# JordanMullens_A02_CodingBasics.Rmd

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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. #creating the sequence from 1 to 100, increasing by four
seq1 <-seq(1,100,4)

#2. #calculating the mean of the sequence
mean(seq1)
```

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

```
#3. #calculating the median of the sequence
median(seq1)
```

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

## 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.

```
#creating vectors
#Character Vector
name <-c('Julia', 'Jerry', 'James', 'Jordan')
#Numerical Vector
score <-c('86', '90', '27', '99')
#Logic Vector
pass <-ifelse(score>=50,TRUE,FALSE)

class_scores <- data.frame(name=name, score=score, pass=pass)
```

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

   Answer: Matricies contain a single class of data. This data frame contains multiple kinds.

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.

```
#created function called PassTest
#Studentscores is the input into the function
#reviewscores is the variable
#If and else cannot be used here because vector length is greater than 1

PassTest <- function(studentscores) {
  reviewscores <- ifelse(studentscores>50,TRUE,FALSE)
  print(reviewscores)

}
```

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

```
PassTest(score)
```

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

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

    Answer: ifelse works. You can only put a vector with a length of one through an 'if' and 'else' function. We can't run these vectors through 'if' and 'else' because our vectors have a length of four.