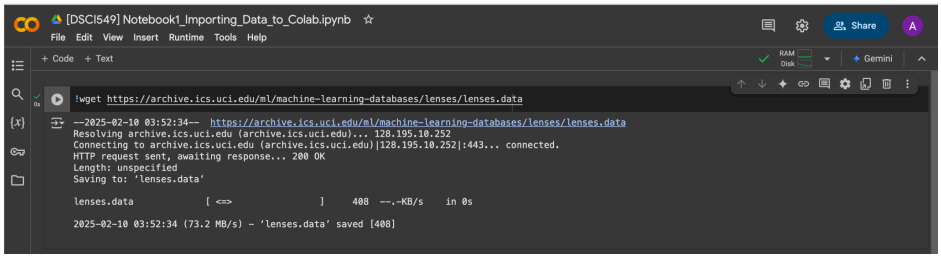
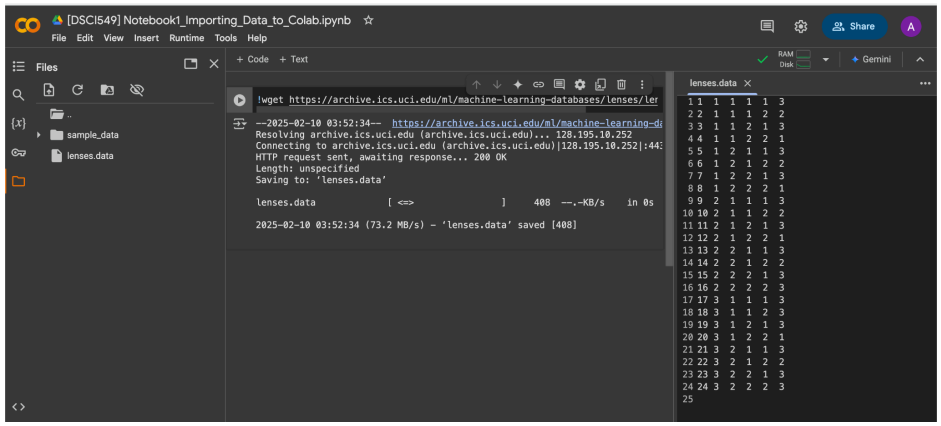
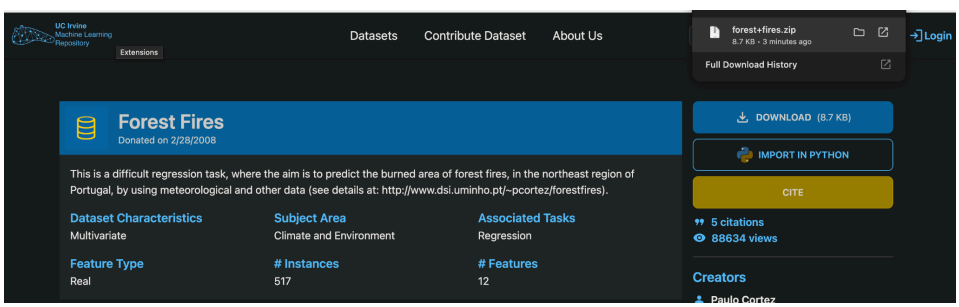
1. Notebook1_Importing_Data_to_Colab

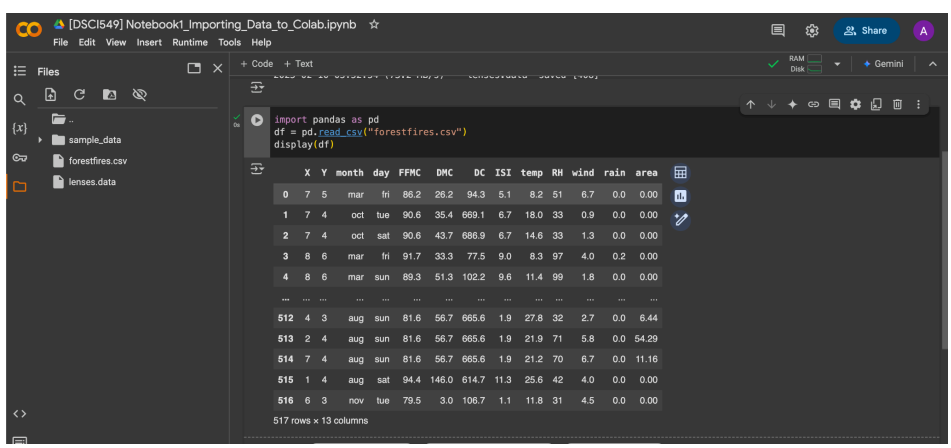
a.





b.





2. Notebook2_Running_Functions

a.

