RINEX TECHNOLOGIES

MAJOR PROJECTS

NAME – DEBASISH DUTTA.

BRANCH - ELECTRONICS AND COMMUNICATION ENGINEERING.

YEAR - 4TH YEAR (7TH SEM).

COLLEGE - SWAMI VIVIKANANDA INSTITUTE OF SCIENCE AND TECHNOLOGY.

ACKNOWLEDGEMENT

Success of any project depends largely on the encouragement and guidelines of many others. I take this sincere opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project work.

I would like to show our greatest appreciation to **Mr. AMEEN MANNA**. I always feel motivated and encouraged every time by his valuable advice and constant inspiration; without his encouragement and guidance this project would not have materialized.

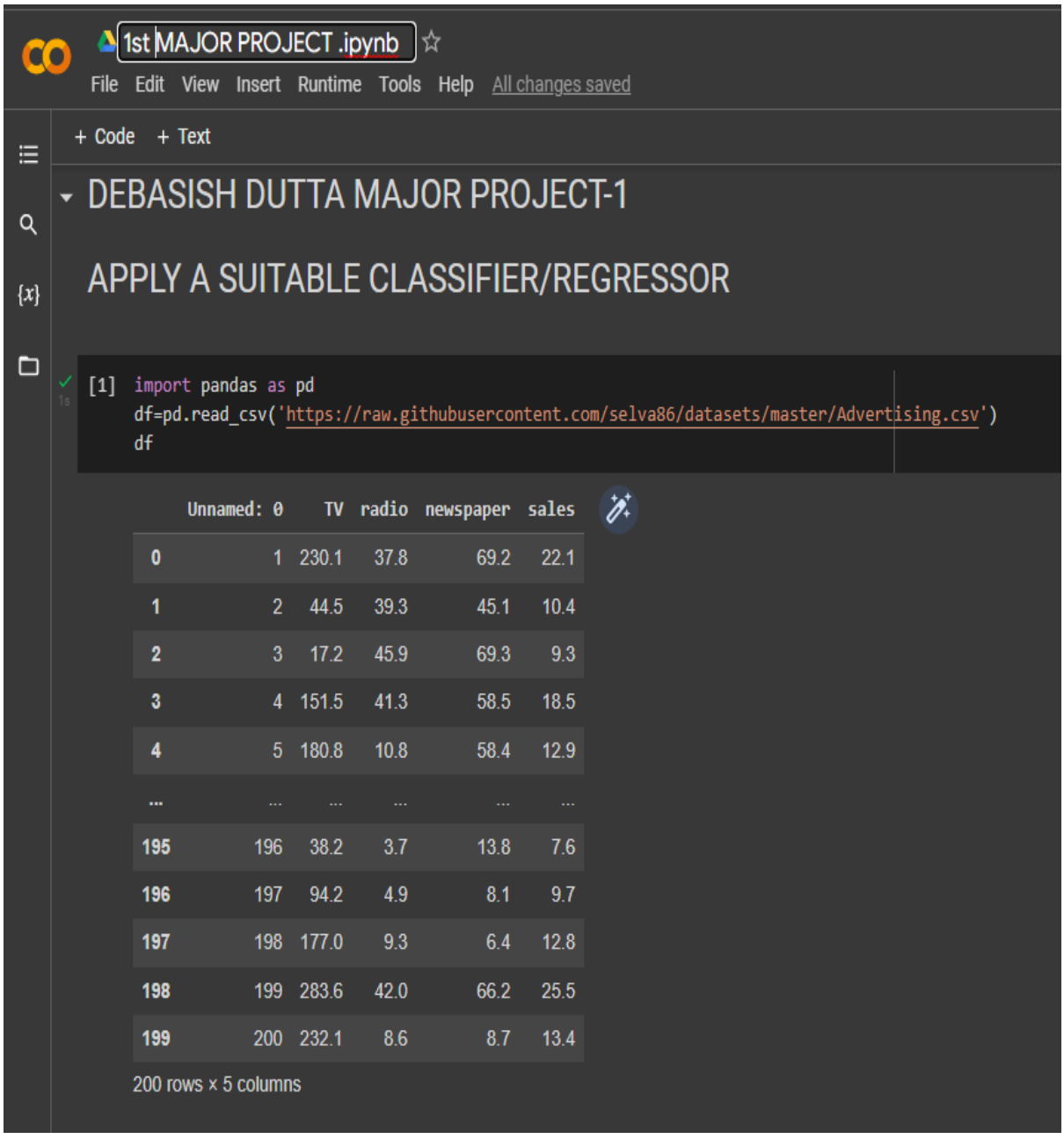
The guidance and support received from all the members and who are contributing to this project, was vital for the success of this project.

