```
\documentclass{article}

\usepackage[main=british,brazilian,ngerman]{babel}
\usepackage[record]{glossaries-extra}

\setabbreviationstyle[foreignabbreviation]{long-short-user}

\newabbreviation{iso}{ISO}
{International Organization for Standardization}

\newabbreviation[
  user1 = {Associa\c{c}\~ao Brasileria de Normas T\'ecnicas},
```

2 Abbreviations

```
user2 = {pt-BR},
category = {foreignabbreviation}
]
{abnt}{ABNT}{Brazilian National Standards Organization}

\newabbreviation[
  user1 = {Deutsches Institut f\"ur Normung e.V.},
  user2 = {de-1996},
  category = {foreignabbreviation}
]{din}{DIN}{German Institute for Standardization}

\renewcommand*{\glstruserparen}[2]{%
  \glstrfullsep{#2}%
  \glstrparen
  {#1%
  \ifglshasfield{\glstruserfield}{#2}%
  {, \emph{\GlsXtrForeignText{#2}{\glscurrentfieldvalue}}}}%
  }%
}

\begin{document}
\gls{abnt}, \gls{din}.
\end{document}
```

This essentially uses the earlier tracklang code where an extra `\ifdefempty` is inserted, which sets the equivalent of `\trackeddialect` in the above to `\TrackedDialectClosest-SubMatch`. If the test for the captions hook is false, then `\foreignlanguage` isn't used.

3 Symbols

Section 1.4 described the `symbol` key, which can be used to additionally provide a symbol. For example:

```
\documentclass{article}

\usepackage{siunitx}% provides \si
\usepackage{glossaries}

\newglossaryentry{length}% label
{% settings:
  name    = {length},
  symbol  = {\si{\metre}},
  description = {measurement between two points}
}

\newglossaryentry{area}% label
{% settings:
  name    = {area},
  symbol  = {\si{\metre\squared}},
  description = {measurement of a surface}
}

\begin{document}
Measurements: \gls{length} (\glssymbol{length}) and
\gls{area} (\glssymbol{area}).
\end{document}
```

This produces:

Measurements: length (m) and area (m²).



It may be that you prefer to have the symbol in the `name` field instead. The example document below is a modification of the above and uses the post-link hook to append the description on first use (see section 5.1).

```

\documentclass{article}

\usepackage{siunitx}
\usepackage{glossaries-extra}

\glsnoexpandfields % name field contains \si

\glsdefpostlink{symbol}{\glsxtrpostlinkAddDescOnFirstUse}

\newglossaryentry{length}% label
{% settings:
  name = {\si{\metre}},
  description = {length},
  category = {symbol}
}

\newglossaryentry{area}% label
{% settings:
  name = {\si{\metre\squared}},
  description = {area},
  category = {symbol}
}

\begin{document}
First use: \gls{length} and \gls{area}.
Next use: \gls{length} and \gls{area}.
\end{document}

```

Note the need for `\glsnoexpandfields` (described in section 1.9). This wasn't required in the previous example because the `siunitx` commands were in the `symbol` field, which isn't expanded by default. The `name` field also isn't expanded by default, but its value is copied to the `text` and `first` fields, which are expanded by default. If `\glsnoexpandfields` is omitted from the above document, the following error would occur:

```

! Undefined control sequence.
\@glo@name ->\si {\metre
                }

```

Although `\si` is robust, commands like `\metre` and `\squared` are only available within the argument of `\si` (and other similar commands provided by `siunitx`) and so break in expandable contexts. With `\glsnoexpandfields`, the document compiles correctly and produces:

First use: m (length) and m² (area). Next use: m and m².



The glossaries-extra's `symbols` package option provides the command

```
\glxtrnewsymbol[⟨key=value list⟩]{⟨label⟩}{⟨symbol⟩}
```

which is a shortcut for

```
\newglossaryentry{⟨label⟩}{name={⟨symbol⟩},category={symbol},sort={⟨label⟩},
type={symbols},⟨key=value list⟩}
```

So the above document can be changed to:

```
\documentclass{article}

\usepackage{siunitx}
\usepackage[symbols]{glossaries-extra}

\glsnoexpandfields

\glsdefpostlink{symbol}{\glxtrpostlinkAddDescOnFirstUse}

\glxtrnewsymbol[description = {length}]{length}{\si{\metre}}

\glxtrnewsymbol[description = {area}]{area}{\si{\metre\squared}}

\begin{document}
First use: \gls{length} and \gls{area}.
Next use: \gls{length} and \gls{area}.
\end{document}
```

The result is the same.

3.1 Functions

Some symbols may represent functions. For example:

```
\documentclass{article}

\usepackage[symbols]{glossaries-extra}
```

```

\glsnoexpandfields

\glsxtrnewsymbol
[description = {derivative}]
{deriv}% label
{\ensuremath{f'(x)}}% symbol

\begin{document}
The derivative is denoted \gls{deriv}.
\end{document}

```

This produces:

The derivative is denoted $f'(x)$.

What if I need to change the variable for a specific instance, for example, if I want $f'(x_i)$ instead of $f'(x)$? I can just use:

The gradient at x_i is $f'(x_i)$.

So far, none of the example documents have a glossary or list of terms. The ultimate aim when using the glossaries package is to ensure consistent formatting and notation, and, where applicable, include a list of all terms referenced in the document. The use of commands like `\gls` helps to achieve this. If the notation needs to be changed, only the entry definition (and associated formatting commands) should need to be redefined without having to go through the whole document changing the code. Using commands like `\gls` also identifies which entries need to be included in the list of terms and, if `hyperref` is loaded, can be hyperlinked to the relevant place in that list (see section 4).

So explicitly using `f'(x_i)` won't index the `deriv` entry or mark it as having been used or create a hyperlink. One possibility is to use one of the following commands:

```
\glslink[<options>]{<label>}[<text>]
```

```
\glsdisp[<options>]{<label>}[<text>]
```

They both work in much the same way, indexing the entry and displaying `<text>` as the link text. The only difference is that `\glsdisp` also unsets the first use flag, which marks the entry as having been used. For example:

The gradient at x_i is `\glslink{deriv}{ $f'(x_i)$ }`.

3 Symbols

This solves the problem of ensuring that the `deriv` entry is indexed and, if `hyperref` is loaded, ensures that the link text has a hyperlink to the relevant place in the list of notation, but it doesn't solve the problem of consistent formatting.

One way of ensuring consistent formatting is to define a semantic command. For example:

```
\documentclass{article}

\usepackage[symbols]{glossaries-extra}

\glsnoexpandfields

\newcommand{\derivfn}[1]{f'(#1)}

\glsxtrnewsymbol
[description = {derivative}]
{deriv}% label
{\ensuremath{\derivfn{x}}}% symbol

\begin{document}
The derivative is denoted \gls{deriv}.
The gradient at  $x_i$  is \glslink{deriv}{\derivfn{x_i}}.
\end{document}
```

This produces:

The derivative is denoted $f'(x)$. The gradient at x_i is $f'(x_i)$.



Now only `\derivfn` needs modifying if the notation must change. This requires remembering both the entry label (`deriv` in this case) and the associated formatting command (`\derivfn` in this case). The `glossaries-extra` package provides a way of storing the associated formatting command in one of the additional keys (see section 1.4). The field is identified by:

```
\GlsXtrFmtField
```

which defaults to `user1` (the internal representation of the `user1` key). The value must be the name (without the leading backslash) of a control sequence that takes a *single* mandatory argument. The above custom command `derivfn` satisfies this requirement, so the entry can be defined as:

```
\glsxtrnewsymbol
[% settings:
description = {derivative},
```

```

    user1 = {derivfn}
]
{deriv}% label
{\ensuremath{\derivfn{x}}}% symbol

```

The formatting command can now be applied using one of the following:

```
\glstrfmt[<options>]{<label>}{<text>}
```

```
\glstrfmt*[<options>]{<label>}{<text>}[<insert>]
```

which internally use `\glslink` or:

```
\glstrentryfmt{<label>}{<text>}
```

which doesn't (as so is more like using `\glsentryname`).

So an alternative approach is:

```

\documentclass{article}

\usepackage[symbols]{glossaries-extra}

\glsnoexpandfields

\newcommand{\derivfn}[1]{f'(#1)}

\glstrnewsymbol
[% settings:
  description = {derivative},
  user1 = {derivfn}
]
{deriv}% label
{\ensuremath{\derivfn{x}}}% symbol

\begin{document}
The derivative is denoted \gls{deriv}.
The gradient at  $x_i$  is \glstrfmt{deriv}{x_i}.
\end{document}

```

This again produces:

The derivative is denoted $f'(x)$. The gradient at x_i is $f'(x_i)$.



3 Symbols

Both the starred `\glsxtrfmt*` and unstarred `\glsxtrfmt` format the $\langle text \rangle$ argument using:

```
\glsxtrfmtdisplay{\langle cs-name \rangle}{\langle text \rangle}[\langle insert \rangle]
```

where $\langle cs-name \rangle$ is the control sequence name stored in the field identified by `\GlsXtrFmt-Field` and the $\langle insert \rangle$ part is the final optional argument for the starred `\glsxtrfmt*` (if provided) otherwise it's empty. If the command identified by $\langle cs-name \rangle$ doesn't exist (or if the field providing it isn't set) then just $\langle text \rangle \langle insert \rangle$ is done.

Nested link text causes problems so don't use `\glsxtrfmt` in the optional part of commands like `\gls` or `\glsymbol` or in field values that are used by those types of command. Also don't use `\glsxtrfmt` within the $\langle text \rangle$ or $\langle insert \rangle$ part of another instance of `\glsxtrfmt` or in `\glslink` or `\glsdisp`. Use `\glsxtrentryfmt` instead.

If more than one argument is required, then a helper macro is needed. For example:

```
\newcommand{\iderivfn}[2][f]{#1'(#2)}  
\newcommand{\derivfn}[1]{\iderivfn#1}
```

Now to obtain $g'(x_i)$:

```
 $\glsxtrfmt{deriv}{[g]{x_i}}$
```

3.2 Dealing with Automated Case-Changing

Commands like `\Gls` don't usually make much sense for symbols as a change in case can cause a change in meaning. For example, x might denote a vector and X might denote a matrix. However, you may have a mixed list of terms containing both symbols and words, and if you set the `glossname` attribute to `firstuc`, which automatically converts the first letter of each `name` to upper case in the glossary, then this can cause a problem for entries where the `name` starts with a symbol. The simplest solution is to insert an empty group at the start of the `name` field for such entries. For example:

```
\glsxtrnewsymbol  
[description = {length}]% settings  
{length}% label  
{\}\si{\metre}}% name
```

This is done automatically by `bib2gls`, but if it causes any interference you can switch off the behaviour with `--no-mfirstuc-math-protection`.

4 Displaying the Definition

The examples so far only use the defined entries in the documents with commands like `\gls` or `\glsymbol` or `\glsentrydesc`. These are useful for ensuring consistent formatting, but it's also helpful to have a place in the document where the term is formally defined. This can be partially solved by including the description in parentheses on first use, either by explicitly including the description in the `first` field or with the use of the post-link hook, but the first use might not be the most appropriate place for the description.

4.1 Listing the Terms (Glossary)

If you want a complete list of all defined terms, you can use:

```
\printunsrtglossary[<options>]
```

This lists all the terms for the given glossary (identified by the `type` key in *<options>*, see section 4.1.3) according to the order of the glossary's internal list of labels, which is typically in the order of definition. (As each entry is defined, its label is appended to the internal list of the associated glossary.)

You can change the default title with the `title` option. For example:

```
\printunsrtglossary[title={Nomenclature}]
```

The title used in the table of contents is assumed to be the same, but you can change it with `toctitle`. For example:

```
\printunsrtglossary[  
  title={List of Terms and Notation},  
  toctitle={Notation}  
]
```

The glossary style can be set with the `style` key in *<options>*. Alternatively, you can set a default style with the `style` package option. There are many predefined styles to choose from (see the glossaries gallery [3]). The styles are provided in supplementary packages, some of which are automatically loaded. Since each package adds to the document overhead,

and some require additional packages to be loaded, when using `glossaries-extra`, it's a good idea to disable the automatic loading of all styles with `nostyles` and then use `stylemods` to load the specific packages (along with the `glossaries-extra-stylemods` package, which patches some of the predefined styles). For example, the `index` style is provided by the `glossary-tree` package, so `stylemods={tree}` will automatically load `glossary-tree` and provide all the tree-like styles, including `index`. The `stylemods` value may be a comma-separated list, so to load both `glossary-tree` and `glossary-long`, use `stylemods={tree,long}`. For example:

```

\documentclass{scrartcl}
\usepackage{mhchem}% provides \ce
\usepackage[postpunc={dot},% full stop after description
nostyles,% don't load default style packages
% load glossaries-extra-stylemods.sty and glossary-tree.sty:
stylemods={tree}
]{glossaries-extra}

\newglossaryentry{area}
{
  name = {\ensuremath{A}},
  description = {area}
}

\newglossaryentry{amethyst}
{
  name = {amethyst},
  description = {a purple type of quartz},
  symbol = {\ce{SiO2}}
}

\newglossaryentry{circumference}
{
  name = {\ensuremath{C}},
  description = {circumference}
}

\newglossaryentry{duck}
{
  name = {duck},
  description = {a waterbird with webbed feet}
}
\newglossaryentry{goose}
{
  name = {goose},

```

```

    description = {a large waterbird with a long neck, short legs,
webbed feet and a short broad bill}
}

\newglossaryentry{radius}
{
    name = {\ensuremath{r}},
    description = {radius}
}

\newglossaryentry{pi}
{
    name = {\ensuremath{\pi}},
    description = {Archimedes' constant}
}

\begin{document}
\printunsrtglossary[style={index}]
\end{document}

```

This produces:



Glossary

A area.

amethyst (SiO_2) a purple type of quartz.

C circumference.

duck a waterbird with webbed feet.

goose a large waterbird with a long neck, short legs, webbed feet and a short broad bill.

r radius.

π Archimedes' constant.

The index glossary style checks if the `symbol` field has been set. If it has, then the symbol is added in parentheses (as in the amethyst example). Only some of the styles include the `symbol` field. (Table 15.1 in the glossaries user manual [5] gives an overview of the features supported by the predefined styles.)

The glossary is sub-divided into letter groups. By default, these sub-groups are separated with a vertical gap (for example, between duck and goose above). In the above example, the letter group is determined by the first character of the `sort` field. Since the default behaviour of both glossaries and glossaries-extra is to use `makeindex`, the `sort` field (which is used by `makeindex`) is set to the value of the `name` field (unless explicitly set) and then sanitized.

When using `\printunsrtglossary`, the `sort` field is irrelevant except to determine the letter group. The sub-group heading is displayed by some styles, such as the `indexgroup` style. For example, with:

```
\printunsrtglossary[style={indexgroup}]
```

The glossary is now:



Glossary

Symbols

A area.

A

amethyst (SiO_2) a purple type of quartz.

Symbols

C circumference.

D

duck a waterbird with webbed feet.

G

goose a large waterbird with a long neck, short legs, webbed feet and a short broad bill.

Symbols

r radius.

π Archimedes' constant.

This explains why there's a gap between A (area) and amethyst as they don't belong to the same letter group. The `sort` field for the area entry is `\ensuremath{A}` which has been sanitized, so it starts with a literal backslash (`\`). This means that area is assigned to the symbols letter group. The symbols group occurs three times, because the list is following the order of definition.

4.1.1 Groups and Locations

The `group` key isn't defined by default, but if it is defined then `\printunsrtglossary` will use the `group` field instead of trying to determine the group from the first character of the `sort` field (as in the example above). The value of the `group` field must be a label (see section 1.1). A title may be assigned to a group with:

```
\glsxtrsetgrouptitle{<group label>}{<group title>}
```

If a title hasn't been assigned, the label is used as the title. The above command is the preferred form, but the base glossaries package checks for a control sequence in the form `\<label>groupname` where `<label>` is the group label. The glossaries-extra package also recognises this form to ensure backward-compatibility. If the `group` field is empty the sub-group won't have a title.

For example, the following defines the `group` field with a custom command `\grouplabel` (that's not needed, but it's required by the `\glsaddstoragekey` syntax):

```
\documentclass{scrartcl}
\usepackage{mhchem}
\usepackage[postpunc={dot},% full stop after description
nostyles,% don't load default style packages
stylemods={tree}% load glossary-tree.sty and patch styles
]{glossaries-extra}

\glsaddstoragekey{group}{}{\grouplabel}
\glsxtrsetgrouptitle{greek}{Greek Symbols}

\newglossaryentry{area}
{
  name = {\ensuremath{A}},
  description = {area},
  group = {A}
}

\newglossaryentry{amethyst}
{
  name = {amethyst},
  description = {a purple type of quartz},
  symbol = {\ce{SiO2}},
  group = {A}
}

\newglossaryentry{circumference}
{
```

Glossary

```
    name = {\ensuremath{C}},
    description = {circumference},
    group = {C}
}

\newglossaryentry{duck}
{
    name = {duck},
    description = {a waterbird with webbed feet},
    group = {D}
}

\newglossaryentry{goose}
{
    name = {goose},
    description = {a large waterbird with a long neck, short legs,
    webbed feet and a short broad bill},
    group = {G}
}

\newglossaryentry{radius}
{
    name = {\ensuremath{r}},
    description = {radius},
    group = {R}
}

\newglossaryentry{pi}
{
    name = {\ensuremath{\pi}},
    description = {Archimedes' constant},
    group = {greek}
}

\begin{document}
\printunsrtglossary[style={indexgroup}]
\end{document}
```

This produces:



Glossary

A

A area.

amethyst (SiO_2) a purple type of quartz.

C

C circumference.

D

duck a waterbird with webbed feet.

G

goose a large waterbird with a long neck, short legs, webbed feet and a short broad bill.

R

r radius.

Greek Symbols

π Archimedes' constant.

Note that with this method *every* entry must be assigned a group or it will be assigned to the empty group.

