

Assignment 2: Coding Basics

Yosia Theo Napitupulu

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. Sequence of numbers from one to 100, increasing by fours. Assign this sequence a name
increasebyfour_sequence <- seq(1, 100, 4) #from, to, by
```

```
#2. Mean and median of this sequence
mean_sequence <- mean(increasebyfour_sequence)
median_sequence <- median(increasebyfour_sequence)
mean_sequence
```

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

```
median_sequence
```

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

```
#3. Ask R to determine whether the mean is greater than the median.
mean_sequence > median_sequence
```

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

#4. I create a variable name "increasebyfour_sequence" and put the sequence into it, calculate the mean

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.

```
students_name <- c("AMIR", "BADU", "CHARLES", "DODO") # character
test_scores <- c(78, 48, 89, 86) # numeric
test_result <- c(TRUE, FALSE, TRUE, TRUE) # logical

#creating a new data frame
students_test_df <- data.frame("name"=students_name, "scores"=test_scores, "result"=test_result)
students_test_df
```

```
##      name scores result
## 1   AMIR     78   TRUE
## 2   BADU     48  FALSE
## 3 CHARLES     89   TRUE
## 4   DODO     86   TRUE
```

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

Answer: It is differ from matrix since it only has one mode and one data dimension, while data frame has two dimensional data with more than one mode 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.
11. Apply your function to the vector with test scores that you created in number 5.

```
passing_grade <- function(x){
  ifelse (x>50, "TRUE", "FALSE")
}
passing_grade(test_scores)
```

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

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

Answer: If and else could be used but it would need a longer code for each element of the vector, however, ifelse is more simple which will allows us to do it directly in a line