Data science on python

TASK - 2

It involves manipulation of data, adding library files, load csv file using : Pandas Dataframe

take sample insertion:-

```
In [6]: import pandas as pd
        df = pd.read csv('C:\\Users\\ACER\\Documents\\student1.csv')
        print(df.to string())
                   names english telugu
                                           hindi
           s.no
           1.0
                             34.0
                                     34.0
                                            45.0
                   james
            2.0
                  amelia
                             45.0
                                            35.0
                                     37.0
            3.0 tanisha
                             56.0
                                     50.0
                                            37.0
                                            56.0
            4.0
                   janay
                             23.0
                                     23.0
            NaN
                     NaN
                              NaN
                                      NaN
                                             NaN
            NaN
                     NaN
                              NaN
                                             NaN
                                      NaN
```

create using basic operations like:

A)filtering data based on conditions..

B)handling missing values..

C)calculating statistics..

```
In [8]: import pandas as pd
    df = pd.read_csv('C:\\Users\\ACER\\Desktop\\financial.csv')
    print(df)
```

	segment		country	product Di	scount Band	\
0	Government		Canada	Carretera	None	
1	Government		Germany	Carretera	None	
2	Midmarket		France	Carretera	None	
3	Midmarket		Germany	Carretera	None	
4	Midmarket		Mexico	Carretera	None	
• •	•••		• • •	•••	• • •	
695	Small Business		France	Amarilla	High	
696	Small Business		Mexico	Amarilla	High	
697	Government		Mexico	Montana	High	
698	Government		Canada	Paseo	High	
699	Channel Partners	United States	of America	VTT	High	
	Units Sold Manu	facturing Price	Sale Price	Gross Sale	·s \	
0	1618.5	\$3.00	\$20.00	\$32,370.0	0	
1	1321.0	\$3.00	\$20.00	\$26,420.0	0	
2	2178.0	\$3.00	\$15.00	\$32,670.0	0	
3	888.0	\$3.00	\$15.00	\$13,320.0	0	
4	2470.0	\$3.00	\$15.00	\$37,050.0	0	
	•••	• • •			• •	
695	2475.0	\$260.00	\$300.00	\$7,42,500.0	0	
696	546.0	\$260.00	\$300.00	\$1,63,800.0	0	
697	1368.0	\$5.00	\$7.00	\$9,576.0	0	
698	723.0	\$10.00	\$7.00	\$5,061.0	0	
699	1806.0	\$250.00	\$12.00	\$21,672.0	0	
	Discounts	Sales	COGS	5 Profit	. Date	١
0	\$-	\$32,370.00	\$16,185.00			\
1	\$- \$-	\$26,420.00	\$13,210.00			
2	\$- \$-	\$32,670.00	\$21,780.00			
3	\$- \$-	\$13,320.00	\$8,880.00	-		
4	\$- \$-	\$37,050.00	\$24,700.00	•		
••	Ψ-	\$57,050.00	\$24,700.00	. \$12,550.00		
695	\$1,11,375.00	\$6,31,125.00	\$6,18,750.00			
696	\$24,570.00	\$1,39,230.00	\$1,36,500.00			
697	\$1,436.40	\$8,139.60	\$6,840.00			
698	\$759.15	\$4,301.85	\$3,615.00			
699	\$3,250.80	\$18,421.20	\$5,418.00			
	• •	•		• •		
	Month Number Mo	nth Name Year				

1	January	2014
6	June	2014
6	June	2014
6	June	2014
3	March	2014
10	October	2014
2	February	2014
4	April	2014
5	May	2014
	6 6 6 3 10 2	6 June 6 June 6 June 3 March 10 October 2 February 4 April

[700 rows x 16 columns]

A) filtering data based on conditions

```
In [ ]: #filtering values
```

```
In [10]: df.filter(["segment", "country"])
```

Out[10]:

	segment	country
0	Government	Canada
1	Government	Germany
2	Midmarket	France
3	Midmarket	Germany
4	Midmarket	Mexico
695	Small Business	France
696	Small Business	Mexico
697	Government	Mexico
698	Government	Canada
699	Channel Partners	United States of America

700 rows × 2 columns

In []: #subset column name

Out[11]:

	segment	Manufacturing Price	Month Number	Month Name
0	Government	\$3.00	1	January
1	Government	\$3.00	1	January
2	Midmarket	\$3.00	6	June
3	Midmarket	\$3.00	6	June
4	Midmarket	\$3.00	6	June
695	Small Business	\$260.00	3	March
696	Small Business	\$260.00	10	October
697	Government	\$5.00	2	February
698	Government	\$10.00	4	April
699	Channel Partners	\$250.00	5	May

700 rows × 4 columns

In []: #using operators based on date

```
In [16]: df['Date'] = pd.to_datetime(df['Date'])
    newdf = (df['Date'] > '01-01-2014') & (df['Date'] <= '01-05-2014')
    newdf = df.loc[newdf]
    print(newdf)</pre>
```

