The codedescribe and codelisting Packages
Version 1.3

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Abstract

This documentation package is designed to be 'as class independent as possible', depending only on *expl3*, *scontents*, *listing* and *pifont*. Unlike other packages of the kind, a minimal set of macros/commands/environments is defined: most/all defined commands have an 'object type' as a *keyval* parameter, allowing for an easy expansion mechanism (instead of the usual 'one set of macros/environments' for each object type).

No assumption about page layout is made (besides 'having a marginpar'), or underlying macros, so that it can be used with any document class.

Contents

1 Introduction

This package aims to document both `Document` level (i.e. final user) commands, as well `Package/Class` level commands. It's fully implemented using *expl3* syntax and structures, in special *l3coffins*, *l3seq* and *l3keys*. Besides those *scontents* and *listing* packages are used to typeset code snippets. The package *pifont* is needed just to typeset those (open)stars, in case one wants to mark a command as (restricted) expandable.

No other package/class is needed, any class can be used as the base one, which allows to demonstrate the documented commands with any desired layout.

codelisting defines a few macros to display and demonstrate LaTeX code (using *listings* and *scontents*), whilst *codedescribe* defines a series of macros to display/enumerate macros and environments (somewhat resembling the *doc3* style).

*https://github.com/alceu-frigeri/codedescribe

1.1 Single versus Multi-column Classes

This package 'can' be used with multi-column classes, given that the `\linewidth` and `\columnsep` are defined appropriately. `\linewidth` shall defaults to text/column real width, whilst `\columnsep`, if needed (2 or more columns) shall be greater than `\marginparwidth` plus `\marginparsep`.

1.2 Current Version

This doc regards to *codedescribe* version 1.3 and *codelisting* version 1.3. Those two packages are fairly stable, and given the ⟨obj-type⟩ mechanism (see below, 3.2) it can be easily extended without changing it's interface.

2 codelisting Package

It requires two packages: *listings* and *scontents*, defines an environment: *codestore* and 3 main commands: `\tscode`, `\tsdemo` and `\tsresult` and 1 auxiliary command: `\setcodekeys`.

2.1 In Memory Code Storage

Thanks to *scontents* (*expl3* based) it's possible to store LaTeX code snippets in a *expl3* key.

codestore `\begin{codestore}` [⟨stcontents-keys⟩]
`\end{codestore}`

This environment is an alias to *scontents* environment (from *scontents* package), all *scontents* keys are valid, with two additional ones: *st* and *store-at* which are aliases to the *store-env* key. If an 'isolated' ⟨*st-name*⟩ is given (unknown *key*), it is assumed 'by Default' that the environment body shall be stored in it (for use with `\tscode` and `\tsdemo`).

2.2 Code Display/Demo

`\setcodekeys` `\setcodekeys` {⟨code-keys⟩}

One has the option to set ⟨code-keys⟩ (see 2.2.1) per `\tscode`/`\tsdemo` call, or *globally*, better said, *in the called context group* .

> ***N.B.:*** All `\tscode` and `\tsdemo` commands create a local group in which the ⟨code-keys⟩ are defined, and discarded once said local group is closed. `\setcodekeys` defines those keys in the *current* context/group.

`\tscode*` `\tscode*` [⟨code-keys⟩] {⟨st-name⟩}
`\tsdemo*` `\tsdemo*` [⟨code-keys⟩] {⟨st-name⟩}
`\tsresult*` `\tsresult*` [⟨code-keys⟩] {⟨st-name⟩}

new: 2024-01-06

`\tscode` just typesets ⟨st-name⟩ (the key-name created with *stcode*), in verbatim mode with syntax highlight. The non-star version centers it and use just half of the base line. The star version uses the full text width.
`\tsdemo*` first typesets ⟨st-name⟩, as above, then it *executes* said code. The non-start versions place them side-by-side, whilst the star versions places one following the other.
(new) `\tsresult*` only *executes* said code. The non-start versions centers it and use just half of the base line, whilst the star versions uses the full text width.

For Example:

LaTeX Code:

```
\begin{codestore}[stmeta]
    Some \LaTeX~coding, for example: \ldots.
\end{codestore}
This will just typesets \tsobj[key]{stmeta}:
\tscode*[codeprefix={Sample Code:}] {stmeta}
and this will demonstrate it, side by side with source code:
\tsdemo[numbers=left,ruleht=0.5,
    codeprefix={inner sample code},
    resultprefix={inner sample result}] {stmeta}
```

LaTeX Result:

This will just typesets *stmeta*:

Sample Code:

```
    Some \LaTeX~coding, for example: \ldots.
```

and this will demonstrate it, side by side with source code:

inner sample code	inner sample result
`1  Some \LaTeX~coding, for example: \ldots.`	Some LaTeX coding, for example: ....

