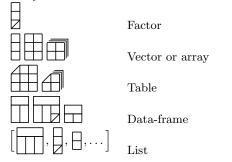
A Visual Guide to Split-Apply-Combine in R

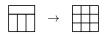
Legend

The symbols used in this document are as follows:



Reshaping

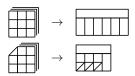
as.matrix Coerces a data-frame to a matrix.



as.table Coerces an array to a contingency table.



as.data.frame Coerces an array or contingency table to a data-frame.



xtabs Coerces a data-frame to a contingency table.



c Coerces an array or contingency table to a vector.



unlist Coerces a data-frame to a vector.



stack Concatenates the columns of a data-frame into a single column along with a factor. Non-vector columns are dropped.

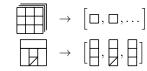


unstack Reverses the effects of stack.



Splitting

as.list Coerces a data-frame to a list of vectors.



split Divides a vector or data-frame into the groups defined by a factor.

unstack Splits a vector or the column of a data-frame into the groups defined by a factor.

Applying

Some of the following functions may return an array instead of a list depending on the output of f.

tapply Applies a function to each cell of a ragged array.

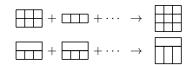
apply Applies a function to margins of an array.

$$\begin{array}{ccc}
& + \uparrow \searrow + f \rightarrow [f(\overrightarrow{\square}), f(\overrightarrow{\square}), \dots] \text{ or} \\
& \rightarrow [f(\overrightarrow{\square}), f(\overrightarrow{\square}), \dots] \text{ or} \\
& \rightarrow [f(\overrightarrow{\square}), f(\overrightarrow{\square}), \dots]
\end{array}$$

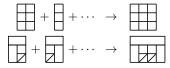
lapply Applies a function over a list or vector.

Combining

rbind Combines a sequence of vectors, arrays or data-frames by rows.



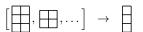
cbind Combines a sequence of vectors, arrays or data-frames by columns.



simplify2array Combines a list of arrays into a single array by adding more dimensions.



unlist Coerces a list of arrays to a vector.



as.data.frame Coerces a list of vectors to a data-frame.



stack Coerces a sequence of vectors into a single-column data-frame along with a factor.

$$\left[\begin{array}{ccc} & & & \\ & & \\ & & \end{array} \right] \rightarrow \begin{array}{ccc} & & \\ & & \\ & & \end{array}$$

unsplit Combines a sequence of vectors or data-frames into a single vector or data-frame by interleaving rows according to a factor.

$$\begin{bmatrix} \begin{bmatrix} 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \end{bmatrix}, \dots \end{bmatrix} + \begin{bmatrix} 1 \\ 1 \end{bmatrix} \rightarrow \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

merge Merges two data-frames by common columns.



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