

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.
```

```
seq1 <- seq(1, 100, 4)
```

```
#2.
```

```
mean(seq1)
```

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

```
median(seq1)
```

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

```
#3.
```

```
mean(seq1) > median(seq1)
```

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

#4. The object seq1 is a sequence of numbers between 1 and 100 that increase by fours. In part 2 I calc

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.

#5.

```
names <- c("Anna, Bob, Josie, Maria")
scores <- c(45,95,75,55)
pass_status <- c(FALSE,TRUE,TRUE,TRUE)
```

#6.

```
class(names) #character
```

```
## [1] "character"
```

```
class(scores) #numeric
```

```
## [1] "numeric"
```

```
class(pass_status) #logical
```

```
## [1] "logical"
```

#7.

```
student_info <- cbind.data.frame(names, scores, pass_status)
```

#8.

```
student_info <- data.frame("Name"=names, "Score"=scores, "Passed"=pass_status)
```

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

Answer: A matrix can only have one class of data, while a data frame can have multiple

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.

```
#10.
```

```
pass_function <- function(x) {  
  ifelse(x > 50, "Pass", "Fail")  
}
```

```
#11.
```

```
pass_function(scores)
```

```
## [1] "Fail" "Pass" "Pass" "Pass"
```

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

Answer: 'ifelse' worked because unlike 'if' and 'else' it calculates all of the values in a vector.