MAJOR PROJECT -1

APPLY A CLASSIFIER/REGRESSOR

DATASET

https://raw.githubusercontent.com/selva86/datasets/master/Advertising.csv



	Unnamed: 0	TV	radio	newspaper	sales
0	1	230.1	37.8	69.2	22.1
1	2	44.5	39.3	45.1	10.4
2	3	17.2	45.9	69.3	9.3
3	4	151.5	41.3	58.5	18.5
4	5	180.8	10.8	58.4	12.9
...	...	...	...	...	...
195	196	38.2	3.7	13.8	7.6
196	197	94.2	4.9	8.1	9.7
197	198	177.0	9.3	6.4	12.8
198	199	283.6	42.0	66.2	25.5
199	200	232.1	8.6	8.7	13.4

200 rows × 5 columns

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```
[2] df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 200 entries, 0 to 199
Data columns (total 5 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   Unnamed: 0   200 non-null    int64  
 1   TV           200 non-null    float64
 2   radio        200 non-null    float64
 3   newspaper    200 non-null    float64
 4   sales        200 non-null    float64
dtypes: float64(4), int64(1)
memory usage: 7.9 KB
```

EXPLORATORY DATA ANALYSIS

```
[4] df.head()
```

	Unnamed: 0	TV	radio	newspaper	sales
0	1	230.1	37.8	69.2	22.1
1	2	44.5	39.3	45.1	10.4
2	3	17.2	45.9	69.3	9.3
3	4	151.5	41.3	58.5	18.5
4	5	180.8	10.8	58.4	12.9

```
[5] df.head(8)
```

	Unnamed: 0	TV	radio	newspaper	sales
0	1	230.1	37.8	69.2	22.1
1	2	44.5	39.3	45.1	10.4
2	3	17.2	45.9	69.3	9.3
3	4	151.5	41.3	58.5	18.5

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```
[5] df.head(8)
```

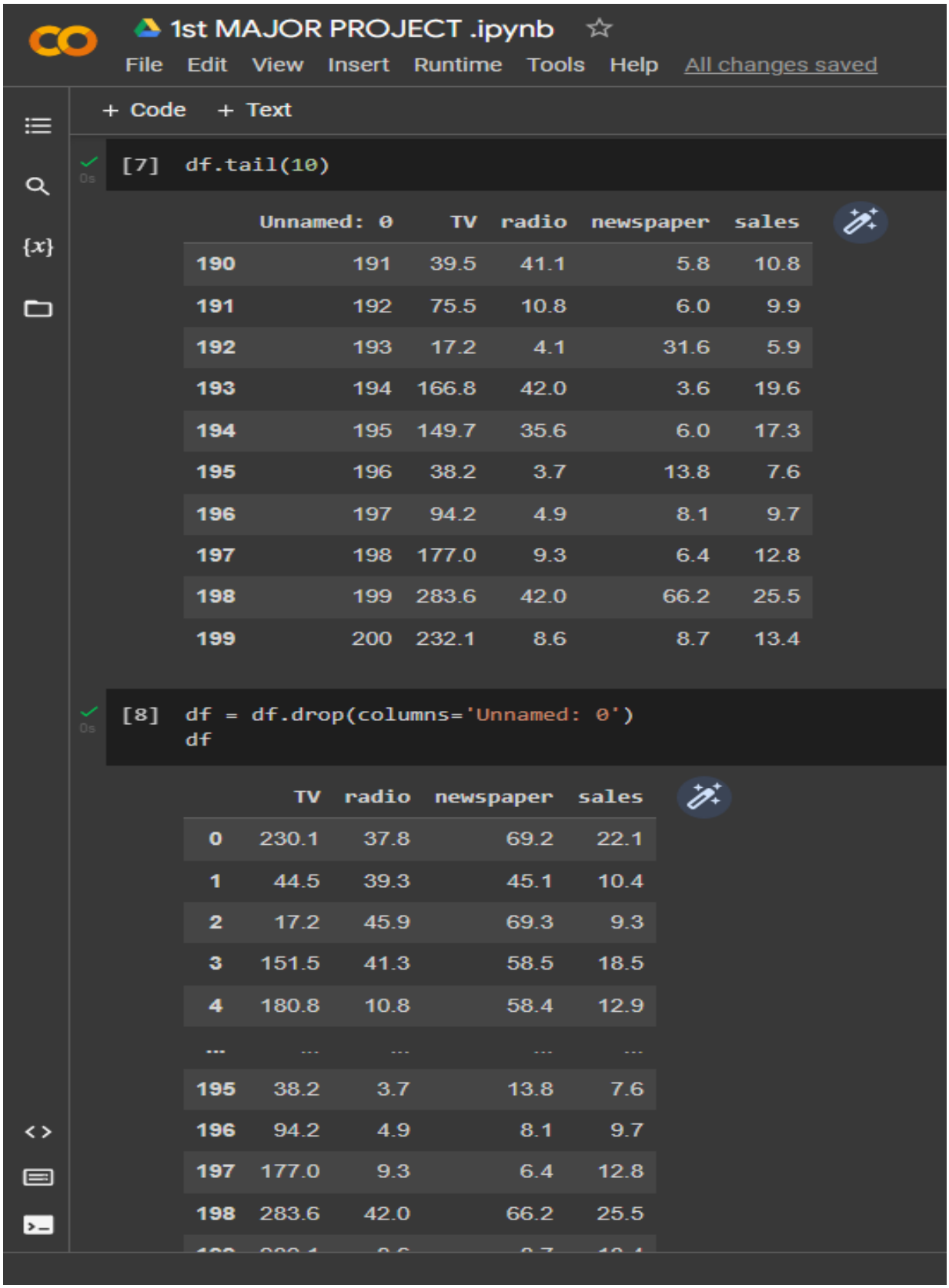
	Unnamed: 0	TV	radio	newspaper	sales
0	1	230.1	37.8	69.2	22.1
1	2	44.5	39.3	45.1	10.4
2	3	17.2	45.9	69.3	9.3
3	4	151.5	41.3	58.5	18.5
4	5	180.8	10.8	58.4	12.9
5	6	8.7	48.9	75.0	7.2
6	7	57.5	32.8	23.5	11.8
7	8	120.2	19.6	11.6	13.2

```
[6] df.tail()
```

