Assignment 2: Coding Basics

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OVERVIEW

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

Directions

1. Change "Student Name" on line 3 (above) with your name.
2. Work through the steps, **creating code and output** that fulfill each instruction.
3. Be sure to **answer the questions** in this assignment document.
4. When you have completed the assignment, **Knit** the text and code into a single PDF file.
5. After Knitting, submit the completed exercise (PDF file) to the dropbox in Sakai. Add your first and last name into the file name (e.g., "FirstLast_A02_CodingBasics.Rmd") prior to submission.

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.
seq1 <- seq(1, 100, 4)
#Creating object "seq1" containing a sequence from 1-100.
#2.
mean1 <- mean(seq1)
med1 <- median(seq1)
#Computing mean and median. Creating objects to use in Q3.

#3.
mean1 > med1
```

```
## [1] FALSE
```
```
#Determining if mean is greater than median (returns 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.

```
name<- c("John","Suzy","Adam","Mary") #Character Vector
score<- c(75,90,49,30) #Numerical Vector
pass<- c(T, T, F, F) #Logical Vector

testdata <- data.frame(name, score, pass)

colnames(testdata) <- c("Student Name", "Test Score", "Pass/Fail")

testdata
```

```
##    Student Name Test Score Pass/Fail
## 1          John         75      TRUE
## 2          Suzy         90      TRUE
## 3          Adam         49     FALSE
## 4          Mary         30     FALSE
```

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

   Answer: This data contains many different data types, whereas all the data in a matrix would need to be of the same data type.

10. Create a function with an if/else statement. Your function should determine whether a 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. Hint: Use `print`, not `return`. The name of your function should be informative.

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

```
passorfail <- function(x) {
ifelse(x >= 50, "Pass", "Fail")
}

passorfail(score)
```

```
## [1] "Pass" "Pass" "Fail" "Fail"
```

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

   Answer: 'ifelse" since we are working with a vector with a length greater than 1.