

How to work with SweaveListingUtils

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Abstract

In this vignette, we give short examples how to use package "SweaveListingUtils" in a vignette.

1 Preparations: Preamble

You should include into the preamble of your `.Rnw` file something like

```
% -----  
\RequirePackage{listings}  
\usepackage{Sweave}  
% -----  
\SweaveOpts{keep.source=TRUE}  
% -----  
<<SweaveListingsPreparations , results=tex , echo=FALSE>>=  
require(SweaveListingUtils)  
SweaveListingPreparations()  
changeKeywordstyles(pkgs = c("SweaveListingUtils", "distr"),  
                     keywordstyles = c("\bf\color{blue}" , "\bf\color{red}"))  
@
```

Actually, after **Sweave**-ing the `.Rnw` file to a corresponding `.tex` file, this should expand to something like

```
%-----%  
%Preparations for Sweave and Listings  
%-----%  
%  
\RequirePackage{color}  
\definecolor{Rcolor}{rgb}{0, 0.5, 0.5}
```

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```

\definecolor{Rbcolor}{rgb}{0, 0.6, 0.6}
\definecolor{Rout}{rgb}{0.461, 0.039, 0.102}
\definecolor{Rcomment}{rgb}{0.101, 0.043, 0.432}
%-----%
\lstdefinelanguage{Rd}[common]{TeX}%
{moretexcs={acronym, alias, arguments, author, bold, cite, %
code, command, concept, cr, deqn, describe, %
description, details, dfn, docType, dots, %
dontrun, dontshow, donttest, dQuote, %
email, emph, enc, encoding, enumerate, env, eqn, %
examples, file, format, item, itemize, kbd, keyword, %
keyword, ldots, link, linkS4class, method, name, note, %
option, pkg, preformatted, R, references, S3method, %
S4method, samp, section, seealso, source, sp, special, %
sQuote, strong, synopsis, tab, tabular, testonly, %
title, url, usage, value, var},
sensitive=true, %
morecomment=[1]\% 2008 Peter Ruckdeschel
}[keywords, comments]\%
%-----%
\lstdefinestyle{Rstyle}{fancyvrb=true, escapechar=., language=R, %
basicstyle={\color{Rcolor}\small}, %
keywordstyle={\bf\color{Rcolor}}, %
commentstyle={\color{Rcomment}\ttfamily\itshape}, %
literate={<-}{\leftarrow$}2{<<}{\twoheadleftarrow$}2, %
alsoother={$}, %
alsoletter={.<-}, %
otherkeywords={!, !=, ~, $, *, \&, \%/\%, \%*\%, \%\\%, <-, <<-, /}}%
\lstdefinestyle{Rdstyle}{fancyvrb=true, language=Rd, keywordstyle={\bf}, %
basicstyle={\color{black}\footnotesize}, %
commentstyle={\ttfamily\itshape}, %
alsolanguage=R}%
%-----%
\global\def\Rlstset{\lstset{style=Rstyle}}%
\global\def\Rdlstset{\lstset{style=Rdstyle}}%
\Rlstset
%-----%
\DefineVerbatimEnvironment{Sinut}{Verbatim}%
{formatcom=\color{Rcolor}\lstset{fancyvrb=true, escapechar='}}
\DefineVerbatimEnvironment{Soutut}{Verbatim}%
{formatcom=\color{Rout}\small\lstset{fancyvrb=false}}
\DefineVerbatimEnvironment{Scode}{Verbatim}%
{fontshape=sl, formatcom=\color{Rcolor}\lstset{fancyvrb=true}}
%-----%
\ifthenelse{\boolean{Sweave@gin}}{\setkeys{Gin}{width=0.6\textwidth}}{}%
%-----%
\let\code\lstinline
\newcommand{\Code}[1]{\{\tt\color{Rcolor} #1\}}
\newcommand{\file}[1]{\{\tt #1\}}
\newcommand{\pkg}[1]{\{\tt "#1"\}}

```