6 16 17 32 33 683 695 697 698 699	segme Midmark Governme Midmark Enterpri Channel Partne Midmark Small Busine Governme Governme Channel Partne	et nt et se rs et ss nt	country Germany Canada Mexico France Germany France France Mexico Canada of America	product Disconding Paseo Paseo Velo Velo Velo Amarilla Montana Paseo VTT	None None None None None High High High High	\
	Units Sold Ma	nufacturing Price	Sale Price	Gross Sales	\	
6	921.0	s5.00	\$15.00	\$13,815.00	\	
16	292.0	\$10.00	\$20.00	\$5,840.00		
17	974.0	\$10.00	\$15.00	\$14,610.00		
32	1804.0	\$120.00	\$125.00	\$2,25,500.00		
33	2161.0	\$120.00	\$12.00	\$25,932.00		
		\$220.00		Ψ23,332.00	_	
683	2826.0	\$120.00	\$15.00	\$42,390.00		
695	2475.0	\$260.00	\$300.00	\$7,42,500.00		
697	1368.0	\$5.00	\$7.00	\$9,576.00		
698	723.0	\$10.00	\$7.00	\$5,061.00		
699	1806.0	\$250.00	\$12.00	\$21,672.00		
	Discounts	Sales	COGS	S Profit	Date	\
6	\$-	\$13,815.00	\$9,210.00	\$4,605.00	2014-01-03	
16	\$-	\$5,840.00	\$2,920.00	\$2,920.00	2014-01-02	
17	\$-	\$14,610.00	\$9,740.00	•	2014-01-02	
32	\$-	\$2,25,500.00	\$2,16,480.00		2014-01-02	
33	\$-	\$25,932.00	\$6,483.00	\$19,449.00	2014-01-03	
• •		•••			•••	
683	\$6,358.50	\$36,031.50	\$28,260.00	-	2014-01-05	
695	\$1,11,375.00	\$6,31,125.00	\$6,18,750.00	•	2014-01-03	
697	\$1,436.40	\$8,139.60	\$6,840.00		2014-01-02	
698	\$759.15	\$4,301.85	\$3,615.00		2014-01-04	
699	\$3,250.80	\$18,421.20	\$5,418.00	\$13,003.20	2014-01-05	
	Month Number	Month Name Year				
6	3	March 2014				
J	J	1101 C11 2014				

16	2	February	2014
17	2	February	2014
32	2	February	2014
33	3	March	2014
• •	• • •		
683	5	May	2014
695	3	March	2014
697	2	February	2014
698	4	April	2014
699	5	May	2014

[140 rows x 16 columns]

In []: #using operator based on time

```
In [20]: Date1 = df["Date"] >= "2014-01-03"
Date2 = df["Date"] <= "2014-01-05"
New_df = df.loc[Date1 & Date2]
print(New_df)</pre>
```

6 33 39 46 47 682 683 695 698	segm Midmar Channel Partn Channel Partn Channel Partn Enterpr Channel Partn Midmar Small Busin Governm Channel Partn	eket hers hers hers hers hise hers hers hers hers hers hers		Germany Mexico France France Canada	product Montana Velo VTT Amarilla Amarilla Velo Velo Amarilla Paseo VTT	Disco	ount	Band None None None None High High High High	\
000	Chamiler Fai Ch	iers onitied states	01	Aller Ica	VII			IIIgII	
	Units Sold M	Nanufacturing Price	!	Sale Price	Gross S	Sales	\		
6	921.0	\$5.00		\$15.00	\$13,81	15.00			
33	2161.0	\$120.00)	\$12.00	\$25,93	32.00			
39	2838.0	\$250.00)	\$12.00	\$34,05	6.00			
46	1953.0	\$260.00)	\$12.00	\$23,43	36.00			
47	4219.5	\$260.00)	\$125.00	\$5,27,43	37.50			
• •	• • •		•		•	• • •			
682	500.0	\$120.00		\$12.00	\$6,00				
683	2826.0	\$120.00		\$15.00	\$42,39				
695	2475.0	\$260.00		\$300.00	\$7,42,50				
698	723.0	\$10.00		\$7.00	\$5,06				
699	1806.0	\$250.00)	\$12.00	\$21,67	72.00			
	Discounts	. Sales		COGS	5 Pro	ofit		Date	\
6	\$-	\$13,815.00		\$9,210.00	\$4,605	5.00	2014	1-01-03	
33	\$-	\$25,932.00		\$6,483.00	\$19,449	00.6	2014	1-01-03	
39	\$-	\$34,056.00		\$8,514.00	\$25,542	2.00	2014	1-01-04	
46	\$-	\$23,436.00		\$5,859.00	\$17,577	7.00	2014	1-01-04	
47	\$-	\$5,27,437.50	\$	5,06,340.00	\$21,097	7.50	2014	1-01-04	
••									
682	\$900.00			\$1,500.00	-			1-01-03	
683	\$6,358.50		_	\$28,260.00				1-01-05	
695	\$1,11,375.00		\$	6,18,750.00				1-01-03	
698	\$759.15			\$3,615.00				1-01-04	
699	\$3,250.80	\$18,421.20		\$5,418.00	\$13,003	3.20	2014	1-01-05	
	Month Number	Month Name Year							
6	3	March 2014							

33	3	March	2014
39	4	April	2014
46	4	April	2014
47	4	April	2014
• •	• • •		
682	3	March	2014
683	5	May	2014
695	3	March	2014
698	4	April	2014
699	5	May	2014

[105 rows x 16 columns]

In []: #using operator based on index

```
In [21]: print("\n Original Dataframe \n", df)
    df_1 = df.filter(items=[46], axis=0)
    print("\n Display only index value \n", df_1)
    df_2 = df.filter(items=[695, 698], axis=0)
    print("\n Display only 695 and 698 index value \n", df_2)
```

