RINEX TECHNOLOGIES

MAJOR PROJECTS

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ACKNOWLEDGEMENT

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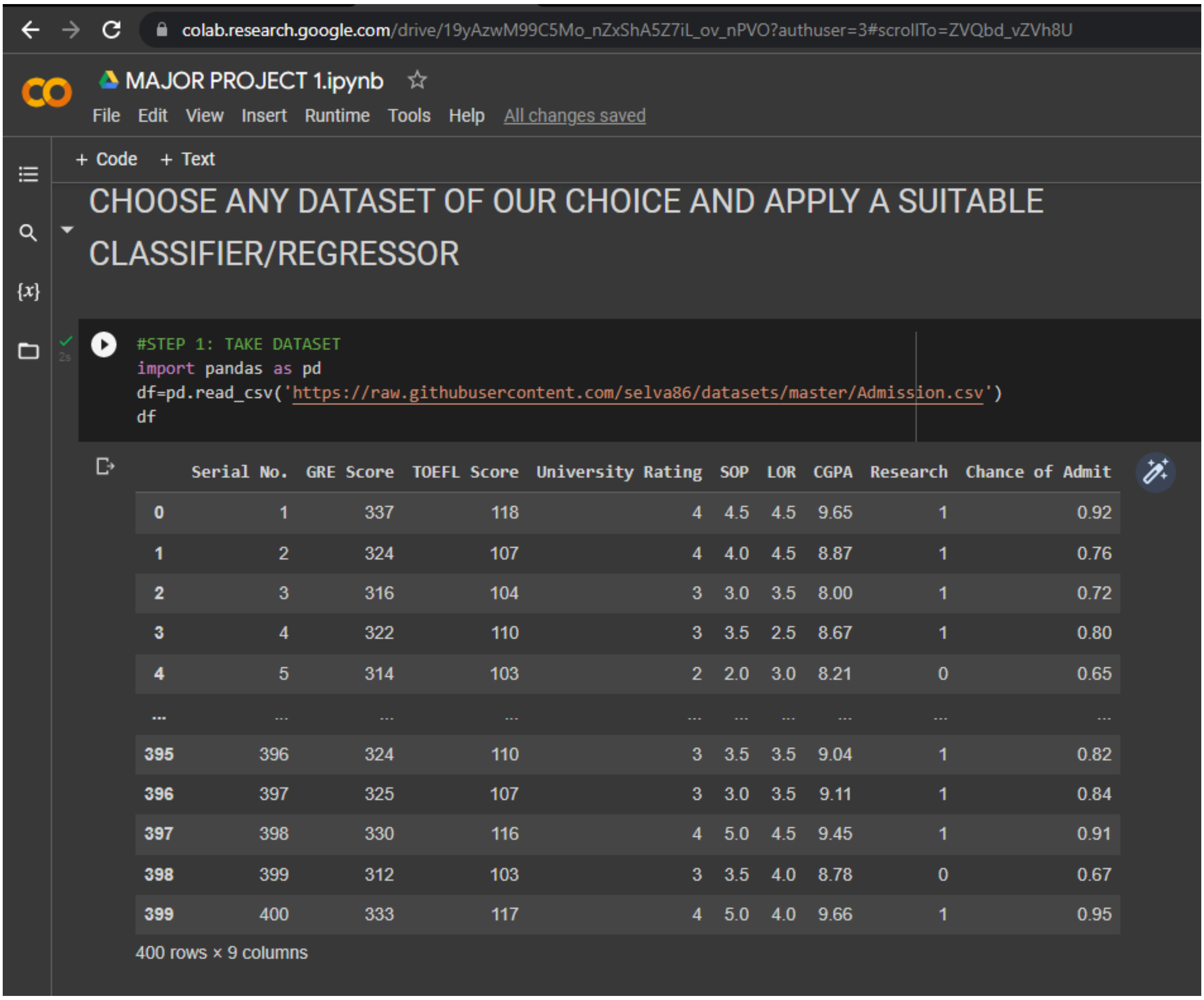
The guidance and support received from all the members and who are contributing to this project, was vital for the success of this project.

MAJOR PROJECT 1:

APPLY A SUITABLE CLASSIFIER / REGRESSOR

Dataset:-

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

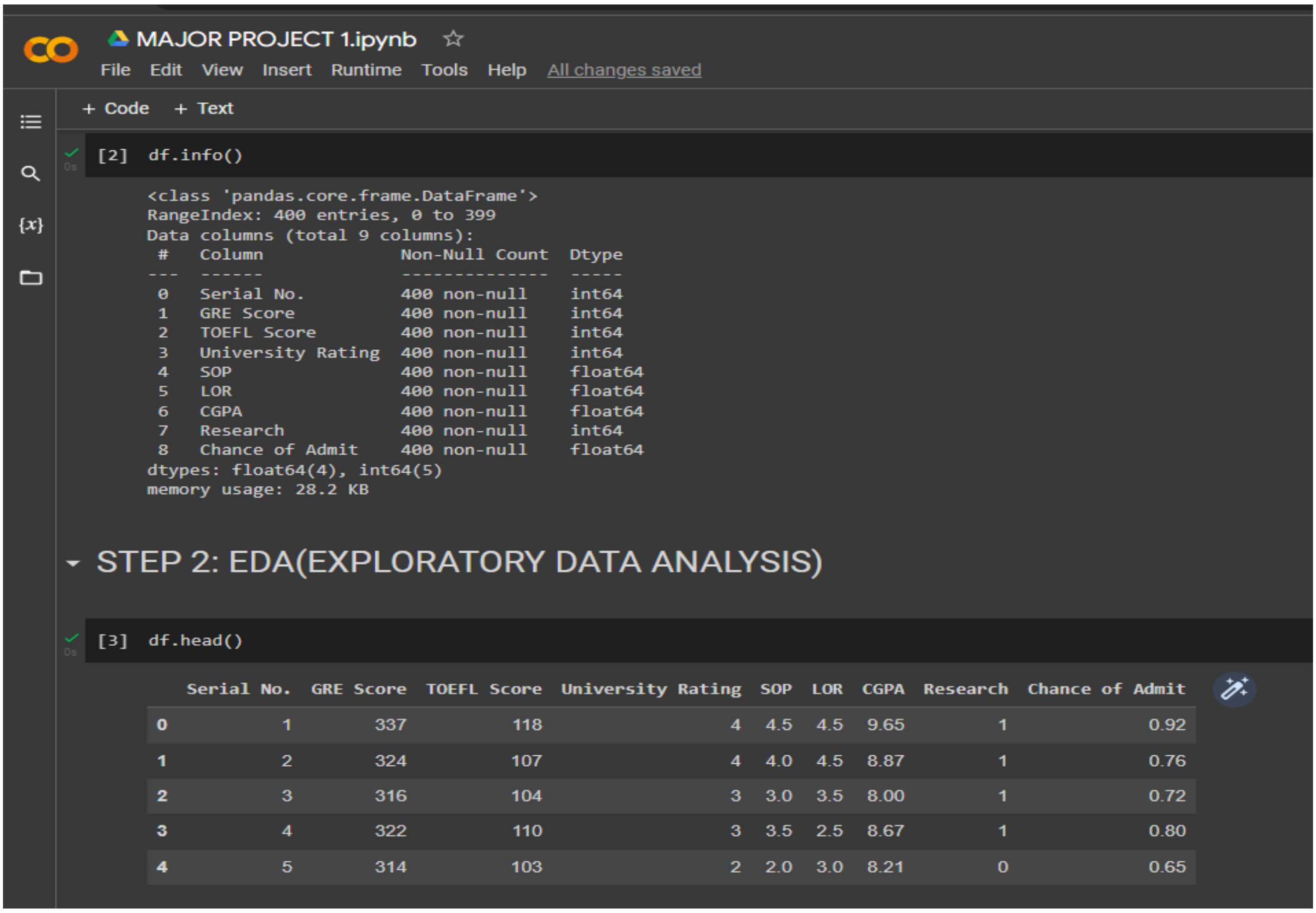

colab.research.google.com/drive/19yAzwM99C5Mo_nZxShA5Z7iL_ov_nPVO?authuser=3#scrollTo=ZVQbd_vZVh8U
MAJOR PROJECT 1.ipynb
File Edit View Insert Runtime Tools Help All changes saved
+ Code + Text

CHOOSE ANY DATASET OF OUR CHOICE AND APPLY A SUITABLE CLASSIFIER/REGRESSOR

```
#STEP 1: TAKE DATASET
import pandas as pd
df=pd.read_csv('https://raw.githubusercontent.com/selva86/datasets/master/Admission.csv')
df
```

	Serial No.	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research	Chance of Admit
0	1	337	118	4	4.5	4.5	9.65	1	0.92
1	2	324	107	4	4.0	4.5	8.87	1	0.76
2	3	316	104	3	3.0	3.5	8.00	1	0.72
3	4	322	110	3	3.5	2.5	8.67	1	0.80
4	5	314	103	2	2.0	3.0	8.21	0	0.65
...	...	...	...	...	...	...	...	...	...
395	396	324	110	3	3.5	3.5	9.04	1	0.82
396	397	325	107	3	3.0	3.5	9.11	1	0.84
397	398	330	116	4	5.0	4.5	9.45	1	0.91
398	399	312	103	3	3.5	4.0	8.78	0	0.67
399	400	333	117	4	5.0	4.0	9.66	1	0.95

