

# IreneChang\_A02\_CodingBasics.Rmd

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## OVERVIEW

This exercise accompanies the lessons in Environmental Data Analytics on coding basics.

## Directions

1. Rename this file <FirstLast>\_A02\_CodingBasics.Rmd (replacing <FirstLast> with your first and last name).
2. Change “Student Name” on line 3 (above) with your name.
3. Work through the steps, **creating code and output** that fulfill each instruction.
4. Be sure to **answer the questions** in this assignment document.
5. When you have completed the assignment, **Knit** the text and code into a single PDF file.
6. After Knitting, submit the completed exercise (PDF file) to Sakai.

## 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) #from, to, by and also naming the sequence "seq1"
```

```
#2.  
mean(seq1) #finding the mean of the sequence that I named
```

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

```
median(seq1) #finding the median of the sequence that I named
```

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

```
#3.  
mean(seq1)>median(seq1) #this is showing if the mean of the sequence is greater than the median, so use
```

```
## [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.

```
name <- c('Ellen', 'Dan', 'Jane', 'Irene') #character
scores <- c(99, 48, 82, 95) #numeric
pass <- ifelse(scores>=50, T, F) #logical

class_scores <- data.frame (name=name, scores=scores, pass=pass)

class_scores
```

```
##      name scores  pass
## 1 Ellen      99  TRUE
## 2   Dan      48 FALSE
## 3   Jane      82  TRUE
## 4 Irene      95  TRUE
```

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

Answer: A matrix can only contain one class, whereas a data frame can have many different classes of data.

10. Create a function with an if/else statement. Your function should take a **vector** of test scores and print (not return) whether a given 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.
11. Apply your function to the vector with test scores that you created in number 5.

```
PassExam <- function(scores) {
  reviewscores <- ifelse(scores>=50, T, F)
  print(reviewscores)
}
PassExam(scores)
```

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

```
# PassExam <- function(scores) {
#   if(scores < 50) {
#     FALSE
#   }
#   else {
#     TRUE
#   }
# }

#PassExam(scores)
```

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

Answer: `'ifelse'` works but `'if'` and `'else'` does not work because it can't run through a vector of a length greater than 1. The error that I get is "Error in if (scores < 50) { : the condition has length > 1". Since the vector that we are using has multiple elements, the `'if'` and `'else'` function does not work because it is only expecting one.