ArielO'CallaghanAssignment 2: Coding Basics

Ariel

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.

```r
#1.
seq(1,100,4)  #run sequence functions to create a function of 1-100 sequencing by 4. to, from, by
```

```
##  [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
```

```r
sequence_100 <- seq(1, 100, 4) #naming the function to get value in environment tab and utilize step 2
```

```r
#2.
mean(sequence_100) #run mean of sequence function
```

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

```r
median(sequence_100) #run median of sequence function
```

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

```r
#3.
49 > 49 #mean is greater then median
```

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

```r
49 !=49 #mean is different then median
```

```
## [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.

```r
Names <- c("Ariel", "Josh", "Mike", "Erin") #Vector type Character
Testscores <- c(85, 74, 92, 45) # Vector type number
Passedexam <- c(TRUE, TRUE, TRUE, FALSE) #vector type Logical data type True if >50
data.frame(Names, Testscores, Passedexam)
```

```
##   Names Testscores Passedexam
## 1 Ariel         85       TRUE
## 2  Josh         74       TRUE
## 3  Mike         92       TRUE
## 4  Erin         45      FALSE
```

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

   Answer: Vectors are one dimensional structures that contain elements of the same type. Matrices are two dimensional structures that contain elements of the same type. This dataframe is more general then a matrix as different columns can have different nodes or datatypes. For example this dtaframe contains character, number and localical data and therefore cannot be a matix.

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.

```r
ifelse(Testscores>50, TRUE, FALSE)
```

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

```r
ifelse(Testscores<50, TRUE, FALSE)
```

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

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

   Answer:The following statement shows an output for when the condition is TRUE and when it's false. The ifelse statement shows all test scores in the sequence for each individual depending on test scores.