	Unnamed: 0	TV	radio	newspaper	sales
195	196	38.2	3.7	13.8	7.6
196	197	94.2	4.9	8.1	9.7
197	198	177.0	9.3	6.4	12.8
198	199	283.6	42.0	66.2	25.5
199	200	232.1	8.6	8.7	13.4

```
[7] df.tail(10)
```

	Unnamed: 0	TV	radio	newspaper	sales
190	191	39.5	41.1	5.8	10.8
191	192	75.5	10.8	6.0	9.9
192	193	17.2	4.1	31.6	5.9
193	194	166.8	42.0	3.6	19.6
194	195	149.7	35.6	6.0	17.3



	Unnamed: 0	TV	radio	newspaper	sales
190	191	39.5	41.1	5.8	10.8
191	192	75.5	10.8	6.0	9.9
192	193	17.2	4.1	31.6	5.9
193	194	166.8	42.0	3.6	19.6
194	195	149.7	35.6	6.0	17.3
195	196	38.2	3.7	13.8	7.6
196	197	94.2	4.9	8.1	9.7
197	198	177.0	9.3	6.4	12.8
198	199	283.6	42.0	66.2	25.5
199	200	232.1	8.6	8.7	13.4

	TV	radio	newspaper	sales
0	230.1	37.8	69.2	22.1
1	44.5	39.3	45.1	10.4
2	17.2	45.9	69.3	9.3
3	151.5	41.3	58.5	18.5
4	180.8	10.8	58.4	12.9
...	...	...	...	...
195	38.2	3.7	13.8	7.6
196	94.2	4.9	8.1	9.7
197	177.0	9.3	6.4	12.8
198	283.6	42.0	66.2	25.5

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```
[9] df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 200 entries, 0 to 199
Data columns (total 4 columns):
 #   Column     Non-Null Count  Dtype  
---  ------     --------------  -----  
 0   TV         200 non-null    float64
 1   radio      200 non-null    float64
 2   newspaper  200 non-null    float64
 3   sales      200 non-null    float64
dtypes: float64(4)
memory usage: 6.4 KB
```

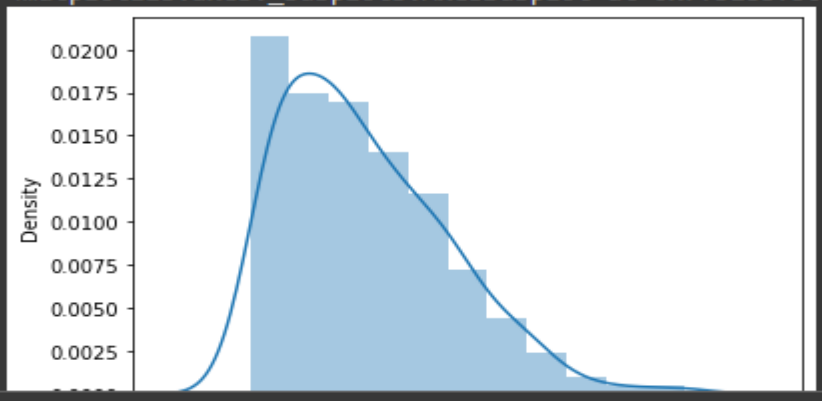
```
[10] df.isnull().sum()
```