400 rows × 9 columns



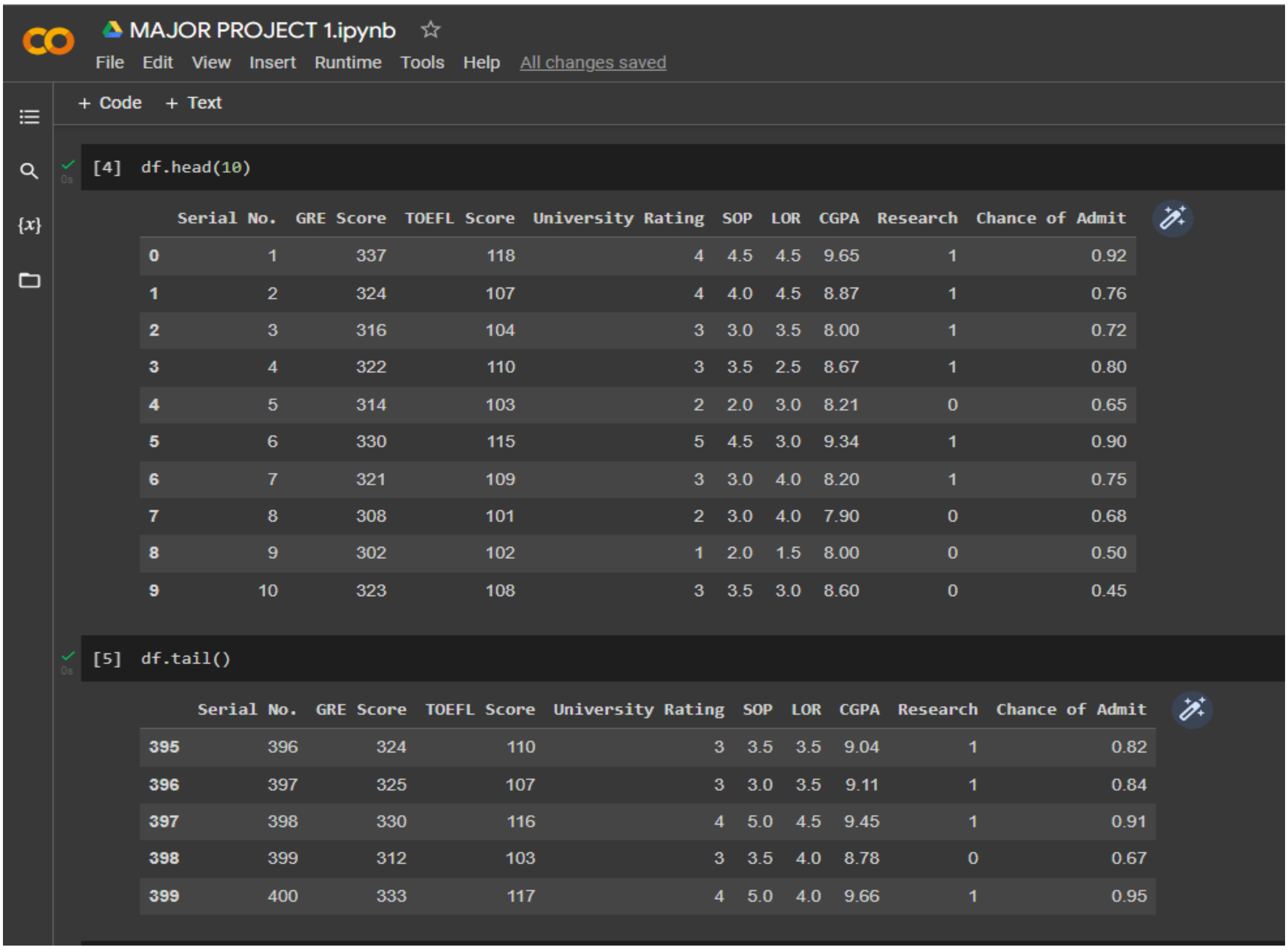
```
[2]  df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 400 entries, 0 to 399
Data columns (total 9 columns):
 #   Column             Non-Null Count  Dtype
---  ------             --------------  -----
 0   Serial No.         400 non-null    int64
 1   GRE Score          400 non-null    int64
 2   TOEFL Score        400 non-null    int64
 3   University Rating  400 non-null    int64
 4   SOP                400 non-null    float64
 5   LOR                400 non-null    float64
 6   CGPA               400 non-null    float64
 7   Research           400 non-null    int64
 8   Chance of Admit    400 non-null    float64
dtypes: float64(4), int64(5)
memory usage: 28.2 KB
```

STEP 2: EDA(EXPLORATORY DATA ANALYSIS)

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

	Serial No.	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research	Chance of Admit
0	1	337	118	4	4.5	4.5	9.65	1	0.92
1	2	324	107	4	4.0	4.5	8.87	1	0.76
2	3	316	104	3	3.0	3.5	8.00	1	0.72
3	4	322	110	3	3.5	2.5	8.67	1	0.80
4	5	314	103	2	2.0	3.0	8.21	0	0.65

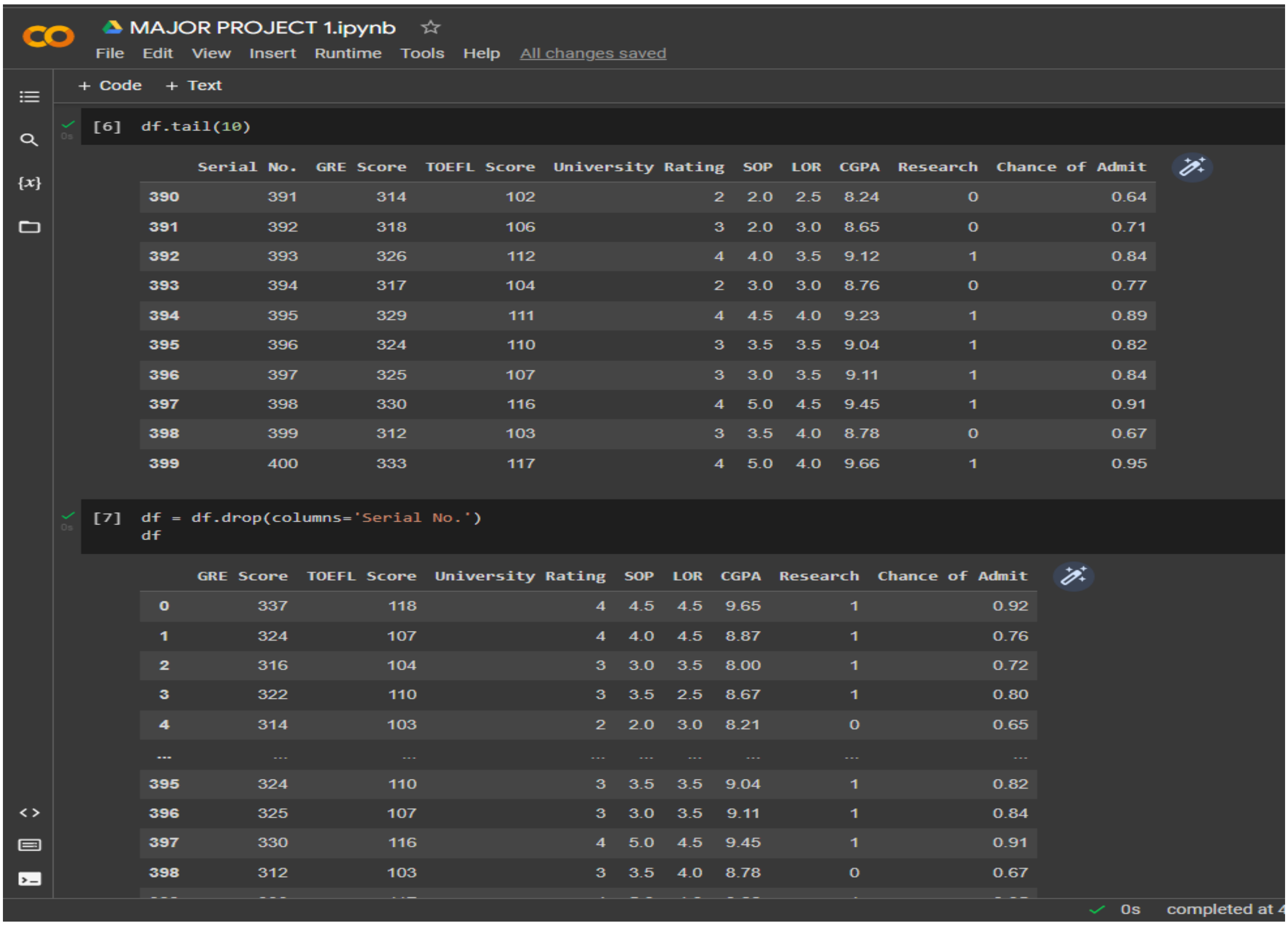


```
[4]  df.head(10)
```

	Serial No.	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research	Chance of Admit
0	1	337	118	4	4.5	4.5	9.65	1	0.92
1	2	324	107	4	4.0	4.5	8.87	1	0.76
2	3	316	104	3	3.0	3.5	8.00	1	0.72
3	4	322	110	3	3.5	2.5	8.67	1	0.80
4	5	314	103	2	2.0	3.0	8.21	0	0.65
5	6	330	115	5	4.5	3.0	9.34	1	0.90
6	7	321	109	3	3.0	4.0	8.20	1	0.75
7	8	308	101	2	3.0	4.0	7.90	0	0.68
8	9	302	102	1	2.0	1.5	8.00	0	0.50
9	10	323	108	3	3.5	3.0	8.60	0	0.45

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

	Serial No.	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research	Chance of Admit
395	396	324	110	3	3.5	3.5	9.04	1	0.82
396	397	325	107	3	3.0	3.5	9.11	1	0.84
397	398	330	116	4	5.0	4.5	9.45	1	0.91
398	399	312	103	3	3.5	4.0	8.78	0	0.67
399	400	333	117	4	5.0	4.0	9.66	1	0.95

