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.
sequence_by_four <- seq(1,100,4)
sequence_by_four
```

```
##  [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.
result_mean <- mean(sequence_by_four)
result_mean
```

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

```
result_median <-median(sequence_by_four)
result_median
```

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

```
#3.
if(result_mean > result_median){ #comparing two values
  print (result_mean) #print mean if mean is greater
}else {
  print (result_median) #print median elsewise
}
```

```
## [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.

```
student_names <- c("Jin","RM", "Jimin","Jungkook") #character vector
student_names
```

```
## [1] "Jin"      "RM"       "Jimin"    "Jungkook"
```

```
test_score <- c(85,95,70,40) #numeric vector
test_score
```

```
## [1] 85 95 70 40
```

```
if_passed <- c(TRUE,TRUE,TRUE,FALSE) #logical vector
if_passed
```

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

```
test_result <-data.frame(student_names,test_score, if_passed)
names(test_result) <- c("Name","Score","Passed"); View(test_result)
```

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

   Answer: matrix can only have the same data type while data frame can have differnt types 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.

```
ifelse(test_score >= 50,TRUE,FALSE)
```

[1] TRUE TRUE TRUE FALSE

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

> Answer: ifelse worked because vector has more than one length and ifelse creates a "loop" which allows it to go over all the test scores in the vector.