Assignment 2: Coding Basics

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OVERVIEW

This exercise accompanies the lessons in Environmental Data Analytics on coding basics.

Directions

1. Rename this file `<FirstLast>_A02_CodingBasics.Rmd` (replacing `<FirstLast>` with your first and last name).
2. Change "Student Name" on line 3 (above) with your name.
3. Work through the steps, **creating code and output** that fulfill each instruction.
4. Be sure to **answer the questions** in this assignment document.
5. When you have completed the assignment, **Knit** the text and code into a single PDF file.
6. After Knitting, submit the completed exercise (PDF file) to Sakai.

Basics Day 1

1. Generate a sequence of numbers from one to 100, increasing by fours. Assign this sequence a name.

2. Compute the mean and median of this sequence.

3. Ask R to determine whether the mean is greater than the median.

4. Insert comments in your code to describe what you are doing.

```
#1.

#I am making the sequence using the format (from,to,by)
seq(1,100,4)
```

```
##  [1]  1  5  9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93 97
```
```
#[1]  1  5  9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93 97

#I am assigning the sequence to the value "x"
x <- seq(1,100,4)


#2.

#Here I am finding the mean and median of the sequence by finding the mean and median of x. Which I hav
mean(x)
```

```
## [1] 49
```
```
#[1] 49

median(x)
```

```
## [1] 49
```

```
#[1] 49

#Here I am assigning the mean and median to the words mean and median.
mean <- mean(x)
median <- median(x)

#3.

#I was not sure what exactly to put here so I simply asked isTRUE(mean>median), which came back FALSE.

isTRUE(mean>median)
```

[1] FALSE
```
#[1] FALSE
```

Basics Day 2

5. Create a series of vectors, each with four components, consisting of (a) names of students, (b) test scores out of a total 100 points, and (c) whether or not they have passed the test (TRUE or FALSE) with a passing grade of 50.

6. Label each vector with a comment on what type of vector it is.

7. Combine each of the vectors into a data frame. Assign the data frame an informative name.

8. Label the columns of your data frame with informative titles.

```
vector1 <- c("John", "Logan", "Mary", "Bob") #character vector
vector2 <- c(67,85,27,45) #number vector
vector3 <- c(TRUE,TRUE,FALSE,FALSE) #logical vector

dataframe1 <- data.frame(vector1,vector2,vector3)
TestResults <- dataframe1

names(TestResults) <- c("Names","Grades","Passed")

colnames(TestResults)
```

[1] "Names" "Grades" "Passed"

9. QUESTION: How is this data frame different from a matrix?

   Answer: This data frame is different becasue there are a variety of modes. A matrix can only have one mode. This data frame has three different modes of data.

10. Create a function with an if/else statement. Your function should take a **vector** of test scores and print (not return) whether a given test score is a passing grade of 50 or above (TRUE or FALSE). You will need to choose either the `if` and `else` statements or the `ifelse` statement.

11. Apply your function to the vector with test scores that you created in number 5.

```
#10
PassOrFail <- function(g) {
  test <- ifelse(g >= 50,TRUE,FALSE)
  print(test)
}
```

```
#11
PassOrFail(TestResults$Grades)
```

```
## [1]  TRUE  TRUE FALSE FALSE
```

```
# [1]  TRUE  TRUE FALSE FALSE
```

12. QUESTION: Which option of `if` and `else` vs. `ifelse` worked? Why?

    Answer: ifelse worked. It worked because if and else options are for individual variables but cannot run an entire vector at once time.