Assignment 2: Coding Basics

Ying Liu

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.
seq1<-seq(1,100,4)
#2.
mean_seq1<-mean(seq1,trim=0,na.rm=FALSE)
mean_seq1
```

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

```
median_seq1<-median(seq1,na.rm=FALSE)
median_seq1
```

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

```
#3.print 'ture' if mean is greater than median, 'false' if mean is less than median
print(mean_seq1>median_seq1)
```

```
## [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
#5.create vectors
name<-c("Ariana","Beyonce","Cardi","Drake")
score<-c(80,90,40,60)
degree<-c(TRUE,TRUE,FALSE,TRUE)
#6.data type
print(typeof(name))#character
```

```
## [1] "character"
```

```r
print(typeof(score))#double
```

```
## [1] "double"
```

```r
print(typeof(degree))#logical
```

```
## [1] "logical"
```

```r
#7.create dataframe called 'classof2022'
classof2022<-data.frame(name,score,degree)
classof2022
```

```
##      name score degree
## 1  Ariana    80   TRUE
## 2 Beyonce    90   TRUE
## 3   Cardi    40  FALSE
## 4   Drake    60   TRUE
```

```r
#8.already assigned informative name to vectors in step5
```

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

   Answer:both store data with rows and columns. The main difference, is that matrices can only contain a single class of data, while data frames 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.

```
grade<-function(x){
  if (x>50){print(TRUE)}
  else {print(FALSE)}}
#grade<-function(x){ifelse(x>50,TRUE,FALSE)}tried by failed
```

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

```
#use lapply to apply function to all the data in vector one by one
isgreaterthan<-lapply(score, grade)
```

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

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

Answer:if and else worked. if and else means carry out an action under certain conditions. ifelse is only an logical test which can only return yes or no