

Assignments – Computing Fundamentals

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Assignments:

0) To start any language people start by showing hello world examples, in R we have different ways of doing this. Store the string “hello world” into a variable and use the *cat*, *print* and the *variable to screen* methods to print out hello world, what are the differences between these three methods?

1a) Check if a variable called *unknown* is larger or equal to 0

1b) Check if a variable called *unknown* is between 0 and 10 (inclusive), if it is not throw a stop error.

2) Use a *for* loop AND a *while* loop and add up all the numbers from 1 to 1000 in a new variables called *forsum* and *whilesum*, make the computer check both answers are equal.

3) Generate a random number using the *runif* function between 1 and 10, store it in a variable, and create some code to check if the number in this variable is higher or lower then 5, use the *cat* function to write out the answer:

X is higher/lower then 5.

note: *X* should be replaced with the value of the number which was generated.

4) Use the *cat* function to print out a triangle of #, having 12 lines.

```
#  
##  
###  
####  
#####  
...  
#####
```

5a) Use *runif* and *rnorm* to generate two matrices containing 20 rows and 5 columns with random numbers. Save the matrices to variables with proper names and write them to different files.

5b) Create *histograms* for a selected columns, to show that it has the correct distribution

note: Use the help to get more information on: `?matrix`, `?write.table`, etc

6) Use character escaping and print the following two sentences to a file:

I say: "Escaping stuff is 'great', but \ and / might be a nuisance."

You are correct, sir!

Additional Assignments:

Your candle fades, as you walk into darkness.

Suddenly you realize you are on your own.

AA1) Remember that each computational task (+, -, *, /) requires time. Revisit assignment 2 and find a smarter (more efficient) way to do this. This is actually a question people use in elementary school to test children's ability for mathematics... :)

AA2) Use the 'bugs' / 'features' of the R type system to turn: 3, 4, 5 into 1, 2, 3.

hint: ?as.factor

AA3) Copy and modify the triangle printing code from assignment 3 to print a 'diamond shape' into a file.