

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.  
sequence4 <- function(x){seq(1,100,4)}
```

```
#2.  
mean(sequence4())
```

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

```
median(sequence4())
```

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

```
#3.  
ifelse(mean(sequence4())>median(sequence4()),true,FALSE)
```

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

#I have asked r to tell me simply if the mean of sequence4 is greater than the median of sequence4.

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.

```
Names <- c("john","adam","sarah","Emily")
#created a list of random names

scores <- c(95,82,75,60)
#created a list of random scores

Passed <- c("true", "false", "false", "true")
#assigned passing grade based on above list

create_df <- data.frame("names"=Names,"scores"= scores, "passed"=Passed)
create_df
```

```
##  names scores passed
## 1  john     95   true
## 2  adam     82  false
## 3 sarah     75  false
## 4 Emily     60   true
```

#created data frame

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

Answer: A data frame is different from a matrix as it contains numerical values as well as character values. A matrix just contains values of all the same 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.

```
Cond_names <- ifelse(scores>50,"true","false")
#created an ifelse statement to determine if a score is passing or not

Test_Results <- data.frame("names"=Names,"scores"= scores, "passed"= Cond_names)
#made a new Data Frame with the new function in place of the old list of whether or not the student pas

Test_Results
```

```
##  names scores passed
## 1  john    95   true
## 2  adam    82   true
## 3  sarah    75   true
## 4  Emily    60   true
```

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

Answer: `print(if(scores > 50) {TRUE} else {FALSE})` #`Ifelse` worked better as it could handle more than one argument. The `if...else` setup only returned the first row in the Dataframe.