2.2.1 Code Keys

Using a *key*=*value* syntax, one can fine tune *listings* syntax highlight.

settexcs
texcs
texcsstyle

settexcs, settexcs2 and settexcs3
texcs, texcs2 and texcs3
texcsstyle, texcs2style and texcs3style

Those define sets of LaTeX commands (csnames), the *set* variants initialize/redefine those sets (an empty list, clears the set), while the others extend those sets. The *style* ones redefines the command display style (an empty ⟨value⟩ resets the style to it's default).

setkeywd
keywd
keywdstyle

setkeywd, setkeywd2 and setkeywd3
keywd, keywd2 and keywd3
keywdstyle, keywd2style and keywd3style

Same for other *keywords* sets.

setemph
emph
emphstyle

setemph, setemph2 and setemph3
emph, emph2 and emph3
emphstyle, emph2style and emph3style

for some extra emphasis sets.

numbers
numberstyle

numbers and numberstyle

numbers possible values are *none* (default) and *left* (to add tinny numbers to the left of the listing). With *numberstyle* one can redefine the numbering style.

stringstyle
codestyle

stringstyle and commentstyle

to redefine *strings* and *comments* formatting style.

bckgndcolor — *bckgndcolor*

to change the listing background's color.

codeprefix / *resultprefix* — *codeprefix and resultprefix*

those set the *codeprefix* (default: LaTeX Code:) and *resultprefix* (default: LaTeX Result:)

parindent — *parindent*

Sets the indentation to be used when 'demonstrating' LaTeX code (`\tsdemo`). Defaults to whatever value `\parindent` was when the package was first loaded.

ruleht — *ruleht*

When typesetting the 'code demo' (`\tsdemo`) a set of rules is drawn. The Default, 1, equals to `\arrayrulewidth` (usually 0.4pt).

basicstyle — *basicstyle*

new: 2023/11/18

Sets the base font style used when typesetting the 'code demo', default being `\footnotesize\ttfamily`

3 codedescribe Package

This package aims at minimizing the number of commands, having the object kind (if a macro, or a function, or environment, or variable, or key ...) as a parameter, allowing for a simple 'extension mechanism': other object types can be easily introduced without having to change, or add commands.

3.1 Package Options

It has a single package option:

nolisting — it will suppress the *codelisting* package load. In case it's not necessary or one wants to use a differen package for LaTeX code listing.

3.2 Object Type keys

The applied text format is defined in terms of ⟨obj-types⟩, which are defined in terms of ⟨format-groups⟩ and each one defines a 'formatting function', 'font shape', bracketing, etc. to be applied.

3.2.1 Format Keys

There is a set of primitive ⟨format-keys⟩ used to define ⟨format-groups⟩ and ⟨obj-types⟩, which are:

meta	to typeset between angles,
xmeta	to typeset *verbatim* between angles,
verb	to typeset *verbatim*,
xverb	to typeset *verbatim*, suppressing all spaces,
code	to typeset *verbatim*, suppressing all spaces and replacing a TF by TF,
nofmt	in case of a redefinition, to remove the 'base' formatting,
slshape	to use a slanted font shape,
itshape	to use an italic font shape,
noshape	in case of a redefinition, to remove the 'base' shape,
lbracket	defines the left bracket (when using `\tsargs`). **Note:** this key must have an associated value,

rbracket	defines the right bracket (when using \tsargs). **Note:** this key must have an associated value,
color	defines the text color. **Note:** this key must have an associated value (a color, as understood by *xcolor* package).

3.2.2 Format Groups

Using \defgroupfmt one can (re-)define custom ⟨format-groups⟩. There is, though, a set of pre-defined ones as follow:

meta	which sets *meta* and *color*
verb	which sets *color*
oarg	which sets *meta* and *color*
code	which sets *code* and *color*
syntax	which sets *color*
keyval	which sets *slshape* and *color*
option	which sets *color*
defaultval	which sets *color*
env	which sets *slshape* and *color*
pkg	which sets *slshape* and *color*

Note: *color* was used in the list above just as a 'reminder' that a color is defined/associated with the given group.