```
TV           0
radio        0
newspaper    0
sales        0
dtype: int64
```

DATA VISUALIZATION

```
[11] import seaborn as sns
     sns.distplot(df['newspaper'])
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:2
  warnings.warn(msg, FutureWarning)
<matplotlib.axes._subplots.AxesSubplot at 0x7f3183f50b10>
```



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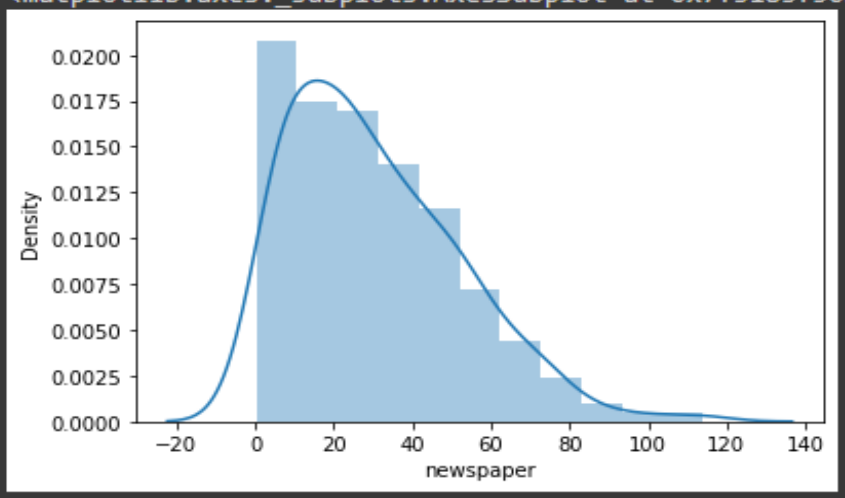
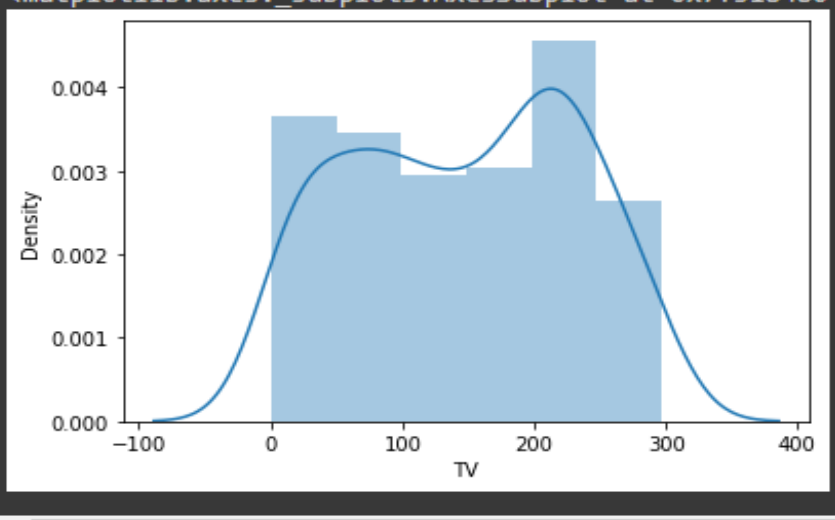
[11]
```
import seaborn as sns
sns.distplot(df['newspaper'])
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py
  warnings.warn(msg, FutureWarning)
<matplotlib.axes._subplots.AxesSubplot at 0x7f3183f50b10>
```



[12]
```
import seaborn as sns
sns.distplot(df['TV'])
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py
  warnings.warn(msg, FutureWarning)
<matplotlib.axes._subplots.AxesSubplot at 0x7f3184804890>
```



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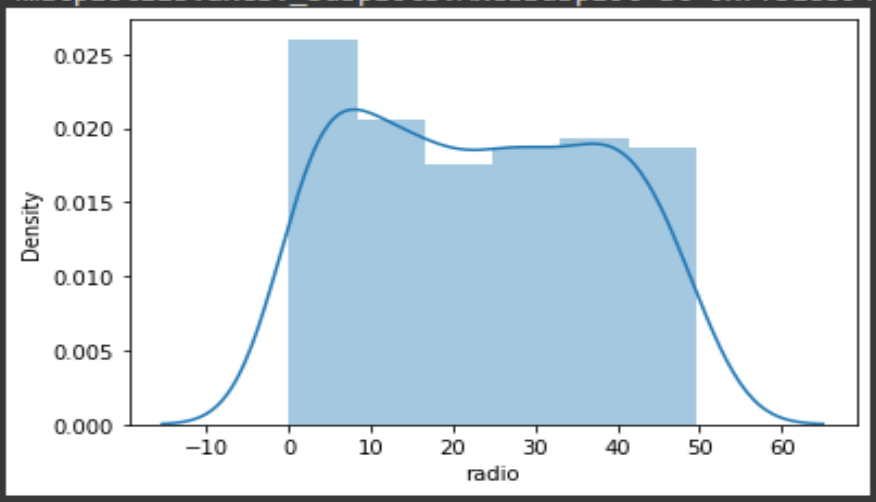
```
[13] import seaborn as sns
     sns.distplot(df['radio'])
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributio
  warnings.warn(msg, FutureWarning)
<matplotlib.axes._subplots.AxesSubplot at 0x7f3183944490>
```



DIVIDE INTO INPUT AND OUTPUT