Similarly, if the `location` field is defined, you can use it to provide a location list. The `record` package option conveniently defines both `group` and `location`, so the following can be used instead:

```
\usepackage[
  record,% provides group and location fields (and other stuff)
  postpunc=dot,nostyles,stylemods=tree]{glossaries-extra}

\newglossaryentry{area}
{
  name = {\ensuremath{A}},
  description = {area},
  group = {A},
  location = {page 1}
}
```

This very quickly becomes tedious and prone to errors as the entries have to be ordered manually, and every entry must be assigned the group and location (if required). Every time the location changes through edits to the document, the locations must be updated. However, this is exactly the method that `bib2gls` uses, but it does it automatically for you by selecting the required data from one or more `.bib` files and then creating a file containing all the glossary entry definitions with the fields set appropriately. The `.aux` file provides `bib2gls` with the indexing information so that it knows which entries to select and what the locations are, and how to order the definitions. See section 7 for further information.

4.1.2 Homographs and Hierarchical Terms

An entry may be assigned a parent with the `parent` key. The value must be the label of an entry that's already defined. You can test if an entry has the `parent` field set with:

```
\ifglshasparent{<entry label>}{<true>}{<false>}
```

If the `name` key is omitted, the value is assumed to be the same as the parent's `name`. For example:

```
% parent:
\newglossaryentry{glossary}{name={glossary},description={}}
% children:
\newglossaryentry{glossarycol}
{% settings:
  parent = {glossary},% parent label
  description = {collection of glosses}
}
\newglossaryentry{glossarylist}
{% settings:
  parent = {glossary},% parent label
  description = {list of technical words}
}
```

In this case the entry with the label `glossary` is the *parent entry*, and the entries with the labels `glossarycol` and `glossarylist` are *child entries* (or sub-items). An entry that doesn't have a parent is a main or top-level or level 0 item. In this case, the child entries don't have the `name` key, so the name is obtained from the parent's name. This is an example of a *homograph*, where two words with different meanings have the same spelling. The parent entry has an empty description.

Here's another example:

```
% parent:
```

Glossary

```
\newglossaryentry{mineral}% label
{% settings:
  name = {mineral},
  description = {natural inorganic substance}
}
% sub-entries:
\newglossaryentry{quartz}% label
{
  parent = {mineral},% parent label
  name = {quartz},
  description = {hard mineral consisting of silica}
}
\newglossaryentry{amethyst}% label
{
  parent = {quartz},% parent label
  name = {amethyst},
  description = {a purple type of quartz}
}
```

In this case, the child entries have the `name` key set. This is an example of a set of *hierarchical entries*, where each child entry is a sub-category of the parent. Some glossary styles are appropriate for homographs and some are appropriate for hierarchical entries and some are only appropriate for flat glossaries (no child entries). For example, the `index`, `indexgroup`, `tree` and `treegroup` styles are appropriate for hierarchical entries:

```
\documentclass{scrartcl}

\usepackage[nostyles,postpunc={dot},stylemods={tree}]{glossaries-extra}

\newglossaryentry{animal}
{
  name = {animal},
  description = {living organism with a nervous system and sense organs
    that can move independently}
}

\newglossaryentry{bird}
{
  parent = {animal},
  name = {bird},
  description = {warm-blooded egg-laying animal with feathers, wings
    and a beak}
```

Glossary

```
}
```

```
\newglossaryentry{duck}
{
  parent = {bird},
  name = {duck},
  description = {a waterbird with webbed feet}
}
```

```
\newglossaryentry{goose}
{
  parent = {bird},
  name = {goose},
  description = {a large waterbird with a long neck, short legs,
webbed feet and a short broad bill}
}
```

```
\newglossaryentry{mineral}
{
  name = {mineral},
  description = {natural inorganic substance}
}
```

```
\newglossaryentry{calcite}% label
{
  parent = {mineral},% parent label
  name = {calcite},
  description = {a carbonate mineral}
}
```

```
\newglossaryentry{quartz}
{
  parent = {mineral},
  name = {quartz},
  description = {hard mineral consisting of silica}
}
```

```
\newglossaryentry{amethyst}
{
  parent = {quartz},
  name = {amethyst},
  description = {a purple type of quartz},
}
```

```
\newglossaryentry{citrine}
{
  parent = {quartz},
  name = {citrine},
  description = {a form of quartz with a colour ranging
  from pale yellow to brown due to ferric impurities}
}

\begin{document}
\printunsrtglossary[style=indexgroup]
\end{document}
```

This produces:



Glossary

A

animal living organism with a nervous system and sense organs that can move independently.

bird warm-blooded egg-laying animal with feathers, wings and a beak.

duck a waterbird with webbed feet.

goose a large waterbird with a long neck, short legs, webbed feet and a short broad bill.

M

mineral natural inorganic substance.

calcite a carbonate mineral.

quartz hard mineral consisting of silica.

amethyst a purple type of quartz.

citrine a form of quartz with a colour ranging from pale yellow to brown due to ferric impurities.

The `treenoname` and `treenonamegroup` styles are appropriate for homographs. These are usually best with the `subentrycounter` package option, which defines the `glossarysubentrycounter` that's incremented and displayed for every level 1 entry (that is, an entry with a parent but not a grandparent). If the `entrycounter` option is also used, `glossaryentry` is set as the master counter for `glossarysubentry` (although it's not included in the display form of that counter), but `subentrycounter` may be used without `entrycounter`, in which case `glossarysubentry` has no master counter. If `subentrycounter` is used as a package option

and `entrycounter` is later switched on outside of the package option list (through `\setupglossaries` or in the optional argument of `\printunsrtglossary`) then it won't be made the master counter.

For example:

```
\documentclass{scrartcl}

\usepackage[subentrycounter,% create glossarysubentry counter
postpunc={dot},% append full stop after description
nostyles,stylemods={tree}]{glossaries-extra}

\newglossaryentry{bow1}
{
  name={bow},
  description={(rhymes with toe)}
}

\newglossaryentry{bowknot}
{
  parent = {bow1},
  description = {a knot tied with two loops and loose ends}
}

\newglossaryentry{bowweapon}
{
  parent = {bow1},
  description = {a weapon for shooting arrows, made of curved wood
  joined at both ends with taut string}
}

\newglossaryentry{bow2}
{
  name={bow},
  description={(rhymes with cow)}
}

\newglossaryentry{bowbend}
{
  parent = {bow2},
  description = {bend head or upper body}
}

\newglossaryentry{bowpressure}
```

```
{
  parent = {bow2},
  description = {give in to pressure}
}

\newglossaryentry{bow3}
{
  name={bow},
  description={(also bows) the front end of a ship}
}

\newglossaryentry{glossary}{name={glossary},description={}}

\newglossaryentry{glossarycol}
{
  parent = {glossary},
  description = {collection of glosses}
}

\newglossaryentry{glossarylist}
{
  parent = {glossary},
  description = {list of technical words}
}

\begin{document}
\printunsrtglossary[style=treenoname]
\end{document}
```

This produces



Glossary

bow (rhymes with toe).

1) a knot tied with two loops and loose ends.

2) a weapon for shooting arrows, made of curved wood joined at both ends with taut string.

bow (rhymes with cow).

1) bend head or upper body.

2) give in to pressure.

bow (also bows) the front end of a ship.

glossary .

- 1) collection of glosses.
- 2) list of technical words.

The empty description for the top-level glossary entry has caused an odd effect with a space occurring between the name and the post-description punctuation. This can be removed by redefining:

```
\glstreenonamedesc{<label>}
```

so that it checks if the `description` field has been set with:

```
\ifglshasdesc{<entry label>}{<true>}{<false>}
```

For example:

```
\renewcommand{\glstreenonamedesc}[1]{%
  \ifglshasdesc{#1}
  {\glstreepredesc\glossentrydesc{#1}\glspostdescription}
  {}% do nothing, description field is empty
}
```

Another variation is to check if the entry has children add use a colon instead of a full stop. The base glossaries package provides:

```
\ifglshaschildren{<entry label>}{<true>}{<false>}
```

However this method is very inefficient as it has to iterate over all defined entries and check if any have the `parent` field set to `<entry label>`. A more efficient method can be obtained with `bib2gls` and the `save-child-count` resource option, which will save the number of child entries that have been indexed in an internal field labelled `childcount` and a list of child entry labels is stored in the internal field labelled `childlist`. In this case, a more efficient method is to use:

```
\GlsXtrIfHasNonZeroChildCount{<entry label>}{<true>}{<false>}
```

which checks the `childcount` field for a non-zero value. If you don't use `bib2gls`, this command will always do `<false>` (unless you explicitly set the internal fields to the correct values, which is tedious and has to be updated whenever definitions are added, deleted or have the `parent` field changed).

Another variation could use custom fields (see section 1.4) to store the pronunciation guide ("rhymes with ...") and the alternative version ("also ...") as well as other information, such as whether the word is a noun or verb.

4.1.3 Multiple Glossaries

The default glossary has the label `main`, but it can also be referenced with:

```
\glsdefaulttype
```

The `nomain` package option suppresses the creation of the `main` glossary, in which case `\glsdefaulttype` will be set to the first glossary to be defined. (There must be at least one glossary defined, so if you use `nomain` you must provide another default.) If you use the `entrycounter` package option, the associated counter isn't reset at the start of the glossary. If you have multiple glossaries and you need it to be reset, add:

```
\glsresetentrycounter
```

before the start of the appropriate glossary.

Abbreviations defined with `\newabbreviation` (see section 2) are, by default, assigned to the glossary given by:

```
\glsxtrabbrvtype
```

This initially expands to `\glsdefaulttype`, but the `abbreviations` option redefines this to `abbreviations` and creates a glossary with that label.

Abbreviations defined with `\newacronym` are, by default, assigned to the glossary given by:

```
\acronymtype
```

This initially expands to `\glsdefaulttype`, but the `abbreviations` option redefines this to `\glsxtrabbrvtype`. However, the `acronyms` option redefines `\acronymtype` to `acronym` and creates a glossary with that label. So if you use both the `abbreviations` and `acronyms` package options, you will have two extra glossaries created, one as the default for `\newabbreviation` and the other as the default for `\newacronym`.

The `symbols` package option creates a glossary with the label `symbols` and defines `\glsxtrnewsymbol` (see section 3) which sets the `type` to `symbols`. There are also similar package options `numbers` and `index`, which create the `numbers` glossary (and `\glsxtrnewnumber`) and the `index` glossary (and `\newterm`).

In each case, the default type can be overridden when defining an entry by using the `type` key in the assignment list. The value must be the label identifying a defined glossary.

You can provide your own custom glossary using:

```
\newglossary*{<type>}{<title>}
```

where `<type>` is the label used to identify the glossary and `<title>` is the default title used by `\printunsortedglossary`. (The unstarred version has a different syntax and is only applicable with `makeindex` or `xindy`.) For example:

```
\newglossary*{measurements}{SI Units}
```

```
\newglossaryentry{length}
{% settings:
  name = {\si{\metre}},
  description = {length},
  type = {measurements}% glossary label
}
```

In this case, the label identifying the new glossary is `measurements` and the title is “SI Units”.

You can specify the glossary using the `type` setting in the optional argument of `\printunsrtglossary`. For example, the above `measurements` glossary can be displayed with:

```
\printunsrtglossary[type={measurements}]
```

For convenience, there’s a command that iterates over all defined glossaries (in the order of definition) and does `\printunsrtglossary[type={\langle label \rangle}]` for each glossary:

```
\printunsrtglossaries
```

There’s no optional argument for this command. When creating glossaries with package options, such as `abbreviations`, you may find an unexpected order as the options aren’t always processed in the order in which they were specified. (Some glossaries-extra options are passed to the base glossaries package and are processed when that package is internally loaded not when the extension options are processed.) In which case you need to use `\printunsrtglossary` for each glossary in the required order. You will also need to do this if the glossary settings are different. (For example, if one glossary needs to use the `tree` style and another needs to use the `treenoname` style.)

You can also define an *ignored glossary*, which is ignored by `\printunsrtglossaries`. This is a useful way of creating a glossary for common terms that shouldn’t appear in a list or for stand-alone entries (see section 4.2). The unstarred form:

```
\newignoredglossary{\langle type \rangle}
```

is useful for common terms where the list won’t be displayed as it automatically suppresses hyperlinks for entries assigned to that glossary. The starred form:

```
\newignoredglossary*{\langle type \rangle}
```

is useful for stand-alone entries as it doesn’t automatically suppress the hyperlinks. Although `\printunsrtglossaries` skips ignored glossaries, it’s still possible to display an ignored glossary with `\printunsrtglossary` but you’ll need to use the `title` setting to override the default title.

4.1.4 Redisplaying or Filtering a Glossary

It's possible to use `\printunsrtglossary` multiple times for the same glossary, but if you have hyperlinks you will need to either suppress the targets with `target={false}` or change the target name (see section 4.1.5).

The starred form of `\printunsrtglossary` has an extra argument:

```
\printunsrtglossary*[\langle options \rangle]{\langle code \rangle}
```

This may be used to make local assignments. It's equivalent to:

```
\begingroup \langle code \rangle \printunsrtglossary[\langle options \rangle] \endgroup
```

For example, if the `group` key has been defined (see section 4.1.1) you can locally switch to a different field for the group label by redefining:

```
\glstrgroupfield
```

within `\langle code \rangle`. For example, if the `secondarygroup` field has been defined:

```
\printunsrtglossary*{%
  \renewcommand{\glstrgroupfield}{secondarygroup}%
}
```

Note that this just changes the group labels. The order is still according to the glossary's internal list of labels.

Unlike `\printglossary` (used with `makeindex` and `xindy`) which inputs a file containing the code to typeset the glossary, `\printunsrtglossary` iterates over the labels defined in the given glossary and adds the appropriate code to an internal command. Once the construction of the internal command is completed, it's then performed. (The construction of this internal command is done to avoid complications when iterating within tabular-like environments, as some of the styles use `longtable` or `supertabular`.) There's a hook just before the internal command is expanded:

```
\printunsrtglossarypredoglossary
```

The glossary header and preamble are displayed before the loop starts, so this hook won't change them (but you can make local changes in `\langle code \rangle` outside of the hook). The style is also set before the loop, but the start and end of the `theglossary` environment (which is defined by the glossary styles) is included in the internal command, so minor adjustments to the style can be made in this hook.

There's another hook that's performed at each iteration:

```
\printunsrtglossaryentryprocesshook{\langle label \rangle}
```

where $\langle label \rangle$ is the current entry label. For example, the `almtree` style needs to know the widest entry name in order to set up the correct indentation. The widest name is set using:

```
\glssetwidest[\langle level \rangle]{\langle text \rangle}
```

but this requires knowing which entry has the widest name. There are some commands provided by the `glossary-tree` and `glossaries-extra-stylemods` packages that iterate over all entries, measuring each name, in order to find the widest, but since `\printunsrtglossary` already has to iterate over the list before typesetting it, this hook can be used to update the widest name at the same time. You can update the value with:

```
\glsupdatewidest[\langle level \rangle]{\langle text \rangle}
```

which computes the width of $\langle text \rangle$ and, if it's wider than the current widest name for the given level, sets the widest value to $\langle text \rangle$ (without expanding it). If $\langle text \rangle$ needs expanding you need to use:

```
\eglsupdatewidest[\langle level \rangle]{\langle text \rangle}
```

The $\langle level \rangle$ refers to the entry's hierarchical level with a value of 0 indicating top-level (that is, an entry without a parent). The level is stored in the internal `level` field and can only be accessed with `\glsxtrusefield` or similar commands (see section 1.4).

You can also redefine this hook to filter the glossary list. If an entry shouldn't appear in the list, use:

```
\printunsrtglossaryskipentry
```

For example, to only include entries that have the `category` set to `formula`:

```
\printunsrtglossary*[target=false,title={Formula}]
{% local code:
  \renewcommand{\printunsrtglossaryentryprocesshook}[1]{%
    \glsifcategory{#1}{formula}
    }% category = formula
  {\printunsrtglossaryskipentry}%
  }%
}
```

This uses `\glsifcategory` to check the value of the entry's `category` field (see section 1.3). Another conditional you might find useful is:

```
\glsxtriflabelinlist{\langle label \rangle}{\langle list \rangle}{\langle true \rangle}{\langle false \rangle}
```

which tests if the given $\langle label \rangle$ is in the comma-separated $\langle list \rangle$ of labels. Both $\langle label \rangle$ and $\langle list \rangle$ are fully expanded before testing. This command is only intended for labels, which must be fully expandable. For example, the following excludes any entries that have the `category` set to `abbreviation` or `acronym`:

```

\printunsrtglossary*[target=false,title={Formula}]
{% local code:
  \renewcommand{\printunsrtglossaryentryprocesshook}[1]{%
    \glstrifflabelinlist
    {\glscategory{#1}}% category label for this entry
    {abbreviation,acronym}% exclusion list
    {\printunsrtglossaryskipentry}% skip (exclude)
    }% don't skip (include)
  }%
}

```

4.1.5 Hyperlink Targets

The naming system used for the hyperlinks from commands like `\gls` and `\glsymbol` to the corresponding definition in the glossary is given by $\langle prefix \rangle \langle label \rangle$ where $\langle label \rangle$ is the entry's label and $\langle prefix \rangle$ is given by:

```
\glolinkprefix
```

This can locally be changed within commands like `\gls` and `\glsymbol` with the `prefix` option. There is a matching `prefix` option for `\printunsrtglossary`. You can set an additional prefix in the glossary with `targetnameprefix={\langle extra \rangle}`, which means that the target name in the glossary is now $\langle extra \rangle \glolinkprefix \langle label \rangle$ (so `targetnameprefix` doesn't modify `\glolinkprefix` but prepends an extra prefix).

If you change the prefix either by using the above options or by redefining `\glolinkprefix`, you need to make sure that the target names match for the links to work correctly. The `debug={showtargets}` package option can be used to show the target names in the document. The target is displayed in the document using:

```
\glsshowtarget{\langle label \rangle}
```

which may be redefined as appropriate. For example:

```

\documentclass{article}

\usepackage{hyperref}
\usepackage[debug=showtargets]{glossaries-extra}

\newglossaryentry{sample}{name={sample},description={an example}}

\begin{document}
\gls[prefix={TARGET.}]{sample}.

