

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) #I want a sequence of numbers from 1 to 30, increasing by three.
```

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

```
seq_3 <- seq(1, 30, 3) #I created the object "seq_3" that takes the value of the sequence of numbers from  
#2.  
mean(seq_3) #Mean of seq_3=14.5
```

```
## [1] 14.5
```

```
median(seq_3) #Median of seq_3=14.5
```

```
## [1] 14.5
```

```
median(seq(1, 30, 3)) #I realized this also works for the mean and the median
```

```
## [1] 14.5
```

```
#3.
```

```
mean(seq_3) > median(seq_3) #I asked RStudio if the mean of the sequence is greater than the median of
```

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

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 <- c("Aaron Alba", "Brian Blas", "Courtney Cris", "Deborah Dodd") #the names, a character vector
```

```
test_scores <- c(95, 43, 80, 59) #the test scores, a numerical vector
```

```
passed <- test_scores >= 50 #the threshold for "passing" is having a test score greater or equal to 50, #7.
```

```
Test_Outcomes <- data.frame("Name"=names, "Test_Score"=test_scores, "Passed"=passed)
```

```
print(Test_Outcomes)
```

```
##           Name Test_Score Passed
## 1   Aaron Alba         95   TRUE
## 2   Brian Blas         43  FALSE
## 3 Courtney Cris         80   TRUE
## 4 Deborah Dodd         59   TRUE
```

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

Answer: This data frame contains different types of data, and a matrix can only contain one.

Basics, Part 3

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.

```
#10.
Approved_or_Failed <- function(x){
  grade <- ifelse(x>=50,TRUE,FALSE)
  print(grade)
}
#11.
Approved_or_Failed(test_scores)
```

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

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

Answer: the “if” and “else” statements did not work because there were multiple values in the vector “test_scores”.