```
[14] x=df.iloc[:,0:3].values
     x
```

```
array([[220.5,  33.2,  37.9],
       [104.6,   5.7,  34.4],
       [ 96.2,  14.8,  38.9],
       [140.3,   1.9,   9. ],
       [240.1,   7.3,   8.7],
       [243.2,  49. ,  44.3],
       [ 38. ,  40.3,  11.9],
       [ 44.7,  25.8,  20.6],
       [280.7,  13.9,  37. ],
       [121. ,   8.4,  48.7],
       [197.6,  23.3,  14.2],
       [171.3,  39.7,  37.7],
       [187.8,  21.1,   9.5],
       [  4.1,  11.6,   5.7],
       [ 93.9,  43.5,  50.5],
       [149.8,   1.3,  24.3],
```

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```
[15] y=df.iloc[:,3].values
     y
```

```
array([22.1, 10.4,  9.3, 18.5, 12.9,  7.2, 11.8, 13.2,  4.8, 10.6,  8.6,
       17.4,  9.2,  9.7, 19. , 22.4, 12.5, 24.4, 11.3, 14.6, 18. , 12.5,
        5.6, 15.5,  9.7, 12. , 15. , 15.9, 18.9, 10.5, 21.4, 11.9,  9.6,
       17.4,  9.5, 12.8, 25.4, 14.7, 10.1, 21.5, 16.6, 17.1, 20.7, 12.9,
        8.5, 14.9, 10.6, 23.2, 14.8,  9.7, 11.4, 10.7, 22.6, 21.2, 20.2,
       23.7,  5.5, 13.2, 23.8, 18.4,  8.1, 24.2, 15.7, 14. , 18. ,  9.3,
        9.5, 13.4, 18.9, 22.3, 18.3, 12.4,  8.8, 11. , 17. ,  8.7,  6.9,
       14.2,  5.3, 11. , 11.8, 12.3, 11.3, 13.6, 21.7, 15.2, 12. , 16. ,
       12.9, 16.7, 11.2,  7.3, 19.4, 22.2, 11.5, 16.9, 11.7, 15.5, 25.4,
       17.2, 11.7, 23.8, 14.8, 14.7, 20.7, 19.2,  7.2,  8.7,  5.3, 19.8,
       13.4, 21.8, 14.1, 15.9, 14.6, 12.6, 12.2,  9.4, 15.9,  6.6, 15.5,
        7. , 11.6, 15.2, 19.7, 10.6,  6.6,  8.8, 24.7,  9.7,  1.6, 12.7,
        5.7, 19.6, 10.8, 11.6,  9.5, 20.8,  9.6, 20.7, 10.9, 19.2, 20.1,
       10.4, 11.4, 10.3, 13.2, 25.4, 10.9, 10.1, 16.1, 11.6, 16.6, 19. ,
       15.6,  3.2, 15.3, 10.1,  7.3, 12.9, 14.4, 13.3, 14.9, 18. , 11.9,
       11.9,  8. , 12.2, 17.1, 15. ,  8.4, 14.5,  7.6, 11.7, 11.5, 27. ,
       20.2, 11.7, 11.8, 12.6, 10.5, 12.2,  8.7, 26.2, 17.6, 22.6, 10.3,
       17.3, 15.9,  6.7, 10.8,  9.9,  5.9, 19.6, 17.3,  7.6,  9.7, 12.8,
       25.5, 13.4])
```