Segment	Ori	ginal Datafra	ame					
Government Germany Carretera None		se	egment		country	product D	iscount Band	\
Midmarket Germany Carretera None	0	Govern	nment		Canada	Carretera	None	
Midmarket Mexico Carretera None	1	Govern	nment		Germany	Carretera	None	
4 Midmarket Mexico Carretera None 695 Small Business France Amarilla High 696 Small Business Mexico Amarilla High 697 Government Mexico Montana High 698 Government Canada Paseo High 699 Channel Partners United States of America VTT High 699 Lostia Manufacturing Price Sale Price Gross Sales VIII High 690 1618.5 \$3.00 \$20.00 \$32,370.00 1 1321.0 \$3.00 \$15.00 \$32,670.00 2 20.426.420.00 2 2178.0 \$3.00 \$15.00 \$32,670.00 3 388.0 \$3.00 \$15.00 \$37,4550.00 4 2470.0 \$3.00 \$15.00 \$37,42,500.00 0 695 2475.0 \$260.00 \$300.00 \$7,42,500.00 0 697 1368.0 \$5.00 \$7.00 \$9,576.00 699 1806.0 \$250.	2	Midma	arket		France	Carretera	None	
	3	Midma	arket		Germany	Carretera	None	
Small Business	4	Midma	arket		Mexico	Carretera	None	
696 Small Business Mexico Mexico Montana Amarilla High 697 Government Government Canada Canada Paseo High 699 Channel Partners United States of America VTT High 0 Linits Sold Manufacturing Price Sale Price Gross Sales 1 1321.0 \$3.00 \$20.00 \$32,370.00 1 1321.0 \$3.00 \$20.00 \$32,370.00 2 2178.0 \$3.00 \$15.00 \$32,670.00 3 888.0 \$3.00 \$15.00 \$37,050.00 4 2470.0 \$3.00 \$15.00 \$37,050.00 - 695 2475.0 \$260.00 \$300.00 \$7,42,500.00 696 546.0 \$260.00 \$300.00 \$7,42,500.00 697 1368.0 \$5.00 \$7.00 \$9,576.00 698 723.0 \$10.00 \$7.00 \$2,661.00 699 1806.0 \$250.00 \$16,185.00 \$16,185.00 2014-01-01 1					• • •	• • •	• • •	
697 Government Mexico Canada Canada Paseo Montana High High High High 699 Channel Partners United States of America VTT High High High 0 Channel Partners United States of America VTT High High High High 0 1618.5 \$3.00 \$20.00 \$32,370.00 \$32,370.00 1 1321.0 \$3.00 \$20.00 \$26,420.00 2 2178.0 \$3.00 \$15.00 \$32,670.00 3 888.0 \$3.00 \$15.00 \$37,050.00 4 2470.0 \$3.00 \$15.00 \$37,050.00 4 2470.0 \$3.00 \$15.00 \$37,050.00 4 2475.0 \$260.00 \$300.00 \$7,42,500.00 696 546.0 \$260.00 \$300.00 \$1,63,800.00 697 1368.0 \$5.00 \$7.00 \$9,576.00 698 723.0 \$10.00 \$7.00 \$5,061.00 699 1806.0 \$250.00 \$13,210.00	695	Small Busi	ness		France	Amarilla	High	
Government Canada Paseo High High Channel Partners United States of America VTT High High Units Sold Manufacturing Price Sale Price Gross Sales \	696	Small Busi	ness		Mexico	Amarilla	High	
Units Sold Manufacturing Price Sale Price Gross Sales \ 0 1618.5 \$3.00 \$20.00 \$32,370.00 \ 1 1321.0 \$3.00 \$20.00 \$26,420.00 \ 2 2178.0 \$3.00 \$15.00 \$33,000 \$20.00 \ 3 888.0 \$3.00 \$15.00 \$33,000 \$22,670.00 \ 3 888.0 \$3.00 \$15.00 \$33,000 \$13,320.00 \ 4 2470.0 \$3.00 \$15.00 \$37,050.00 \ \ 695 2475.0 \$260.00 \$300.00 \$7,42,500.00 \ 696 546.0 \$260.00 \$300.00 \$1,63,800.00 \ 697 1368.0 \$5.00 \$7.00 \$9,576.00 \ 698 723.0 \$10.00 \$7.00 \$5,061.00 \ 699 1806.0 \$250.00 \$12.00 \$21,672.00 \ Discounts Sales COGS Profit Date \ 0 \$-\$32,370.00 \$16,185.00 \$13,210.00 2014-01-01 \ 1 \$-\$26,420.00 \$13,210.00 \$13,210.00 2014-01-06 \ 3 \$-\$33,670.00 \$21,780.00 \$10,890.00 2014-01-06 \ 4 \$-\$337,050.00 \$24,700.00 \$12,350.00 2014-01-06 \ 4 \$-\$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 \ \ \ \	697	Govern	nment		Mexico	Montana	High	
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0 1618.5 \$3.00 \$20.00 \$32,370.00 1 1321.0 \$3.00 \$20.00 \$26,420.00 2 2178.0 \$3.00 \$15.00 \$32,670.00 3 888.0 \$3.00 \$15.00 \$13,320.00 4 2470.0 \$3.00 \$15.00 \$37,050.00 	699	Channel Part	ners	United States	of America	VTT		
0 1618.5 \$3.00 \$20.00 \$32,370.00 1 1321.0 \$3.00 \$20.00 \$26,420.00 2 2178.0 \$3.00 \$15.00 \$32,670.00 3 888.0 \$3.00 \$15.00 \$13,320.00 4 2470.0 \$3.00 \$15.00 \$37,050.00 								
1 1321.0 \$3.00 \$20.00 \$26,420.00 2 2178.0 \$3.00 \$15.00 \$32,670.00 3 888.0 \$3.00 \$15.00 \$33,300.00 4 2470.0 \$3.00 \$15.00 \$37,050.00 695 2475.0 \$260.00 \$300.00 \$7,42,500.00 696 546.0 \$260.00 \$300.00 \$1,63,800.00 697 1368.0 \$5.00 \$7.00 \$9,576.00 698 723.0 \$10.00 \$7.00 \$5,061.00 699 1806.0 \$250.00 \$12.00 \$21,672.00 Discounts Sales COGS Profit Date \ 0 \$- \$32,370.00 \$16,185.00 \$16,185.00 2014-01-01 1 \$- \$26,420.00 \$13,210.00 \$21,672.00 Discounts \$- \$32,670.00 \$21,780.00 \$10,890.00 2014-01-06 3 \$- \$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$- \$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-06 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04		Units Sold	Manuf	acturing Price	Sale Price	Gross Sale	s \	
