Study Guide for Module 2

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Study Guide for Module 2 - Fish-ues (pronounced Fish-yews - get it?)

This is an overview of the material we covered in module 2, and should inform the ideas, techniques and concepts that will be covered by Exam 2.

Data Visualization and plotting in R

1. Be able to create simple scatterplots (2 variables) and histograms (1 variable) for example data sets.

2. Understand and be able to replicate the base R syntax for these two plots:

   a. e.g. `plot(y = data$y_var, x = data$x_var, col = "purple", ylab = "This is the variable on the yaxis", xlab = "This is the variable on the xaxis")`

3. Be able to draw insight and conclusions from different data visualizations, and be able to map data types to different visualization types

4. Be able to recognize errors and critique poorly designed plots

Functions

1.Recall the basic pattern of how functions operate:

```
new_func = function(arg1, arg2){
  arg1+arg2 = thing_3
  return(thing_3)
}
```

2. Be able to create simple functions that do things (e.g. compute means, summaries, print things, etc).
3. Be able to critique and debug code for functions if I supplied code to you contained problems.

Iteration

1. Be able to describe in your own words why iteration tools are important in R
2. Be familiar and be able to explain each component of how for loops operate

```
for(i in 1:10){
  print(i)
}
```

```
## [1] 1
## [1] 2
## [1] 3
## [1] 4
## [1] 5
## [1] 6
## [1] 7
## [1] 8
## [1] 9
## [1] 10
```

3. Be able to critique and debug a for loop.

4. Be able to describe the utility of linking functions and for loops - if I gave you an example of this type of functionality, be able to de-construct it!

Simulations and the normal distribution

1. Be able to draw a normal distributions with large and small standard deviations and label the means.

2. Be able to relate simulated draws from a normal distribution to real-world scenarios (e.g. what happens when simulations draw data that don't make any sense?)

3. Be able to generally describe the utility of simulations. Why are they useful when might we use them?

4. What does the `rnorm()` function do?

Aquaculture, Disease and Module Content

1. Recall and be able to discuss the fundamental problems associated with this module.

a. Aquaculture techniques and challenges

b. Environmental Conditions in tanks

c. Linking environmental conditions to immune function