TRAIN AND TEST VARIABLES

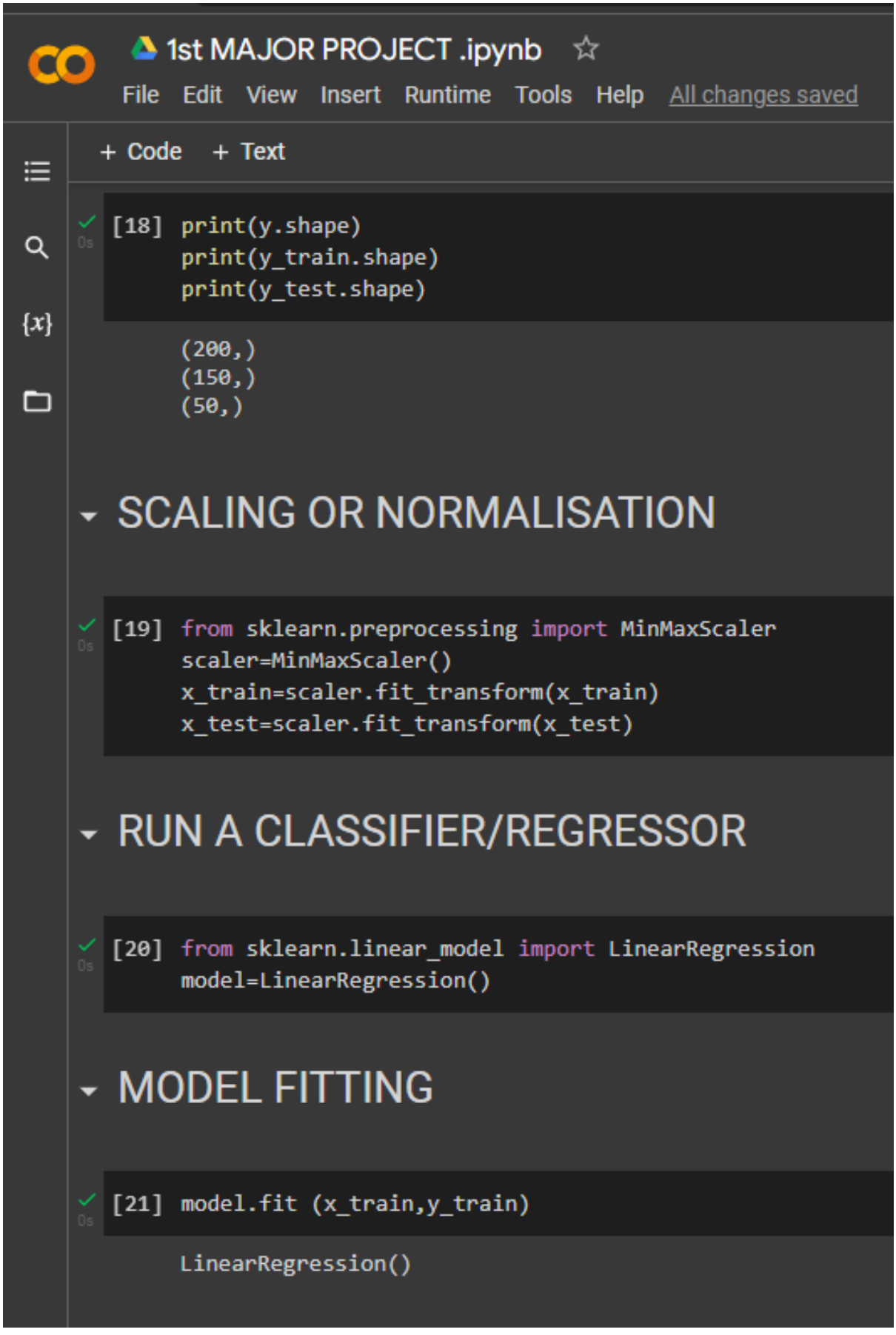
```
[16] from sklearn.model_selection import train_test_split
     x_train,x_test,y_train,y_test=train_test_split(x,y,random_state=0)
```

```
[17] print(x.shape)
     print(x_train.shape)
     print(x_test.shape)
```

```
(200, 3)
(150, 3)
(50, 3)
```

```
[18] print(y.shape)
     print(y_train.shape)
     print(y_test.shape)
```

```
(200,)
```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[18] print(y.shape)
print(y_train.shape)
print(y_test.shape)
(200,)
(150,)
(50,)
SCALING OR NORMALISATION
[19] from sklearn.preprocessing import MinMaxScaler
scaler=MinMaxScaler()
x_train=scaler.fit_transform(x_train)
x_test=scaler.fit_transform(x_test)
RUN A CLASSIFIER/REGRESSOR
[20] from sklearn.linear_model import LinearRegression
model=LinearRegression()
MODEL FITTING
[21] model.fit (x_train,y_train)
LinearRegression()