3.2.3 Object Types

Using \defobjectfmt one can (re-)define custom ⟨obj-types⟩. Similarly, there is a set of predefined ones, as follow:

arg, meta	based on (group) *meta*
verb, xverb	based on (group) *verb* plus *verb* or *xverb*
marg	based on (group) *meta* plus brackets
oarg, parg, xarg	based on (group) *oarg* plus brackets
code, macro, function	based on (group) *code*
syntax	based on (group) *syntax*
keyval, key, keys, values	based on (group) *keyval*
option	based on (group) *option*
defaultval	based on (group) *defaultval*
env	based on (group) *env*
pkg, pack	based on (group) *pkg*

3.2.4 Customization

One can add user defined groups/objects or change the pre-defined ones with the following commands:

\defgroupfmt — \defgroupfmt {⟨format-group⟩} {⟨format-keys⟩}

new: 2023/05/16

⟨format-group⟩ is the name of the new group (or one being redefined, which can be one of the standard ones). ⟨format-keys⟩ is any combination of the keys defined in 3.2.1

For example, one can redefine the *code group* standard color with \defgroupfmt{code}{color=red} and all *obj-types* based on it will be typeset in red (in the standard case: *code*, *macro* and *function* objects).

\defobjectfmt — \defobjectfmt {⟨obj-type⟩} {⟨format-group⟩} {⟨format-keys⟩}

new: 2023/05/16

⟨obj-type⟩ is the name of the new ⟨object⟩ being defined (or redefined), ⟨format-group⟩ is the base group to be used. ⟨format-keys⟩ allows for further differentiation.

For instance, the many optional ⟨*arg⟩ are defined as follow:

```
\colorlet {c__codedesc_oarg_color} { gray!90!black }

\defgroupfmt  {oarg} { meta , color=c__codedesc_oarg_color }

\defobjectfmt {oarg} {oarg} { lbracket={[} , rbracket={]} }
\defobjectfmt {parg} {oarg} { lbracket={(} , rbracket={)} }
\defobjectfmt {xarg} {oarg} { lbracket={<} , rbracket={>} }
```

3.3 Environments

codedescribe

new: 2023/05/01
update: 2023/05/1
NB: this is an example

```
\begin{codedescribe} [⟨obj-type⟩] {⟨csv-list⟩}
...
\end{codedescribe}
```

This is the main environment to describe *Macros*, *Functions*, *Variable*, *Environments* and *etc.* ⟨csv-list⟩ is typeset in the margin. The optional ⟨obj-type⟩ defines the object-type format.

> ***Note 1:*** One can change the rule color with the key *rulecolor*, for instance `\begin{codedescribe}[rulecolor=white]` will remove the rules.
>
> ***Note 2:*** Besides that, one can use the keys *new*, *update* and *note* to further customize it as: `\begin {codedescribe} [new=2023/05/01, update=2023/05/1, note={this is an example}]`
>
> ***Note 3:*** Finally, one can use *EXP* and *rEXP* to add a star ★ or a hollow star ☆, as per expl3/doc3 conventions (if expandable, restricted expandable or not).

codesyntax

```
\begin{codesyntax}
...
\end{codesyntax}
```

The *codesyntax* environment sets the fontsize and activates `\obeylines`, `\obeyspaces` , so one can list macros/cmds/keys use, one per line.

> ***Note:*** *codesyntax* environment shall appear only once, inside of a *codedescribe* environment. Take note, as well, this is not a verbatim environment!

For example, the code for *codedescribe* (entry above) is:

LaTeX Code:

```
\begin{codedescribe}[env,new=2023/05/01,update=2023/05/1,note={this is an example}]{
      codedescribe}
  \begin{codesyntax}
    \tsmacro{\begin{codedescribe}}[obj-type]{csv-list}
    \ldots
    \tsmacro{\end{codedescribe}}{}
  \end{codesyntax}
  This is the main ...
\end{codedescribe}
```

describelist
*describelist**

```
\begin{describelist} [⟨item-indent⟩] {⟨obj-type⟩}
..\describe {⟨item-name⟩} {⟨item-description⟩}
..\describe {⟨item-name⟩} {⟨item-description⟩}
...
\end{describelist}
```

This sets a *description* like 'list'. In the non-star version the ⟨items-name⟩ will be typeset on the marginpar. In the star version, ⟨item-description⟩ will be indented by ⟨item-indent⟩ (defaults to: 20mm). ⟨obj-type⟩ defines the object-type format used to typeset ⟨item-name⟩.