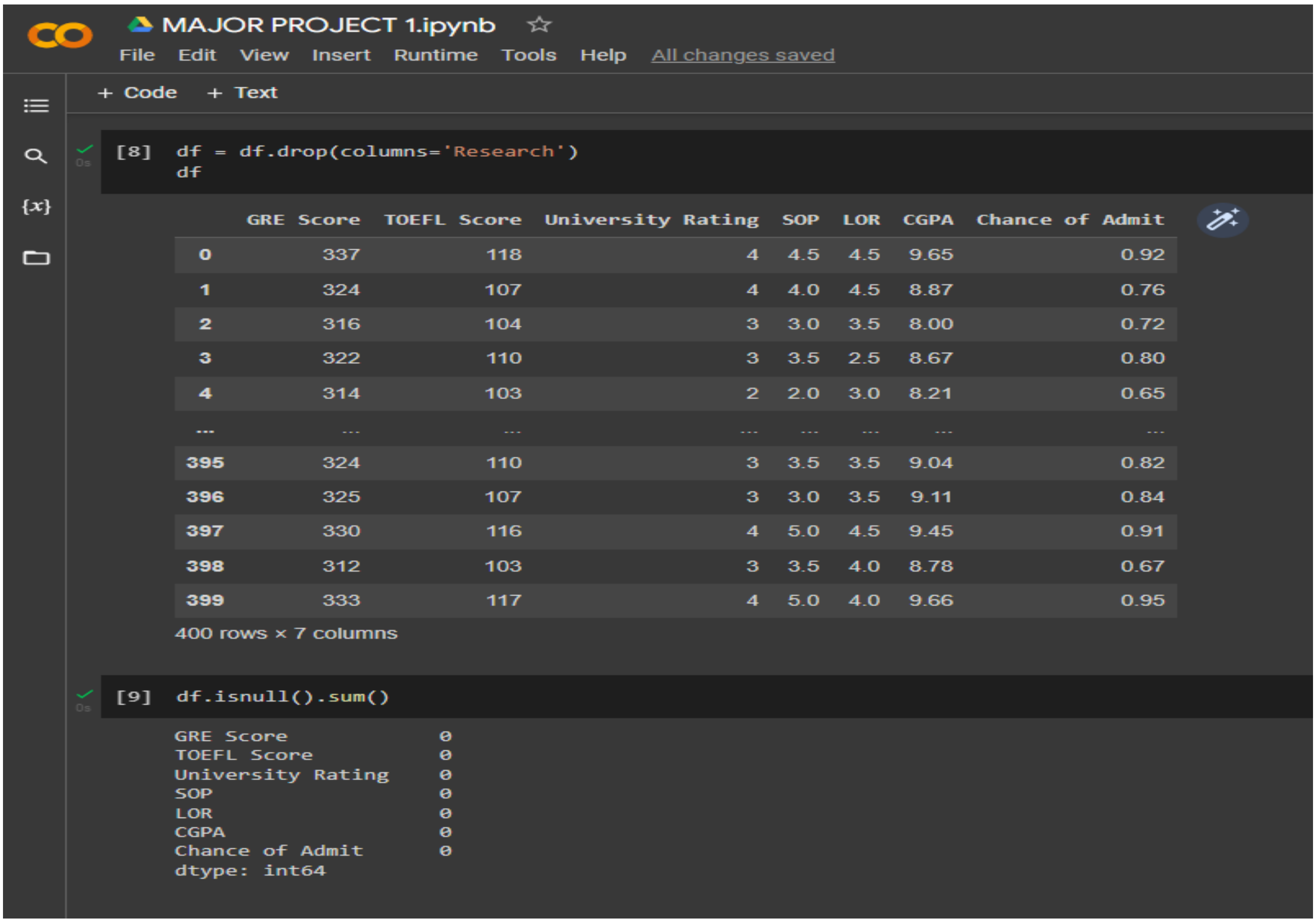


```
[6] df.tail(10)
```

	Serial No.	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research	Chance of Admit
390	391	314	102	2	2.0	2.5	8.24	0	0.64
391	392	318	106	3	2.0	3.0	8.65	0	0.71
392	393	326	112	4	4.0	3.5	9.12	1	0.84
393	394	317	104	2	3.0	3.0	8.76	0	0.77
394	395	329	111	4	4.5	4.0	9.23	1	0.89
395	396	324	110	3	3.5	3.5	9.04	1	0.82
396	397	325	107	3	3.0	3.5	9.11	1	0.84
397	398	330	116	4	5.0	4.5	9.45	1	0.91
398	399	312	103	3	3.5	4.0	8.78	0	0.67
399	400	333	117	4	5.0	4.0	9.66	1	0.95

```
[7] df = df.drop(columns='Serial No.')
    df
```

	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research	Chance of Admit
0	337	118	4	4.5	4.5	9.65	1	0.92
1	324	107	4	4.0	4.5	8.87	1	0.76
2	316	104	3	3.0	3.5	8.00	1	0.72
3	322	110	3	3.5	2.5	8.67	1	0.80
4	314	103	2	2.0	3.0	8.21	0	0.65
...	...	...	...	...	...	...	...	...
395	324	110	3	3.5	3.5	9.04	1	0.82
396	325	107	3	3.0	3.5	9.11	1	0.84
397	330	116	4	5.0	4.5	9.45	1	0.91
398	312	103	3	3.5	4.0	8.78	0	0.67



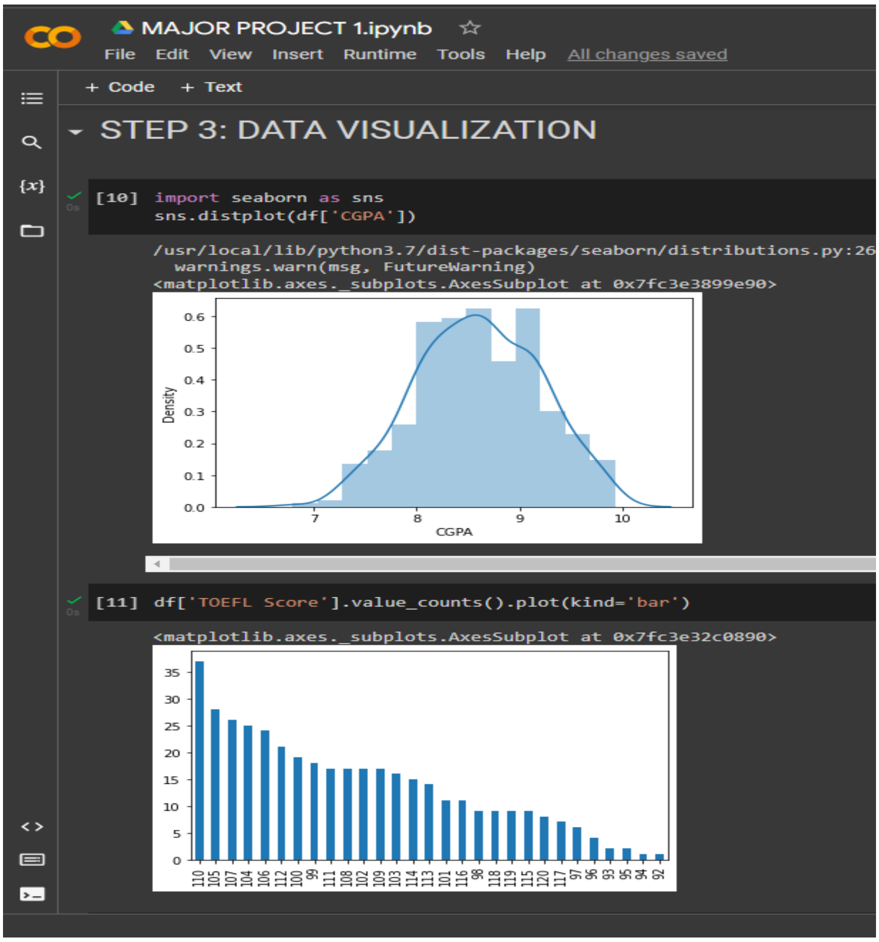
```
[8] df = df.drop(columns='Research')
    df
```

	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Chance of Admit
0	337	118	4	4.5	4.5	9.65	0.92
1	324	107	4	4.0	4.5	8.87	0.76
2	316	104	3	3.0	3.5	8.00	0.72
3	322	110	3	3.5	2.5	8.67	0.80
4	314	103	2	2.0	3.0	8.21	0.65
...	...	...	...	...	...	...	...
395	324	110	3	3.5	3.5	9.04	0.82
396	325	107	3	3.0	3.5	9.11	0.84
397	330	116	4	5.0	4.5	9.45	0.91
398	312	103	3	3.5	4.0	8.78	0.67
399	333	117	4	5.0	4.0	9.66	0.95