2 2178.0 \$3.00 \$15.00 \$32,670.00 3 888.0 \$3.00 \$15.00 \$13,320.00 4 2470.0 \$3.00 \$15.00 \$37,050.00 	0	1618.5		\$3.00	\$20.00	\$32,370.0	0	
3 888.0 \$3.00 \$15.00 \$13,320.00 4 2470.0 \$3.00 \$15.00 \$37,050.00 695 2475.0 \$260.00 \$300.00 \$7,42,500.00 696 546.0 \$260.00 \$300.00 \$1,63,800.00 697 1368.0 \$5.00 \$7.00 \$9,576.00 698 723.0 \$10.00 \$7.00 \$5,061.00 699 1806.0 \$250.00 \$12.00 \$21,672.00 Discounts Sales COGS Profit Date 0 \$- \$32,370.00 \$16,185.00 \$16,185.00 2014-01-01 1 \$- \$26,420.00 \$13,210.00 \$13,210.00 2014-01-01 2 \$- \$32,670.00 \$21,780.00 \$10,890.00 2014-01-06 3 \$- \$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$- \$37,050.00 \$24,700.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00	1	1321.0		\$3.00	\$20.00	\$26,420.0	0	
4 2470.0 \$3.00 \$15.00 \$37,050.00	2	2178.0		\$3.00	\$15.00	\$32,670.0	0	
	3	888.0		\$3.00	\$15.00	\$13,320.0	0	
695 2475.0 \$260.00 \$300.00 \$7,42,500.00 696 546.0 \$260.00 \$300.00 \$1,63,800.00 697 1368.0 \$5.00 \$7.00 \$9,576.00 698 723.0 \$10.00 \$7.00 \$5,061.00 699 1806.0 \$250.00 \$112.00 \$21,672.00 699 699 699 699 699 699 699 699 699 6	4	2470.0		\$3.00	\$15.00	\$37,050.0	0	
696 546.0 \$260.00 \$300.00 \$1,63,800.00 697 1368.0 \$5.00 \$7.00 \$9,576.00 698 723.0 \$10.00 \$7.00 \$5,061.00 699 1806.0 \$250.00 \$12.00 \$21,672.00 698 699 699 699 699 699 699 699 699 699				• • •			• •	
697 1368.0 \$5.00 \$7.00 \$9,576.00 698 723.0 \$10.00 \$7.00 \$5,061.00 699 1806.0 \$250.00 \$12.00 \$21,672.00 \$21,85	695	2475.0		\$260.00	\$300.00	\$7,42,500.0	0	
698 723.0 \$10.00 \$7.00 \$5,061.00 699 1806.0 \$250.00 \$12.00 \$21,672.00 Discounts Sales COGS Profit Date 0 \$- \$32,370.00 \$16,185.00 \$16,185.00 2014-01-01 1 \$- \$26,420.00 \$13,210.00 \$13,210.00 2014-01-01 2 \$- \$32,670.00 \$21,780.00 \$10,890.00 2014-01-06 3 \$- \$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$- \$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04	696	546.0		\$260.00	\$300.00	\$1,63,800.0	0	
Discounts Sales COGS Profit Date \ 0 \$- \$32,370.00 \$16,185.00 \$16,185.00 2014-01-01 1 \$- \$26,420.00 \$13,210.00 \$13,210.00 2014-01-01 2 \$- \$32,670.00 \$21,780.00 \$10,890.00 2014-01-06 3 \$- \$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$- \$37,050.00 \$24,700.00 \$12,350.00 2014-01-06	697	1368.0		\$5.00	\$7.00	\$9,576.0	0	
Discounts Sales COGS Profit Date \ 0 \$-\$32,370.00 \$16,185.00 \$16,185.00 2014-01-01 1 \$-\$26,420.00 \$13,210.00 \$13,210.00 2014-01-01 2 \$-\$32,670.00 \$21,780.00 \$10,890.00 2014-01-06 3 \$-\$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$-\$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04	698	723.0		\$10.00	\$7.00	\$5,061.0	0	
0 \$- \$32,370.00 \$16,185.00 \$16,185.00 2014-01-01 1 \$- \$26,420.00 \$13,210.00 \$13,210.00 2014-01-01 2 \$- \$32,670.00 \$21,780.00 \$10,890.00 2014-01-06 3 \$- \$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$- \$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04	699	1806.0		\$250.00	\$12.00	\$21,672.0	0	
0 \$- \$32,370.00 \$16,185.00 \$16,185.00 2014-01-01 1 \$- \$26,420.00 \$13,210.00 \$13,210.00 2014-01-01 2 \$- \$32,670.00 \$21,780.00 \$10,890.00 2014-01-06 3 \$- \$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$- \$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04								
1 \$- \$26,420.00 \$13,210.00 \$13,210.00 2014-01-01 2 \$- \$32,670.00 \$21,780.00 \$10,890.00 2014-01-06 3 \$- \$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$- \$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04		Discount	S	Sales	COGS	5 Profit	Date	\
2 \$- \$32,670.00 \$21,780.00 \$10,890.00 2014-01-06 3 \$- \$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$- \$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04	0	\$-		\$32,370.00	\$16,185.00	9 \$16,185.00	2014-01-01	
3 \$- \$13,320.00 \$8,880.00 \$4,440.00 2014-01-06 4 \$- \$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04	1	\$-		\$26,420.00	\$13,210.00	9 \$13,210.00	2014-01-01	
4 \$- \$37,050.00 \$24,700.00 \$12,350.00 2014-01-06 695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04	2	\$-		\$32,670.00	\$21,780.00	\$10,890.00	2014-01-06	
	3	\$-		\$13,320.00	\$8,880.00	9 \$4,440.00	2014-01-06	
695 \$1,11,375.00 \$6,31,125.00 \$6,18,750.00 \$12,375.00 2014-01-03 696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04	4	\$-		\$37,050.00	\$24,700.00	9 \$12,350.00	2014-01-06	
696 \$24,570.00 \$1,39,230.00 \$1,36,500.00 \$2,730.00 2014-01-10 697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04		•		• • •	•			