```

\newcommand{\pkgversion}{\tt 2.0.3}}
%-----%
% -----
% Registration of package SweaveListingUtils
% -----
% -----
\lstset{morekeywords={[2]changeKeywordstyles,copySourceFromRForge,%
getSweaveListingOption,lstinputSourceFromRForge,lstset,%
lstsetLanguage,lstsetR,lstsetRd,readPkgVersion,readSourceFromRForge,%
setToBeDefinedPkgs,SweaveListingMASK,SweaveListingoptions,%
SweaveListingOptions,SweaveListingPreparations,%
taglist%
},%
keywordstyle={[2]{\bf}}%
}
%
%

% -----
% Registration of package startupmsg
% -----
\lstset{morekeywords={[3]buildStartupMessage,infoShow,mySMHandler,%
mystartupMessage,NEWS,onlytypeStartupMessages,pointertoNEWS,%
readURLInformation,readVersionInformation,startupMessage,%
StartupMessage,startupPackage,startupType,suppressStartupMessages%
},%
keywordstyle={[3]{\bf}}%
}
%
%

% -----
% Registration of package tools
% -----
\lstset{morekeywords={[4]Adobe_glyphs,buildVignettes,charset_to_Unicode,%
checkDocFiles,checkDocStyle,checkFF,checkMD5sums,checkNEWS,%
checkReplaceFuns,checkS3methods,checkTnF,checkVignettes,codoc,%
codocClasses,codocData,delimMatch,encoded_text_to_latex,%

... snip ...

vignetteDepends,write_PACKAGES,xgettext,xgettext2pot,xngettext%
},%
keywordstyle={[4]{\bf}}%
}
%
%

% -----
% Registration of package stats

```

```

% -----
\lstset{morekeywords={ [5] acf , acf2AR, add.scope , addmargins , %
aggregate.data.frame , aggregate.default , aggregate.ts , AIC , %
anova.glm , anova.glmlist , anova.lm , anova.lmlist , anova.mlm , %
anovalist.lm , ansari.test , ar , ar.burg , ar.mle , ar.ols , ar.yw , %
arima , arima.sim , arima0 , arima0.diag , ARMAacf , %
ARMAtoMA , as.dendrogram , as.dist , as.formula , as.hclust , %

... snip ...

weighted.mean , weighted.residuals , wilcox.test , window<- , %
write.ftable , xtabs%
} , %
keywordstyle={ [5] {\bf} } %
}
%
%

% -----
% Registration of package graphics
% -----
\lstset{morekeywords={ [6] assocplot , Axis , axis.Date , axis.POSIXct , %
axTicks , barplot.default , boxplot.default , boxplot.matrix , cdplot , %
clip , close.screen , co.intervals , contour.default , dotchart , %
erase.screen , filled.contour , fourfoldplot , grconvertX , grconvertY , %
hist.default , image.default , layout.show , lines.default , pairs.default , %
panel.smooth , pie , plot.default , plot.design , plot.new , plot.window , %
plot.xy , points.default , spineplot , split.screen , strheight , %
stripchart , text.default , xspline%
} , %
keywordstyle={ [6] {\bf} } %
}
%
%

% -----
% Registration of package grDevices
% -----
\lstset{morekeywords={ [7] as.graphicsAnnot , bitmap , bmp , boxplot.stats , %
bringToTop , check.options , CIDFont , cm.colors , col2rgb , colorConverter , %
colorRamp , colorRampPalette , colorspace , contourLines , convertColor , %
dev.control , dev.copy , dev.copy2eps , dev.copy2pdf , dev.cur , %

... snip ...

windowsFont , windowsFonts , xfig , xy.coords , xyTable , %
xyz.coords%
} , %
keywordstyle={ [7] {\bf} } %
}

```

```

%
%

% -----
% Registration of package utils
% -----
\lstset{morekeywords={ [8] alarm , argsAnywhere , as . person , as . personList , %
as . relistable , as . roman , assignInNamespace , available . packages , browseEnv , %
browseURL , browseVignettes , bug . report , capture . output , checkCRAN , %
choose . dir , choose . files , chooseCRANmirror , citation , citEntry , citFooter , %
citHeader , close . socket , combn , compareVersion , contrib . url , %
count . fields , CRAN . packages , data . entry , de . ncols , de . restore , %
de . setup , DLL . version , download . file , download . packages , dump . frames , %