```



```
\printunsrtglossary[prefix={TARGET.}]
\printunsrtglossary[prefix={TARGET.},targetnameprefix={EXTRA.}]
\end{document}
```

4.2 Stand-alone Definitions

The glossaries-extra package provides:

```
\glxtrglossentry{<label>}
```

which may be used to create a target for a particular entry (identified by *<label>*). This displays the value of the *name* field, but it also obeys the post-name hook (see section 5.3), the *glossname* and *glossnamefont* attributes (see section 5.2), and provides accessibility support if the *access* field is set (see section 1.5). This command may be used for both top-level and child entries, and will obey the *entrycounter* (see below) and *subentrycounter* (see section 4.1.2) package options according to the entry's hierarchical level.

This command doesn't display any of the other field values. If any are required, you need to add them afterwards. For the description, you can use `\glsendrydesc`, but it's better to use:

```
\glossentrydesc{<label>}
```

Unlike `\glsendrydesc`, which just displays the value of the *description* field, `\glossentrydesc` obeys the *glossdesc* and *glossdescfont* attributes (section 5.2). Alternatively, you can use:

```
\Glossentrydesc{<label>}
```

which converts the first letter of the description to upper case. To pick up the *postpunc* setting and the post-description category hook, append `\glspostdescription` after the description (see section 5.3).

There's a similar command for symbols:

```
\glossentrysymbol{<label>}
```

There are currently no category attributes governing this command, but it does check for the *symbolaccess* field if accessibility support has been added (see section 1.5). For other fields, you can use the commands described in section 1.4.

If you need to substitute the *name* for another field in the target, you can use:

```
\glxtrglossentryother{<header>}{<label>}{<field>}
```

instead of `\glxtrglossentry{<label>}`, where *<label>* identifies the entry and *<field>* is the internal field label to use instead of the *name*. The *<header>* argument is the code to use in

the header (which should be left empty for the default value¹) if `\glsxtrglossentryother` is used in a sectioning command. This command obeys the `glossname` and `glossnamefont` attributes and the post-name hook, even though it's not actually displaying the name. For example,

```
\section{\glsxtrglossentryother}{duck}{plural}}
```

Here's a complete example that uses `\glsxtrglossentry` after an equation to describe the notation:

```
\documentclass{article}

\usepackage{xcolor}% provides colour
\usepackage[colorlinks,linkcolor=purple]{hyperref}
\usepackage[postpunc={dot}]{glossaries-extra}

\newglossaryentry{pi}
{
  name = {\ensuremath{\pi}},
  description = {Archimedes' constant}
}

\newglossaryentry{radius}
{
  name = {\ensuremath{r}},
  description = {radius}
}

\newglossaryentry{area}
{
  name = {\ensuremath{A}},
  description = {area}
}

\begin{document}
\begin{equation}
\gls{area} = \gls{pi}\gls{radius}[\^2]
\end{equation}
\begin{tabular}{ll}
```

¹The `<header>` argument doesn't use standard L^AT_EX optional syntax [`<option>`] because `\glsxtrglossentryother` has to be expandable in order for it to work correctly in section arguments.

Glossary

```
\glstrglossentry{area} & \glossentrydesc{area}\glspostdescription\\
\glstrglossentry{pi} & \glossentrydesc{pi}\glspostdescription\\
\glstrglossentry{radius} & \glossentrydesc{radius}\glspostdescription
\end{tabular}
\end{document}
```

This produces:

$$A = \pi r^2 \tag{1}$$

- A area.
- π Archimedes' constant.
- r radius.

The purple text shows the hyperlinks to the relevant definition. As with `\printunsrtglossary`, the hypertargets are prefixed with `\glolinkprefix` (see section 4.1.4). This can be locally changed to avoid clashes if the definition needs to be reproduced later.

A more convenient approach to the above is to define an environment that can list all the referenced entries automatically. The `glossaries-extra` package provides a way of buffering the boolean switch performed by `\gls` that ensures that the first use flag is unset (see section 6.5). This is intended for use where the switch causes a problem, but it can also be used in this case to store a list of used entries (since there's no difference between first use and subsequent use in this case, it won't affect the link text).

Here's a modified version of the above document:

```
\documentclass{article}

\usepackage{xcolor}
\usepackage[colorlinks,linkcolor=purple]{hyperref}
\usepackage[postpunc={dot}]{glossaries-extra}

\newglossaryentry{pi}
{
  name = {\ensuremath{\pi}},
  description = {Archimedes' constant}
}

\newglossaryentry{radius}
{
  name = {\ensuremath{r}},
  description = {radius}
}
```

Glossary

```
\newglossaryentry{area}
{
  name = {\ensuremath{A}},
  description = {area}
}

\newglossaryentry{circumference}
{
  name = {\ensuremath{C}},
  description = {circumference}
}

\newcommand{\doglossaryentry}[1]{% handler macro
  \glstrglossentry{#1} & \glossentrydesc{#1}\glspostdescription\\%
}

\newcounter{localglossary}

\newenvironment{localglossary}
{%
  \stepcounter{localglossary}%
  \renewcommand{\glolinkprefix}{\thelocalglossary.}%
  \GlsXtrStartUnsetBuffering*
}
{%
  \par
  \begin{tabular}{ll}
  \GlsXtrForUnsetBufferedList\doglossaryentry
  \end{tabular}
  \GlsXtrStopUnsetBuffering
  \par
}

\begin{document}
The area of a circle is given by:
\begin{localglossary}
\begin{equation}
\gls{area} = \gls{pi}\gls{radius}[^2]
\end{equation}
\end{localglossary}
The circumference of a circle is given by:
\begin{localglossary}
\begin{equation}
```

```

\gls{circumference} = 2\gls{pi}\gls{radius}
\end{equation}
\end{localglossary}
\end{document}

```

This produces:

The area of a circle is given by:

$$A = \pi r^2 \tag{1}$$

A area.
 π Archimedes' constant.
 r radius.

The circumference of a circle is given by:

$$C = 2\pi r \tag{2}$$

C circumference.
 π Archimedes' constant.
 r radius.

The custom `localglossary` counter is defined and incremented to ensure that the target prefix `\glolinkprefix` is unique for each environment. This definition of the custom `localglossary` environment is intentionally kept trivial since the main point here is the demonstration of `\glsxtrglossentry` and the buffering rather than the actual formatting of the entries. Additional vertical spacing, appropriate alignment and a paragraph column specifier are left as an exercise for the reader.

4.2.1 Numbering Top-Level Entries

The `entrycounter` package option creates a new counter called `glossaryentry`, which will automatically be incremented and displayed at the start of `\glsxtrglossentry` for top-level entries. (The `glossarysubentry` counter created with the `subentrycounter` option, described in section 4.1.2, may be used independently of the `entrycounter` package option.) In the above example, this counter will need to depend on the custom `localglossary` counter to ensure that it's reset at the start of each `localglossary` environment. This can easily be done by using the name of the master counter as the value of `counterwithin` (which automatically implements `entrycounter`), but the master counter must be defined first:

```

\newcounter{localglossary}
\usepackage[counterwithin={localglossary}]{glossaries-extra}

```

The default definition of `\theHglossaryentry` is:

```
\currentglossary.\theglossaryentry
```

The prefix `\currentglossary` is set by both `\printunsrtglossary` and `\glstrglossentry` to the current glossary label (given by the `type` option in `\printunsrtglossary` and by the entry's `type` field for `\glstrglossentry`). In the case of `\glstrglossentry` (and `\glstrglossentryother`), the value of `\currentglossary` is obtained from:

```
\GlsXtrStandaloneGlossaryType
```

which defaults to the value of the `type` field for the current entry.

Since this example is using multiple stand-alone definitions that may repeat the same entry, this definition isn't appropriate and will cause duplicate destination warnings. The simplest solution is to redefine `\GlsXtrStandaloneGlossaryType` in terms of the custom `localglossary` counter value:

```
\renewcommand{\GlsXtrStandaloneGlossaryType}{%
  standalone.\thelocalglossary.\arabic{glossaryentry}%
}
```

Unlike commands such as `\gls`, which can be problematic in moving arguments, `\glstrglossentry` is designed to work in section headings. For example:

```
\documentclass{article}

\usepackage{mhchem}
\usepackage[colorlinks,linkcolor=magenta]{hyperref}
\usepackage[postpunc={dot}]{glossaries-extra}

\newglossaryentry{amethyst}
{
  name = {amethyst},
  description = {a purple type of quartz},
  symbol = {\ce{SiO2}},
  category = {mineral}
}

\glssetcategoryattribute{mineral}{glossname}{firsttuc}

\newcommand{\displayterm}[1]{%
  \subsection{\glstrglossentry{#1}}%
```

```

Chemical formula: \glossentrysymbol{#1}.
\Glossentrydesc{#1}\glspostdescription\par
}
\begin{document}
\tableofcontents
\section{Types of Quartz}
A reference to \gls{amethyst}.

\displayterm{amethyst}
\end{document}

```

(Again, improvements to the actual formatting of the custom `\displayterm` is left as an exercise to the reader. Additional fields could contain, for example, the name of an image file to illustrate the entry. See the glossaries gallery [2] for further ideas.)

The above example uses the `glossname` attribute to convert the first letter of the `name` to upper case. Unfortunately this can't be applied to the PDF bookmark or table of contents. A solution to this would be to explicitly set the `name` with the first letter as an upper case character and the `text` field in lower case. For example:

```

\newglossaryentry{amethyst}
{
  name = {Amethyst},
  text = {amethyst},
  description = {a purple type of quartz},
  symbol = {\ce{SiO2}},
  category = {mineral}
}

```

The `glossname` attribute can then be omitted. This is a bit inconvenient, but if you use `bib2gls` (see section 7) this can be performed automatically with the `name-case-change` resource option.

4.2.2 Stand-alone Hierarchical Entries

Sub-entries can also be displayed with `\glsxtrglossentry` or `\glsxtrglossentryother`. These check if the entry has a parent (with `\ifglshasparent`). If it doesn't, then it will display the glossaryentry counter label if the `entrycounter` package option has been used. If the entry does have a parent, it uses:

```
\GlsXtrStandaloneSubEntryItem{<label>}
```

which checks the internal `level` field to determine the hierarchical level. If the `level` is 1 (that is, the entry has a parent but not a grandparent) then it will display the `glossarysubentry` label if that counter has been defined, otherwise it does nothing.

Here's an example document with a top-level entry (mineral), a level 1 entry (quartz) and a level 2 entry (amethyst).

```
\documentclass{article}

\usepackage{xcolor}% provides colour
\usepackage[colorlinks,linkcolor=magenta]{hyperref}
\usepackage[
  entrycounter,% enable top-level counter
  subentrycounter,% enable level 1 counter
  postpunc={dot},% put full-stop after description
  nostyles,% suppress automatic loading of default styles
  stylemods={tree}% load glossary-tree.sty
]{glossaries-extra}

\newglossaryentry{mineral}
{
  name = {mineral},
  description = {natural inorganic substance},
  category = {mineral}
}

\newglossaryentry{calcite}
{
  parent = {mineral},
  name = {calcite},
  description = {a carbonate mineral},
  category = {mineral}
}

\newglossaryentry{quartz}
{
  parent = {mineral},
  name = {quartz},
  description = {hard mineral consisting of silica},
  category = {mineral}
}

\newglossaryentry{amethyst}
{
```



```

parent = {quartz},
name = {amethyst},
description = {a purple type of quartz},
category = {mineral}
}

\glssetcategoryattribute{mineral}{glosname}{firstuc}

\renewcommand{\GlsXtrStandaloneGlossaryType}{standalone}

\newcommand{\displayterm}[1]{%
\par
Definition \glsxtrglossentry{#1}:
\glossentrydesc{#1}\glspostdescription\par
}

\begin{document}
\displayterm{mineral}
\displayterm{calcite}
\displayterm{quartz}
\displayterm{amethyst}

A reference to \gls{mineral}.
A reference to \gls[prefix=main.]{amethyst}.

\renewcommand{\GlsEntryCounterLabelPrefix}{main.glsentry-}
\glsresetentrycounter
\printunsrtglossary[prefix={main.},style=tree]
\end{document}

```

This produces:

Definition 1. Mineral: natural inorganic substance. ☞
 Definition 1) Calcite: a carbonate mineral.
 Definition 2) Quartz: hard mineral consisting of silica.
 Definition Amethyst: a purple type of quartz.
 A reference to **mineral**. A reference to **amethyst**.

Glossary

1. Mineral natural inorganic substance.
 - 1) Calcite a carbonate mineral.
 - 2) Quartz hard mineral consisting of silica.

Glossary

Amethyst a purple type of quartz.

Note the need to reset the glossaryentry counter with `\glsresetentrycounter` before the main glossary. The top-level entry (`mineral`) has the label formatted as “1.” and the level 1 entries (`calcite` and `quartz`) have their labels formatted as “1)” and “2)” but the level 2 entry (`amethyst`) doesn’t have an associated number. If you want to number levels deeper than 1, you will have to provide your own custom counters. (If the stand-alone level 2 entry shows a number when you try this, then you’ve encountered a bug that’s been fixed in `glossaries-extra` version 1.31.)

The hyperlinks are shown in magenta. The first (`mineral`) links to the stand-alone target, and the second (`amethyst`) links to the entry in the main glossary.

5 Changing the Formatting

All commands like `\gls` and `\glssymbol` by default encapsulate the link text within the argument of:

```
\gls{textformat}{text}
```

For example:

```
\documentclass{article}

\usepackage{xcolor}% provides colour
\usepackage{pifont}% provides \ding
\usepackage{glossaries-extra}

\newglossaryentry{duck}% label
{
  name = {duck},
  description = {a waterbird with webbed feet}
}

\newglossaryentry{fleuron}% label
{
  name = {fleuron},
  symbol = {\ding{167}},
  category = {ornament},
  description = {typographic ornament}
}

\newabbreviation{tug}{TUG}{\TeX\_\_Users Group}

\renewcommand{\gls{textformat}[1]{\textcolor{violet}{#1}}

\begin{document}
A \gls{duck}, a \gls{fleuron} (\glssymbol{fleuron},
\glsentrydesc{fleuron}) and \gls{tug}.
\end{document}
```

This produces:

A **duck**, a **fleuron** (•, typographic ornament) and **T_EX Users Group (TUG)**. 

Note that this has affected `\gls` and `\glsymbol` but not `\glsentrydesc`.

A distinction can be made between abbreviations (non-regular terms) and regular terms (non-abbreviations or abbreviations that are considered regular entries). A regular term is encapsulated with

```
\glsxtrregularfont{<text>}
```

and an abbreviation is encapsulated with

```
\glsxtrabbreviationfont{<text>}
```

For example:

```
\documentclass{article}

\usepackage{xcolor}% provides colour
\usepackage{pifont}% provides \ding
\usepackage{glossaries-extra}

\newglossaryentry{duck}% label
{
  name = {duck},
  description = {a waterbird with webbed feet}
}

\newglossaryentry{fleuron}% label
{
  name = {fleuron},
  symbol = {\ding{167}},
  category = {ornament},
  description = {typographic ornament}
}


\newabbreviation{tug}{TUG}{\TeX\_{U}Users Group}
\newacronym{ascii}{ASCII}{American Standard Code for
Information Interchange}

\renewcommand{\glsformat}[1]{\textcolor{violet}{#1}}
\renewcommand{\glsxtrregularfont}[1]{\underline{#1}}
\renewcommand{\glsxtrabbreviationfont}[1]{\emph{#1}}
```

5 Changing the Formatting

```
\begin{document}
Two \glspl{duck}, a \gls{fleuron} (\glssymbol{fleuron},
\glsentrydesc{fleuron}), \gls{tug} and \gls{ascii}.
\end{document}
```

This now produces:

Two ducks, a fleuron (☛, typographic ornament), *T_EX Users Group (TUG)* and ASCII. 

Note the difference between the abbreviation defined with `\newabbreviation` and the one defined with `\newacronym`. The above example document is using the default styles, which is `long-short` for the abbreviation category and `short-nolong` for the acronym category. The `short-nolong` style makes the abbreviation behave like a regular entry and so it's governed by `\glxtrregularfont` not by `\glxtrabbreviationfont`.

The `\glstextformat` command is overridden by the `textformat` attribute. The value of this attribute must be the name (without the leading backslash) of a command that takes a single argument, which will be used instead of `\glstextformat` for any entry that has this attribute set for its category. For example:

```
\documentclass{article}

\usepackage{xcolor}% provides colour
\usepackage{pifont}% provides \ding
\usepackage{glossaries-extra}

\newcommand{\ornamentfmt}[1]{\textcolor{cyan}{#1}}

\glsssetcategoryattribute{ornament}{textformat}{ornamentfmt}

\setabbreviationstyle{long-short-em}
\setabbreviationstyle[acronym]{short-sc-nolong}

\newglossaryentry{duck}% label
{
  name = {duck},
  description = {a waterbird with webbed feet}
}

\newglossaryentry{fleuron}% label
{
  name = {fleuron},
  symbol = {\ding{167}},
}
```

5 Changing the Formatting

```
category = {ornament},
description = {typographic ornament}
}

\newabbreviation{tug}{TUG}{\TeX\_{Users Group}}
\newacronym{ascii}% label
{ascii}% short form needs to be in lower case with sc styles
{American Standard Code for Information Interchange}

\renewcommand{\glstextformat}[1]{\textcolor{violet}{#1}}
\renewcommand{\glsxtrregularfont}[1]{\underline{#1}}
\renewcommand{\glsxtrabbreviationfont}[1]{\textbf{#1}}

\begin{document}
Two \glsp{duck}, a \gls{fleuron} (\glssymbol{fleuron},
\glstrydesc{fleuron}), \gls{tug} and \gls{ascii}.
\end{document}
```

This produces:

Two [ducks](#), a [fleuron](#) (☛, typographic ornament), **TeX Users Group (TUG)** and ASCII.

