

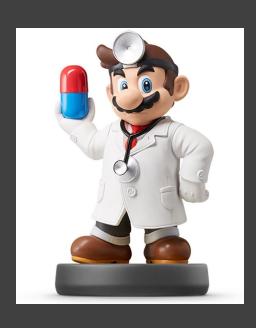
Statistical Programming Assignment



Instructions

- Download Analysis 3 Zip Folder
- Unzip Folder
- Open Analysis 3 Rmd File
- Knit to HTML
- Read Introduction
- Three Part Assignment
 - Using Climate Data from Delhi
 - Found on Kaggle
 - Split Into Train and Test
 - Daily Data Sorted by Date
 - Train: 2013-2016
 - Test: 2017

Statistical Programming Assignment



- Play Close Attention
 - Notice: DO NOT CHANGE
 - Notice: COMPLETE
 - Notice: EVAL=F
- Coding Restrictions
 - You Must Use If-Else When Asked or Lose Points
 - You Must Use Loops When Asked or Lose Points

Part 1 Cleaning Data



- Process of Programming
 - Create Code for a Task
 - Check Code Works
 - Create a Function of the Process to Generalize
- Question 1
 - Taking Working Code and Create a Function
 - Apply Function to Train
 - Apply Function to Test
 - Use Copy and Paste with Some Minor Changes

Part 1 Cleaning Data



Question 2

- Change Month from Numbers to Names
- Create Function to convert a Vector of Months in Number to a Vector of Months in Name
- Alternative for Variable Creation

Data\$NEWVAR = CONTENT

Question 3

- Look at Use of Function
- Rewrite Over Day Variable with Day Names
- Data Organized by Date and Starts with a Tuesday
- Do this For Train and Test

Part 1 Cleaning Data



- Question 4
 - Convert Celsius to Fahrenheit
 - Google Conversion Formula
 - Function that Changes Vector of Celsius Temperatures to Vector of Fahrenheit Temperatures

Part 2 Summarizing Data



- Question 1
 - Use a Double Loop
 - Building a 12x7 Table
 - Start with NA's
 - Imputing the Mean Temperature for Each Month and Day
 - Run This and Think:

rownames(MEAN.TEMP.TRAIN)[4]

colnames(MEAN.TEMP.TRAIN)[6]

- Question 2
 - Create Function that Computes Range
 - Do Not Use print() in Function

Part 2 Summarizing Data



- Question 3
 - Apply() Function to Matrix
 - To Rows

apply(Matrix, 1, Function)

To Columns

apply(Matrix, 2, Function)

- Question 4
 - Loop Through All Observations
 - Start with NULL to Create Vector of Humidity
 - Explain Results from t-Test in the Context of the Problem

Part 3 Time Series Variables



- Question 1
 - Create Percent Change

```
Pressure\ Percent\ Change\ Today = \frac{Pressure\ Today - Pressure\ Yesterday}{Pressure\ Yesterday}
```

- Use a Loop To Create
- Look Back at Original Lag Function from Lecture
- Question 2
 - Create Moving Average

$$Pressure 3-Day \ Average = \frac{Pressure \ Yesterday + Pressure \ Today + Pressure \ Tomorrow}{3}$$

 Similar Process to First Question Closing



Disperse and Make Reasonable Decisions