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, Part 1

1. Generate a sequence of numbers from one to 30, increasing by threes. 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.
seq (1,30,3)
```

```
##  [1]  1  4  7 10 13 16 19 22 25 28
```

```
thirty_sequence <-seq(1,30,3)
# I used the seq function to determine the numbers of the sequence and I named it as "thirty_sequence".

#2.
mean(1,4,7,10,13,16,19,22,25,28)
```

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

```
median(1,4,7,10,13,16,19,22,25,28)
```

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

```
# i copied and pasted what R gave me in terms of the numbers and used the mean and median function to d
#3.
1>1
```

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

```
# I used what R gave me for mean and median, and I asked R if mean is bigger than the median. R gave me
```

Basics, Part 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.

```
# 5
names_vector <- c("student1","student2", "student3", "student 4")
# student names vector; strings
test_score_vector <- c(100, 80,45,50)
# test score vector; numerical
pass_vextor<- c(TRUE, TRUE,FALSE,TRUE)
# pass or not vector; logial items

# 7
students_performance <- data.frame(names_vector, test_score_vector, pass_vextor)
students_performance
```

```
##   names_vector test_score_vector pass_vextor
## 1     student1               100        TRUE
## 2     student2                80        TRUE
## 3     student3                45       FALSE
## 4    student 4                50        TRUE
```

```
# 8
create_df <- data.frame("Student Names"=names_vector,"Test Score"=test_score_vector, "Passed"= pass_vex
create_df
```

```
##   Student.Names Test.Score Passed
## 1      student1        100   TRUE
## 2      student2         80   TRUE
## 3      student3         45  FALSE
## 4     student 4         50   TRUE
```

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

   Answer:matrix can only contain a single class of data, while this data frame can consist of many different classes 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.

```
create_df$Test.Score
```

```
## [1] 100  80  45  50
```

```
Function_1 <-function(Test_score){
  ifelse (Test_score>50,TRUE,FALSE)}

Function_1(create_df$Test.Score)
```

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

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

    Answer: Becasue "if" and "else" only works on single value.