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OUTPUT PREDICTION

```
[22] y_pred=model.predict(x_test)
     y_pred
```

```
array([10.21356217,  7.56689655,  7.1046953 , 24.4786537 , 12.18908925,
        6.66930666, 13.27846956, 15.18367259, 11.16941336, 16.50744845,
       23.29411275,  9.27637033, 10.50875866, 15.62264298, 11.7856394 ,
       12.30378143, 18.86716522, 10.98375843, 16.29702002, 17.4733955 ,
       24.54664017,  9.64068738, 15.359316  , 12.5997308 ,  5.79640761,
       15.44958562, 12.40789173, 21.22596166, 13.48654784,  9.31468573,
       13.48547634, 21.8592375 , 18.35287588, 21.44159363,  6.8194993 ,
        6.27445928,  8.10136603, 13.28936999, 15.02024425,  6.34116807,
       12.45784502,  9.33739069, 15.26872923, 16.49708736, 17.40720355,
       13.52914521,  3.79011856, 12.61410406, 16.09639691,  8.83597734])
```

```
[23] y_test
```

```
array([11.3,  8.4,  8.7, 25.4, 11.7,  8.7,  7.2, 13.2,  9.2, 16.6, 24.2,
       10.6, 10.5, 15.6, 11.8, 13.2, 17.4,  1.6, 14.7, 17. , 26.2, 10.3,
       14.9, 12.9,  8.1, 15.2, 12.6, 22.6, 11.6,  8.5, 12.5, 23.7, 16.1,
       21.8,  5.6,  6.7,  9.7, 12.9, 13.6,  7.2, 10.8,  9.5, 15. , 15.9,
       17.1, 14. ,  4.8,  8.7, 15.9, 10.4])
```

INDIVIDUAL PREDICTION

```
[24] model.predict([x_train[10]])
```

```
array([15.23153021])
```

```
[25] print(x_train[10])
```

```
[0.89326035 0.05846774 0.421     ]
```

```
print(x_train[50])
```

```
[0.02600068 0.74395161 0.443     ]
```

MAJOR PROJECT-2

IMAGE PROCESSING PROJECT ON A TOPIC OF IMAGE CONVERTION

IMAGE PROCESSING.py - C:/Users/HP/AppData/Local/Programs/Python/Python310/IMAGE ...

