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.
seq4 <- seq(1,100,4) #assigning a sequence of 1-100 increasing by 4s to the variable seq 4
seq4 #displaying the sequence of 1-100 by 4s
```

```
##  [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
```

```
#2.
mean(seq4) #computing the mean of the sequence of 4s. (49)
```

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

```
median(seq4) #computng the median of the sequence of 4s. (49)
```

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

```
#3.
mean(seq4)>median(seq4) #inequality testing whether the mean of the sequence of 4s is greater than the
```

```
## [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.

```
name <- c('carl', 'sam', 'emma', 'chloe', 'ella') #character vector
scores <- c(67,44,89,38,73) #numeric vector
passed <- c('TRUE','FALSE','TRUE','FALSE','TRUE') #logical vector
class.grades.df <- data.frame("Student Name"=name, "Test Score" = scores, "Passed (50 or higher)"=passe
class.grades.df
```

```
##   Student.Name Test.Score Passed..50.or.higher.
## 1         carl         67                  TRUE
## 2          sam         44                 FALSE
## 3         emma         89                  TRUE
## 4        chloe         38                 FALSE
## 5         ella         73                  TRUE
```

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

   Answer: this data frame is different from a matrix because it has more than one class 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.

```
Passing <- ifelse(scores>50,"TRUE","FALSE")
print(Passing)
```

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

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

    Answer: ifelse worked instead of if and else because scores is a numeric vector and you would need a logical vector for if and else.