

# Assignment 2: Coding Basics

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## OVERVIEW

This exercise accompanies the lessons in Environmental Data Analytics on coding basics.

## Directions

1. Change “Student Name” on line 3 (above) with your name.
2. Work through the steps, **creating code and output** that fulfill each instruction.
3. Be sure to **answer the questions** in this assignment document.
4. When you have completed the assignment, **Knit** the text and code into a single PDF file.
5. After Knitting, submit the completed exercise (PDF file) to the dropbox in Sakai. Add your first and last name into the file name (e.g., “FirstLast\_A02\_CodingBasics.Rmd”) prior to submission.

## 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_1_100 <- seq(1,100,4) #sequence of numbers from 1-100 counting by fours
#2.
mean_sequence <- mean(sequence_1_100) #average of sequence
median_sequence <- median(sequence_1_100) #median of sequence
#3.
mean_sequence > median_sequence

## [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.

```
name_of_students<-c("Kaitlyn", "Jeff", "Hannah", "Issiah") #character
test_scores<- c(90, 95, 86, 70) #numeric
passed_test<-c(TRUE, TRUE, TRUE, TRUE) #logical
```

```
data_frame_test_data<- data.frame(name_of_students,test_scores,passed_test) #I think I labeled my column
```

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

Answer: This data frame is different than a matrix because it can store different vector types all in one, while a matrix is only one data type.

10. Create a function with an if/else statement. Your function should determine whether a 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. Hint: Use `print`, not `return`. The name of your function should be informative.

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

```
#function_passed_test<- function(grade) {if (grade>49){print (TRUE)} else {print (FALSE)}}
#function_passed_test(test_scores$)
function_passed_test<- function(grade) {ifelse (grade>49, TRUE, FALSE)}
data_frame_test_data$function_passed_test<-
(function_passed_test(data_frame_test_data$test_scores))
```

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

Answer: `ifelse` worked much better because it is meant for vectors, `if` and `else` could work if I used another function with it like `apply()`.