

Data Structures: Exercises

1. Read data from various sources into data frames:
 - Directly from the keyboard.
 - Using the data editor `fix()`.
 - From a text file in which the data values are delimited by white space.
 - From an SPSS data set (in a `.sav` or `.por` file) or from some other source supported by the **foreign** package.
 - From an Excel spreadsheet.
2. If you're feeling ambitious, install the MySQL database server on your computer: visit <http://www.mysql.com> to download the software. Read Brian Ripley's *R News* article, "Using Databases in R", at http://cran.r-project.org/doc/Rnews/Rnews_2001-1.pdf, and place one or more data sets on your database server. Then experiment with accessing the data from R using the **RODBC** package (on CRAN) and the **dfdb.RODBC** package [available from R-Forge via `install.packages("dfdb.RODBC", repos="http://R-Forge.R-project.org")`].
3. Explore the properties of various kinds of objects:
 - Create a character vector, a numeric vector, a logical vector, a character matrix, a numeric matrix, a factor, a data frame, a list, and a function.
 - Apply each of the following functions to these objects: `length()`, `class()`, `mode()`, `typeof()`, and `attributes()`.
 - Look at the help files for each of these functions – e.g., `?length`.
 - What did you learn?
4. R has a number of “coercion” functions, prefixed with `as.`, and a number of “predicate” functions, prefixed with `is.:` for example, `as.matrix` and `is.matrix`.
 - Get a complete list of these functions via the commands `apropos("^as\\.")` and `apropos("^is\\.")`. *Note:* The quoted arguments to `apropos()` are “regular expressions.”
 - Using the objects created in the previous exercise, experiment with (for example) the coercion functions `as.matrix`, `as.vector`, and `as.character`, and with the predicates `is.vector` and `is.character`. What did you learn?