So `\gls{fleuron}` and `\glssymbol{fleuron}` are now formatted according to the custom command `\ornamentfmt` (cyan) not by `\glstextformat` (violet), but they are still affected by `\glsxtrregularfont` (underline).


The `tug` abbreviation has been assigned the `long-short-em` style which encapsulates the short form with `\emph`, but it also obeys `\glsxtrabbreviationfont` (bold) and it's encapsulated by `\glstextformat` (violet), so the full form on first use is all violet and bold with the short form in italics.

The `ascii` entry (which has the `category` set to `acronym`) has been assigned the `short-sc-nolong` style, which encapsulates the short form with `\textsc` (so the short form must be converted to lower case) and identifies the entry as a regular term, so it obeys `\glsxtrregularfont` (underline). Again, the link text is encapsulated with `\glstextformat` (violet) so the abbreviation is violet, underlined and in small-caps.

You can override a specific instance with the `textformat` setting in the first optional argument of commands like `\gls`. For example, if the above is modified to:

```
Two \glsp{duck}, a \gls[textformat=textbf]{fleuron}
(\glssymbol{fleuron}, \glstrydesc{fleuron}), \gls{tug}
and \gls{ascii}.
```

then the result is now:

Two [ducks](#), a [fleuron](#) (, typographic ornament), [T_EX Users Group \(TUG\)](#) and [ASCII](#).

In this case, only that specific instance is changed.

Take care if the formatting command needs to parse its argument as the argument won't be the actual text but consists of intermediary commands that determine the required text and any inner formatting, such as the formatting applied by abbreviation styles. See section 6.4 for further details.

5.1 Post-Link Category Hooks

Extra information can be appended after commands such as `\gls` by defining a *post-link hook* for the given category. You can obtain the label of the entry that's just been referenced with:

```
\glslabel
```

The post-link hook is a command in the form

```
\glsxtrpostlink<category>
```

where `<category>` is the category label. This hook is implemented after any instances of commands such as `\gls` or `\glsymbol` (but not after commands like `\glsentryname`, `\glsentrydesc` or `\glsentryname`, which may be used in the hook).

Consider the following document:

```
\documentclass{article}

\usepackage{pifont}% provides \ding
\usepackage{glossaries-extra}

\newglossaryentry{fleuron}% label
{
  name = {fleuron},
  symbol = {\ding{167}},
  description = {typographic ornament}
}

\newglossaryentry{pi}% label
{
  name = {Archimedes' constant},
  symbol = {\ensuremath{\pi}},
  category = {constant},
```

```

description = {Archimedes' constant}
}

% post-link hook for 'constant' category:
\newcommand{\glxtrpostlinkconstant}{%
  \space (\glstentrysymbol{\glslabel})}

\begin{document}
A \gls{fleuron} and \gls{pi}.
\end{document}

```

This produces:

A fleuron and Archimedes' constant (π).

The fleuron entry doesn't have the `category` key explicitly set, so it defaults to general, but the pi entry has the `category` set to constant, so it's affected by the post-link hook for that category, which in this case is given by `\glxtrpostlinkconstant`. This hook is defined to use `\glstentrysymbol` where the entry label is obtained from `\glslabel`, which is set by `\gls` and similar commands.

If `\glssymbol{\glslabel}` had been used instead of `\glstentrysymbol{\glslabel}` it would've caused infinite recursion! Don't use commands like `\glssymbol`, `\glsdesc` or `\gls` in post-link hooks.

This means that `\gls{pi}` is automatically followed by the symbol in parentheses, but `\gls{fleuron}` isn't because it's governed by the general post-link hook instead. Note that the above is a simple example to demonstrate one of the uses of the `category` field.

Here's a minor modification that sets the category for the fleuron entry to ornament and creates another hook for that.

```

\documentclass{article}

\usepackage{pifont}% provides \ding
\usepackage{glossaries-extra}

\newglossaryentry{fleuron}% label
{
  name = {fleuron},
  symbol = {\ding{167}},
  category = {ornament},
  description = {typographic ornament}
}

```



```

\newglossaryentry{pi}% label
{
  name = {pi},
  symbol = {\ensuremath{\pi}},
  category = {constant},
  description = {Archimedes' constant}
}

% post-link hook for 'ornament' category:
\newcommand{\glxtrpostlinkornament}{%
  \space (\glstrydesc{\glslabel})}

% post-link hook for 'constant' category:
\newcommand{\glxtrpostlinkconstant}{%
  \space (\glstrysymbol{\glslabel})}

\begin{document}
A \gls{fleuron} and \gls{pi}. Another \gls{fleuron} and
\gls{pi}. Symbols: \glssymbol{fleuron} and \glssymbol{pi}.
\end{document}

```

This produces:

A fleuron (typographic ornament) and Archimedes' constant (π). Another fleuron (typographic ornament) and Archimedes' constant (π). Symbols: ♣ (typographic ornament) and π (π).



The post-link hook is repeated after every instance of `\gls` or `\glssymbol` etc. In the case of the ornament category, the description is appended in parentheses and in the case of the constant category the symbol is appended. This results in redundant repetition, especially with `\glssymbol{pi}` which displays the symbol followed by the symbol in parentheses.

It's more likely that the information only needs to be appended after the first use. You can determine if the post-link hook follows the first use of the entry using:

```
\glxtrifwasfirstuse{\true}{\false}
```

For example:

```

\newcommand{\glxtrpostlinkconstant}{%
  \glxtrifwasfirstuse{\space (\glstrysymbol{\glslabel})}{}%
}

```

5 Changing the Formatting

Commands that don't check or modify the first use flag, such as `\glsymbol`, always set `\glstrifwasfirstuse` so that it expands to `\false`. This means that even if `\glsymbol{pi}` is placed before the first instance of `\gls{pi}` it still won't be treated as the first use of that entry.

For convenience, there's a shortcut command:

```
\glstrpostlinkAddSymbolOnFirstUse
```

So an alternative definition is:

```
\newcommand{\glstrpostlinkconstant}{%  
  \glstrpostlinkAddSymbolOnFirstUse  
}
```

This does nothing if the `symbol` field hasn't been set.

Similarly, there's a shortcut command for the description:

```
\glstrpostlinkAddDescOnFirstUse
```

Version 1.31+ provides a combination:

```
\glstrpostlinkAddSymbolDescOnFirstUse
```

If the `symbol` field is set, this displays the symbol followed by a comma and space. The description is always displayed at the end of the parenthetical material.

Also from glossaries-extra v1.31, there's a shortcut command that you can use to define the post-link hook:

```
\glsdefpostlink{\category}{\definition}
```

This is just a shortcut for:

```
\csdef{glstrpostlink\category}{\definition}
```

So the above document can be changed to:

```
\documentclass{article}  
  
\usepackage{pifont}% provides \ding  
\usepackage{glossaries-extra}  
  
\newglossaryentry{fleuron}% label  
{
```

```

name = {fleuron},
symbol = {\ding{167}},
category = {ornament},
description = {typographic ornament}
}

\newglossaryentry{pi}% label
{
name = {pi},
symbol = {\ensuremath{\pi}},
category = {constant},
description = {Archimedes' constant}
}



% post-link hook for 'ornament' category:
\glsdefpostlink{ornament}{%
\glxtrpostlinkAddSymbolDescOnFirstUse
}

% post-link hook for 'constant' category:
\glsdefpostlink{constant}{%
\glxtrpostlinkAddSymbolOnFirstUse
}

\begin{document}
Symbols: \glssymbol{fleuron} and \glssymbol{pi}.
A \gls{fleuron} and \gls{pi}. Another \gls{fleuron} and
\gls{pi}.
\end{document}

```

The result is now:

Symbols:  and π . A fleuron (, typographic ornament) and Archimedes' constant (π). Another fleuron and Archimedes' constant.



5.2 Glossary Name and Description Formatting

When an entry's definition is displayed within `\printunsrtglossary` or `\glxtrglossentry` (see section 4), the value of the `name` field is encapsulated by

```
\glsnamefont{\text}
```

This may be overridden with the `glossnamefont` attribute whose value must be the name (without the leading backslash) of a control sequence that takes a single argument. If set, this control sequence is used instead of `\glsnamefont`.

By default `\glsnamefont` simply does its argument, but the glossary style may apply additional formatting. For example, the list styles place the name in the optional argument of `\item` within the description environment. With the standard document classes, this renders the name in bold, but other classes may apply different formatting.

The tree styles defined by the `glossary-tree` style encapsulate the name within:

```
\glstreenamefmt{<text>}
```

which does `\textbf{<text>}` by default. So, for example, if `\glsnamefont` is redefined to use `\textit` and the tree style is used, then the name will appear in italic bold. The letter group headings are encapsulated within:

```
\glstreegroupheaderfmt{<text>}
```

which defaults to `\glstreenamefmt{<text>}`, so if you need to redefine `\glstreenamefmt` you may also need to redefine `\glstreegroupheaderfmt` if the headers should have different formatting. The `glossaries-extra-stylemods` package (as from v1.31) now redefine both `\glstreenamefmt` and `\glstreegroupheaderfmt` to use:

```
\glstreedefaultnamefmt{<text>}
```

which does `\textbf{<text>}` by default. This means that if you want to change both the header and name to a different font, you can just redefine `\glstreedefaultnamefmt`, and if you want to change only the font used for the name, then now you only need to redefine `\glstreenamefmt`, without also having to redefine `\glstreegroupheaderfmt`.

Case-changing can be automatically applied to the name with the `glossname` attribute, which may take one of the values: `firstuc` (convert the first letter to upper case), `title` (convert to title case) or `uc` (convert to all capitals). Alternatively, if you're using `bib2gls`, you can use the `name-case-change` resource option.

The description is similarly governed by the `glossdescfont`, which again should have the name (without the leading backslash) of a control sequence that takes a single argument. There's no equivalent of `\glsnamefont` for the description but the glossary or abbreviation style may apply particular formatting, which will be in addition to the formatting command given by `glossdescfont` (if set).

Case-changing is also available for descriptions with the `glossdesc` attribute, but this only has two allowed values: `firstuc` (convert the first letter to upper case) and `title` (convert to title case). Alternatively, if you're using `bib2gls`, you can use the `description-case-change` resource option.

5.3 Post-Name and Post-Description Hooks

Information can be appended to the `name` in the glossary for a particular category using the *post-name hook*, which is given by the command:

```
\glstrpostname⟨category⟩
```

The current entry’s label can be referenced with:

```
\glscurrententrylabel
```

For example, if the preferred glossary style doesn’t include the `symbol` field, but you want the symbol displayed after the name for entries with the `category` field set to `symbol`:

```
\newcommand{\glstrpostnamesymbol}{\space
(\glstrsymbol{\glscurrententrylabel})}
```

There’s a convenient shortcut:

```
\glstdefpostname{⟨category⟩}{⟨definition⟩}
```

which defines `\glstrpostname⟨category⟩` to `⟨definition⟩` (using `\csdef`). There’s also a more general purpose post-name hook used regardless of the category:

```
\glsextrapostnamehook{⟨label⟩}
```

The post-name hook is placed inside the formatting command used for the `name` field in the glossary. It’s only present in the glossary (see section 4.1) or stand-alone entries (see section 4.2).

There is a similar *post-description hook*. For a particular category, the hook is given by:

```
\glstrpostdesc⟨category⟩
```

There are some categories that have empty hooks already defined, such as

```
\glstrpostdescgeneral
```

These will need `\renewcommand` rather than `\newcommand`. Again there’s a shortcut command provided:

```
\glstdefpostdesc{⟨category⟩}{⟨definition⟩}
```

which just uses `\csdef`, so there’s no check if the command is already defined. As with the post-name hook, the entry’s label can be accessed with `\glscurrententrylabel`.

Punctuation (such as a full stop or comma) can automatically be appended to the description in the glossary with the `postpunc` option. (Note that the unstarred form of `\longnewglossaryentry` interferes with this option. Use the starred form `\longnewglossaryentry*` instead.) The post-description punctuation (if set) is placed after the post-description category hook (if provided). Both the post-description category hook and the post-description punctuation are implemented by

```
\glspostdescription
```

5 *Changing the Formatting*

The `glossaries-extra-stylemods` package (which can be loaded with the `stylemods` option) patches the predefined styles provided with the base `glossaries` package to ensure that the standard styles all use `\glspostdescription`.

6 Problematic Areas

There are some places where the use of commands like `\gls` can cause problems. Common issues are listed below, with workarounds provided.

6.1 Headings and Captions

The arguments of sectioning commands (such as `\chapter` or `\section`) and of captions (`\caption`) are *moving arguments*. The text is not only displayed at the point in the document where the command occurs, but may also be copied to the table of contents or list of figures etc. Additionally, depending on the page style, the section argument may also be reproduced in the page header. This repeated use of the same material can cause complications, in particular it can prematurely triggering the first use flag switch and cause unwanted indexing. If the content appears in the page header and the page styles converts headers to upper case, this can also cause a problem.

For example:

```
\documentclass{book}

\usepackage{lipsum}% provides \lipsum
\usepackage{glossaries}

\newglossaryentry{sample}{name={sample},description={an example}}

\begin{document}
\chapter{A \gls{sample} chapter}
\lipsum % dummy text
\end{document}
```

I've used `\lipsum` here to create some dummy text that ensures a multi-paged document because the problem doesn't occur until the second page. The error message is:

```
Glossary entry `SAMPLE' has not been defined.
```

The problem here is that the chapter title is copied to the header (which doesn't appear on the chapter's first page) but the header uses `\MakeUppercase`, which can't expand `\gls` but

it does change the label, so `\gls{sample}` is converted to `\gls{SAMPLE}`, but there's no entry with that label. (Labels are case-sensitive.)

Here's an example that doesn't cause an error (because there's not enough text to trigger a page break) but does cause unexpected output:

```
\documentclass{book}

\usepackage{glossaries-extra}

\setabbreviationstyle{long-short-sc}
\newabbreviation{html}{html}{hypertext markup language}

\begin{document}
\tableofcontents
\chapter{A chapter about \gls{html}}
Reference \gls{html}.
\end{document}
```

On the first \LaTeX run, the table of contents is empty as the associated `.toc` file didn't exist at the start. The chapter title appears as “A chapter about hypertext markup language (HTML)”, which shows the first use of `\gls{html}`. The `.toc` file (which was created but not read by `\tableofcontents`) now contains:

```
\contentsline {chapter}{\numberline {1}A chapter about \gls {html}}{3}
```

This means that on the next \LaTeX run, the table of contents now includes `\gls{html}`. Since the table of contents occurs at the start of the document, this is now the first use of `html`, so the full form is shown in the table of contents, but the chapter title is now “A chapter about HTML”, which shows the subsequent use.

The `glossaries-extra` package provides some commands that are designed for use in section or caption titles. These include:

```
\glsfmtshort{\label}
```

which shows the short form of an abbreviation,

```
\glsfmtlong{\label}
```

which shows the long form of an abbreviation,

```
\glsfmtfull{\label}
```

which shows the full form of an abbreviation,


```
\glsfmtname{<label>}
```

which shows the entry's name,

```
\glsfmtfirst{<label>}
```

which shows the entry's `first` field, and

```
\glsfmttext{<label>}
```

which shows the entry's `text` field.

Here's a modified version of the above:

```
\documentclass{book}

\usepackage{lipsum}% provides \lipsum
\usepackage{glossaries-extra}

\setabbreviationstyle{long-short-sc}
\newabbreviation{html}{html}{hypertext markup language}

\begin{document}
\tableofcontents
\chapter{A chapter about \glsfmtlong{html}}
Reference \gls{html}.
\lipsum % dummy text
\end{document}
```

This now shows the long form in the table of contents and the chapter title. Since `\glsfmtlong` doesn't affect the first use flag, the reference after the chapter title now shows the first use full form. There's no longer an error with the page header on the second page, but it's not quite right as the case-change hasn't been applied, so the page heading appears as:

4 *CHAPTER 1. A CHAPTER ABOUT hypertext markup language* 

This can be corrected by setting the `headuc` attribute to true:

```
\glssetcategoryattribute{abbreviation}{headuc}{true}
```

This now makes the page header too long, but remember that you can use the optional argument of sectioning commands to provide a shorter form for both the page heading and table of contents:

```
\chapter[A chapter about \glsfmtshort{html}]{A chapter about
\glsfmtlong{html}}
```

One final problem remains and it's due to the `long-short-sc` abbreviation style which uses `\textsc` to display the short form in small capitals. The combination of italic and small capitals isn't supported with the default fonts and results in a font substitution. There's a similar problem in the table of contents which displays the chapter title in bold. There's a warning at the end of the transcript:

```
Some font shapes were not available, defaults substituted.
```

The conflict between bold and small capitals can be solved by switching to the T1 font encoding:

```
\usepackage[T1]{fontenc}
```

The conflict between italic and small capitals can be solved with the `slantsc` package. Another possibility is to redefine:

```
\glsabbrvscfont{<text>}
```

which is used by the “sc” abbreviation styles:

```
\renewcommand{\glsabbrvscfont}[1]{%
  \glsxtrifinmark{\MakeTextUppercase{#1}}{\textsc{#1}}%
}
```

This uses:

```
\glsxtrifinmark{<true>}{<true>}
```

which expands to `<true>` in headings and the table of contents, otherwise it expands to `<false>`. This use of `\MakeTextUppercase` replaces the need for the `headuc` attribute. Both `headuc` and the above redefinition of `\glsabbrvscfont` will cause the abbreviation to appear in upper case in the table of contents. If you don't want this, you can defer making these modifications until after the table of contents. Alternatively, use:

```
\glsxtrRevertTocMarks
```

which makes `\glsxtrifinmark` expand to `<false>` in the table of contents. For example:

```

\documentclass{book}

\usepackage[T1]{fontenc}
\usepackage{lipsum}
\usepackage{glossaries-extra}

\renewcommand{\glsabbrvscfont}[1]{%
  \glsxtrifinmark{\MakeTextUppercase{#1}}{\textsc#1}%
}

\setabbreviationstyle{long-short-sc}
\newabbreviation{html}{html}{hypertext markup language}

\begin{document}
\tableofcontents
\chapter[A chapter about \glsfmtshort{html}]{A chapter
about \glsfmtlong{html}}
Reference \gls{html}.
\lipsum % dummy text
\end{document}

```

6.2 Nesting

Nesting refers to commands like `\gls` and `\glsymbol` being used in the link text of similar commands. This occurs if these commands are used in fields that form part of the link text or if they occur in the final *<insert>* optional argument (which is included in the link text) or in the post-link hook (which isn't included in the link text but is still problematic).