\describe `\describe {⟨item-name⟩} {⟨item-description⟩}`

This is the *describelist* companion macro. In case of the *describe**, ⟨item-name⟩ will be typeset in a box ⟨item-ident⟩ wide, so that ⟨item-description⟩ will be fully indented, otherwise ⟨item-name⟩ will be typed in the marginpar.

3.4 Commands

\typesetobj `\typesetobj [⟨obj-type⟩] {⟨csv-list⟩}`
\tsobj `\tsobj [⟨obj-type⟩] {⟨csv-list⟩}`

This is the main typesetting command (most of the others are based on this). It can be used to typeset a single 'object' or a list thereof. In the case of a list, each term will be separated by commas. The last two by *sep* (defaults to: and).

> ***Note:*** One can change the last 'separator' with the key *sep*, for instance `\tsobj [env,sep=or] {}` (in case one wants to produce an 'or' list of environments). Additionally, one can use the key *comma* to change the last separator to a single comma, like `\tsobj [env,comma] {}`.

\typesetargs `\typesetargs [⟨obj-type⟩] {⟨csv-list⟩}`
\tsargs `\tsargs [⟨obj-type⟩] {⟨csv-list⟩}`

Those will typeset ⟨csv-list⟩ as a list of parameters, like `[⟨arg1⟩] [⟨arg2⟩] [⟨arg3⟩]`, or `{⟨arg1⟩} {⟨arg2⟩} {⟨arg3⟩}`, etc. ⟨obj-type⟩ defines the formating AND kind of brackets used (see 3.2): `[]` for optional arguments (oarg), `{}` for mandatory arguments (marg), and so on.

\typesetmacro `\typesetmacro {⟨macro-list⟩} [⟨oargs-list⟩] {⟨margs-list⟩}`
\tsmacro `\tsmacro {⟨macro-list⟩} [⟨oargs-list⟩] {⟨margs-list⟩}`

This is just a short-cut for
`\tsobj[code]{macro-list} \tsargs[oarg]{oargs-list} \tsargs[marg]{margs-list}`.

\typesetmeta `\typesetmeta {⟨name⟩}`
\tsmeta `\tsmeta {⟨name⟩}`

Those will just typeset ⟨name⟩ between left/right 'angles' (no other formatting).

\typesetverb `\typesetverb [⟨obj-type⟩] {⟨verbatim text⟩}`
\tsverb `\tsverb [⟨obj-type⟩] {⟨verbatim text⟩}`

Typesets ⟨verbatim text⟩ as is (verbatim...). ⟨obj-type⟩ defines the used format. The difference with `\tsobj [verb]{something}` is that ⟨verbatim text⟩ can contain commas (which, otherwise, would be interpreted as a list separator in `\tsobj`.

> ***Note:*** This is meant for short expressions, and not multi-line, complex code (one is better of, then, using 2.2). ⟨verbatim text⟩ must be balanced ! otherwise, some low level TEX errors may pop out.

\typesetmarginnote `\typesetmarginnote {⟨note⟩}`
\tsmarginnote `\tsmarginnote {⟨note⟩}`

Typesets a small note at the margin.

tsremark `\begin{tsremark}` [⟨NB⟩]
`\end{tsremark}`

The environment body will be typeset as a text note. ⟨NB⟩ (defaults to Note:) is the note begin (in boldface). For instance:

LaTeX Code:	LaTeX Result:

`Sample text. Sample test.`
`\begin{tsremark}[N.B.]`
`  This is an example.`
`\end{tsremark}`
	Sample text. Sample test.
	N.B. This is an example.

3.5 Auxiliary Command / Environment

In case the used Document Class redefines the `\maketitle` command and/or *abstract* environment, alternatives are provided (based on the article class).

`typesettitle` `\typesettitle` {⟨title-keys⟩}
`tstitle` `\tstitle` {⟨title-keys⟩}

This is based on the `\maketitle` from the *article* class. The ⟨title-keys⟩ are:

title The used title.
author Author's name. It's possible to use `\footnote` command in it.
date Title's date.

tsabstract `\begin{tsabstract}`
`...`
`\end{tsabstract}`

This is the *abstract* environment from the *article* class.

`typesetdate` `\typesetdate`
`tsdate` `\tsdate`

new: 2023/05/16

This provides the current date (Month Year, format).