

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.  
x<-seq(1, 100, 4)
```

```
#2.  
median<-median(x)  
mean<-mean(x)  
  
mean
```

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

```
median
```

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

```
#3.  
  
ifelse(median>mean, mean, median)
```

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

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.

```
Student<-c("Alex", "Blake", "Cam", "Derek") #character vector
scores<-c(25, 50, 75,100) #numeric vector
Pass<-c(FALSE, TRUE, TRUE, TRUE) #logical vector
```

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.

```
combined<-data.frame(Student, scores, Pass)
names(combined)<-c("Student Name","Test Score","Did they pass?")
```

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

Answer: This data frame has numbers and characters, whereas a matrix contains all the same type of data, for example just numeric data.

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.

```
test<-ifelse(scores>49, TRUE, FALSE)
test

## [1] FALSE TRUE TRUE TRUE
trial<- function(x){ifelse(scores>49, TRUE, FALSE)}
trial(names)
```

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

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

Answer: `ifelse` worked because we are checking one component of a vector whereas `else` and `if` work to check the first component of a vector, which is not what we are trying to do here.