

1 The ‘cleveref-usedon’ package

This package patches a bug in the `cleveref` package and adds the following functionality. If an environment, i.e. a theorem environment, has been labelled, it can be called with both `\cref{<LabelName>}` as well as

```
\cref[UsedOn]{<LabelName>}
\cref[uo]{<LabelName>}
```

The option `UsedOn` or the short form `uo` is case-insensitive, i.e. you could also call it via

```
\cref[UsEdOn]{<LabelName>}
\cref[uO]{<LabelName>}
```

— but why would you? This additional option adds the text *Used on page(s) ...*.) to the beginning of the environment where the label has been originally set. If `hyperref` has been loaded, there will also be hyperlinks to the corresponding pages from where the label has been referenced.

This might be a useful feature if you are writing a textbook or longer thesis and include various results early on but it is not yet clear why they are useful. Hopefully, the promise that this result ‘is used on page...’ will prompt your reader to keep reading. Check the package documentation for more infos.

1.1 An example

Theorem 1.1. (Used on pages 1, 3 to 5 and 7.)

The identity

$$1 = 1$$

is true.

Lemma 1.2. (Used on pages 1, 3 to 5 and 7.)

The identity

$$2 = 2.$$

is also true.

Here, we reference Theorem 1.1 with option `UsedOn`.

Here, we reference Lemma 1.2 with option `uo`.

1.2 Dummy text

This is just some dummy text to generate pages.

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1.3 Continuation of example

Here, we have referenced both Theorem 1.1 and Lemma 1.2 and called them in one environment with option `uo`. Note the lack of spaces in the braced arguments of `\cref`! This is important as there will be a `LaTeXError` when multiple labels are separated by commas AND spaces, i.e. it should be

```
\cref[uo]{thm:TestTheorem,lemma:TestLemma\}
```

and NOT

```
\cref[uo]{thm:TestTheorem, lemma:TestLemma\}.
```

Check the documentation of the `cleveref` package!

The pdf goes on for a few more pages! Don't stop!

Theorem 1.1 can also be called with option `UsedOn` at the beginning of a sentence. One should then use `\Cref` instead of `\ref`.

Lemma 1.2 can be similarly called at the beginning of a sentence with option `UsedOn`.

Keep reading.

Theorem 1.1 and Lemma 1.2 are here called again in one single call of `\Cref` with option `UsedOn`.

More pages upcoming!

1.4 Yet another subsection

Here is yet another theorem.

Theorem 1.3. *All rational numbers are real numbers.*

Here, Theorem 1.3 has *not* been called with `UsedOn`. This is just the standard behaviour of the original `cleveref` package.

There are more pages.

Just for the fun of it, let's call Theorem 1.1 and Lemma 1.2 again with option `UsedOn`.

There is another section on the next page.

2 Experimental options UsedBy and UsedByAndOn

Unfortunately, due the way how this package is currently implemented, to get these experimental options to work it is necessary to abuse the usage of proof environments. Namely, one needs to nest the proof environment *inside* the theorem-like environment. Note carefully how the proof environments are (ab)used in the above code example.

This is – as far as I know – not how these environments are supposed to be used. In particular, placing text between theorem-like environment and the corresponding proof, as is often common, will result in a wrong reference. Namely, instead of referencing the theorem-like environment by name only the corresponding section name would be printed, e.g. “*Used by Section 2*”. You can see this for yourself, if you move the proof environment out of the theorem-like environment in the above examples. Hence, using proof environments correctly results in messages which are less helpful to the reader. On the other hand, using this experimental functionality to help the reader forces users (i.e. authors) of this package to use proof environments incorrectly. This sounds like a No-Free-Lunch theorem... Therefore, use these experimental options at your own discretion!

The following shows the difference in behaviour if you use the proof environments as intended. If you comment out lines 96-106 in this .tex file, then it will display the intended behaviour of this package. However, you need use the proof environment differently.

Theorem 2.1. (Used on pages 9 to 10.)

Let $f: M \rightarrow (0, 1)$ be a smooth function.

1. (Used by Lemma 2.2, Example 2.3, and Section 2 on pages 9 to 10.)

The function f is continuous.

2. (Used by Lemma 2.2, Example 2.3, and Section 2.)

The differential df is continuous.

Check the following two pages.

The following works as you want.

Lemma 2.2. *Something about functions.*

Proof. By Theorem 2.1 it's true. In particular, Item 2 is helpful. However, also Item 1 gives the result. \square

Example 2.3. *Something about functions.*

Proof. By Theorem 2.1 it's true. In particular, Item 2 is helpful. However, also Item 1 gives the result. \square

The following does not work as you want because the proof environment is not nested inside the theorem-like environment. Comment it out to see the behaviour in the theorem that you asked for.

Example 2.4. *Something about functions.*

Proof. By Theorem 2.1 it's true. In particular, Item 2 is helpful. However, also Item 1 gives the result. \square