Notebook2_Running_Functions.ipynb Save in GitHub to keep changes

File Edit View Insert Runtime Tools Help

+ Code + Text Copy to Drive

The following cell contains a function that takes a text file and inserts line breaks after each period, exclamation point, or question mark.

You have to run the cell in order for this function to be activated into your notebook.

We provide three sample text files in the Caesar_Cypher folder. You can copy and paste the content when you are prompted to input text in the following cells.

```
[1] def linebreak(text):
        string=""
        for ch in text:
            string+=ch
            if ch == "." or ch == "!" or ch == "?":
                string+="\n"
        return string
```

This function is executed when you run the cell below:

```
inputtext=input('Please Enter the Text You Want to Use in the Function: ')
textLineBreak=linebreak(inputtext)

print("======Text with Line Breaks=========")
print(textLineBreak)
```

```
Please Enter the Text You Want to Use in the Function: We are only as strong as we are united, as weak as we are divided. Dark and difficult times lie ahead
======Text with Line Breaks=========
We are only as strong as we are united, as weak as we are divided.
 Dark and difficult times lie ahead.
 Soon we must all face the choice between what is right and what is easy.
 But remember this: you have friends here.
 You are not alone.
```

8m 33s completed at 8:30 PM

b.

Notebook2_Running_Functions.ipynb Save in GitHub to keep changes

File Edit View Insert Runtime Tools Help

+ Code + Text Copy to Drive

This is a good opportunity to mention a few programming concepts for those interested:

- A ***function*** is a named sequence of statements that performs a computation. For example, "cipher" is a function.
- An ***argument*** is a value or variable that is passed as input to a function. For example, "text" is an argument of the function cipher.
- A ***value*** is one of the basic units of data, like a number or string, that a program manipulates. In the cipher function above, "91" and "96" are values.
- A ***variable*** is a name that refers to a value. In the cipher function above, "outputNum" is a variable.

Composing Functions in a Notebook

Values that are generated by running earlier cells can be available in subsequent cells if they are stored in a variable.

As an example, we are going to take the text with line breaks that we generated above, and encypher it.

The cell below uses the variable "textLineBreak" which stored the text with line breaks that was generated when we run the cell above.

When you run the cell below, you will get an encrypted text with the shift key you provide.

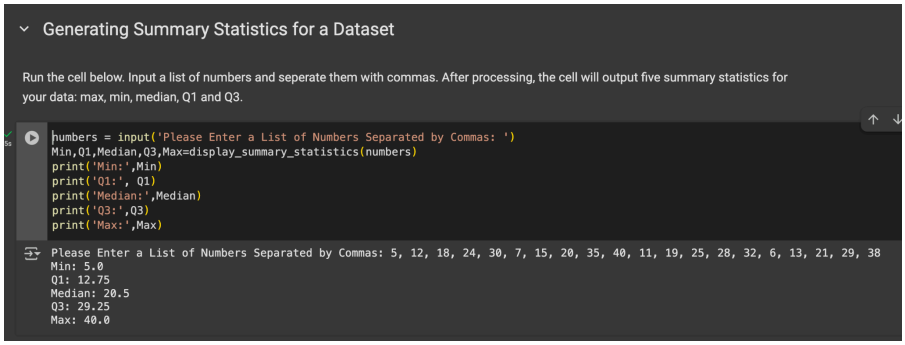
```
key = int(input('Please Enter Shift Key: '))
textCiphered=cipher(textLineBreak,key)
print(textCiphered)
```

```
Please Enter Shift Key: 5
Bj fwj tsqd fx xywtsl fx bj fwj zsnyji, fx bjfp fx bj fwj inaniji.
 Ifwp fsi inkknhzqy ynrjx qnj fmjfi.
 Xtts bj rzxy fqq kfhj ymj hmtnhj gjybjjs bmfy nx wnlmy fsi bmfy nx jfxd.
 Gzy wjrjrgjw ymnx: dtz mfaj kwnjsix mjwj.
 Dtz fwj sty fqtsj.
```