The most serious problem is when the post-link hook includes one of these commands that references an entry with the same category (and therefore the same post-link hook code) as you can end up with an infinite loop. For example:

```
\glsdefpostlink{symbol}{ (\glsymbol{\glslabel})}% infinite loop!
```

✗

Instead, use `\glsentrysymbol`:

```
\glsdefpostlink{symbol}{ (\glsentrysymbol{\glslabel})}
```

✓

Better still, use commands like `\glstrpostlinkAddSymbolOnFirstUse` (see section 5.1).

The next most problematic nesting is the use of `\gls` in abbreviations. It's far more of a problem if you only use the base glossaries package. For example:

```

\documentclass{book}

\usepackage{glossaries}

\newacronym{ssi}{SSI}{server-side includes}
\newacronym{html}{HTML}{hypertext markup language}
\newacronym{shtml}{SHTML}{\gls{ssi} enabled \gls{html}}

\begin{document}
\gls{shtml}.
\end{document}

```

X

This results in:

server-side includes (SSI) enabled hypertext markup language (HTML) (SHTML).

☞

The glossaries-extra package temporarily changes `\gls` within the link text to avoid this type of problem.

```

\documentclass{book}

\usepackage{glossaries-extra}

\newabbreviation{ssi}{SSI}{server-side includes}
\newabbreviation{html}{HTML}{hypertext markup language}
\newabbreviation{shtml}{SHTML}{\gls{ssi} enabled \gls{html}}

\begin{document}
\gls{shtml}.
\end{document}

```

This now produces:

SSI enabled HTML (SHTML).

☞

This doesn't seem so bad, but now let's see what happens if the `glossdesc` is set to `firstuc`:

```

\documentclass{book}

\usepackage{glossaries-extra}

\glssetcategoryattribute{abbreviation}{glossdesc}{firstuc}
\newabbreviation{ssi}{SSI}{server-side includes}
\newabbreviation{html}{HTML}{hypertext markup language}
\newabbreviation{shtml}{SHTML}{\gls{ssi} enabled \gls{html}}

\begin{document}
\gls{shtml}.
\printunsrtglossary
\end{document}

```

X

This now causes an error:

```

! Missing \endcsname inserted.
<to be read again>
          \protect

```

The problem here is that the first-letter upper-casing command is being applied to `\gls{ssi}`. This results in `\gls{\MakeTextUppercase ssi}` which has an invalid label. A workaround is to insert an empty group before the initial `\gls`:

```

\newabbreviation{shtml}{SHTML}{\{\}\gls{ssi} enabled \gls{html}}

```

However, `\gls` functions normally within the glossary, so the result is:

```

    SSI Server-side includes
    HTML Hypertext markup language
    SHTML server-side includes (SSI) enabled hypertext markup language (HTML)

```

☞

Since neither `ssi` nor `html` have been referenced in the document, the reference in the `shtml` description in the glossary is the first use for both of them, so they show the full form, but the upper-casing can't be applied. This means that the description for the `shtml` entry doesn't start with an upper case letter. The best solution is to avoid using `\gls` in the `long` field:

```

\documentclass{book}

\usepackage[record]{glossaries-extra}

```

```

\glssetcategoryattribute{abbreviation}{glossdesc}{firstuc}

\glsdefpostdesc{abbreviation}{%
  \glsxtrifhasfield{seealso}{\glscurrententrylabel}%
  { (\emph{see also} \glsxtrseelist{\glscurrentfieldvalue})}%
  }%
}

\newabbreviation{ssi}{SSI}{server-side includes}
\newabbreviation{html}{HTML}{hypertext markup language}
\newabbreviation[seealso={ssi,html}]{shtml}{SHTML}
{server-side includes enabled hypertext markup language}

\begin{document}
\Gls{shtml}.
\printunsrtglossary
\end{document}

```

I've used the `seealso` key here. (The value should be a comma-separated list of labels.) It doesn't show in the glossary by default as it needs an indexing application to add it automatically to the location list, so I've used the post-description hook to append the cross-reference. The `record` option is needed, otherwise the default `makeindex` setting will be assumed and an error will occur as the associated `makeindex` file hasn't been opened. If `bib2gls` support is added then the hook won't be needed.

6.3 Shortcut Commands or Active Characters

Some packages, such as `babel`, provide shortcut commands or active characters that can be enabled through a particular setting. It's best not to use these in entry definitions. Instead use the full command name. The main problem comes when the shortcuts aren't enabled until the start of the document environment. For example, the `ngerman` language setting in `babel` makes the double quote character (") active and it becomes a shortcut for `\"` (the `umlaut` accent command):

```

\documentclass{article}

\usepackage[ngerman]{babel}
\usepackage{glossaries-extra}

\newabbreviation{rna}{RNA}{ribonukleins"aure}

```

X

```

\begin{document}
Explicit use: ribonukleins"aure.
Reference: \gls{rna}.
\end{document}

```

This produces:

Explicit use: ribonukleinsäure. Reference: ribonukleins"äure (RNA). 

This is because the double quote character still had its normal meaning when the `rna` entry was defined, so the `"` in the long form is an actual double quote character not a shortcut for `\`.

Another problem occurs when you have a large file containing entry definitions that will be shared by multiple documents. If shortcut commands are used in the entry definitions then every document that uses those entries must ensure that the appropriate shortcut commands are set up before use. Also, when using `bib2gls`, it recognises commands like `\` but not babel shorthands, so the sorting will be adversely affected if you simply use `"` instead of `\`.

For large files that are written once (with minor subsequent edits), but reused many times for multiple documents, it's better to use the actual command (that simply requires the appropriate package to be loaded, if applicable, without specific options to enable it).

6.4 Formatting Commands that Need Direct Access to the Text

If you want to redefine any of the formatting commands `\glstextformat`, `\glsxtrregularfont` or `\glsxtrabbreviationfont`, remember that their argument isn't the actual text but consists of intermediary commands that determine the required text and any inner formatting, such as the formatting applied by abbreviation styles.

With the `hyperoutside` setting on, the outermost level will be the command to apply the hyperlink with `\glstextformat` (or the equivalent provided by `textformat`) inside the hyperlink text. (If hyperlinks aren't enabled the outer command simply does the hyperlink text.)

With `hyperoutside={false}`, the outermost level will be `\glstextformat` (or equivalent) with the command that applies the hyperlink inside the formatting argument.

The next level down sets up the abbreviation styles for the given category (if appropriate). If the entry isn't an abbreviation or is an abbreviation classified as regular then `\glsxtrregularfont` is applied to the command that governs how regular entries are formatted. Otherwise `\glsxtrabbreviationfont` is applied to the command that governs how abbreviations are formatted.

Finally, there are tests applied to determine if this is the first use, if the plural is required, if any case-changing is required, if the final optional argument has been given, or if a command such as `\glssymbol` has been used. These tests determine which field to obtain the link

text from. With abbreviations, any formatting required by the abbreviation style is finally performed.

This makes it very difficult to apply a formatting command that needs direct access to the actual text that needs to be displayed. One possible method is to use:

```
\GlsXtrExpandedFmt{<cs>}{<text>}
```

which first (protected) fully expands $\langle text \rangle$ and then performs $\langle cs \rangle \{ \langle expanded text \rangle \}$ where $\langle cs \rangle$ is a control sequence. For example, the soul package provides the command \ul to underline text, but it needs to be able to parse its argument to work. If I simply try to change the standard \underline to \ul in the earlier example from section 5:

```
\renewcommand{\glsxtrregularfont}[1]{\ul{#1}}
```

then this causes the error:

```
! Package soul Error: Reconstruction failed.
```

Instead I need:

```
\renewcommand{\glsxtrregularfont}[1]{\GlsXtrExpandedFmt\ul{#1}}
```

and also \ding now needs protection:

```
\newglossaryentry{fleuron}% label
{
  name = {fleuron},
  symbol = {\protect\ding{167}},
  category = {ornament},
  description = {typographic ornament}
}
```

6.5 Buffering Changes to the First Use Flag

The soul commands, described above, also have problems if the first use flag is switched off within the argument. This can be demonstrated with the following:

```

\documentclass{article}
\usepackage{soul}
\usepackage{glossaries-extra}
\newabbreviation{ssl}{SSL}{Secure Sockets Layer}
\begin{document}
\ul{Some text about \gls{ssl}.}
\end{document}

```

This produces the somewhat confusing error message:

Glossary entry `{ssl}' has not been defined.

Enclosing `\gls{ssl}` inside the argument of `\mbox` changes the error message to:

! Package soul Error: Reconstruction failed.

The only way to avoid an error is to switch on the `\glsunset` buffering, which modifies the internal command that normally changes the first use flag. Instead, the entry label is simply stored in an internal list. The buffering is switched on with:

```
\GlsXtrStartUnsetBuffering
```

The unstarred form of this command may result in multiple occurrences of an entry in the buffer's internal list. The starred form, which only adds an entry's label to the list if not already present, is better if the list needs to contain unique items.

The current buffer can be iterated over using:

```
\GlsXtrForUnsetBufferedList{<cs>}
```

where `<cs>` is a command that takes a single argument (the entry's label). Finally, entries in the buffer can be unset and the buffer cleared with:

```
\GlsXtrStopUnsetBuffering
```

The above example will work if it's changed to:

```

\documentclass{article}
\usepackage{soul}
\usepackage{glossaries-extra}
\newabbreviation{ssl}{SSL}{Secure Sockets Layer}
\begin{document}
\GlsXtrStartUnsetBuffering
\ul{Some text about \mbox{\gls{ssl}}.}
\GlsXtrStopUnsetBuffering
\end{document}

```

Note the need for `\mbox`, which can cause a problem with line-breaking. Another problem is that if the entry is referenced multiple times within the same buffer, each use of `\gls` (or its variants) will be treated as the first use.

Another workaround is to use `textformat` with a command that uses `\GlsXtrExpandedFmt` (see section 6.4). For example:

```

\documentclass{article}
\usepackage{soul}
\usepackage{glossaries-extra}

\newrobustcmd{\gul}[1]{%
  {%
    \def\glsxtrabbreviationfont##1{\GlsXtrExpandedFmt{\ul}{##1}}%
    \def\glsxtrregularfont##1{\GlsXtrExpandedFmt{\ul}{##1}}%
    #1%
  }}

\newabbreviation{ssl}{SSL}{Secure Sockets Layer}
\begin{document}
\ul{Some text about }\gls[textformat=gul]{ssl}.
\end{document}

```

7 Incorporating bib2gls

So far, the examples haven't actually used bib2gls, so what does it actually do? Recall the example document in section 4.1.1, reproduced below:

```
\documentclass{scrartcl}
\usepackage{mhchem}
\usepackage[postpunc={dot},% full stop after description
nostyles,% don't load default style packages
stylemods={tree}% load glossary-tree.sty and patch styles
]{glossaries-extra}

\glsaddstoragekey{group}{\grouplabel}
\glstrsetgrouptitle{greek}{Greek Symbols}

\newglossaryentry{area}
{
  name = {\ensuremath{A}},
  description = {area},
  group = {A}
}

\newglossaryentry{amethyst}
{
  name = {amethyst},
  description = {a purple type of quartz},
  symbol = {\ce{SiO2}},
  group = {A}
}

\newglossaryentry{circumference}
{
  name = {\ensuremath{C}},
  description = {circumference},
  group = {C}
}

\newglossaryentry{duck}
```

```

{
  name = {duck},
  description = {a waterbird with webbed feet},
  group = {D}
}

\newglossaryentry{goose}
{
  name = {goose},
  description = {a large waterbird with a long neck, short legs,
webbed feet and a short broad bill},
  group = {G}
}

\newglossaryentry{radius}
{
  name = {\ensuremath{r}},
  description = {radius},
  group = {R}
}

\newglossaryentry{pi}
{
  name = {\ensuremath{\pi}},
  description = {Archimedes' constant},
  group = {greek}
}

\begin{document}
\printunsrtglossary[style={indexgroup}]
\end{document}

```

The document preamble is quite cluttered. It could be tidied up by moving all the `\newglossaryentry` code into a separate file called, say, `entries.tex`. The main document code can now be simplified to:

```

\documentclass{scrartcl}
\usepackage{mhchem}
\usepackage[
  record,% create group field
  postpunc={dot},% full stop after description
  nostyles,% don't load default style packages

```

```

stylemods={tree}% load glossary-tree.sty and patch styles
]{glossaries-extra}

\glstrsetgrouptitle{greek}{Greek Symbols}

\input{entries}% input entries.tex

\begin{document}
\printunsrtglossary[style={indexgroup}]
\end{document}

```

This is much neater, but maintaining the `entries.tex` file is quite troublesome. Each entry must be defined in the correct order (that matches the desired listing in `\printunsrtglossary`) and only those entries that should appear in `\printunsrtglossary` should be defined (unless you want the laborious task of filtering them out, as in section 4.1.4). The `group` field needs setting for every entry, and if the `location` field also needs setting then the `entries.tex` file will need to be modified every time new document edits cause a shift in the page numbers.

With `bib2gls`, you write all the entry definitions (without the `group` or `location` fields set) in one or more `.bib` files. It's then `bib2gls` that creates the equivalent of the above `entries.tex` file with all the entry definitions in the correct order and with the `group` or `location` fields set, if appropriate. To avoid accidentally overwriting an important document file, `bib2gls` uses the extension `.glstex` rather than `.tex` (but it's still a file containing \LaTeX code that defines the entries using `\newabbreviation` or `\newglossaryentry`¹).

Instead of using `\input` in the document preamble, you now need to use:

```
\GlsXtrLoadResources[<options>]
```

The `.glstex` file doesn't exist on the first \LaTeX run as `bib2gls` can only create the file once the `.aux` file has been created (since the `.aux` file contains all the information about which entries to select, the name of the `.bib` files where their definitions are stored and how to order them). So `\GlsXtrLoadResources` tests if the `.glstex` file exists before trying to input it. The `record` option is necessary because it:

- enables the `undefaction={warn}` option (the entries aren't defined on the first \LaTeX run);
- creates the `group` and `location` fields;
- disables the `makeindex/xindy` indexing and instead writes the indexing information as a record in the `.aux` file;
- loads `glossaries-extra-bib2gls` (which provides extra commands specific to `bib2gls`).

¹Actually it uses `\longnewglossaryentry*` to allow for multi-paragraph descriptions, and `\longnewglossaryentry*` and `\newabbreviation` are used indirectly through helper commands.

Each time you use a command like `\gls` or `\glssymbol` (but not like `\glsentrysymbol`) in the document, a record is added to the `.aux` file containing the entry's label, the location (by default the page number) where the entry was used, and extra information including how to format the location. The default behaviour of `bib2gls` is to only select those entries that have records in the `.aux` file and any dependent entries.

The example above doesn't include any references (commands like `\gls`), so `bib2gls` won't select any entries and the `.gls.tex` file won't contain any definitions. This means that the glossary will be empty. If you want all entries from the specified `.bib` files selected then you need to change the `selection` setting:

```
\GlsXtrLoadResources[selection={all}]
```

This doesn't explicitly name any `.bib` file. The default is `\jobname.bib` but you can change this with the `src` option. For example, if the entries are defined in `entries.bib` (regular terms), `symbols.bib` (symbols) and `abbrvs.bib` (abbreviations) then you need to use:

```
\GlsXtrLoadResources[
  src={entries,symbols,abbrvs},% bib files
  selection={all}% select all entries
]
```

You can have multiple instances of `\GlsXtrLoadResources`, but remember that each instance inputs a file containing definitions, and the glossary produced with `\printunsrtglossary` follows the same order. This means that you can have blocks within the same glossary that use different sorting methods. For example:

```
\GlsXtrLoadResources[
  src={symbols},% bib file
  sort={letter-case},% sort according to character code
  category={symbol},% set this as the category field
  group={glssymbols}% set this as the group field
]
\GlsXtrLoadResources[
  src={entries,abbrvs},% bib files
  sort={en-GB}
]
```

The first instance fetches the data from `symbols.bib`, sorts the entries according to the character code, sets the `category` field to `symbol`, and sets the `group` field to `glssymbols` for each definition written to the `.gls.tex` file. The `glssymbols` group label is recognised by the glossaries package, and the title is obtained from the language-sensitive `\glssymbols-groupname` command (“Symbols” in English). So the glossary will start with a `symbols` group that contains all the entries selected from `symbols.bib`. The rest of the glossary is obtained from the data selected from the `entries.bib` and `abbrvs.bib` file sorted according to the `en-GB` locale. These entries will have the `group` field set by the locale’s sort rule.

The document build now needs to include a call to `bib2gls`. For example, if the main document file is called `myDoc.tex` then the build process is:

```
pdflatex myDoc
bib2gls --group myDoc
pdflatex myDoc
```

Omit the `--group` switch if you want the `group` field left empty, and replace `pdflatex` with `xelatex` etc, as appropriate.

