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 last name into the file name (e.g., "Salk_A02_CodingBasics.Rmd") prior to submission.

The completed exercise is due on Tuesday, January 21 at 1:00 pm.

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.

```r
#1.
funfunfun <- seq(1, 100, 4) #seq from to by, named

#2.
funmean <- mean(funfunfun) #named mean to call it up
funmedian <- median(funfunfun) #same

#3.
funmean > funmedian #test
```

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

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
names <- c("alex", "bea", "claire", "dan") # character/string vector
scores <- c(100,80,60,40) #numeric
pass <- c(TRUE,TRUE,TRUE,FALSE) #logical
dframe <-data.frame(names, scores, pass)
names(dframe)<-c("names", "scores", "pass"); View(dframe)
```

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

   Answer: It's not a matrix...it's more like a csv...it doesn't have the same requirements as matrices would have for dimensions/characters, and you can't do linear algebra on it.

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.

```r
if (pass ==TRUE) {print ("Next Level")} else {print("Complete Failure")}
```

```
## Warning in if (pass == TRUE) {: the condition has length > 1 and only the first
## element will be used
```

```
## [1] "Next Level"
```

```r
ifelse(pass,"Next Level","Complete Failure")
```

```
## [1] "Next Level"      "Next Level"      "Next Level"      "Complete Failure"
```

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

    Answer:ifelse worked. Apparently, only ifelse works for logical vectors. But, I also tried using "scores" and >< values, but that came back with the same condition has length > 1 error.