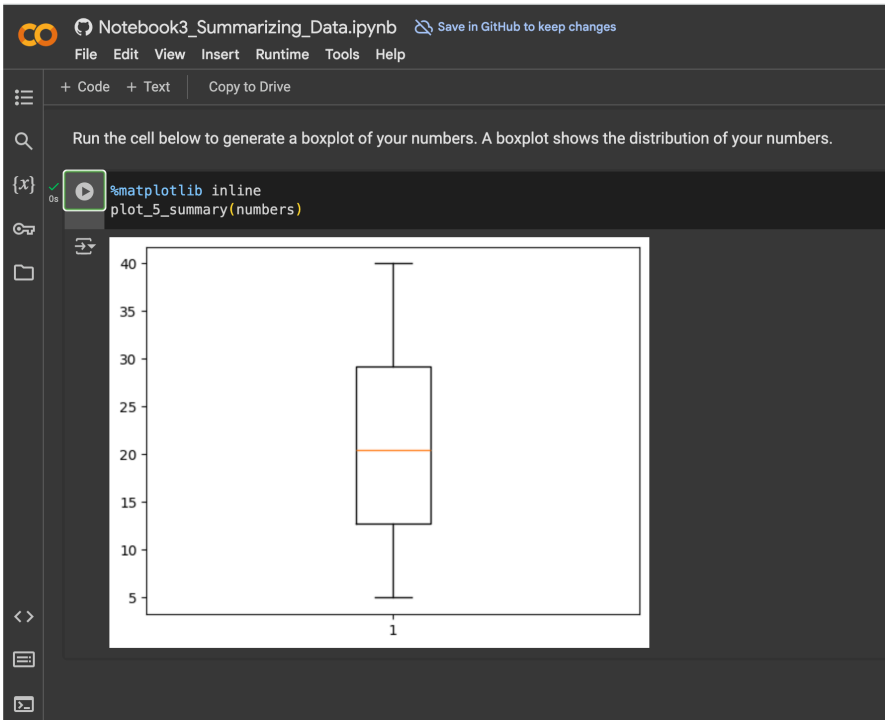
56s completed at 8:40 PM

3. Notebook3_Summarizing_Data

a + b. Q1 and Q3 represent the 25th and 75th percentile, respectively. This means that 25% of the data on the list is less than 12.75 and 75% of the data is less than 29.25.



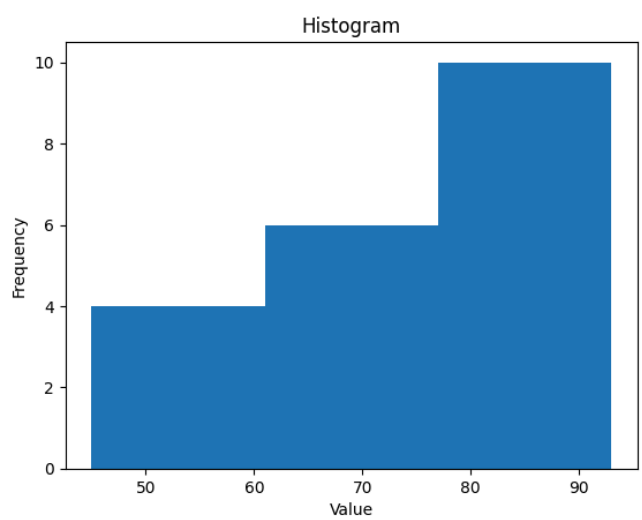
c. Boxplots visualize the five number summary statistics. The ends of the boxes (whiskers) represent the minimum and maximum values. The bottom and the top of the box represent Q1 and Q3, respectively. The orange line in the middle of the box represents the median.

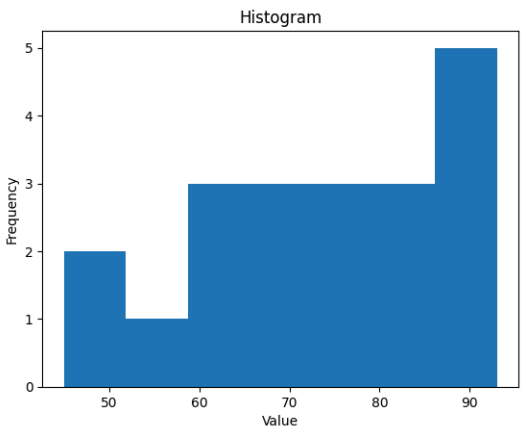


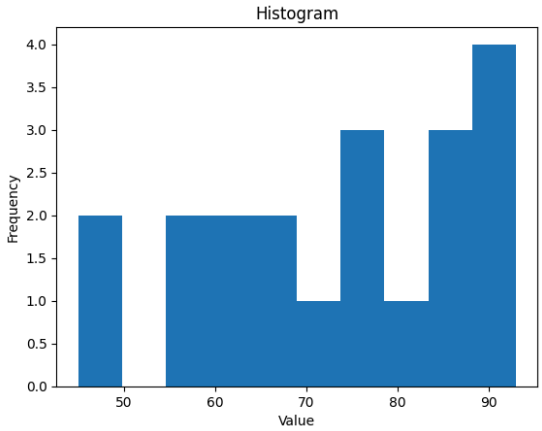
4. Notebook4_Visualizing_Data

a.

b. After rerunning the cell with 3, 7, and 10 bins, 7 bins seems to be the most optimal because the bins are also small enough to group similar scores together, but not so small that the chart becomes hard to read.




Histogram
Frequency
Value
0
1
2
3
4
5
50
60
70
80
90


Histogram
Frequency
Value
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
50
60
70
80
90