... snip ...

write . socket , write . table , writeClipboard , wsbrowser , zip . file . extract , %
zip . unpack %
} , %
keywordstyle = { [8] { \ bf } } %
}
%
%

% -----
% Registration of package datasets
% -----
\lstset{morekeywords={ [9] ability . cov , airmiles , AirPassengers , airquality , %
anscombe , attenu , attitude , austres , beaver1 , beaver2 , %
BJsales , BJsales . lead , BOD , cars , ChickWeight , %
chickwts , co2 , CO2 , crimtab , discoveries , %

... snip ...

uspop , VADeaths , volcano , warpbreaks , women , %
WorldPhones , WWWusage %
} , %
keywordstyle = { [9] { \ bf } } %
}
%
%

% -----
% Registration of package methods
% -----
\lstset{morekeywords={ [10] addNextMethod , allGenerics , allNames , Arith , %
as <- , asMethodDefinition , assignClassDef , assignMethodsMetaData , %
balanceMethodsList , body <- , cacheGenericsMetaData , cacheMetaData , %
cacheMethod , callGeneric , callNextMethod , canCoerce , cbind2 , %
checkSlotAssignment , classMetaName , coerce , %

```

```

... snip ...

Summary, superClassDepth, testVirtual, traceOff, traceOn, %
tryNew, trySilent, unRematchDefinition, validObject, validSlotNames %
}, %
keywordstyle={ [10]{\bf}} %
}
%
%

% -----
% Registration of package base
% -----
\lstset{morekeywords={ [11]addNA, addTaskCallback, agrep, all.equal, %
all.equal.character, all.equal.default, all.equal.factor, all.equal.formula, %
all.equal.language, all.equal.list, all.equal.numeric, all.equal.POSIXct, %
all.equal.raw, all.names, all.vars, as.array, as.array.default, as.call, %
as.character, as.character.condition, %

... snip ...

xtfrm.default, xtfrm.factor, xtfrm.numeric_version, xtfrm.POSIXct, xtfrm.POSIXlt, %
xtfrm.Surv %
}, %
keywordstyle={ [11]{\bf}} %
}
%
%

%------%
%
%%
\lstset %
{keywordstyle={ [2]\bf\color{blue}}
}%

```

2 Example of code coloring

Any keyword of some new R package “loaded in” by **require** or **library** which is on the **search** list item of this package afterwards when used in `\lstinline { }` or `\begin{lstlisting} \end{lstlisting}` or in some Sweave chunk is typeset in style `keywordstyle`. More specifically, with argument `keywordstyles` of functions **setToBeDefinedPkgs** or **lstsetLanguage** all packages may obtain their own style; in the preamble, for instance, package “**SweaveListingUtils**” is colored blue, and “**distr**” (to be attached just now) will be colored red. Also, comments are set in a different style (by default using color `Rcomment`). Of course, instead of colors, you may use any other markup, like different font shapes, fonts, font sizes or whatever comes into your mind. For this purpose, commands **setToBeDefinedPkgs** and **changeKeywordstyles** are helpful.

Note that in order to define these new keywords correctly, they must not be included into a `\begin{Schunk} ... \end{Schunk}` environment, so we use

```
<<Prepa, echo=FALSE, results=tex>>=
require(distr)
## preparation: load package distr and register its keywords
@
```

Example (note the different colorings):

```
<<exam1, eval=TRUE >>=
require(distr)
N <- Norm(mean = 2, sd = 1.3)
P <- Pois(lambda = 1.2)
Z <- 2*N + 3 + P
Z
p(Z)(0.4)
q(Z)(0.3)
@
```

which gives

```
> require(distr)
> N <- Norm(mean = 2, sd = 1.3)
> P <- Pois(lambda = 1.2)
> Z <- 2*N + 3 + P
> Z
```

Distribution Object of Class: AbscontDistribution

