xtable package in R

Lecture 30
Nov. 20, 2009

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xtable package: xtable
Create Export Tables

Description:

Function converting an R object to an 'xtable' object, which can then be printed as a LaTeX or HTML table.

Usage:

xtable(x, caption=NULL, label=NULL, align=NULL, digits=NULL, display=NULL, ...)

Arguments:

x: An R object of class found among 'methods(xtable)'. See below on how to write additional method functions for 'xtable'.

caption: Character vector of length 1 containing the table's caption or title. Set to 'NULL' to suppress the caption. Default value is 'NULL'.

label: Character vector of length 1 containing the LaTeX label or HTML anchor. Set to 'NULL' to suppress the label. Default value is 'NULL'.

align: Character vector of length equal to the number of columns of the resulting table indicating the alignment of the corresponding columns. Also, "|" may be used to produce vertical lines between columns in LaTeX tables, but these are effectively ignored when considering the required length of the supplied vector. If a character vector of length one is supplied, it is split as 'strsplit(align,"")[[1]]' before processing. Since the row names are printed in the first column, the length of 'align' is one greater than 'ncol(x)' if 'x' is a 'data.frame'. Use "l", "r", and "c" to denote left, right, and center alignment, respectively. Use "p(3cm)" etc for a LaTeX column of the specified width. For HTML output the "p" alignment is interpreted as "l", ignoring the width request. Default depends on the class of 'x'.

...
digits: Numeric vector of length equal to one (in which case it will be replicated as necessary) or to the number of columns of the resulting table *or* matrix of the same size as the resulting table indicating the number of digits to display in the corresponding columns. Since the row names are printed in the first column, the length of the vector ‘digits’ or the number of columns of the matrix ‘digits’ is one greater than ‘ncol(x)’ if ‘x’ is a ‘data.frame’. Default depends on class of ‘x’. If values of ‘digits’ are negative, the corresponding values of ‘x’ are displayed in scientific format with ‘abs(digits)’ digits.

display: Character vector of length equal to the number of columns of the resulting table indicating the format for the corresponding columns. Since the row names are printed in the first column, the length of ‘display’ is one greater than ‘ncol(x)’ if ‘x’ is a ‘data.frame’. These values are passed to the ‘formatC’ function. Use ‘”d”’ (for integers), ‘”f”’, ‘”e”’, ‘”E”’, ‘”g”’, ‘”Q”’, ‘”fg”’ (for reals), or ‘”n”’ (for strings). ‘”f”’ gives numbers in the usual ‘xxx.xxx’ format; ‘”e”’ and ‘”E”’ give ‘n.dddE+nn’ or ‘n.dddE+m’ (scientific format); ‘”g”’ and ‘”G”’ put ‘x[i]’ into scientific format only if it saves space to do so. ‘”fg”’ uses fixed format as ‘”f”’, but ‘digits’ as number of significant digits. Note that this can lead to quite long result strings. Default depends on the class of ‘x’.

...: Additional arguments. (Currently ignored.)

Details:

This function extracts tabular information from ‘x’ and returns an object of class ‘”xtable”’. The nature of the table generated depends on the class of ‘x’. For example, ‘aov’ objects produce ANOVA tables while ‘data.frame’ objects produce a table of the entire data.frame. One can optionally provide a caption (called a title in HTML) or label (called an anchor in HTML), as well as formatting specifications. Default values for ‘align’, ‘digits’, and ‘display’ are class dependent.

The available method functions for ‘xtable’ are given by ‘methods(xtable)’. Users can extend the list of available classes by writing methods for the generic function ‘xtable’. These methods functions should have ‘x’ as their first argument with additional arguments to specify ‘caption’, ‘label’, ‘align’, ‘digits’, and ‘display’. Optionally, other arguments may be present to specify how the object ‘x’ should be manipulated. All method functions should return an object whose class if given by ‘("xtable","data.frame")’. The resulting object can have attributes ‘caption’ and ‘label’, but must have attributes ‘align’, ‘digits’, and ‘display’. It is strongly recommended that you set these attributes through the provided replacement functions as they perform validity checks.

Value:

An object of class ‘”xtable”’ which inherits the ‘data.frame’ class and contains several additional attributes specifying the table formatting options.

Author(s):

David Dahl dahl@stat.tamu.edu with contributions and suggestions from many others (see source code).

See Also:

• very handy if you are producing results in R and writing them up in LaTeX
• can be used with different kinds of objects produced by R, including
  – matrices
  – regression output
• examples with data frame created from Davis dataset on course web page

```R
> Davis[1:5,]
sex weight height repwt repht
1 M  77  182  77  180
2 F  58  161  51  159
3 F  53  161  54  158
4 M  68  177  70  175
5 F  59  157  59  155

> xtDavis <- xtable(Davis[1:5,], row.names=F, align="rcrrrr",
caption='Example of xtable for matrix or data frame')
> xtDavis
% latex table generated in R 2.9.1 by xtable 1.5-4 package
% Fri Nov 20 13:31:00 2009
\begin{table}[ht]
\begin{center}
\begin{tabular}{rcrrrr}
\hline
& sex & weight & height & repwt & repht \\
\hline
1 & M &  77 &  182 &  77 &  180 \\
2 & F &  58 &  161 &  51 &  159 \\
3 & F &  53 &  161 &  54 &  158 \\
4 & M &  68 &  177 &  70 &  175 \\
5 & F &  59 &  157 &  59 &  155 \\
\hline
\end{tabular}
caption='Example of xtable for matrix or data frame'}
\end{center}
\end{table}
```
> lmout <- lm( weight ~ repwt + sex, data = Davis)
> summary(lmout)

Call:
  lm(formula = weight ~ repwt + sex, data = Davis)

Residuals:
   Min     1Q    Median     3Q    Max
-7.5920 -1.7913  -0.7577  0.6400 108.4106

Coefficients:
                               Estimate Std. Error t value Pr(>|t|)
(Intercept)                    3.47433    3.78632  0.918  0.3606
repwt                           0.96634    0.06507 14.850  <2e-16 ***
sexM                           -1.48263    1.79775  -0.825  0.4111

---
Signif. codes:  0 *** 0.001 ** 0.01 * 0.05 . 0.1  1

Residual standard error: 8.426 on 180 degrees of freedom
(17 observations deleted due to missingness)
Multiple R-squared:  0.6998,    Adjusted R-squared:  0.6964
F-statistic: 209.8 on 2 and 180 DF,  p-value: < 2.2e-16
> lmout.table <- xtable(lmout, caption='xtable for regression output')
> lmout.table

% latex table generated in R 2.9.1 by xtable 1.5-4 package
% Fri Nov 20 13:34:00 2009
\begin{table}[ht]
\begin{center}
\begin{tabular}{rrrrr}
\hline
& Estimate & Std. Error & t value & Pr($>|t|$) \\
\hline
(Intercept) & 3.4743 & 3.7863 & 0.92 & 0.3601 \\
repwt & 0.9663 & 0.0651 & 14.85 & 0.0000 \\
sexM & -1.4826 & 1.7977 & -0.82 & 0.4106 \\
\hline
\end{tabular}
\caption{xtable for regression output}
\end{center}
\end{table}

Table 2: xtable for regression output