400 rows × 7 columns

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

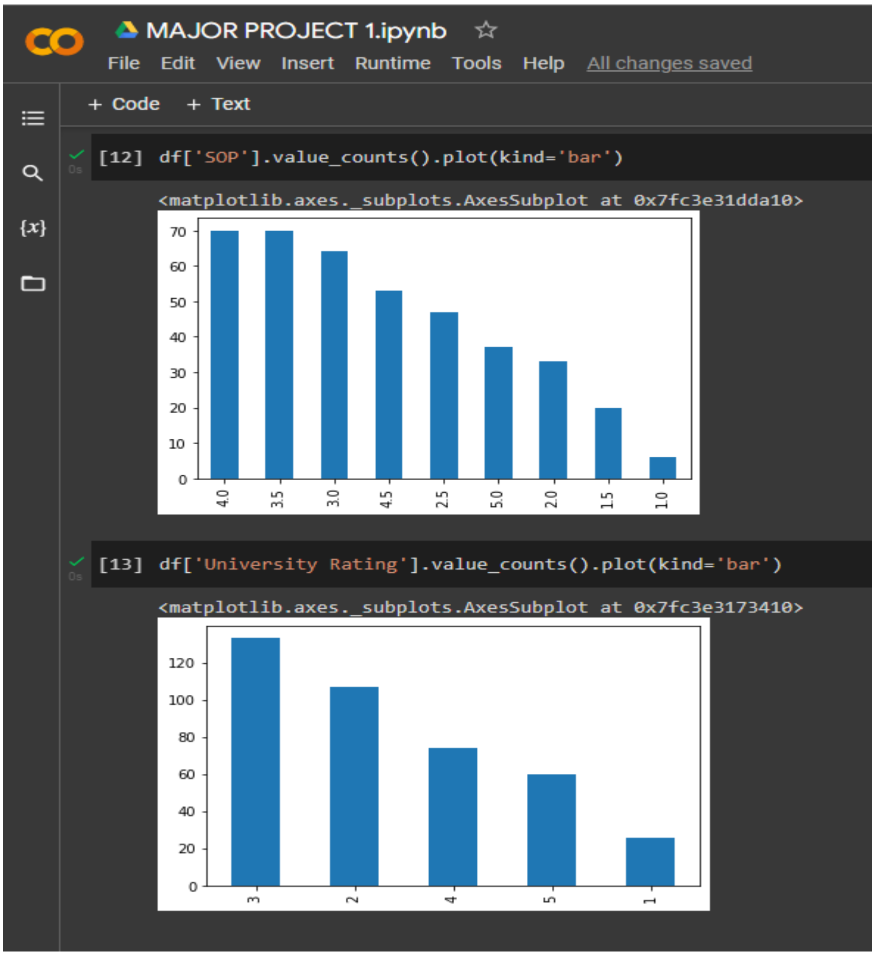
```
GRE Score            0
TOEFL Score          0
University Rating    0
SOP                  0
LOR                  0
CGPA                 0
Chance of Admit      0
dtype: int64
```



STEP 3: DATA VISUALIZATION

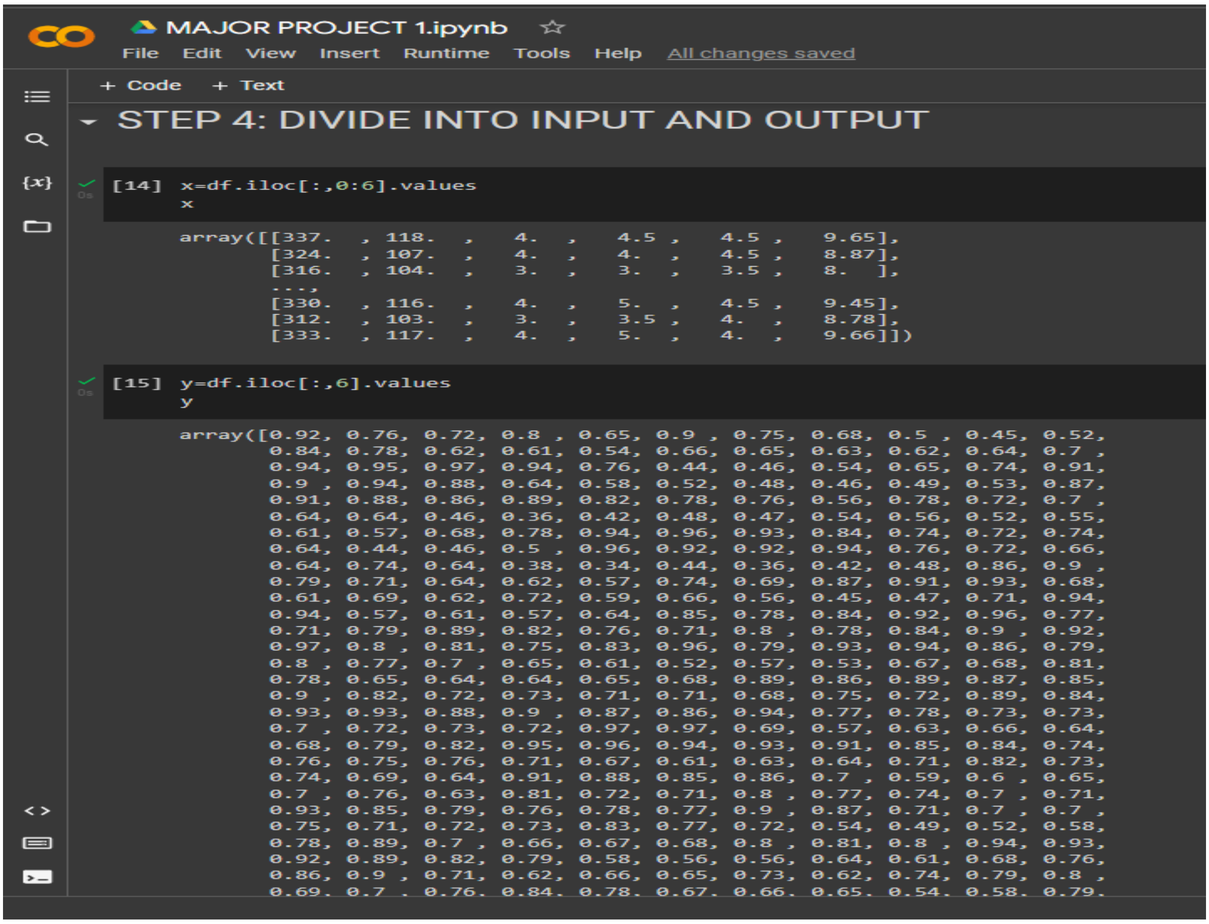
```
[10] import seaborn as sns
     sns.distplot(df['CGPA'])

/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:26
  warnings.warn(msg, FutureWarning)
<matplotlib.axes._subplots.AxesSubplot at 0x7fc3e3899e90>
```

```
[11] df['TOEFL Score'].value_counts().plot(kind='bar')

<matplotlib.axes._subplots.AxesSubplot at 0x7fc3e32c0890>
```



```
[12] df['SOP'].value_counts().plot(kind='bar')

<matplotlib.axes._subplots.AxesSubplot at 0x7fc3e31dda10>
```

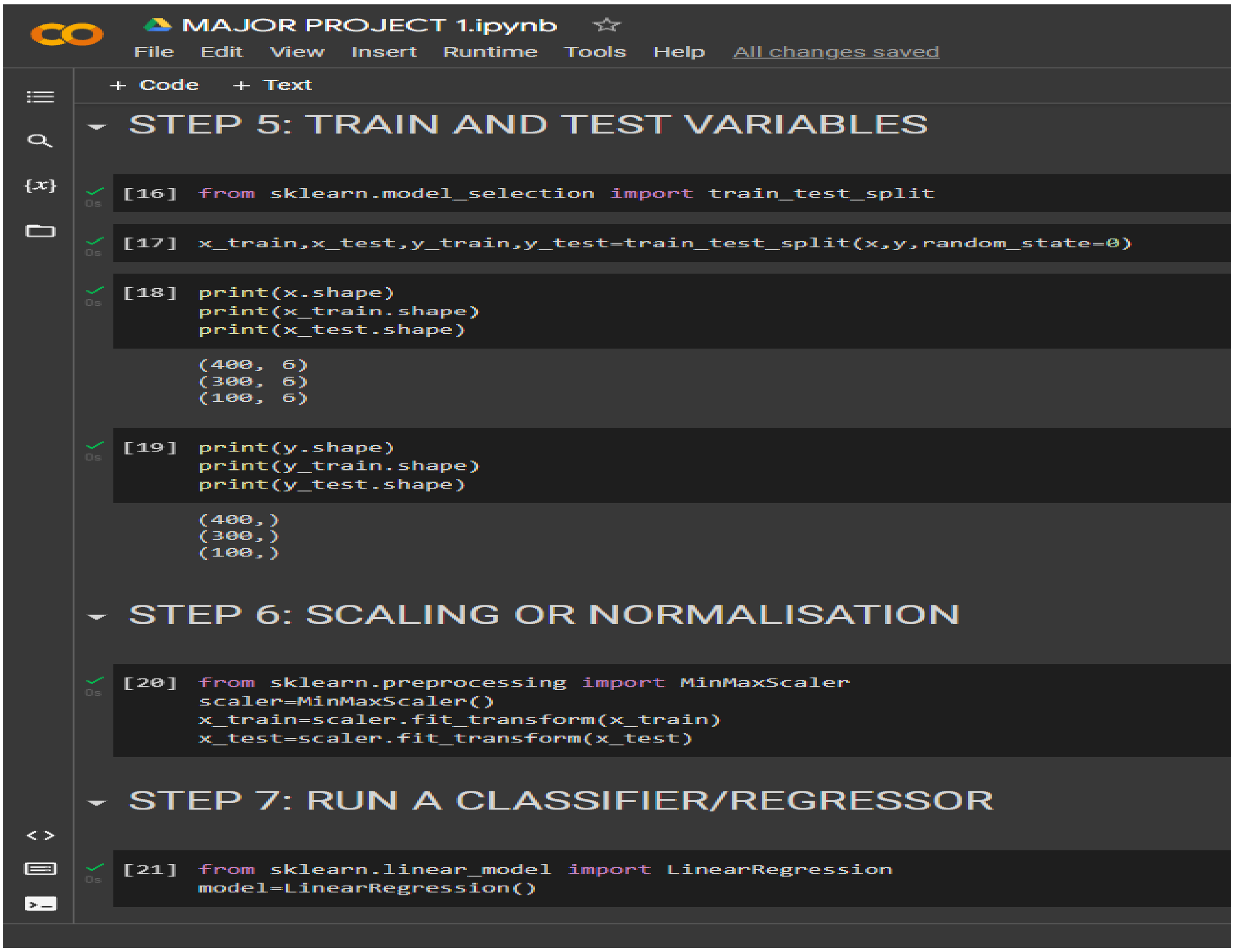
```
[13] df['University Rating'].value_counts().plot(kind='bar')

<matplotlib.axes._subplots.AxesSubplot at 0x7fc3e3173410>
```