7.1 The `.bib` Format

The `.bib` files define entry data in the form:

```
@<entry type>{<id>,
  <field1> = {<value>},
  ...
  <fieldn> = {<value>}
}
```

where `<id>` is the entry’s label. The most basic entry type is `@entry`. For example:

```
@entry{goose,
  name = {goose},
  plural = {geese},
  description = {a large waterbird with a long neck, short legs,
    webbed feet and a short broad bill}
}
```

This is analogous to:

```
\newglossaryentry{goose}
{
  name = {goose},
  plural = {geese},
  description = {a large waterbird with a long neck, short legs,
    webbed feet and a short broad bill}
}
```

You can use any of the defined keys, such as `symbol`:

```
@entry{amethyst,
  name = {amethyst},
  description = {a purple type of quartz},
  symbol = {\ce{SiO2}}
}
```

but avoid using internal fields. If you define custom keys in your document, make sure you define them all before the first instance of `\GlsXtrLoadResources` as all the recognised keys are written to the `.aux` file for `bib2gls` to detect. Any unrecognised fields in the `.bib` file are ignored.

The `@entry` type is intended mainly for words or phrases, optionally with an associated `symbol`. If the `name` field contains symbols or other non-alphabetic content (such as punctuation that shouldn't be ignored by the sort comparator) see section 7.1.3.

7.1.1 Defining Terms with Optional Descriptions

The `@entry` type requires the `description` field and either the `name` or `parent` field. There's a similar command that doesn't have any required fields: `@index`. If the `name` isn't supplied, it's assumed to be the same as the `<id>`. If the `description` isn't supplied it's assumed to be empty. This type behaves like `@entry`, but it sets the default `category` to `index`. So:

```
@index{duck}
```

is analogous to:

```
\newglossaryentry{duck}
{
  name={duck},
  description={},
  category={index}
}
```

and

```
@index{goose,
  plural = {geese}
}
```

is analogous to:

```
\newglossaryentry{goose}
{
  name={goose},
  plural={geese},
  description={},
  category={index}
}
```

If the name contains content that can't be used in a label (see section 1.1), then you need the `name` field. For example:

```
@index{chateau,
  name = {ch\^ateau},
  plural = {ch\^ateaux}
}
```

is analogous to:

```
\newglossaryentry{chateau}
{
  name={ch\^ateau},
```

```
plural={ch\^ateaux},
description={},
category={index}
}
```

There's a similar entry type `@indexplural` that sets the `name` field (if not provided) to the plural form, which is obtained from the `plural` field, if set. Otherwise it's obtained by appending the plural suffix ("s") to the `text` field. If the `text` field isn't set it's obtained from the label. The other difference is that it sets the default `category` field to `indexplural`. For example,

```
@indexplural{duck}
```

is analogous to:

```
\newglossaryentry{duck}
{
  name={ducks},
  text={duck},
  description={},
  category={indexplural}
}
```

and

```
@indexplural{goose,
  plural = {geese}
}
```

is analogous to:

```
\newglossaryentry{goose}
{
  name={geese},
  text={goose},
  plural={geese},
  description={},
}
```

```
category={indexplural}  
}
```

The `name-case-change={firstuc}` resource option converts the first letter of the `name` field to upper case, so with

```
\GlsXtrLoadResources[name-case-change={firstuc}]
```

then

```
@index{duck}
```

is now analogous to:

```
\newglossaryentry{duck}  
{  
  name={Duck},  
  text={duck},  
  description={},  
  category={index}  
}
```

and

```
@indexplural{goose,  
  plural = {geese}  
}
```

is now analogous to:

```
\newglossaryentry{goose}  
{  
  name={Geese},  
  text={goose},  
  plural={geese},  
}
```

```
description={},
category={indexplural}
}
```

and

```
@entry{amethyst,
  name = {amethyst},
  description = {a purple type of quartz},
  symbol = {\ce{SiO2}}
}
```

is now analogous to:

```
\newglossaryentry{amethyst}
{
  name={Amethyst},
  text={amethyst},
  description={a purple type of quartz},
  symbol = {\ce{SiO2}}
}
```

7.1.2 Defining Abbreviations

Abbreviations can be defined with `@abbreviation`. For example:

```
@abbreviation{html,
  short = {HTML},
  long = {hypertext markup language}
}
```

which is analogous to:

```
\newabbreviation{html}{HTML}{hypertext markup language}
```

(which sets the `category` to `abbreviation`). Alternatively, you can use `@acronym`. For example:

```
@acronym{html,
  short = {HTML},
  long = {hypertext markup language}
}
```

which is analogous to:

```
\newacronym{html}{HTML}{hypertext markup language}
```

(which sets the `category` to `acronym`). If you decide to use one of the abbreviation styles that formats the `short` field with `\textsc` (for example, `long-short-sc`) then the `short` value needs to be in lower case. (Remember that `\textsc` only changes lower case characters to small capitals. For example, `\textsc{html}` is displayed as HTML but `\textsc{HTML}` is displayed as HTML.) This can easily be accomplished with the `short-case-change` resource option. For example:

```
\GlsXtrLoadResources[short-case-change={lc}]
```

Recall from section 2 that the abbreviation style must be set *before* the abbreviations are defined. This means that if you want to use `\setabbreviationstyle` it must come before `\GlsXtrLoadResources`.

The default sort value used by `bib2gls` is usually taken from the `name` field. This typically isn't supplied with abbreviations. The actual value depends on the abbreviation style, which `bib2gls` doesn't know about, so `bib2gls` uses the `short` field instead for abbreviations. If you want to change this, for example, if you are using the `long-noshort-desc` style, then use the `abbreviation-sort-fallback` option. For example:

```
\GlsXtrLoadResources[abbreviation-sort-fallback={long}]
```

7.1.3 Defining Symbols

If the `name` field contains the symbol (rather than having a textual `name` and the symbol in `symbol`) then the notation can be defined with `@symbol`. For example:

```
@symbol{pi,
  name = {\ensuremath{\pi}},
  description = {Archimedes' constant}
}
```

This behaves much like `@entry` but there are two significant differences: the `category` defaults to `symbol` and the default value used when sorting is the label not the value of the `name` field. So in this case, the sort value defaults to `pi`. Therefore the above is analogous to:

```
\newglossaryentry{pi}
{
  name = {\ensuremath{\pi}},
  description = {Archimedes' constant},
  category = {symbol},
  sort = {pi}
}
```

This is essentially like `\glsxtrnewsymbol` but it doesn't set the `type` field.

You can change the default value used for sorting symbols with the `symbol-sort-fallback` option. For example, to sort symbols according to the `name` field:

```
\GlsXtrLoadResources [
  symbol-sort-fallback={name},
  break-at={none}
]
```

This means that the sort value for the above example entry is now `\ensuremath{\pi}`, which `bib2gls`'s \TeX interpreter converts to the Unicode symbol 0x1D70B (mathematical italic small pi, π). The interpreter used by `bib2gls` recognises all the standard mathematical Greek commands, and also the missing Greek commands `\omicron`, `\Alpha` etc (which are provided by `glossaries-extra-bib2gls`). Using these commands rather than the Latin equivalent ensures correct sorting (`\omicron` comes between `\xi` and `\pi`, but `o` comes between `n` and `p`). See section 2 (\TeX Parser Library) in the `bib2gls` user manual for further details.

The default sort method is designed for words and phrases, so non-letters, such as punctuation characters, are discarded. If your sort values include symbols that need to be taken into account by the comparator, use `break-at={none}` to prevent them from being discarded.

Alternatively, you may prefer to sort symbols according to the description:

```
\GlsXtrLoadResources[symbol-sort-fallback={description}]
```

There's a similar entry type `@number`, which behaves much like `@symbol` except that it sets the default `category` to `number`. It also follows the `symbol-sort-fallback` setting. For example, the `pi` entry could be defined as:

```
@symbol{pi,
  name = {\ensuremath{\pi}},
  description = {Archimedes' constant},
  value = {3.141592654}
}
```

I've used a custom field here (`value`) that `bib2gls` will ignore by default. I can instruct `bib2gls` to convert this to a known field with `field-aliases`. For example:

```
\GlsXtrLoadResources[field-aliases={value=user1}]
```

This makes `bib2gls` treat;

```
value = {3.141592654}
```

as though it had been:

```
user1 = {3.141592654}
```

This can now be used in one of the hooks (described in section 5). For example, the post-description hook:

```
\glsdefpostdesc{number}{% check if user1 field given:
  \glsextrifhasfield{user1}{\glscurrententrylabel}
  { (\glscurrentfieldvalue)}
  {}% not provided
}
```

It can also be used if you want to order the entries numerically. For example:

```
\GlsXtrLoadResources[
  field-aliases={value=user1},
  sort={double},% use double-precision numeric comparisons
  sort-field={user1}
]
```

This uses `sort-field` to set the field used for sorting. This affects all entry types.

There are more examples in section 8 of the main bib2gls user manual.

7.2 Indexing

By default, bib2gls selects entries from the specified .bib files that have been directly indexed in the document or that are dependencies of selected entries. Indexing is performed through commands like `\gls` and `\glsymbol` (but not by commands like `\gls-entriysymbol`). The `record` package option ensures that the indexing is done that matches the requirements of bib2gls (rather than the default `makeindex` syntax).

Each instance of `\gls`, `\glsymbol` etc writes a *record* to the .aux file, that includes the entry's label, the location in the document where the record was triggered and the associated format to encapsulate the location. For example, if `\gls{duck}` appears on page 3, the record label is `duck`, the location is 3 and the format is the default `\glsnumberformat`.

The format can be changed with the `format` key. For example:

```
\gls[format=hyperbf]{duck}
```

This sets the format to `hyperbf`, which makes a bold hyperlink, if `hyperref` has been loaded, otherwise it just uses `\textbf`. The value of the `format` option should be the name (without a leading backslash) of a text-block command that takes a single argument (the location to be formatted). The `glossaries` package provides some commands like `\hyperbf` that may be used to ensure a hyperlink (if supported). The basic command is:

```
\glsnumber{<text>}
```

which provides the hyperlink (if enabled) otherwise it just does its argument. So, if you want, for example, an underlined hyperlink:

```
\newcommand{\hyperul}[1]{\underline{\glsnumber{#1}}}
```

Now you can use `format={hyperul}`.

There's a special command `\glsignore` that ignores its argument. With `makeindex` and `indy`, this can lead to spurious commas in the location list, because the location is still included in the list, even though the location itself isn't displayed (since it's discarded by `\glsignore`). However, `bib2gls` recognises `format={glsignore}` as a special ignored record. This indicates that `bib2gls` should select that particular entry but not include that record in the location list.

If a selected entry depends on another entry that hasn't been indexed, for example, a parent entry, then the dependent entry will automatically be selected as well, by default. The dependent entry won't have a location list if it hasn't been indexed anywhere. If you don't want the location lists to appear in a particular glossary, use `nonumberlist` in the optional argument of `\printunsrtglossary`.

If you want to index an entry without actually displaying any text, you can use:

```
\glsadd[⟨options⟩]{⟨label⟩}
```

where `⟨label⟩` is the entry's label. The `format` key is again available in `⟨options⟩`. For example:

```
\renewcommand{\glsxtrapostnamehook}[1]{%
  \glsadd[format=hyperbf]{#1}%
}
```

This automatically indexes the given entry in the post-name hook. This is redundant if you only have a single glossary, but may be useful if the entry is repeated in a later list. Alternatively, if you are using a dual entry type (see section 4.6 in the main `bib2gls` user manual), the hook could check for the existence of the dual label (identified by the `dual-field` resource option) and use that instead. For example:

```
\renewcommand{\glsxtrapostnamehook}[1]{%
  \glsxtrifhasfield{\GlsXtrDualField}{#1}
  {%
    \glsadd[format=hyperbf]{\glscurrentfieldvalue}%
  }%
  {}% no dual
}
```

If you want to index multiple entries at the same time with the same set of options, you can use:

```
\glsaddeach[⟨options⟩]{⟨label list⟩}
```

This just iterates through the comma-separated list of labels and performs `\glsadd[⟨options⟩]{⟨label⟩}` for each label in `⟨label list⟩`. For example, to ensure that `bib2gls` selects the entries with the labels `duck`, `goose` and `parrot`, even if they aren't referenced in the document:

```
\glsaddeach[format={glsignore}]{duck,goose,parrot}
```

To select all entries, regardless of whether or not they have been indexed, use the `selection={all}` resource option. There are other selection criteria. See the main bib2gls user manual for further details.

7.3 Aliasing Fields and Entry Types

In section 2.5, the `user1` key was used to store a translation:

```
\newabbreviation[user1={ribonucleic acid}]
{rna}{RNA}{ribonukleins\"aure}
```

You can also use the generic user fields in `.bib` files, but a more flexible approach is to use a semantic naming scheme in the `.bib` file and use resource aliasing to convert these custom field names into recognised keys. For example, the above abbreviation could be written in the `.bib` file as:

```
@abbreviation{rna,
  short = {RNA},
  long = {ribonukleins\"aure},
  translation = {ribonucleic acid}
}
```

The custom `translation` field will be ignored by bib2gls, unless it's first defined in the document or aliased in the resource options:

```
\GlsXtrLoadResources[
  src={abbrvs},% entries defined in abbrvs.bib
  % treat translation as though it's user1:
  field-aliases={translation=user1}
]
```

This makes bib2gls behave as though the entry was defined in the bib2gls file as:

```
@abbreviation{rna,
  short = {RNA},
  long = {ribonukleins\"aure},
  user1 = {ribonucleic acid}
}
```

The definition is now the same as the above example from section 2.5. The .bib entry type can also be aliased. Here's a modified version:

```
@foreignabbreviation{rna,
  short = {RNA},
  nativelong = {ribonukleins\"aure},
  foreignlong = {ribonucleic acid}
}
```

and here are the aliases:

```
\GlsXtrLoadResources[
  src={abbrvs},% entries defined in abbrvs.bib
  % treat @foreignabbreviation as though it's @abbreviation:
  entry-type-aliases={foreignabbreviation=abbreviation},
  field-aliases={nativelong=long,foreignlong=user1}
]
```

This has the same result, but suppose another document is in English rather than German:

```
\GlsXtrLoadResources[
  src={abbrvs},% entries defined in abbrvs.bib
  entry-type-aliases={foreignabbreviation=abbreviation},
  field-aliases={foreignlong=long}
]
```

Now the `long` field is set to the English version, and the German long form is ignored.

Here's another example where the native language is now English:

```

@abbreviation{iso,
  short = {ISO},
  long = {International Organization for Standardization}
}

@foreignabbreviation{abnt,
  short = {ABNT},
  foreignlong = {Associa\c{c}\~ao Brasileira de Normas T\ecnicas},
  nativelong = {Brazilian National Standards Organization},
  language = {pt-BR}
}

@foreignabbreviation{din,
  short = {DIN},
  foreignlong = {Deutsches Institut f\"ur Normung e.V.},
  nativelong = {German Institute for Standardization},
  language = {de-DE-1996}
}

```

The aliasing is again identified in the resource options:

```

\GlsXtrLoadResources[
  src={abbrvs},% entries defined in abbrvs.bib
  entry-type-aliases={foreignabbreviation=abbreviation},
  field-aliases={nativelong=long,foreignlong=user1,language=user2},
  category={same as original entry}
]

```

This has an extra setting that assigns the `category` field to the original entry type (before any aliasing occurred) without the leading @ (and converted to lower case). This makes bib2gls act as though the abbreviations had actually been defined as:

```

@abbreviation{iso,
  short = {ISO},
  long = {International Organization for Standardization},
  category = {abbreviation}
}

@abbreviation{abnt,

```

```

short = {ABNT},
user1 = {Associa\c{c}\~ao Brasileria de Normas T\'ecnicas},
long = {Brazilian National Standards Organization},
user2 = {pt-BR},
category = {foreignabbreviation}
}

@abbreviation{din,
  short = {DIN},
  user1 = {Deutsches Institut f\"ur Normung e.V.},
  long = {German Institute for Standardization},
  user2 = {de-1996},
  category = {foreignabbreviation}
}

```

which is now the same as an earlier example in section 2.5. If I don't need a particular custom field (such as `language` in the above), I can simply omit it from the aliasing, but it's available for other documents if the need arises. Here's the complete document modified from section 2.5:

```

\documentclass{article}

\usepackage[main=british,brazilian,ngerman]{babel}
\usepackage[record]{glossaries-extra}

\setabbreviationstyle[foreignabbreviation]{long-short-user}

\GlsXtrLoadResources[
  src={abbrvs},% entries defined in abbrvs.bib
  entry-type-aliases={foreignabbreviation=abbreviation},
  field-aliases={nativelong=long,foreignlong=user1,language=user2},
  category={same as original entry}
]

\renewcommand*{\glstruserparen}[2]{%
  \glstrfullsep{#2}%
  \glstrparen
  {#1%
    \ifglshasfield{\glstruserfield}{#2}%
    {, \emph{\GlsXtrForeignText{#2}{\glscurrentfieldvalue}}}%
  }%
}%

```

```

}

\begin{document}
\gls{abnt}, \gls{din}.
\end{document}

```

Here's another example where field and entry aliasing can make the .bib data more flexible:

```

@mineral{amethyst,
  mineralname = {amethyst},
  mineraldescription = {a purple type of quartz},
  mineralformula = {\ce{SiO2}}
}

```

For one document, I might use:

```

\GlsXtrLoadResources[
  src={entries},% data in entries.bib
  entry-type-aliases={mineral=symbol},
  field-aliases={
    mineralformula=name,
    mineralname=description
  },
  category={same as original entry}
]

```

This makes the amethyst entry behave as though it was defined as:

```

@symbol{amethyst,
  description = {amethyst},
  name = {\ce{SiO2}},
  category = {mineral}
}

```

Another document might have:

```
\GlsXtrLoadResources[
  src={entries},% data in entries.bib
  entry-type-aliases={mineral=entry},
  field-aliases={
    mineralformula=symbol,
    mineralname=name
    mineraldescription=description
  },
  category={same as original entry}
]
```

which now makes the amethyst entry behave as though it was defined as:

```
@entry{amethyst,
  name = {amethyst},
  description = {a purple type of quartz},
  symbol = {\ce{SiO2}},
  category = {mineral}
}
```

See section 8 in the main bib2gls user manual for more examples of aliasing fields and entry types.

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- [6] Nicola Talbot. The tracklang package, 2018. <https://ctan.org/pkg/tracklang>.