697 \$1,436.40 \$8,139.60 \$6,840.00 \$1,299.60 2014-01-02 698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04	695	\$1,11,375.0	90	\$6,31,125.00	\$6,18,750.00	9 \$12,375.00	2014-01-03	
698 \$759.15 \$4,301.85 \$3,615.00 \$686.85 2014-01-04	696	\$24,570.0	90	\$1,39,230.00	\$1,36,500.00	\$2,730.00	2014-01-10	
	697	\$1,436.4	10	\$8,139.60	\$6,840.00	\$1,299.60	2014-01-02	
699 \$3,250.80 \$18,421.20 \$5,418.00 \$13,003.20 2014-01-05	698	\$759.1	L5	\$4,301.85	\$3,615.00	\$686.85	2014-01-04	
	699	\$3,250.8	30	\$18,421.20	\$5,418.00	\$13,003.20	2014-01-05	

```
Month Number Month Name
                                Year
0
                1
                                2014
                      January
1
                1
                      January
                                2014
2
                6
                                2014
                         June
3
                6
                                2014
                         June
                6
4
                         June
                                2014
                           . . .
                                 . . .
. .
              . . .
695
                3
                        March
                                2014
696
               10
                      October 0
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                2
                     February
697
                                2014
                4
                                2014
698
                        April
699
                5
                                2014
                          Mav
[700 rows x 16 columns]
Display only index value
              segment
                                        country
                                                    product Discount Band
46 Channel Partners United States of America Amarilla
                                                                      None
   Units Sold Manufacturing Price Sale Price
                                                  Gross Sales
                                                                 Discounts
        1953.0
                                                    $23,436.00
46
                            $260.00
                                          $12.00
                                                                      $-
          Sales
                        COGS
                                    Profit
                                                  Date Month Number \
                   $5,859.00
                                $17,577.00 2014-01-04
     $23,436.00
46
    Month Name
                 Year
         April
46
                 2014
Display only 695 and 698 index value
             segment country
                                 product Discount Band
                                                          Units Sold \
     Small Business France
                              Amarilla
                                                  High
                                                              2475.0
         Government Canada
                                                              723.0
698
                                 Paseo
                                                  High
     Manufacturing Price
                           Sale Price
                                                            Discounts
                                          Gross Sales
695
                 $260.00
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                                         $7,42,500.00
                                                         $1,11,375.00
                  $10.00
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                                            $5,061.00
                                                              $759.15
698
             Sales
                              COGS
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                                                              Month Number \
                                                        Date
                                      $12,375.00 2014-01-03
695
      $6,31,125.00
                      $6,18,750.00
                                                                          3
         $4,301.85
                         $3,615.00
                                         $686.85 2014-01-04
698
                                                                          4
```