STEP 4: DIVIDE INTO INPUT AND OUTPUT

```
[14] x=df.iloc[:,0:6].values
     x

     array([[337.  , 118.  ,   4.  ,   4.5 ,   4.5 ,   9.65],
            [324.  , 107.  ,   4.  ,   4.  ,   4.5 ,   8.87],
            [316.  , 104.  ,   3.  ,   3.  ,   3.5 ,   8.  ],
            ...,
            [330.  , 116.  ,   4.  ,   5.  ,   4.5 ,   9.45],
            [312.  , 103.  ,   3.  ,   3.5 ,   4.  ,   8.78],
            [333.  , 117.  ,   4.  ,   5.  ,   4.  ,   9.66]])
```

```
[15] y=df.iloc[:,6].values
     y

     array([0.92, 0.76, 0.72, 0.8 , 0.65, 0.9 , 0.75, 0.68, 0.5 , 0.45, 0.52,
            0.84, 0.78, 0.62, 0.61, 0.54, 0.66, 0.65, 0.63, 0.62, 0.64, 0.7 ,
            0.94, 0.95, 0.97, 0.94, 0.76, 0.44, 0.46, 0.54, 0.65, 0.74, 0.91,
            0.9 , 0.94, 0.88, 0.64, 0.58, 0.52, 0.48, 0.46, 0.49, 0.53, 0.87,
            0.91, 0.88, 0.86, 0.89, 0.82, 0.78, 0.76, 0.56, 0.78, 0.72, 0.7 ,
            0.64, 0.64, 0.46, 0.36, 0.42, 0.48, 0.47, 0.54, 0.56, 0.52, 0.55,
            0.61, 0.57, 0.68, 0.78, 0.94, 0.96, 0.93, 0.84, 0.74, 0.72, 0.74,
            0.64, 0.44, 0.46, 0.5 , 0.96, 0.92, 0.92, 0.94, 0.76, 0.72, 0.66,
            0.64, 0.74, 0.64, 0.38, 0.34, 0.44, 0.36, 0.42, 0.48, 0.86, 0.9 ,
            0.79, 0.71, 0.64, 0.62, 0.57, 0.74, 0.69, 0.87, 0.91, 0.93, 0.68,
            0.61, 0.69, 0.62, 0.72, 0.59, 0.66, 0.56, 0.45, 0.47, 0.71, 0.94,
            0.94, 0.57, 0.61, 0.57, 0.64, 0.85, 0.78, 0.84, 0.92, 0.96, 0.77,
            0.71, 0.79, 0.89, 0.82, 0.76, 0.71, 0.8 , 0.78, 0.84, 0.9 , 0.92,
            0.97, 0.8 , 0.81, 0.75, 0.83, 0.96, 0.79, 0.93, 0.94, 0.86, 0.79,
            0.8 , 0.77, 0.7 , 0.65, 0.61, 0.52, 0.57, 0.53, 0.67, 0.68, 0.81,
            0.78, 0.65, 0.64, 0.64, 0.65, 0.68, 0.89, 0.86, 0.89, 0.87, 0.85,
            0.9 , 0.82, 0.72, 0.73, 0.71, 0.71, 0.68, 0.75, 0.72, 0.89, 0.84,
            0.93, 0.93, 0.88, 0.9 , 0.87, 0.86, 0.94, 0.77, 0.78, 0.73, 0.73,
            0.7 , 0.72, 0.73, 0.72, 0.97, 0.97, 0.69, 0.57, 0.63, 0.66, 0.64,
            0.68, 0.79, 0.82, 0.95, 0.96, 0.94, 0.93, 0.91, 0.85, 0.84, 0.74,
            0.76, 0.75, 0.76, 0.71, 0.67, 0.61, 0.63, 0.64, 0.71, 0.82, 0.73,
            0.74, 0.69, 0.64, 0.91, 0.88, 0.85, 0.86, 0.7 , 0.59, 0.6 , 0.65,
            0.7 , 0.76, 0.63, 0.81, 0.72, 0.71, 0.8 , 0.77, 0.74, 0.7 , 0.71,
            0.93, 0.85, 0.79, 0.76, 0.78, 0.77, 0.9 , 0.87, 0.71, 0.7 , 0.7 ,
            0.75, 0.71, 0.72, 0.73, 0.83, 0.77, 0.72, 0.54, 0.49, 0.52, 0.58,
            0.78, 0.89, 0.7 , 0.66, 0.67, 0.68, 0.8 , 0.81, 0.8 , 0.94, 0.93,
            0.92, 0.89, 0.82, 0.79, 0.58, 0.56, 0.56, 0.64, 0.61, 0.68, 0.76,
            0.86, 0.9 , 0.71, 0.62, 0.66, 0.65, 0.73, 0.62, 0.74, 0.79, 0.8 ,
            0.69, 0.7 , 0.76, 0.84, 0.78, 0.67, 0.66, 0.65, 0.54, 0.58, 0.79,
```



STEP 5: TRAIN AND TEST VARIABLES

```
[16] from sklearn.model_selection import train_test_split
```

```
[17] x_train,x_test,y_train,y_test=train_test_split(x,y,random_state=0)
```

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

     (400, 6)
     (300, 6)
     (100, 6)
```

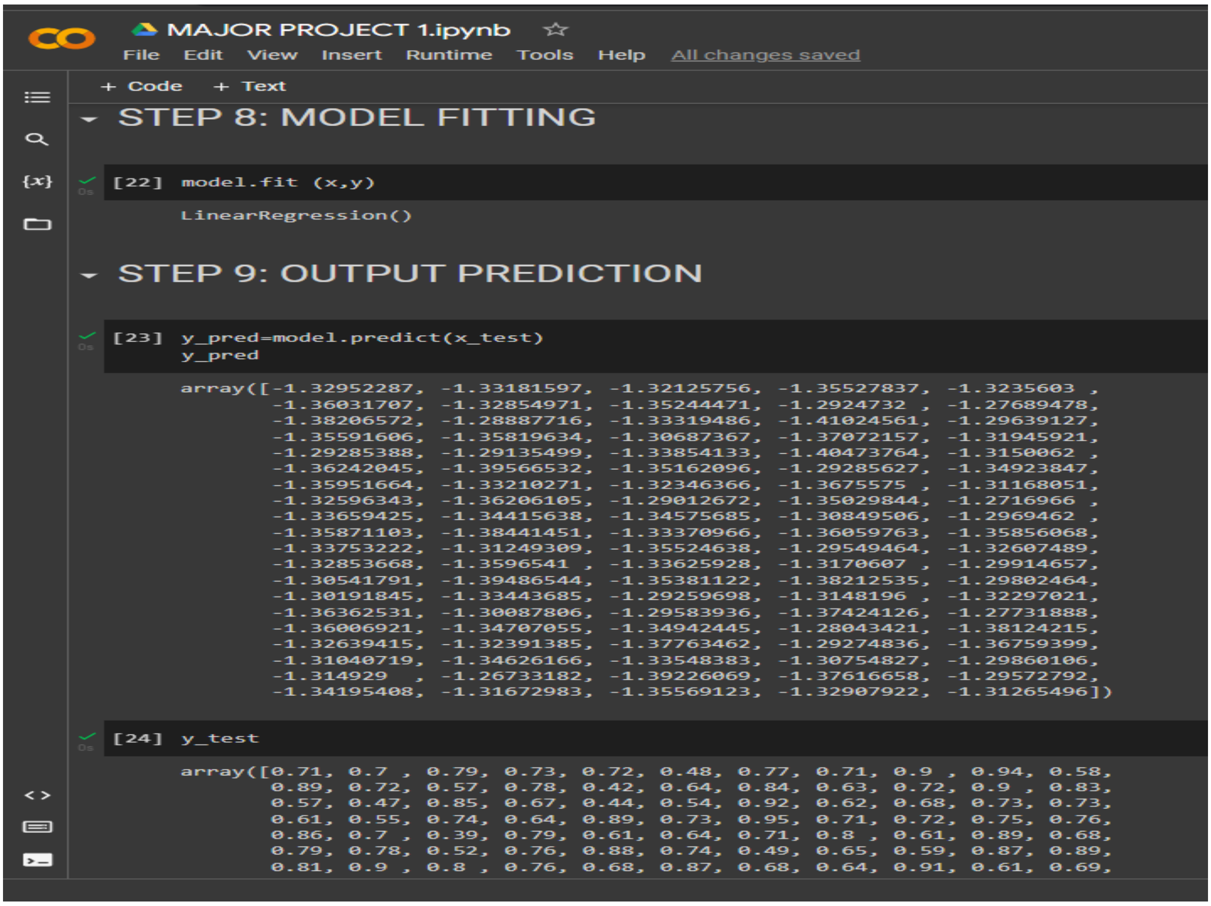
```
[19] print(y.shape)
     print(y_train.shape)
     print(y_test.shape)

     (400,)
     (300,)
     (100,)
```

STEP 6: SCALING OR NORMALISATION

```
[20] from sklearn.preprocessing import MinMaxScaler
     scaler=MinMaxScaler()
     x_train=scaler.fit_transform(x_train)
     x_test=scaler.fit_transform(x_test)
```

STEP 7: RUN A CLASSIFIER/REGRESSOR