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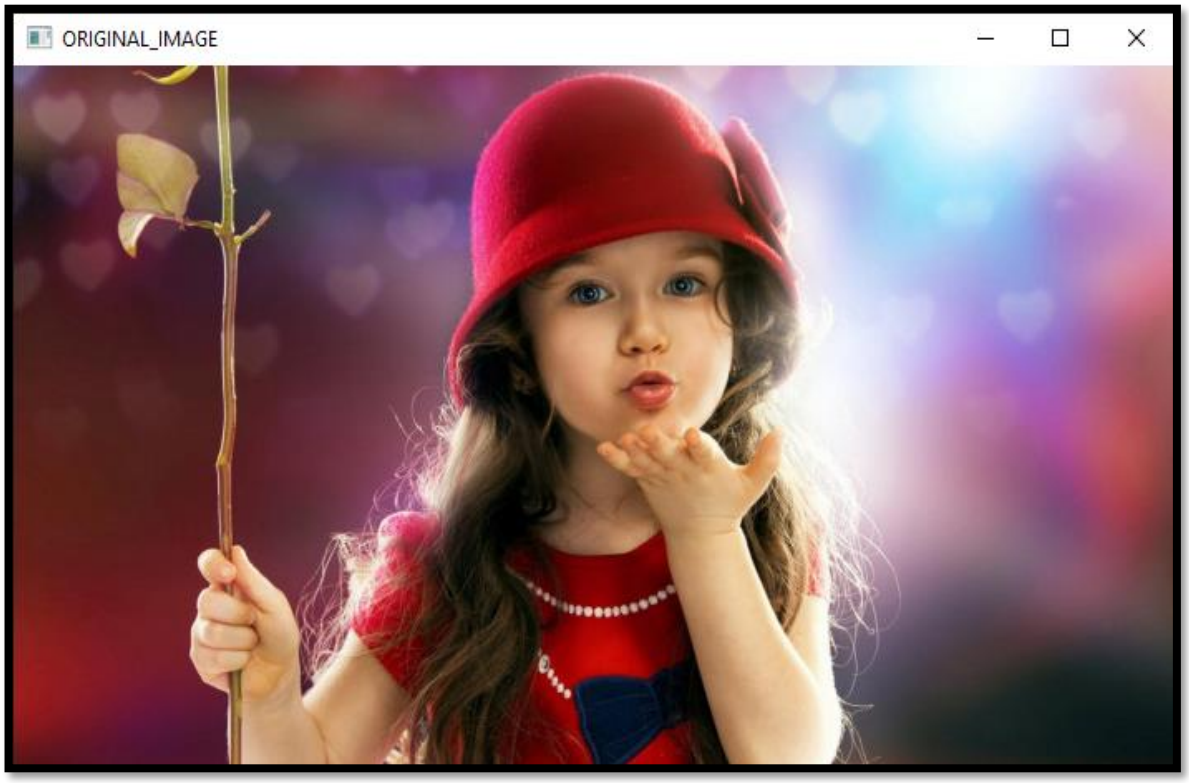
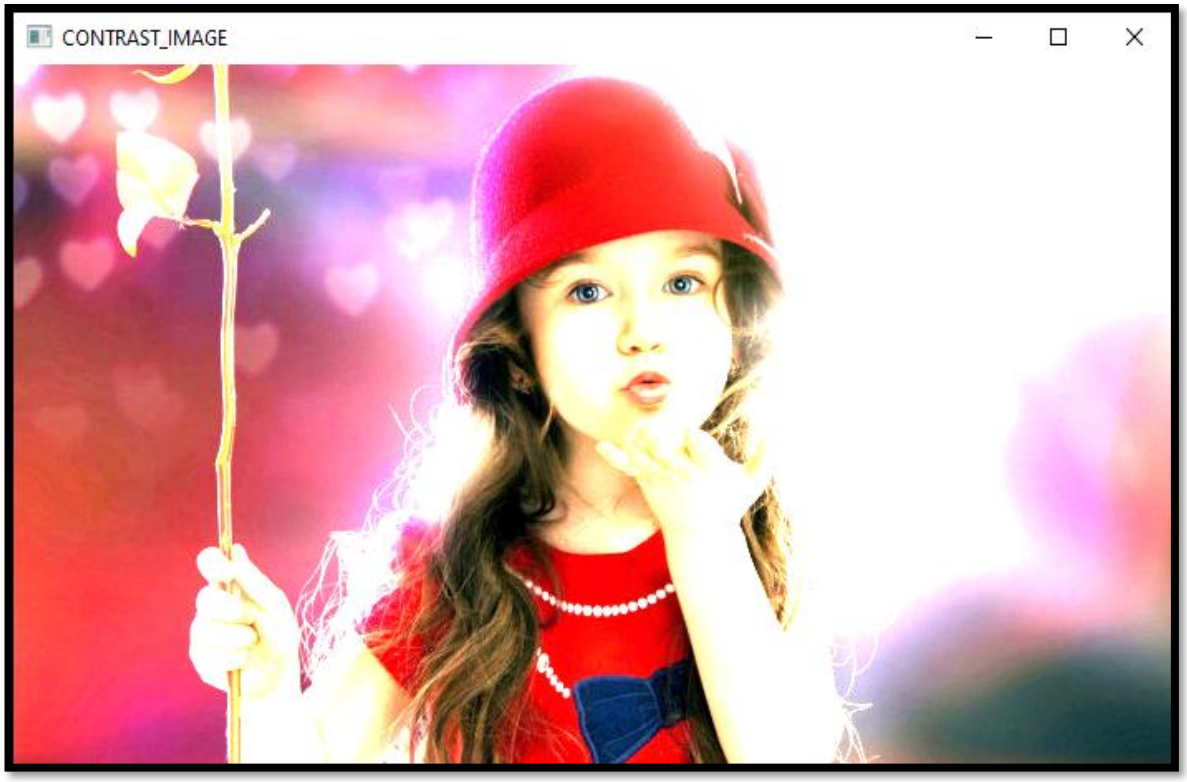
```
#IMPORT LIBRARY
import cv2 as cv
import numpy as np

#IMPORT IMAGE
img=cv.imread('C://Users//HP//Desktop//RINEX//girl.jpg',)

#CONTRAST IMAGE OF ORIGINAL IMAGE
contrast_img=cv.addWeighted(img,2.5,np.zeros(img.shape,img.dtype),0,0)

#CONVERT THE IMAGE INTO GRAYSCALE
gray_img=cv.cvtColor(img,cv.COLOR_BGR2GRAY)

#CONVERT THE IMAGE TO BINARY
ret,gray=cv.threshold(img,127,256,cv.THRESH_BINARY)

#DISPLAY THE IMAGE
cv.imshow("ORIGINAL_IMAGE",img) #original image
cv.imshow("CONTRAST_IMAGE",contrast_img)#contrast image
cv.imshow("GRAY_IMAGE",gray_img)#convert into gray image
cv.imshow("BINARY_IMAGE",gray)#convert into binary image
cv.waitKey()
cv.destroyAllWindows()
```


ORIGINAL_IMAGE


CONTRAST_IMAGE


GRAY_IMAGE


BINARY_IMAGE

THANK YOU