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.

```r
#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"
```

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

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

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

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

```r
#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.