Command Summary

Symbols

`\^{\langle character \rangle}`
Puts a circumflex accent over $\langle character \rangle$.
Kernel command.

`\~{\langle character \rangle}`
Puts tilde accent over $\langle character \rangle$.
Kernel command.

`\' {\langle character \rangle}`
Puts an acute accent over $\langle character \rangle$.
Kernel command.

`\" {\langle character \rangle}`
Puts an umlaut accent over $\langle character \rangle$.
Kernel command.

A

`\ab[\langle options \rangle]{\langle label \rangle}[\langle insert \rangle]`
Equivalent to `\gls`.
Provided by glossaries-extra `shortcuts={abbreviations}` package option.

`\ac[\langle options \rangle]{\langle label \rangle}[\langle insert \rangle]`
Equivalent to `\gls`.
Provided by glossaries-extra `shortcuts` package option.

`\acronymtype`
Expands to the default acronym glossary type when using `\newacronym`.
Provided by glossaries.

`\Alpha`
Greek letter alpha A.
Provided by glossaries-extra-bib2gls.

C

`\c{\langle character \rangle}`
Puts a cedilla accent over $\langle character \rangle$.
Kernel command.

`\caption[<list title>]{<title>}`

Caption title.

Kernel command.

`\ce{<formula>}`

Displays the chemical formula.

Provided by mhchem.

`\chapter[<toc title>]{<title>}`

Chapter heading.

Book or report classes.

`\csdef{<cs-name>}{<syntax>}{<definition>}`

Defines the control sequence whose name is given by *<cs-name>*, without checking if the command already exists.

Provided by etoolbox.

`\currentglossary`

Defined within the glossary to the current glossary type, this has no meaning outside of the glossary list.

Provided by glossaries.

D

`\ding{<number>}`

Displays the symbol associated with the given number.

Provided by pifont.

E

`\eglsupdatewidest[<level>]{<text>}`

As `\glsupdatewidest` but expands *<text>*.

Provided by glossaries-extra-stylemods version 1.23+.

`\emph{<text>}`

Emphasizes the given text (italic or slanted if the surrounding font is upright, otherwise upright font is used).

Kernel command.

`\ensuremath{<maths>}`

Ensures the argument is in math mode. As a general rule this should only be used if you know for certain that the argument just contains mathematical markup and doesn't cause a change in mode.

Kernel command.

F

`\footnote[<number>]{<text>}`

Displays the given text as a footnote.

Kernel command.

`\foreignlanguage{<language name>}{<text>}`
Typesets *<text>* according to the rules of the given language.
Provided by babel.

G

`\GetTrackedDialectFromLanguageTag{<language tag>}{<cs>}`
Gets the tracklang dialect label from the given language tag and stores it in the command *<cs>*. The result will be empty if there's no tracked dialect associated with the given language tag.
Provided by tracklang version 1.3+.

`\GetTrackedDialectToMapping{<tracklang label>}`
The language hook label corresponding to the given tracklang label.
Provided by tracklang version 1.3+.

`\glolinkprefix`
Target name prefix used in entry hyperlinks.
Provided by glossaries.

`\Glossentrydesc{<label>}`
Like `\glossentrydesc` but converts the first letter to uppercase.
Provided by glossaries.

`\glossentrydesc{<label>}`
Used by glossary styles to display the description.
Provided by glossaries.

`\glossentryname{<label>}`
Used by glossary styles to display the name.
Provided by glossaries.

`\glossentrysymbol{<label>}`
Used by glossary styles to display the symbol.
Provided by glossaries.

`\GLS[<options>]{<label>}[<insert>]`
As `\gls` but converts the link text to upper case.
Provided by glossaries.

`\Gls[<options>]{<label>}[<insert>]`
As `\gls` but converts the first letter of the link text to upper case.
Provided by glossaries.

`\gls[<options>]{<label>}[<insert>]`
On first use displays the first use text (the value of the `first` field for general entries) and on subsequent use displays the subsequent use text (the value of the `text` field for general entries) where the text is optionally hyperlinked to the relevant place in the glossary.
Provided by glossaries.

Command Summary

`\glsabbrvscfont{<text>}`

Used with “sc” abbreviation styles to format the short form using `\textsc`.
Provided by glossaries-extra v1.17+.

`\glsaccsupp{<accessible text>}{<text>}`

Used by the accessibility support to interface with the accsupp package.
Provided by glossaries-accsupp.

`\glsadd[<options>]{<label>}`

Indexes the entry without displaying any text.
Provided by glossaries.

`\glsaddeach[<options>]{<label list>}`

Indexes each entry identified in the comma-separated list of labels without displaying any text.
Provided by glossaries-extra v1.31+.

`\glsaddkey{<key>}{<default value>}{<no link cs>}{<no link ucfirst cs>}{<link cs>}{<link ucfirst cs>}{<link allcaps cs>}`

Adds a new key for use in `\newglossaryentry` and associated commands to access it.
Provided by glossaries.

`\glsaddstoragekey{<key>}{<default value>}{<no link cs>}`

Adds a new key for internal use that can be set in `\newglossaryentry`.
Provided by glossaries.

`\glscategory{<label>}`

Expands to the value of the `category` field for the entry identified by `<label>` or nothing if the entry hasn’t been defined.
Provided by glossaries-extra.

`\glscurrententrylabel`

Only for use in the glossary, such as in the style or in the post-name or post-description hooks, this expands to the label of the current entry.
Provided by glossaries.

`\glscurrentfieldvalue`

Only for use in the `<true>` part of `\ifglshasfield` or `\glsextrifhasfield`, this expands to the field value.
Provided by glossaries.

`\glsdefaulttype`

The default glossary type.
Provided by glossaries.

`\glsdefpostdesc{<category>}{<definition>}`

Define the post-description hook for the given category.
Provided by glossaries-extra v1.31+.

- `\glsdefpostlink`{*category*}{*definition*}
- Define the post-link hook for the given category.
Provided by glossaries-extra v1.31+.
- `\glsdefpostname`{*category*}{*definition*}
- Define the post-name hook for the given category.
Provided by glossaries-extra v1.31+.
- `\glsdesc`[*options*]{*label*}[*insert*]
- Links to the entry's location in the glossary with the link text obtained from the `description` field without altering the first use flag.
Provided by glossaries.
- `\glsdisp`[*options*]{*label*}[*text*]
- Links to the entry's location in the glossary with the given link text and marks the entry as having been used.
Provided by glossaries.
- `\GlsEntryCounterLabelPrefix`
- Used as a prefix in the `\label` command automatically implemented by the `entrycounter` and `subentrycounter` options.
Provided by glossaries v4.38+.
- `\glsentrydesc`{*label*}
- Expands to the value of the `description` field.
Provided by glossaries.
- `\Glsentryname`{*label*}
- Displays the value of the `name` field with the first character converted to upper case.
Provided by glossaries.
- `\glsentryname`{*label*}
- Expands to the value of the `name` field.
Provided by glossaries.
- `\glsentryplural`{*label*}
- Expands to the value of the `plural` field.
Provided by glossaries.
- `\glsentrysymbol`{*label*}
- Expands to the value of the `symbol` field.
Provided by glossaries.
- `\glsentrytext`{*label*}
- Expands to the value of the `text` field.
Provided by glossaries.
- `\glsentryuseri`{*label*}
- Expands to the value of the `user1` field.
Provided by glossaries.

- `\glsentryuserii{⟨label⟩}`
Expands to the value of the `user2` field.
Provided by glossaries.
- `\glsentryuseriii{⟨label⟩}`
Expands to the value of the `user3` field.
Provided by glossaries.
- `\glsentryuseriv{⟨label⟩}`
Expands to the value of the `user4` field.
Provided by glossaries.
- `\glsentryuseriv{⟨label⟩}`
Expands to the value of the `user5` field.
Provided by glossaries.
- `\glsentryuservi{⟨label⟩}`
Expands to the value of the `user6` field.
Provided by glossaries.
- `\glsextrapostnamehook{⟨label⟩}`
Additional category-independent code for the post-name hook.
Provided by glossaries-extra version 1.25+.
- `\glsfmtfirst{⟨label⟩}`
Provided for use in section or caption titles, this displays the given entry's `first` field.
Provided by glossaries-extra.
- `\glsfmtfull{⟨label⟩}`
Provided for use in section or caption titles, this displays the full form of the given abbreviation.
Provided by glossaries-extra.
- `\glsfmtlong{⟨label⟩}`
Provided for use in section or caption titles, this displays the long form of the given abbreviation.
Provided by glossaries-extra.
- `\glsfmtname{⟨label⟩}`
Provided for use in section or caption titles, this displays the given entry's name.
Provided by glossaries-extra.
- `\glsfmtshort{⟨label⟩}`
Provided for use in section or caption titles, this displays the short form of the given abbreviation.
Provided by glossaries-extra.
- `\glsfmttext{⟨label⟩}`
Provided for use in section or caption titles, this displays the given entry's `text` field.
Provided by glossaries-extra.

Command Summary

`\glsnumber{<text>}`

A location format that has a hyperlink (if enabled).
Provided by glossaries.

`\glsifcategory{<label>}{<category>}{<>true>}{<>false>}`

Does `<true>` if the `category` field for the entry given by `<label>` is `<category>`.
Provided by glossaries-extra.

`\glsignore{<text>}`

Does nothing but when used as a location format `bib2gls` recognises it as an ignored record.
Provided by glossaries.

`\glslabel`

Only for use in the post-link hooks, this expands to the label of the entry that was last referenced.
Provided by glossaries.

`\glslink[<options>]{<label>}[<text>]`

Links to the entry's location in the glossary with the given link text without altering the first use flag.
Provided by glossaries.

`\glsnamefont{<text>}`

Used by `\glossentryname` to format the name.
Provided by glossaries.

`\glsnoexpandfields`

Switches off field expansion.
Provided by glossaries.

`\glsnumberformat{<text>}`

Default location format, uses `\glsnumber` if hyperlinks enabled otherwise just does `<text>`.
Provided by glossaries.

`\GLSp1[<options>]{<label>}[<insert>]`

As `\GLS` but shows the plural form.
Provided by glossaries.

`\Glspl[<options>]{<label>}[<insert>]`

As `\Gls` but shows the plural form.
Provided by glossaries.

`\glspl[<options>]{<label>}[<insert>]`

As `\gls` but shows the plural form.
Provided by glossaries.

`\glspostdescription`

A hook added after the description in some glossary styles (all if the `glossaries-extra` -stylemods package is loaded to patch them). This hook is used to reflect the `nopostdot`

package option for glossaries and the `postpunc` option for glossaries-extra.
Provided by glossaries and modified by glossaries-extra.

`\glsrefentry{<label>}`

When used with `entrycounter` or `subentrycounter` may be used to cross-reference the entry's number in the glossary list with `\ref`.
Provided by glossaries v3.0+.

`\glsreset{<label>}`

Resets the first use flag so that the entry is marked as not used.
Provided by glossaries.

`\glsresetentrycounter`

Resets the glossaryentry counter if the `entrycounter` setting is on.
Provided by glossaries.

`\glssetcategoryattribute{<category>}{<attribute>}{<value>}`

Sets the value of the attribute for the given category.
Provided by glossaries-extra.

`\glssetwidest[<level>]{<text>}`

Used with the `alttree` style to set the widest entry name for the given level.
Provided by glossary-tree.

`\glsshowtarget{<label>}`

Used to show the target name when the `debug={showtargets}` option is on.
Provided by glossaries v4.32+.

`\glsstepentry{<label>}`

Increments the glossaryentry counter, which is defined with the `entrycounter` option, and automatically labels it with `\label`.
Provided by glossaries.

`\glsymbol[<options>]{<label>}[<insert>]`

Links to the entry's location in the glossary with the link text obtained from the `symbol` field without altering the first use flag.
Provided by glossaries.

`\glsymbolsgroupname`

The name used for the symbols group.
Provided by glossaries.

`\glstextformat{<text>}`

Used by commands like `\gls` to format the link text.
Provided by glossaries.

`\glstreedefaultnamefmt{<text>}`

Used as the default format for `\glstreenamefmt`, `\glstreegroupheaderfmt` and `\glstreenavigationfmt`.

Provided by glossaries-extra-stylemods v1.31+.

Command Summary

`\glstreegroupheaderfmt{<text>}`

Used with the tree styles to format the group headings.

Provided by glossary-tree v4.22+ and redefined by glossaries-extra-stylemods v1.31+.

`\glstreenamefmt{<text>}`

Used with the tree styles to format the entry's name.

Provided by glossary-tree v4.08+ and redefined by glossaries-extra-stylemods v1.31+.

`\glstreenavigationfmt{<text>}`

Used with the tree styles to format the navigation elements.

Provided by glossary-tree v4.22+ and redefined by glossaries-extra-stylemods v1.31+.

`\glstreenonamedesc{<label>}`

Displays the pre-description separator, the description and the post-description hook for the `treenoname` styles.

Provided by glossaries-extra-stylemods v1.31+.

`\glstreepredesc{<label>}`

Separator used before the description for the tree styles.

Provided by glossary-tree v4.26+.

`\glset{<label>}`

Unsets the first use flag so that the entry is marked as having been used.

Provided by glossaries.

`\glupdatewidest[<level>]{<text>}`

As `\glsetwidest` but only sets if `<text>` is wider than the current value.

Provided by glossaries-extra-stylemods version 1.23+.

`\gluseri[<options>]{<label>}[<insert>]`

Links to the entry's location in the glossary with the link text obtained from the `user1` field without altering the first use flag.

Provided by glossaries.

`\gluserii[<options>]{<label>}[<insert>]`

Links to the entry's location in the glossary with the link text obtained from the `user2` field without altering the first use flag.

Provided by glossaries.

`\gluseriii[<options>]{<label>}[<insert>]`

Links to the entry's location in the glossary with the link text obtained from the `user3` field without altering the first use flag.

Provided by glossaries.

`\gluseriv[<options>]{<label>}[<insert>]`

Links to the entry's location in the glossary with the link text obtained from the `user4` field without altering the first use flag.

Provided by glossaries.

- `\glsuserv` [*options*] {*label*} [*insert*]
 Links to the entry's location in the glossary with the link text obtained from the `user5` field without altering the first use flag.
 Provided by glossaries.
- `\glsuservi` [*options*] {*label*} [*insert*]
 Links to the entry's location in the glossary with the link text obtained from the `user6` field without altering the first use flag.
 Provided by glossaries.
- `\glsxtrabbreviationfont` {*text*}
 Used by commands like `\gls` to format the link text for (non-regular) abbreviations.
 Provided by glossaries-extra v1.30+.
- `\glsxtrabbrvtype`
 Expands to the default glossary type when using `\newabbreviation`.
 Provided by glossaries-extra.
- `\GlsXtrDualField`
 The field used to store the dual label. This defaults to `dual` but will need to be redefined if a different value is given by `dual-field`.
 Internal command provided by glossaries-extra-bib2gls v1.30+.
- `\GlsXtrEnableInitialTagging` {*category list*} {*cs*}
 Defines the control sequence *cs* to be used with abbreviation tagging with the given categories.
 Provided by glossaries-extra.
- `\glsxtrentryfmt` {*label*} {*text*}
 Alternative to `\glsxtrfmt` for use in section headings.
 Provided by glossaries-extra.
- `\GlsXtrExpandedFmt` {*cs*} {*text*}
 Fully expands *text* and then does *cs*{*expanded text*}.
 Provided by glossaries-extra v1.30+.
- `\glsxtrfmt` [*options*] {*label*} {*text*}
 Formats the given text according to the formatting command identified by the value of the field obtained from `\GlsXtrFmtField`.
 Provided by glossaries-extra.
- `\glsxtrfmt*` [*options*] {*label*} {*text*} [*insert*]
 Like `\glsxtrfmt` but inserts extra material into the link text but outside of the formatting command.
 Provided by glossaries-extra.
- `\glsxtrfmtdisplay` {*cs-name*} {*text*} [*insert*]
 Used by `\glsxtrfmt` to format the given *text* where *cs-name* is obtained from the field identified by `\GlsXtrFmtField` and *insert* is empty for the unstarred `\glsxtrfmt` and the final optional argument of the starred version `\glsxtrfmt*`.
 Provided by glossaries-extra.

`\GlsXtrFmtField`

Expands to the internal label of the field used to store the control sequence name for use with `\glsxtrfmt`.

Provided by glossaries-extra v1.12.

`\GlsXtrForeignText{<label>}{<text>}`

Encapsulates `<text>` in `\foreignlanguage` where the language label is obtained from the locale tag given in the field identified by `\GlsXtrForeignTextField`.

Provided by glossaries-extra v1.32+.

`\GlsXtrForeignTextField`

Used by `\GlsXtrForeignText` to identify the field containing the locale tag.

Provided by glossaries-extra v1.32+.

`\GlsXtrForUnsetBufferedList{<cs>}`

Iterates over all the entry whose labels are stored in the buffer that was started with `\GlsXtrStartUnsetBuffering` and implements `<cs>{<label>}` at each iteration.

Provided by glossaries-extra v1.31+.

`\glsxtrfull[<options>]{<label>}`

Links to the entry's location in the glossary with the link text obtained from the `long` and `short` fields (using the appropriate abbreviation style) without altering the first use flag.

Provided by glossaries-extra.

`\glsxtrfullsep{<label>}`

The separator used in the full format for the parenthetical styles.

Provided by glossaries-extra.

`\glsxtrglossentry{<label>}`

Displays the given entry name including a hypertext (if `hyperref` has been loaded) as the destination for commands like `\gls`.

Provided by glossaries-extra v1.21.

`\glsxtrglossentryother{<header>}{<label>}{<field>}`

Like `\glsxtrglossentry` but uses the value given in the supplied internal `<field>` where `<header>` is the code to use in the header (leave empty for default).

Provided by glossaries-extra v1.22+.

`\glsxtrgroupfield`

Expands to the field label used to store the entry group labels.

Provided by glossaries-extra v1.21+.