```
[21] from sklearn.linear_model import LinearRegression
     model=LinearRegression()
```



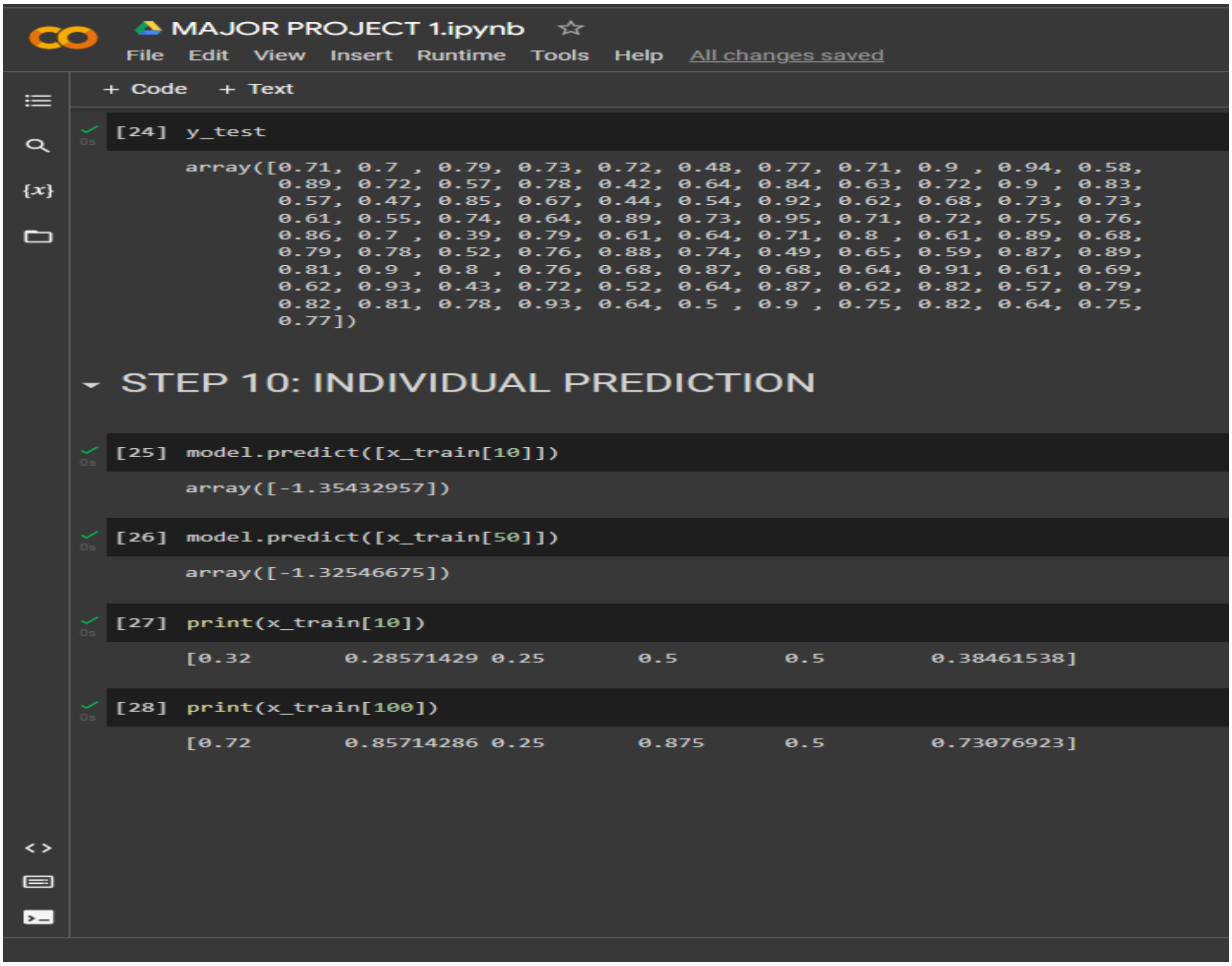
STEP 8: MODEL FITTING

```
[22] model.fit (x,y)

     LinearRegression()
```

STEP 9: OUTPUT PREDICTION

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

     array([-1.32952287, -1.33181597, -1.32125756, -1.35527837, -1.3235603 ,
            -1.36031707, -1.32854971, -1.35244471, -1.2924732 , -1.27689478,
            -1.38206572, -1.28887716, -1.33319486, -1.41024561, -1.29639127,
            -1.35591606, -1.35819634, -1.30687367, -1.37072157, -1.31945921,
            -1.29285388, -1.29135499, -1.33854133, -1.40473764, -1.3150062 ,
            -1.36242045, -1.39566532, -1.35162096, -1.29285627, -1.34923847,
            -1.35951664, -1.33210271, -1.32346366, -1.3675575 , -1.31168051,
            -1.32596343, -1.36206105, -1.29012672, -1.35029844, -1.2716966 ,
            -1.33659425, -1.34415638, -1.34575685, -1.30849506, -1.2969462 ,
            -1.35871103, -1.38441451, -1.33370966, -1.36059763, -1.35856068,
            -1.33753222, -1.31249309, -1.35524638, -1.29549464, -1.32607489,
            -1.32853668, -1.3596541 , -1.33625928, -1.3170607 , -1.29914657,
            -1.30541791, -1.39486544, -1.35381122, -1.38212535, -1.29802464,
            -1.30191845, -1.33443685, -1.29259698, -1.3148196 , -1.32297021,
            -1.36362531, -1.30087806, -1.29583936, -1.37424126, -1.27731888,
            -1.36006921, -1.34707055, -1.34942445, -1.28043421, -1.38124215,
            -1.32639415, -1.32391385, -1.37763462, -1.29274836, -1.36759399,
            -1.31040719, -1.34626166, -1.33548383, -1.30754827, -1.29860106,
            -1.314929  , -1.26733182, -1.39226069, -1.37616658, -1.29572792,
            -1.34195408, -1.31672983, -1.35569123, -1.32907922, -1.31265496])
```

```
[24] y_test

     array([0.71, 0.7 , 0.79, 0.73, 0.72, 0.48, 0.77, 0.71, 0.9 , 0.94, 0.58,
            0.89, 0.72, 0.57, 0.78, 0.42, 0.64, 0.84, 0.63, 0.72, 0.9 , 0.83,
            0.57, 0.47, 0.85, 0.67, 0.44, 0.54, 0.92, 0.62, 0.68, 0.73, 0.73,
            0.61, 0.55, 0.74, 0.64, 0.89, 0.73, 0.95, 0.71, 0.72, 0.75, 0.76,
            0.86, 0.7 , 0.39, 0.79, 0.61, 0.64, 0.71, 0.8 , 0.61, 0.89, 0.68,
            0.79, 0.78, 0.52, 0.76, 0.88, 0.74, 0.49, 0.65, 0.59, 0.87, 0.89,
            0.81, 0.9 , 0.8 , 0.76, 0.68, 0.87, 0.68, 0.64, 0.91, 0.61, 0.69,
```



```
[24] y_test

     array([0.71, 0.7 , 0.79, 0.73, 0.72, 0.48, 0.77, 0.71, 0.9 , 0.94, 0.58,
            0.89, 0.72, 0.57, 0.78, 0.42, 0.64, 0.84, 0.63, 0.72, 0.9 , 0.83,
            0.57, 0.47, 0.85, 0.67, 0.44, 0.54, 0.92, 0.62, 0.68, 0.73, 0.73,
            0.61, 0.55, 0.74, 0.64, 0.89, 0.73, 0.95, 0.71, 0.72, 0.75, 0.76,
            0.86, 0.7 , 0.39, 0.79, 0.61, 0.64, 0.71, 0.8 , 0.61, 0.89, 0.68,
            0.79, 0.78, 0.52, 0.76, 0.88, 0.74, 0.49, 0.65, 0.59, 0.87, 0.89,
            0.81, 0.9 , 0.8 , 0.76, 0.68, 0.87, 0.68, 0.64, 0.91, 0.61, 0.69,
            0.62, 0.93, 0.43, 0.72, 0.52, 0.64, 0.87, 0.62, 0.82, 0.57, 0.79,
            0.82, 0.81, 0.78, 0.93, 0.64, 0.5 , 0.9 , 0.75, 0.82, 0.64, 0.75,
            0.77])
```

