

Homework 1: FISH 553 Advanced R

Open a new script in R and put the following information at the top using comments:

```
# Name: First Last  
# Homework 1
```

Complete the tasks below and be sure to label each question with comments as before. When your script is complete, save it as LastName_Homework1.R, then clear your workspace (Workspace/Clear all) and run through your script again to make sure you don't have any 'object not found' errors. Then go to the course website on Canvas to submit your R script.

Question 1: obfuscated R (50 points)

The code below is fully functioning and includes an example of its usage. Rewrite the R code (start with the copy in "HW1 obfuscated.r") so that its purpose can be easily understood. Include comments, use meaningful variable names, add indenting, line spacing, etc.

```
O<-function(l, 0, ...){o<-par("usr"); O0<-o[1]+0[1]*diff(o[1:2]);  
o0<-o[3]+0[2]*diff(o[3:4]); text(x=O0, y=o0, l=l, ...)}  
plot(1, 1); O(l="(a)", O=c(.05, .95))
```

Question 2: central limit theorem (50 points)

2a) (20 points) Write a function CL.theorem() that takes four parameters: n, mean, sd, breaks. The function will draw n numbers from a random normal distribution with a mean of mean, and a standard deviation of sd. The function will then plot a histogram of the resulting values with the breaks specified by the breaks parameter. The function will also return the mean of the n randomly drawn numbers.

2b) (20 points) Now, open a pdf file for output to store the plots, and call the function 10 times with the same values for mean, sd, breaks, but with different values for n, as follows: n=5, 10, 20, 30, 50, 100, 500, 1000, 5000, 10000. Then close the pdf file. The result should be a single pdf file containing 10 plots.

2c) (10 points) Solve question 2b using the apply() command (i.e. open a pdf file, use the apply command, close the pdf file).