`\GlsXtrIfFieldEqNum{<field>}{<entry label>}{<number>}{<true>}{<false>}`

Tests if the given field value expands to the given integer `<number>`. If the field is undefined or empty, the value is assumed to be 0. If the field is set, it must expand to an integer value. The value can be referenced in `<true>` or `<false>` with `\glscurrentfieldvalue`.

Provided by glossaries-extra v1.31+.

Command Summary

`\GlsXtrIfFieldEqStr{⟨field label⟩}{⟨entry label⟩}{⟨text⟩}{⟨true⟩}{⟨false⟩}`

Tests if the given field value is the same as `⟨text⟩` for the given entry, which may not exist.

Provided by glossaries-extra v1.21+.

`\GlsXtrIfFieldEqXpStr{⟨field label⟩}{⟨entry label⟩}{⟨text⟩}{⟨true⟩}{⟨false⟩}`

Like `\GlsXtrIfFieldEqStr` but first (protected) fully expands `⟨text⟩` (but not the field value).

Provided by glossaries-extra v1.31+.

`\GlsXtrIfFieldNonZero{⟨field⟩}{⟨entry label⟩}{⟨true⟩}{⟨false⟩}`

Tests if the given field value expands to a non-zero integer. If the field is undefined or empty, the value is assumed to be 0. If the field is set, it must expand to an integer value. The value can be referenced in `⟨true⟩` or `⟨false⟩` with `\glscurrentfieldvalue`.

Provided by glossaries-extra v1.31+.

`\GlsXtrIfFieldUndef{⟨field label⟩}{⟨entry label⟩}{⟨true⟩}{⟨false⟩}`

Tests if the given field isn't defined for the given entry, which may also not exist.

Provided by glossaries-extra v1.23+.

`\glsextrifhasfield{⟨field label⟩}{⟨entry label⟩}{⟨true⟩}{⟨false⟩}`

Tests if the given entry has the given *internal* field set (defined and not empty) without testing if the entry exists and adds implicit scoping to `⟨true⟩` and `⟨false⟩`.

Provided by glossaries-extra v1.19+.

`\glsextrifhasfield*{⟨field label⟩}{⟨entry label⟩}{⟨true⟩}{⟨false⟩}`

Tests if the given entry has the given field set (defined and not empty) without testing if the entry exists and without introducing an implicit scope.

Provided by glossaries-extra v1.19+.

`\GlsXtrIfHasNonZeroChildCount{⟨entry label⟩}{⟨true⟩}{⟨false⟩}`

For use with the `save-child-count` resource option, this uses `\GlsXtrIfFieldNonZero` to test if the `childcount` field has a non-zero value. The value can be referenced in `⟨true⟩` or `⟨false⟩` with `\glscurrentfieldvalue`.

Provided by glossaries-extra-bib2gls v1.31+.

`\glsextrifinmark{⟨true⟩}{⟨true⟩}`

Used by commands like `\glssfntshort`, this expands to `⟨true⟩` in page headings and the table of contents, otherwise it expands to `⟨false⟩`.

Provided by glossaries-extra v1.07+.

`\glsextriflabelinlist{⟨label⟩}{⟨list⟩}{⟨true⟩}{⟨false⟩}`

Tests if the `⟨label⟩` is contained in the comma-separated `⟨list⟩`, where both `⟨label⟩` and `⟨list⟩` are fully expanded before testing. This test is designed for *labels* which should be fully expandable.

Provided by glossaries-extra v1.21+.

`\GlsXtrIfUnusedOrUndefined{⟨label⟩}{⟨true⟩}{⟨false⟩}`

Does `⟨true⟩` if the entry given by `⟨label⟩` hasn't been used or is undefined, otherwise it

Command Summary

does *false*. This command is not for use in the post-link hooks.

Provided by glossaries-extra v1.34+.

`\glstrifwasfirstuse{<true>}{<false>}`

Only for use in the post-link hooks this tests if the entry just referenced was used for the first time.

Provided by glossaries-extra.

`\GlsXtrIfXpFieldEqXpStr{<field label>}{<entry label>}{<text>}{<true>}{<false>}`

Like `\GlsXtrIfFieldEqStr` but first (protected) fully expands both the field value and *text*.

Provided by glossaries-extra v1.31+.

`\GlsXtrLoadResources [<options>]`

A shortcut command that uses `\glstrresourcefile`.

Provided by glossaries-extra.

`\glstrlong [<options>] {<label>}`

Links to the entry's location in the glossary with the link text obtained from the `long` field (using the appropriate abbreviation style) without altering the first use flag.

Provided by glossaries-extra.

`\glstrnewnumber [<key=value list>] {<label>}`

Defines a new number.

Provided by glossaries-extra's `numbers` package option.

`\glstrnewsymbol [<key=value list>] {<label>} {<symbol>}`

Defines a new symbol.

Provided by glossaries-extra's `symbols` package option.

`\glstrpageref{<label>}`

When used with `entrycounter` or `subentrycounter` may be used to cross-reference the entry's number in the glossary list with `\pageref`.

Provided by glossaries-extra v1.11.

`\glstrparen{<text>}`

Used to markup parenthetical material.

Provided by glossaries-extra v1.17+.

`\glstrpostdesc<category>`

Hook used after the description is displayed in the glossary for entries that have the `category` set to *category*.

Common category hooks such as `\glstrpostdescgeneral` are provided by glossaries-extra, custom categories need the hook defined.

`\glstrpostdescgeneral`

Hook used after the description is displayed in the glossary for entries that have the `category` set to `general`.

Provided by glossaries-extra.

Command Summary

`\glstrpostlinkAddDescOnFirstUse`

Only for use in the post-link hooks, this appends a space and the value of the `description` field in parentheses if the entry that was just referenced was used for the first time.
Provided by glossaries-extra.

`\glstrpostlinkAddSymbolDescOnFirstUse`

Only for use in the post-link hooks, if the entry that was just referenced was used for the first time, this appends a space and, in parentheses, the value of the `symbol` field (if set) followed by the value of the `description` field.
Provided by glossaries-extra v1.31+.

`\glstrpostlinkAddSymbolOnFirstUse`

Only for use in the post-link hooks, this appends a space and the value of the `symbol` field in parentheses if the entry that was just referenced was used for the first time and has the `symbol` field set.
Provided by glossaries-extra.

`\glstrpostlink<category>`

Hook used after commands like `\gls` for entries that have the `category` set to `<category>`.
User needs to define hook for use with glossaries-extra.

`\glstrpostname<category>`

Hook used after the name is displayed in the glossary for entries that have the `category` set to `<category>`.
User needs to define hook for use with glossaries-extra.

`\glstrregularfont{<text>}`

Used by commands like `\gls` to format the link text for regular terms.
Provided by glossaries-extra v1.04+.

`\glstrresourcefile[<options>]{<filename>}`

Input the `.glstex` file created by `bib2gls` and write resource instructions to the `.aux` file.
Provided by glossaries-extra.

`\glstrRevertTocMarks`

Restores original behaviour of `\tableofcontents` so that `\glstrifinmark` expands to `<false>` in the table of contents.
Provided by glossaries-extra v1.07+.

`\glstrseelist{<xr label list>}`

Formats the list of cross-reference labels, without the initial “see” tag.
Provided by glossaries-extra v1.16+.

`\glstrsetgrouptitle{<group label>}{<group title>}`

Globally sets the title for the group identified by the given label.
Provided by glossaries-extra version 1.14+.

`\glxtrshort` [*options*] {*label*}

Links to the entry's location in the glossary with the link text obtained from the `short` field (using the appropriate abbreviation style) without altering the first use flag.
 Provided by glossaries-extra.

`\GlsXtrStandaloneGlossaryType`

Expands to the label for `\currentglossary` within `\glxtrglossentry` and `\glxtrglossentryother`.
 Provided by glossaries-extra v1.31+.

`\GlsXtrStandaloneSubEntryItem` {*label*}

Used within `\glxtrglossentry` and `\glxtrglossentryother` to display sub-item labels.
 Provided by glossaries-extra v1.31+.

`\GlsXtrStartUnsetBuffering`

Starts buffering calls to `\glsunset` for use in code where the boolean switch causes a problem. The buffer can later be processed and cleared with `\GlsXtrStopUnsetBuffering`. The starred form (added to v1.31) avoids duplicate labels in the buffer's internal list.
 Provided by glossaries-extra v1.30+.

`\GlsXtrStopUnsetBuffering`

Unsets (locally with the starred form) all the entry whose labels are stored in the buffer that was started with `\GlsXtrStartUnsetBuffering` and clears the buffer.
 Provided by glossaries-extra v1.30+.

`\glxtrtagfont` {*text*}

Font used by tagging command defined by `\GlsXtrEnableInitialTagging`.
 Provided by glossaries-extra.

`\glxtrusefield` {*entry label*} {*field label*}

Expands to the value of the given field for the given entry.
 Provided by glossaries-extra v1.12+.

`\glxtruserfield`

Used by the parenthetical abbreviation styles, this expands to the label of the field used to store the parenthetical material.
 Provided by glossaries-extra.

`\glxtruserparen` {*text*} {*label*}

Used by the `long-short-user` and `short-long-user` abbreviation styles to format the parenthetical material where *text* is the default parenthetical text and *label* is the entry's label. This checks the field given by `\glxtruserfield` and, if set, the *text* is followed by a comma and the user value.
 Provided by glossaries-extra v1.04+.

`\glxtrword` {*text*}

Used to encapsulate each word in the long form of an abbreviation by the `markwords`

attribute.

Provided by glossaries-extra v1.17+.

`\glstrwordsep`

Used to mark spaces between each word in the long form of an abbreviation by the `markwords` attribute.

Provided by glossaries-extra v1.17+.

H

`\hyperbf{<text>}`

A location format that uses the bold font that also has a hyperlink (if enabled).

Provided by glossaries.

I

`\ifcsundef{<cs-name>}{<>true>}{<>false>}`

Tests if the control sequence given by `<cs-name>` is undefined.

Provided by etoolbox.

`\ifdefempty{<cs>}{<>true>}{<>false>}`

Tests if the control sequence `<cs>` is empty.

Provided by etoolbox.

`\ifglshaschildren{<entry label>}{<>true>}{<>false>}`

Tests if the given entry, which must be defined, has child entries. This method is inefficient as it has to iterate over all defined entries to determine which ones have `<entry label>` as the value of the `parent` field. With `bib2gls`, a more efficient approach is to use `save-child-count` and test the value of the `childcount` field.

Provided by glossaries.

`\ifglshasdesc{<entry label>}{<>true>}{<>false>}`

Tests if the given entry, which must be defined, has the `description` field set.

Provided by glossaries.

`\ifglshasfield{<field label>}{<entry label>}{<>true>}{<>false>}`

Tests if the given entry, which must be defined, has the given field set to a non-empty value.

Provided by glossaries.

`\ifglshasparent{<entry label>}{<>true>}{<>false>}`

Tests if the given entry, which must be defined, has the `parent` field set.

Provided by glossaries.

`\ifglshassuppressedesc{<entry label>}{<>true>}{<>false>}`

Tests if the given entry, which must be defined, has the `description` field set to `\nopostdesc`.

Provided by glossaries.

Command Summary

`\ifglshassymbol{⟨entry label⟩}{⟨true⟩}{⟨false⟩}`

Tests if the given entry, which must be defined, has the `symbol` field set to value that's not empty and not `\relax`.

Provided by glossaries.

`\ifglused{⟨label⟩}{⟨true⟩}{⟨false⟩}`

Does `⟨true⟩` if the entry given by `⟨label⟩` has been used, `⟨false⟩` if the entry hasn't been used and neither if the entry doesn't exist (an error or warning message will occur and ?? will appear in the document). This command is not for use in the post-link hooks.

Provided by glossaries.

`\IfTrackedDialectHasMapping{⟨tracklang label⟩}{⟨true⟩}{⟨false⟩}`

Tests if the tracklang dialect label has been assigned a mapping to a language hook label.

Provided by tracklang version 1.3+.

`\input{⟨file⟩}`

Input the given file.

Kernel command.

J

`\jobname`

The current job name, which is usually the name of the main `.tex` file without the extension.

Primitive.

L

`\label{⟨id⟩}`

Creates a label that can be referenced with `\ref` or `\pageref`.

Kernel command.

`\longnewglossaryentry{⟨label⟩}{⟨key=value list⟩}{⟨description⟩}`

Defines a new glossary entry and appends `\leavemode\unskip\nopostdesc` at the end of `⟨description⟩`.

Provided by glossaries.

`\longnewglossaryentry*{⟨label⟩}{⟨key=value list⟩}{⟨description⟩}`

Defines a new glossary entry without appending any extra code to the end of `⟨description⟩`.

Provided by glossaries-extra v1.12+.

M

`\MakeTextUppercase{⟨text⟩}`

Converts `⟨text⟩` to upper case.

Provided by textcase.

Command Summary

`\MakeUppercase{⟨text⟩}`

Converts *⟨text⟩* to upper case.
Kernel command.

N

`\newabbreviation[⟨key=value list⟩]{⟨label⟩}{⟨short⟩}{⟨long⟩}`

Defines a new abbreviation.
Provided by glossaries-extra.

`\newacronym[⟨key=value list⟩]{⟨label⟩}{⟨short⟩}{⟨long⟩}`

Defines a new abbreviation with the `category` set to acronym.
Provided by glossaries.

`\newglossary*{⟨type⟩}{⟨title⟩}`

Defines a new glossary identified by *⟨type⟩* with the given title.
Provided by glossaries.

`\newglossaryentry{⟨label⟩}{⟨key=value list⟩}`

Defines a new glossary entry.
Provided by glossaries.

`\newignoredglossary{⟨type⟩}`

Defines a new ignored glossary (with hyperlinks suppressed) identified by *⟨type⟩* that's not included in the list used by commands, such as `\printunsrtglossaries`, that iterate over defined glossaries.
Provided by glossaries v4.08+.

`\newignoredglossary*{⟨type⟩}`

Defines a new ignored glossary (without suppressing hyperlinks) identified by *⟨type⟩* that's not included in the list used by commands, such as `\printunsrtglossaries`, that iterate over defined glossaries.
Provided by glossaries-extra v1.11+.

`\newterm[⟨key=value list⟩]{⟨label⟩}`

Defines a new glossary entry where the `description` field defaults to empty.
Provided by the glossaries's `index` package option.

`\nopostdesc`

Suppresses the post-description hook.
Provided by glossaries.

O

`\omicron`

Greek letter omicron *o*.
Provided by glossaries-extra-bib2gls.

P

`\pageref{<id>}`

Cross-reference the page where `\label{<id>}` occurred.
Kernel command.

`\pgls[<options>]{<label>}[<insert>]`

Does `<prefix>\gls[<options>]{<label>}[<insert>]`, where the `<prefix>` is obtained from the appropriate prefix field.
Provided by glossaries-prefix.

`\printglossary[<options>]`

Inputs file created by `makeindex` or `xindy`.
Provided by glossaries.

`\printunsrtglossaries`

Iterates over all non-ignored defined glossaries and performs `\printunsrtglossary` for each one.
Provided by glossaries-extra.

`\printunsrtglossary[<options>]`

Display the glossary by iterating over all entries associated with that glossary in the order in which they were defined.
Provided by glossaries-extra.

`\printunsrtglossary*[<options>]{<code>}`

As `\printunsrtglossary` but performs `<code>` first (scoped to localise any assignments within `<code>`).
Provided by glossaries-extra.

`\printunsrtglossaryentryprocesshook{<label>}`

Performed at each iteration of the internal loop used by `\printunsrtglossary`.
Provided by glossaries-extra v1.21+.

`\printunsrtglossarypredoglossary`

Hook performed by `\printunsrtglossary`.
Provided by glossaries-extra v1.21+.

`\printunsrtglossaryskipentry`

Only allowed within `\printunsrtglossaryentryprocesshook` this command indicates that the current entry should be skipped.
Provided by glossaries-extra v1.21+.

`\protect<token>`

Protects `<token>` from expansion.
Kernel command.

`\providecommand{<cs>}[<n>][<def>]{<code>}`

Defines a command if it's not already defined.
Kernel command.

R

`\ref{⟨id⟩}`

Cross-reference the location where `\label{⟨id⟩}` occurred.
Kernel command.

S

`\section[⟨toc title⟩]{⟨title⟩}`

Section heading.
Most classes that have a concept of document sections.

`\setabbreviationstyle[⟨category⟩]{⟨style-name⟩}`

Sets the abbreviation style to `⟨style-name⟩` for the given `⟨category⟩`, must be used before the abbreviation is defined.
Provided by glossaries-extra.

`\setupglossaries{⟨key=value list⟩}`

Applies the base glossaries options that are allowed to be changed after the package has loaded.
Provided by glossaries.

`\si{⟨unit⟩}`

Displays the unit with intelligent formatting.
Provided by siunitx.

T

`\tableofcontents`

Displays the table of contents (by reading in the `.toc` file) and then opens `.toc` file to allow the sectioning commands to write to it.
Kernel command.

`\textbf{⟨text⟩}`

Displays the given text in bold.
Kernel command.

`\textit{⟨text⟩}`

Displays the given text in italic.
Kernel command.

`\textsc{⟨text⟩}`

Applies small-caps font to `⟨text⟩`.
Kernel command.

`\theglossaryentry`

Textual representation of the `glossaryentry` counter, which is defined with the `entrycounter` option.
Provided by glossaries.

`\theHglossaryentry`

Hypertarget associated with the glossaryentry counter, which is defined with the `entrycounter` option.

Provided by glossaries.

`\TrackedDialectClosestSubMatch`

Set by `\GetTrackedDialectFromLanguageTag` if an exact match isn't found but a partial match on the root language is found.

Provided by tracklang version 1.3.6+.

`\TrackedLanguageFromDialect{<dialect>}`

Expands to the root language associated with the given (tracklang) dialect label.

Provided by tracklang.

U

`\ul{<text>}`

Underlines the given text.

Provided by soul.

`\underline{<text>}`

Underlines the given text.

Kernel command.

`\usepackage[<options>]{<name>}[<min version>]`

Loads the package identified by `<name>`.

Kernel command.

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