STEP 10: INDIVIDUAL PREDICTION

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

     array([-1.35432957])
```

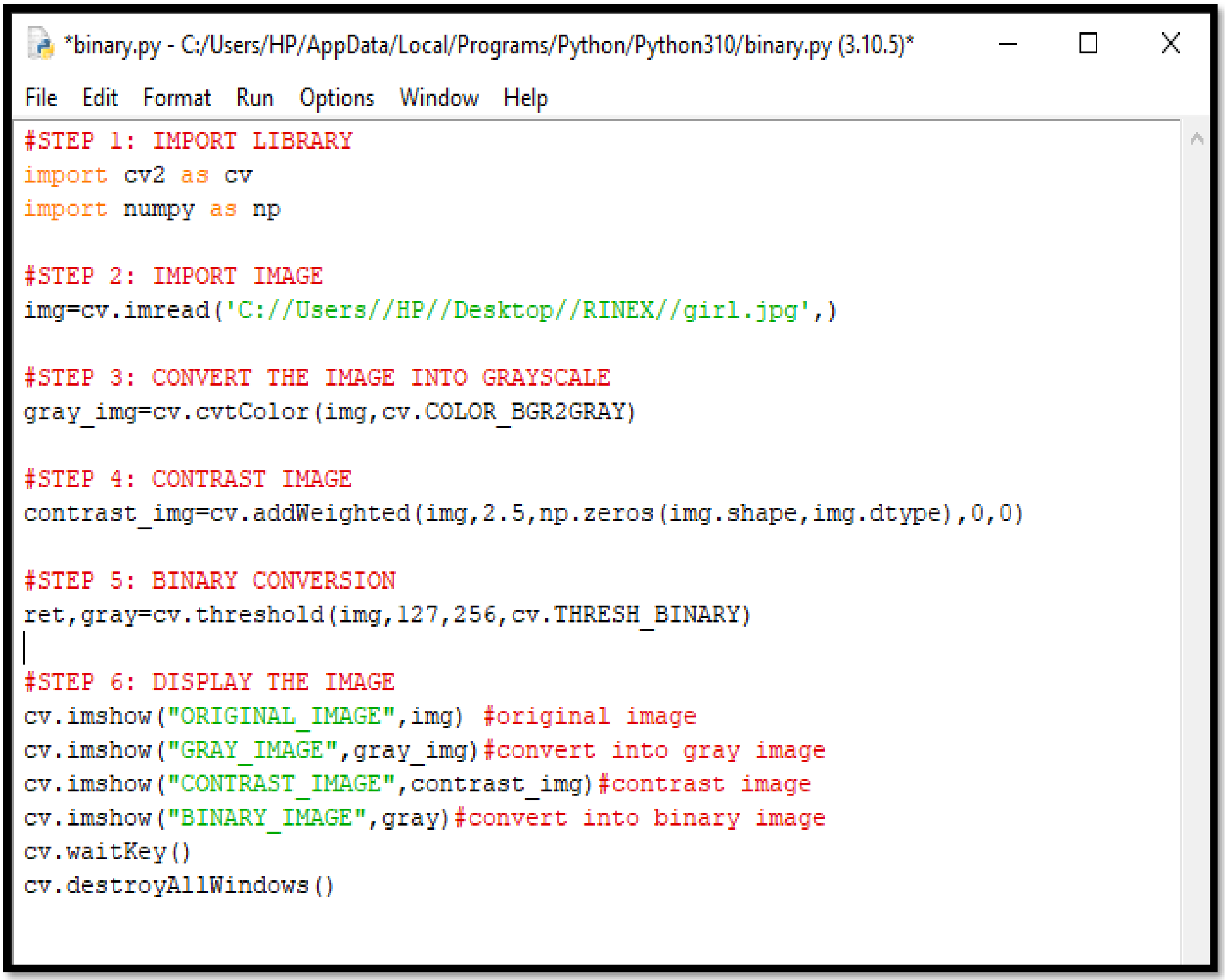
```
[26] model.predict([x_train[50]])

     array([-1.32546675])
```

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

     [0.32       0.28571429 0.25       0.5        0.5        0.38461538]
```

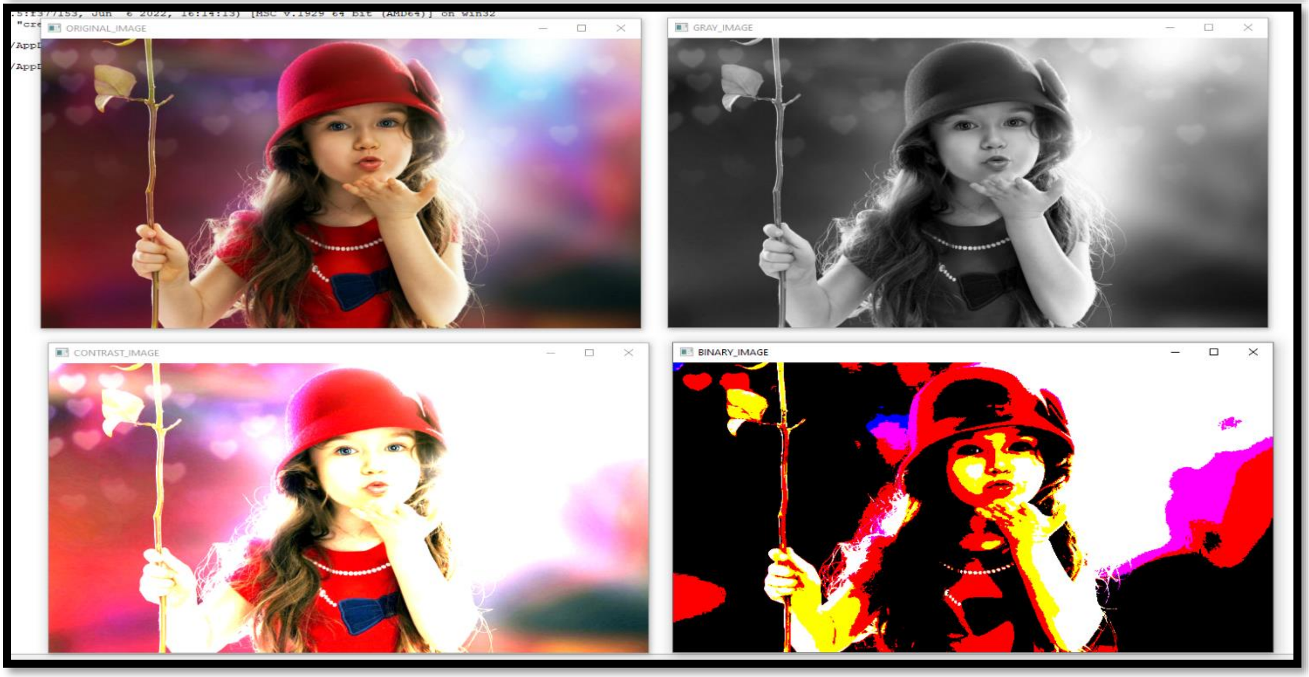
```
[28] print(x_train[100])

     [0.72       0.85714286 0.25       0.875      0.5        0.73076923]
```

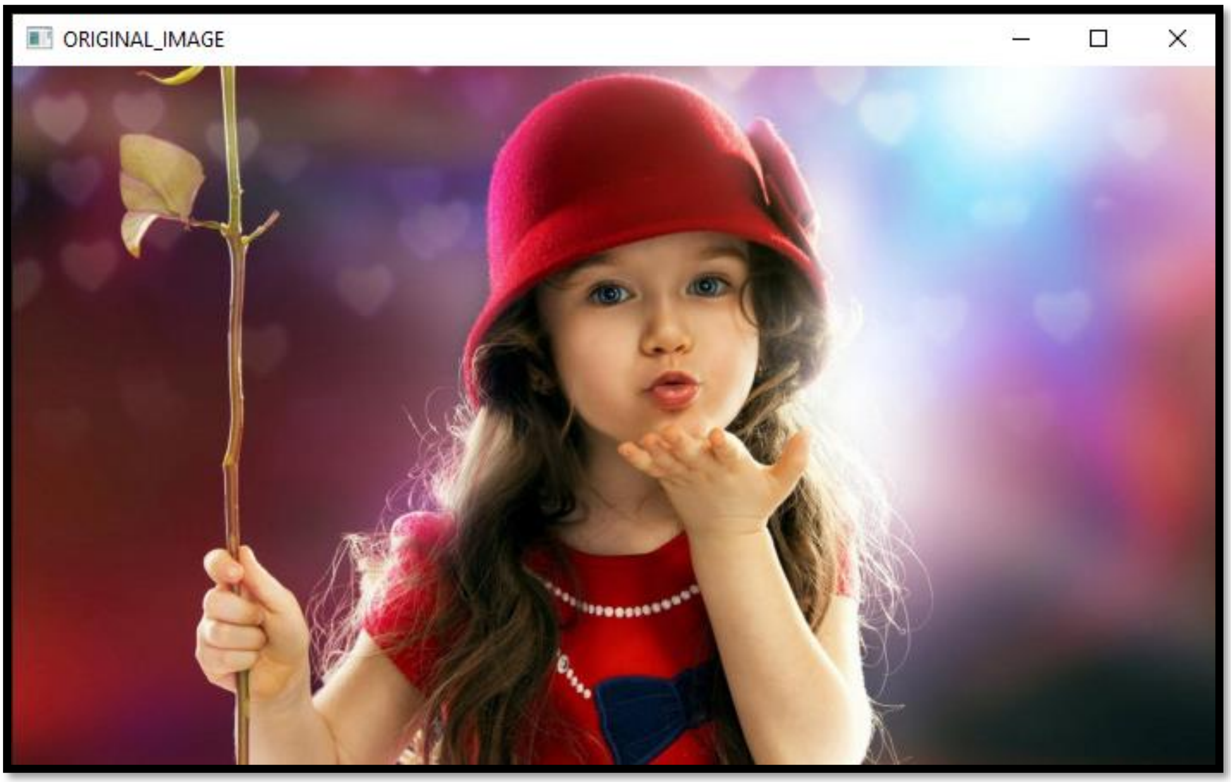
MAJOR PROJECT 2:

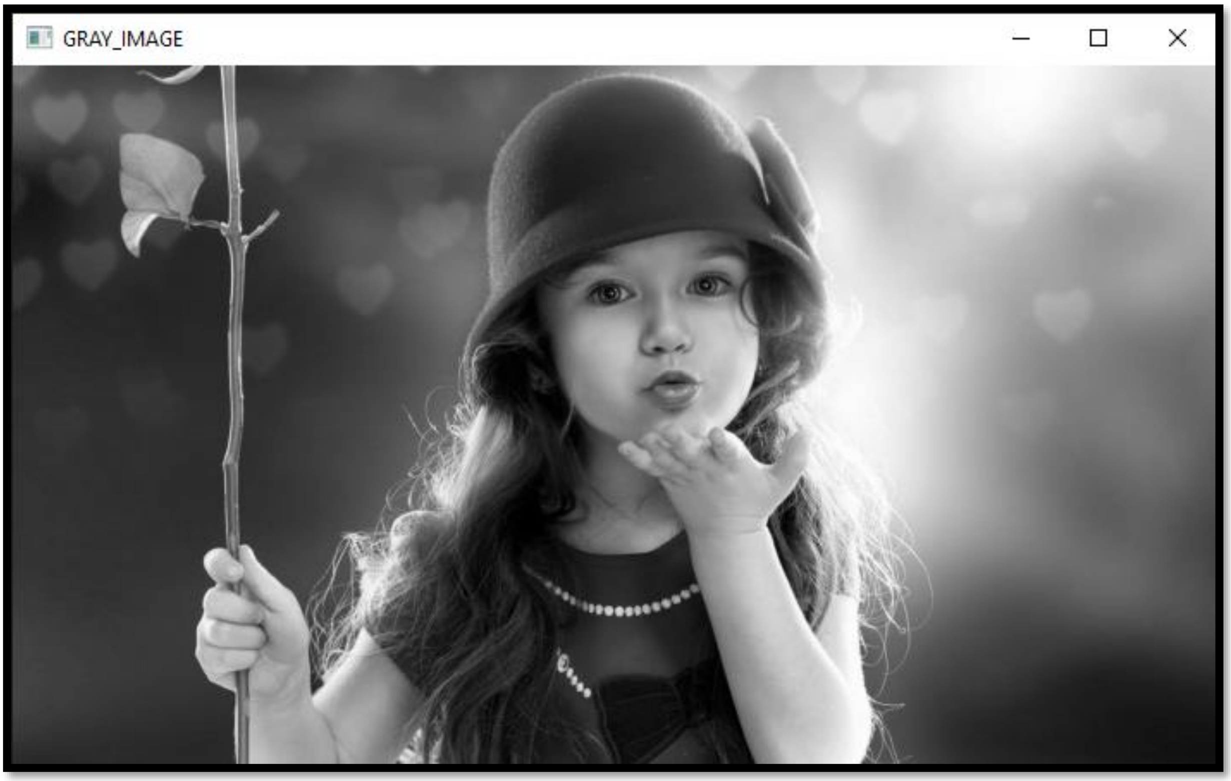
PROJECT ON IMAGE PROCESSING OF IMAGE TO GRAY SCALE , CONTRAST &BINARY CONVERSION

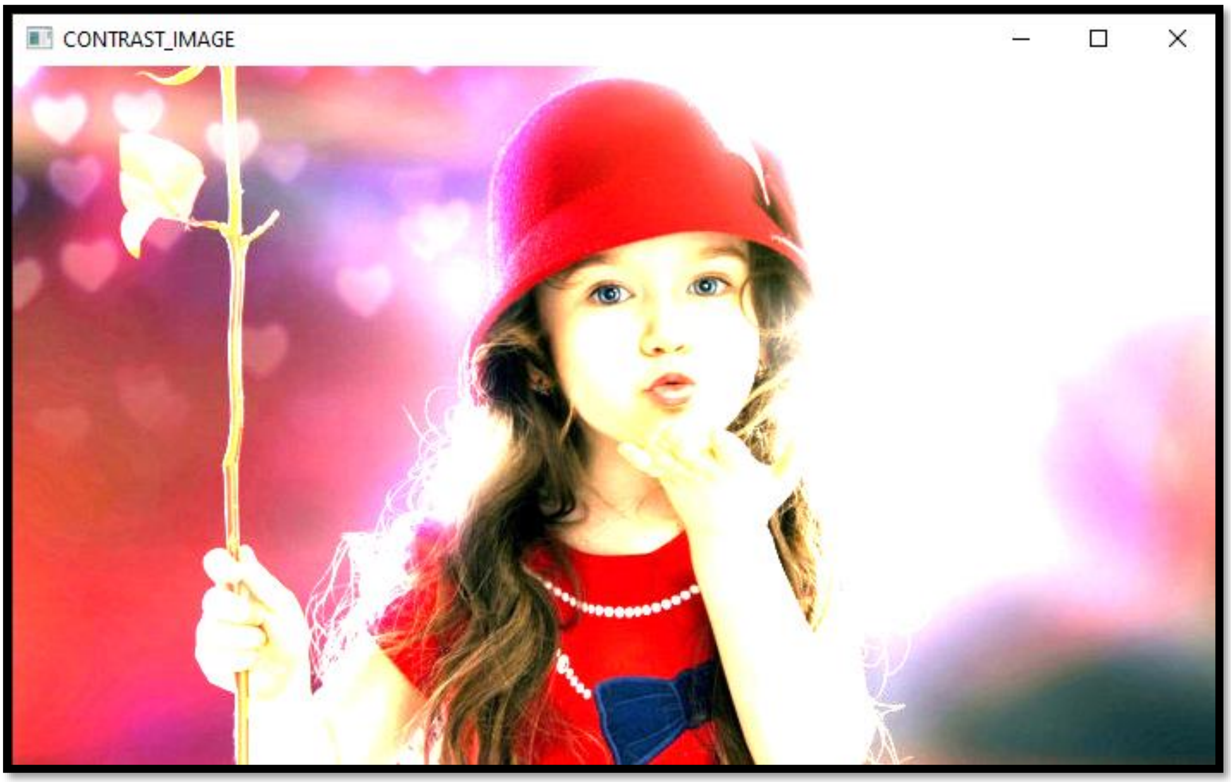

binary.py - C:/Users/HP/AppData/Local/Programs/Python/Python310/binary.py (3.10.5)
File Edit Format Run Options Window Help

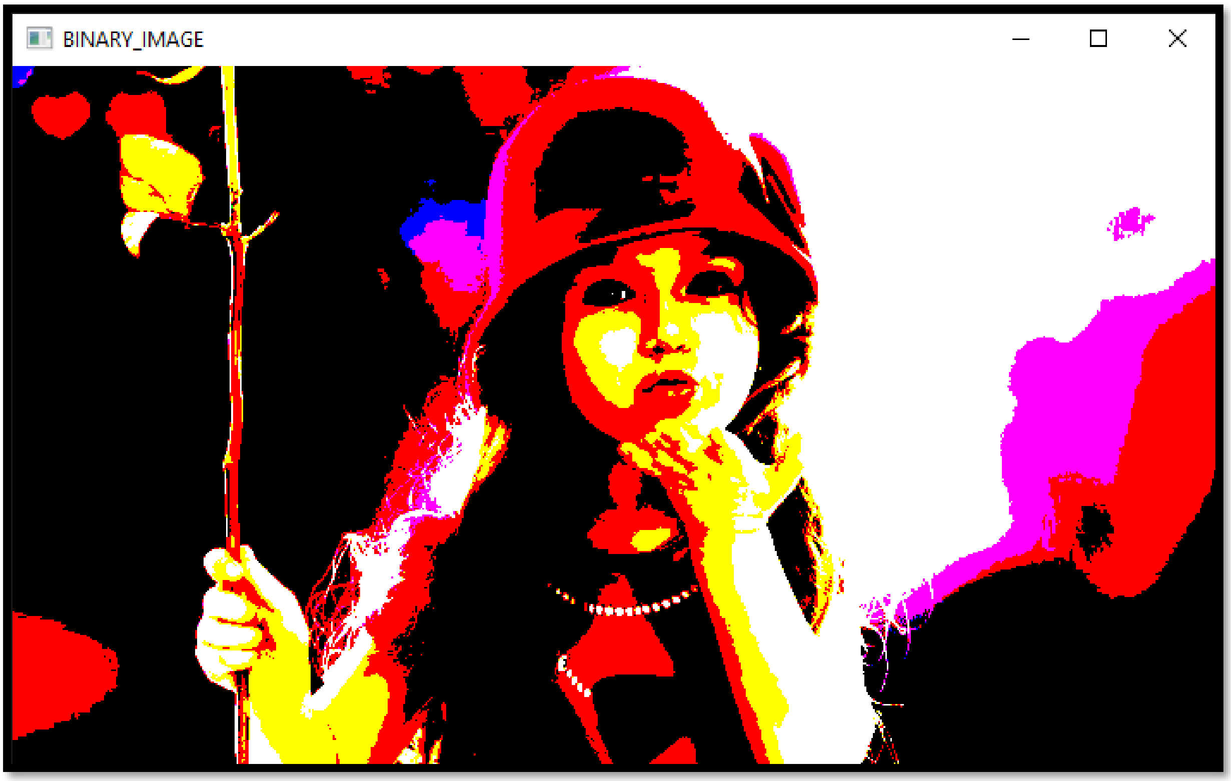
```
#STEP 1: IMPORT LIBRARY
import cv2 as cv
import numpy as np

#STEP 2: IMPORT IMAGE
img=cv.imread('C://Users//HP//Desktop//RINEX//girl.jpg',)

#STEP 3: CONVERT THE IMAGE INTO GRAYSCALE
gray_img=cv.cvtColor(img,cv.COLOR_BGR2GRAY)

#STEP 4: CONTRAST IMAGE
contrast_img=cv.addWeighted(img,2.5,np.zeros(img.shape,img.dtype),0,0)

#STEP 5: BINARY CONVERSION
ret,gray=cv.threshold(img,127,256,cv.THRESH_BINARY)

#STEP 6: DISPLAY THE IMAGE
cv.imshow("ORIGINAL_IMAGE",img) #original image
cv.imshow("GRAY_IMAGE",gray_img)#convert into gray image
cv.imshow("CONTRAST_IMAGE",contrast_img)#contrast image
cv.imshow("BINARY_IMAGE",gray)#convert into binary image
cv.waitKey()
cv.destroyAllWindows()
```




ORIGINAL_IMAGE


GRAY_IMAGE





THANK YOU