```
> p(Z)(0.4)
```

```
[1] 0.002415384
```

```
> q(Z)(0.3)
```

```
[1] 6.70507
```

Remark: `.Rd` keywords will be taken from file `Rdlistings.sty` in the `TeX` subfolder of this package, which is according to Duncan Murdoch’s “Parsing Rd Files” as of Nov. 4 2008.

3 Including Code Snippets from R Forge

When documenting code, which is not necessarily of the same package, and be it R code or `.Rd`-code, we provide helper functions to integrate code snippets from an url (by default, we use the svn server at R-forge in its most recent version). This can be useful to stay consistent with the current version of the code without having to update vignettes all the time. To this end, besides referencing by line numbers, [lstinputSourceFromRForge](#) also offers referencing by matching regular expressions.

For instance, to refer to some code of file `R/AllClasses.R` in package `"distr"`, we would use:

```
<<AllClass, results=tex, echo=FALSE>>=
lstinputSourceFromRForge("distr","R","AllClasses.R","distr",
                          "## Class: BinomParameter", "#-")
@

which returns
lines 180–189

## Class: BinomParameter
setClass("BinomParameter",
  representation = representation(size = "numeric", prob = "numeric"),
  prototype = prototype(size = 1, prob = 0.5, name =
    gettext("Parameter_of_a_Binomial_distribution")),
  contains = "Parameter"
)

#-
```

Note the referencing with regular expressions instead of line numbers, which helps if you later on add/delete (other) code in this file.

To refer to a whole .Rd file, use something like the following chunk:

```
<<BinomParam, results=tex, echo=FALSE>>=
lstinputSourceFromRForge("distr","man","BinomParameter-class.Rd","distr")
@

giving

\name{BinomParameter-class}
\docType{class}
\alias{BinomParameter-class}
\alias{initialize,BinomParameter-method}

\title{Class "BinomParameter"}
\description{The parameter of a binomial distribution, used by Binom-class}
\section{Objects from the Class}{
  Objects can be created by calls of the form
  \code{new("BinomParameter", prob, size)}.
  Usually an object of this class is not needed on its own, it is generated
  automatically when an object of the class Binom
  is instantiated.
}
\section{Slots}{
  \describe{
    \item{\code{prob}:}{Object of class \code{"numeric"}:
      the probability of a binomial distribution }
    \item{\code{size}:}{Object of class \code{"numeric"}:
      the size of a binomial distribution }
    \item{\code{name}:}{Object of class \code{"character"}:
      a name / comment for the parameters }
  }
}
\section{Extends}{
  Class \code{"Parameter"}, directly.
}
\section{Methods}{
```

```

\describe{
  \item{initialize}{\code{signature(.Object = "BinomParameter")}:
    initialize method }
  \item{prob}{\code{signature(object = "BinomParameter")}: returns the slot
    \code{prob} of the parameter of the distribution }
  \item{prob←}{\code{signature(object = "BinomParameter")}: modifies the slot
    \code{prob} of the parameter of the distribution }
  \item{size}{\code{signature(object = "BinomParameter")}: returns the slot
    \code{size} of the parameter of the distribution }
  \item{size←}{\code{signature(object = "BinomParameter")}: modifies the slot
    \code{size} of the parameter of the distribution }
}
}

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}

\seealso{
\code{\link{Binom-class}}
\code{\link{Parameter-class}}
}

\examples{
  W ← new("BinomParameter",prob=0.5,size=1)
  size(W) # size of this distribution is 1.
  size(W) ← 2 # size of this distribution is now 2.
}
\keyword{distribution}
\concept{parameter}
\concept{Binomial distribution}
\concept{S4 parameter class}

```

Note that corresponding examples are still typeset in R style; however, up to now this will only be done in the (static) `listings` style `Rstyle`, as defined in the preamble; keywords from attached packages will not be used. Reason for this: I do not yet know how to save a current “state of style” in a corresponding `listings` style.

References

- [1] Ruckdeschel P., Kohl M., Stabla T., and Camphausen F. S4 Classes for Distributions. *R-News*, **6**(2): 10–13. http://CRAN.R-project.org/doc/Rnews/Rnews_2006-2.pdf