Month Name Year

695 March 2014 698 April 2014

In []: # using Loc keyword

```
In [29]: df = df.loc[df["Month Number"] == 6]
print(df)
```

	segment	country	рі	roduct	Discou	nt Band	Un:	its Sol	/ b	
2	Midmarket	France	Carre	etera		None		2178.0	9	
3	Midmarket	Germany	Carre	etera		None		888.6	9	
4	Midmarket	Mexico	Carre	etera		None		2470.0	9	
7	Channel Partners	Canada	Mor	ntana		None		2518.6	9	
8	Government	France		ntana		None		1899.6		
	•••					• •				
599	Government	Canada		Velo		High		2632.0		
600	Government	France		Velo		High		1190.6	9	
601	Channel Partners	Mexico		Velo		High		604.6		
606	Enterprise	Canada		VTT		High		1583.6		
609	Government	France	Amaı	rilla		High		1190.6		
						J				
	Manufacturing Pri	ice Sale	Price	Gr	oss Sal	es	Dis	counts	\	
2	\$3.	.00	\$15.00	\$	32,670.	00		\$-		
3	\$3.	.00	\$15.00	\$	13,320.	00		\$-		
4	\$3.	.00	\$15.00		37,050.			\$-		
7	\$5.	.00	\$12.00	\$	30,216.	00		\$-		
8	\$5.	.00	\$20.00	\$	37,980.	00		\$-		
599	\$120.	.00 \$	350.00	\$9,	21,200.	00 \$3	L,19,	756.00		
600	\$120.	.00	\$7.00		\$8,330.	00	\$1,0	082.90		
601	\$120.	.00	\$12.00		\$7,248.	00	\$9	942.24		
606	\$250.	.00 \$	125.00	\$1,	97,875.	00	\$25,	723.75		
609	\$260.	.00	\$7.00		\$8,330.	00	\$1,0	082.90		
	Sales	(COGS		Profit	[Date	Month I	Number	\
2	\$32,670.00	\$21,780	0.00	\$10,	890.00	2014-03	L-06		6	
3	\$13,320.00	\$8,886	0.00	\$4,	440.00	2014-03	L-06		6	
4	\$37,050.00	\$24,700	0.00	\$12,	350.00	2014-03	L-06		6	
7	\$30,216.00	\$7,554	1.00	\$22,	662.00	2014-03	L-06		6	
8	\$37,980.00	\$18,996	0.00	\$18,	990.00	2014-03	L-06		6	
	• • •									
599	\$8,01,444.00	\$6,84,320	0.00	\$1,17,	124.00	2014-03	L-06		6	
600	\$7,247.10	\$5,950	0.00	\$1,	297.10	2014-03	L-06		6	
601	\$6,305.76	\$1,812	2.00	_	493.76	2014-03	L-06		6	
606	\$1,72,151.25	\$1,89,960	0.00	\$(17,	808.75)	2014-03	L-06		6	
609	\$7,247.10	\$5,950	0.00		297.10	2014-03	L-06		6	

Month Name Year 2 June 2014

```
3
           June
                  2014
4
                  2014
           June
7
           June
                  2014
8
           June
                  2014
             . . .
                   . . .
599
           June
                  2014
600
           June
                  2014
601
           June
                  2014
606
           June
                  2014
609
           June
                  2014
```

[70 rows x 16 columns]

B)Handling missing values

```
In [ ]: #using is null function
```

In [30]: df.isnull()

Out[30]:

	segment	country	product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	cogs	Profit	Date	Month Number	Month Name	Year
2	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
7	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
8	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
599	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
600	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
601	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
606	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
609	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False

70 rows × 16 columns

In []: #using not null function

In [45]: df.notnull()

Out[45]:

	segment	country	product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	cogs	Profit	Date	Month Number	Month Name	Year
2	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True
3	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True
4	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True
7	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True
8	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True
599	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True
600	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True
601	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True
606	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True
609	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True	True

70 rows × 16 columns

In []: #using forward method

In [48]: df.fillna(method='pad')

Out[48]:

	segment	country	product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	cogs	Profit
2	Midmarket	France	Carretera	None	2178.0	\$3.00	\$15.00	\$32,670.00	\$-	\$32,670.00	\$21,780.00	\$10,890.00
3	Midmarket	Germany	Carretera	None	888.0	\$3.00	\$15.00	\$13,320.00	\$-	\$13,320.00	\$8,880.00	\$4,440.00
4	Midmarket	Mexico	Carretera	None	2470.0	\$3.00	\$15.00	\$37,050.00	\$-	\$37,050.00	\$24,700.00	\$12,350.00
7	Channel Partners	Canada	Montana	None	2518.0	\$5.00	\$12.00	\$30,216.00	\$-	\$30,216.00	\$7,554.00	\$22,662.00
8	Government	France	Montana	None	1899.0	\$5.00	\$20.00	\$37,980.00	\$-	\$37,980.00	\$18,990.00	\$18,990.00
599	Government	Canada	Velo	High	2632.0	\$120.00	\$350.00	\$9,21,200.00	\$1,19,756.00	\$8,01,444.00	\$6,84,320.00	\$1,17,124.00
600	Government	France	Velo	High	1190.0	\$120.00	\$7.00	\$8,330.00	\$1,082.90	\$7,247.10	\$5,950.00	\$1,297.10
601	Channel Partners	Mexico	Velo	High	604.0	\$120.00	\$12.00	\$7,248.00	\$942.24	\$6,305.76	\$1,812.00	\$4,493.76
606	Enterprise	Canada	VTT	High	1583.0	\$250.00	\$125.00	\$1,97,875.00	\$25,723.75	\$1,72,151.25	\$1,89,960.00	\$(17,808.75)
609	Government	France	Amarilla	High	1190.0	\$260.00	\$7.00	\$8,330.00	\$1,082.90	\$7,247.10	\$5,950.00	\$1,297.10

70 rows × 16 columns

4

In []: #using backward method

```
In [49]: df.fillna(method='backfill')
```

Out[49]:

ıt	country	product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	cogs	Profit	Date	Month Number
∍t	France	Carretera	None	2178.0	\$3.00	\$15.00	\$32,670.00	\$-	\$32,670.00	\$21,780.00	\$10,890.00	2014- 01-06	6
∌t	Germany	Carretera	None	888.0	\$3.00	\$15.00	\$13,320.00	\$-	\$13,320.00	\$8,880.00	\$4,440.00	2014- 01-06	6
∍t	Mexico	Carretera	None	2470.0	\$3.00	\$15.00	\$37,050.00	\$-	\$37,050.00	\$24,700.00	\$12,350.00	2014- 01-06	6
el S	Canada	Montana	None	2518.0	\$5.00	\$12.00	\$30,216.00	\$-	\$30,216.00	\$7,554.00	\$22,662.00	2014- 01-06	6
nt	France	Montana	None	1899.0	\$5.00	\$20.00	\$37,980.00	\$-	\$37,980.00	\$18,990.00	\$18,990.00	2014- 01-06	6
					•••						•••		
nt	Canada	Velo	High	2632.0	\$120.00	\$350.00	\$9,21,200.00	\$1,19,756.00	\$8,01,444.00	\$6,84,320.00	\$1,17,124.00	2014- 01-06	6
nt	France	Velo	High	1190.0	\$120.00	\$7.00	\$8,330.00	\$1,082.90	\$7,247.10	\$5,950.00	\$1,297.10	2014- 01-06	6
el S	Mexico	Velo	High	604.0	\$120.00	\$12.00	\$7,248.00	\$942.24	\$6,305.76	\$1,812.00	\$4,493.76	2014- 01-06	6
е	Canada	VTT	High	1583.0	\$250.00	\$125.00	\$1,97,875.00	\$25,723.75	\$1,72,151.25	\$1,89,960.00	\$(17,808.75)	2014- 01-06	6
nt	France	Amarilla	High	1190.0	\$260.00	\$7.00	\$8,330.00	\$1,082.90	\$7,247.10	\$5,950.00	\$1,297.10	2014- 01-06	6
ılu	mns												

C) Calculating statistics

In []: # mean method

```
In [60]: df.mean(axis = 0)
Out[60]: Units Sold
                         1475.742857
         Month Number
                            6.000000
         Year
                         2014.000000
         dtype: float64
 In [ ]: # median method
In [58]: df.median(axis = 0)
Out[58]: Units Sold
                         1282.0
         Month Number
                            6.0
         Year
                         2014.0
         dtype: float64
 In [ ]: # mode method
```

In [59]: df.mode(axis = 0)

Out[59]:

∍nt	country	product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	cogs	Profit	Date	Month Number	
ent	Canada	Paseo	Medium	448.0	\$10.00	\$12.00	\$1,34,400.00	\$-	\$1,24,992.00	\$1,12,000.00	\$(17,808.75)	2014- 01-06	6.0	•
aN	France	NaN	NaN	602.0	NaN	\$125.00	\$1,96,250.00	NaN	\$1,72,151.25	\$1,56,520.00	\$1,03,224.00	NaT	NaN	
aN	Germany	NaN	NaN	604.0	NaN	\$15.00	\$1,97,875.00	NaN	\$1,90,362.50	\$1,72,250.00	\$1,17,124.00	NaT	NaN	
aN	Mexico	NaN	NaN	662.0	NaN	\$20.00	\$10,486.00	NaN	\$13,027.20	\$1,812.00	\$1,297.10	NaT	NaN	
aN	United States of America	NaN	NaN	689.0	NaN	\$300.00	\$13,320.00	NaN	\$13,320.00	\$1,88,400.00	\$1,655.00	NaT	NaN	
aN	NaN	NaN	NaN	708.0	NaN	\$350.00	\$13,704.00	NaN	\$13,429.92	\$1,89,960.00	\$1,713.85	NaT	NaN	
aN	NaN	NaN	NaN	727.0	NaN	\$7.00	\$14,160.00	NaN	\$15,056.72	\$10,380.00	\$1,962.50	NaT	NaN	
aN	NaN	NaN	NaN	787.0	NaN	NaN	\$16,366.00	NaN	\$18,540.00	\$11,690.00	\$10,003.92	NaT	NaN	
aN	NaN	NaN	NaN	886.0	NaN	NaN	\$18,540.00	NaN	\$18,721.08	\$12,820.00	\$10,768.80	NaT	NaN	
aN	NaN	NaN	NaN	888.0	NaN	NaN	\$2,06,700.00	NaN	\$18,891.60	\$13,660.00	\$10,890.00	NaT	NaN	
aN	NaN	NaN	NaN	991.0	NaN	NaN	\$2,10,700.00	NaN	\$2,00,165.00	\$14,535.00	\$11,474.40	NaT	NaN	
aN	NaN	NaN	NaN	1006.0	NaN	NaN	\$2,97,300.00	NaN	\$2,00,499.00	\$18,990.00	\$11,660.40	NaT	NaN	
aN	NaN	NaN	NaN	1038.0	NaN	NaN	\$20,349.00	NaN	\$2,72,888.00	\$2,30,360.00	\$12,350.00	NaT	NaN	
aN	NaN	NaN	NaN	1094.0	NaN	NaN	\$20,760.00	NaN	\$2,82,435.00	\$2,47,750.00	\$12,992.00	NaT	NaN	
aN	NaN	NaN	NaN	1135.0	NaN	NaN	\$22,812.00	NaN	\$2,98,662.00	\$2,61,560.00	\$13,905.00	NaT	NaN	
aN	NaN	NaN	NaN	1142.0	NaN	NaN	\$25,640.00	NaN	\$22,127.64	\$2,73,500.00	\$16,424.64	NaT	NaN	
aN	NaN	NaN	NaN	1190.0	NaN	NaN	\$27,320.00	NaN	\$23,588.80	\$21,780.00	\$18,990.00	NaT	NaN	
aN	NaN	NaN	NaN	1282.0	NaN	NaN	\$3,10,100.00	NaN	\$25,134.40	\$24,700.00	\$2,366.84	NaT	NaN	
aN	NaN	NaN	NaN	1366.0	NaN	NaN	\$3,28,200.00	NaN	\$3,52,100.00	\$25,670.00	\$2,726.25	NaT	NaN	
aN	NaN	NaN	NaN	1496.0	NaN	NaN	\$3,52,100.00	NaN	\$30,216.00	\$28,440.00	\$2,951.25	NaT	NaN	
aN	NaN	NaN	NaN	1498.0	NaN	NaN	\$30,216.00	NaN	\$32,670.00	\$3,426.00	\$22,662.00	NaT	NaN	
aN	NaN	NaN	NaN	1545.0	NaN	NaN	\$32,670.00	NaN	\$33,499.35	\$3,88,960.00	\$25,162.00	NaT	NaN	
aN	NaN	NaN	NaN	1570.0	NaN	NaN	\$37,050.00	NaN	\$37,050.00	\$4,635.00	\$28,249.00	NaT	NaN	

