

22S:166 Fall 2006
Instructor: Cowles
Homework 4

See reading assignment under Web Resources on course web page.

Problems (due Fri. 9/22):

1. In R, use the `help.search` function to locate a package that contains a function to compute the skewness of a vector of numbers. What is the name of the function, and which package is it in?
2. Locate an R function that computes the five-number summary of a vector of numbers. What is the name of the function, and which package is it in?
3. Write an R function that does the following:
 - (a) Accepts one argument: a vector
 - (b) Checks whether the vector is numeric
 - (c) If not, displays the message "Vector must be numeric" and exits
 - (d) If yes, computes the skewness of the values (after removing any missing values)
 - i. if the absolute value of skewness is less than 1, returns a list containing two objects:
 - A. skewness in an object named "skewness"
 - B. a vector consisting of the mean and standard deviation in an object named "descstats"
 - ii. otherwise, returns a list containing two objects
 - A. skewness in an object named "skewness"
 - B. a vector consisting of the five-number summary in an object named "descstats"
4. Run your function in R three times, using the following vectors as arguments:
 - (a) `c("Arthur", "Mary", "Rover")`
 - (b) `rnorm(100)`
 - (c) `rexp(100, 5)`
5. (Work with a partner on this one.) Search the libraries installed on the Linux network to find one that does something of interest to you. Read the documentation to learn how to use at least one function in the library.

Turn in your homework on paper in class on Fri. 9/23. You don't have to use L^AT_EX this time. You may simply print out a text file. Include:

1. answers to questions 1 and 2
2. a printout of your function
3. the command lines and output from your three calls to your function
4. your R code and output for:
 - (a) loading the library
 - (b) accessing or creating any objects that you need to supply as arguments to the function of interest
 - (c) executing the function

The output from your own function ought to look something like the following (with different numeric values):

```
> mydesc( rnorm(100) )
$skewness
[1] 0.1931722

$descstats
[1] -0.03160733  0.94527957

> mydesc( rexp(100,5) )
$skewness
[1] 1.462030

$descstats
[1] 0.000019662 0.057816812 0.105732124 0.265288314 0.806777159
```