

# 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)
```

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

```
three_sequence<-seq(1,30,3)  
#created sequence beginning from 1, ending in 30, increasing by threes and assigned this sequence a name
```

```
#2.  
mean(three_sequence)
```

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

```
#calculated mean
```

```
median(three_sequence)
```

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

```
#calculated median
```

```
#3.
```

```
mean(three_sequence)>median(three_sequence)
```

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

```
##created a conditional statement asking R if mean is greater than median
```

## 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.

```
test_score<- c(99,66,33,69)
```

```
#test scores uses different numbers as the mode
```

```
student_name<-c("R", "Duke", "Nicholas", "EDA")
```

```
#student_name uses characters as the mode
```

```
test_pass_fail<-c(TRUE,TRUE,FALSE,TRUE)
```

```
#test_pass_fail uses characters as the mode
```

```
class_pass<-data.frame("student name"=student_name, "test score"=test_score, "test results"=test_pass_f
```

```
class_pass
```

```
##  student.name test.score test.results
## 1           R          99          TRUE
## 2         Duke          66          TRUE
## 3   Nicholas          33          FALSE
## 4          EDA          69          TRUE
```

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

Answer: This data frame is different from a matrix. Because of it includes different modes while matrices does not have different modes.

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.

```
check_pass_fail <- function(scores) {  
  for(score in scores) {  
    if(score >= 50) {  
      print(TRUE)  
    } else {  
      print(FALSE)  
    }  
  }  
}  
  
check_pass_fail(test_score)
```

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

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

Answer: “if” and “else” works for me. This function will iterate through each score in the `test_score` vector, printing TRUE if the score is 50 or above, and FALSE otherwise. This will provide a clear indication of pass/fail status for each student’s score.