∍nt	country	product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	cogs	Profit	Date	Month Number	
aN	NaN	NaN	NaN	1583.0	NaN	NaN	\$37,980.00	NaN	\$37,980.00	\$5,675.00	\$3,366.72	NaT	NaN	
aN	NaN	NaN	NaN	1899.0	NaN	NaN	\$38,505.00	NaN	\$4,92,184.00	\$5,703.00	\$34,685.00	NaT	NaN	
aN	NaN	NaN	NaN	1901.0	NaN	NaN	\$42,660.00	NaN	\$40,100.40	\$5,950.00	\$4,186.08	NaT	NaN	
aN	NaN	NaN	NaN	2178.0	NaN	NaN	\$5,23,600.00	NaN	\$6,305.76	\$6,15,000.00	\$4,440.00	NaT	NaN	
aN	NaN	NaN	NaN	2338.0	NaN	NaN	\$7,248.00	NaN	\$6,78,960.00	\$6,84,320.00	\$4,493.76	NaT	NaN	
aN	NaN	NaN	NaN	2460.0	NaN	NaN	\$7,38,000.00	NaN	\$7,247.10	\$7,080.00	\$42,528.00	NaT	NaN	
aN	NaN	NaN	NaN	2470.0	NaN	NaN	\$7,945.00	NaN	\$7,388.85	\$7,490.00	\$43,645.00	NaT	NaN	
aN	NaN	NaN	NaN	2518.0	NaN	NaN	\$8,330.00	NaN	\$8,01,444.00	\$7,554.00	\$5,947.20	NaT	NaN	
aN	NaN	NaN	NaN	2567.0	NaN	NaN	\$82,750.00	NaN	\$81,095.00	\$79,440.00	\$63,960.00	NaT	NaN	
aN	NaN	NaN	NaN	2632.0	NaN	NaN	\$9,21,200.00	NaN	\$89,966.25	\$8,880.00	\$7,829.35	NaT	NaN	
aN	NaN	NaN	NaN	2844.0	NaN	NaN	\$90,875.00	NaN	\$9,856.84	\$87,240.00	\$8,511.60	NaT	NaN	
aN	NaN	NaN	NaN	2907.0	NaN	NaN	\$98,375.00	NaN	\$97,391.25	\$94,440.00	\$90,540.00	NaT	NaN	

In []: # maximum

```
In [63]: print(df.max(axis=0))
                                            Small Business
         segment
                                  United States of America
         country
         product
                                                     Velo
          Discount Band
                                                     None
         Units Sold
                                                      2907
          Manufacturing Price
                                                    $5.00
          Sale Price
                                                    $7.00
          Gross Sales
                                               $98,375.00
          Discounts
                                                  $983.75
           Sales
                                               $97,391.25
          COGS
                                               $94,440.00
          Profit
                                               $90,540.00
         Date
                                       2014-01-06 00:00:00
         Month Number
          Month Name
                                                     June
         Year
                                                      2014
         dtype: object
In [ ]: # minimum
```

```
In [64]: print(df.min(axis=0))
                                      Channel Partners
         segment
         country
                                               Canada
         product
                                            Amarilla
          Discount Band
                                                High
         Units Sold
                                                   448
          Manufacturing Price
                                               $10.00
          Sale Price
                                              $12.00
          Gross Sales
                                        $1,34,400.00
          Discounts
                                                $-
           Sales
                                        $1,24,992.00
          COGS
                                        $1,12,000.00
          Profit
                                         $(17,808.75)
         Date
                                   2014-01-06 00:00:00
         Month Number
          Month Name
                                                 June
                                                 2014
         Year
         dtype: object
In [ ]:
```

Done by:-

K.K.Sreevalli

In []: