```
import numpy as np
import pandas as pd
import seaborn as sb


df1=pd.read_csv("/content/Admission_Predict.csv")
df2=pd.read_csv("/content/Admission_Predict_Ver1.1.csv")


df.shape
```

```
(500, 9)
```

```
df.columns
```

```
Index(['Serial No.', 'GRE Score', 'TOEFL Score', 'University Rating', 'SOP',
       'LOR ', 'CGPA', 'Research', 'Chance of Admit '],
      dtype='object')
```

```
from sklearn .preprocessing import Binarizer
bi=Binarizer(threshold=0.75)
df['Chance of Admit ']=bi.fit_transform(df[['Chance of Admit ']])


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	1.0
1	2	324	107	4	4.0	4.5	8.87	1	1.0
2	3	316	104	3	3.0	3.5	8.00	1	0.0
3	4	322	110	3	3.5	2.5	8.67	1	1.0
4	5	314	103	2	2.0	3.0	8.21	0	0.0

```
x=df.drop('Chance of Admit ',axis=1)#input(idependent variable)
y=df['Chance of Admit ']#output(dependent variable)


x
```

	Serial No.	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research
0	1	337	118	4	4.5	4.5	9.65	1
1	2	324	107	4	4.0	4.5	8.87	1
2	3	316	104	3	3.0	3.5	8.00	1
3	4	322	110	3	3.5	2.5	8.67	1
4	5	314	103	2	2.0	3.0	8.21	0
...	...	...	...	...	...	...	...	...
495	496	332	108	5	4.5	4.0	9.02	1
496	497	337	117	5	5.0	5.0	9.87	1
497	498	330	120	5	4.5	5.0	9.56	1
498	499	312	103	4	4.0	5.0	8.43	0
499	500	327	113	4	4.5	4.5	9.04	0

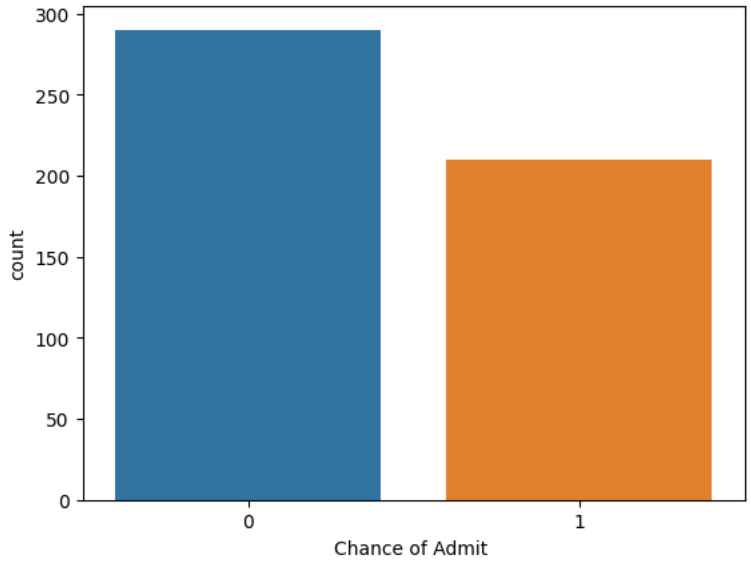
500 rows × 8 columns

```
y=y.astype('int')


y
```

```
0      1
1      1
2      0
3      1
4      0
      ..
495    1
496    1
497    1
498    0
```

```
499    1
Name: Chance of Admit , Length: 500, dtype: int64
```

```
sb.countplot(x=y);
```




```
y.value_counts()
```

```
0    290
1    210
Name: Chance of Admit , dtype: int64
```

```
from sklearn.model_selection import train_test_split
```

```
x_train,x_test,y_train,y_test=train_test_split(x,y,random_state=0,test_size=0.25)
```

```
xs=x_train.shape
ys=y_train.shape
print("X train Shape=",xs)
print("Y train Shape=",xs)
```

```
X train Shape= (375, 8)
Y train Shape= (375, 8)
```

```
xt=x_test.shape
yt=y_test.shape
print("X test Shape=",xt)
print("Y test Shape=",xt)
```

```
X test Shape= (125, 8)
Y test Shape= (125, 8)
```

```
from sklearn.tree import DecisionTreeClassifier
```

```
classifier=DecisionTreeClassifier(random_state=0)
classifier.fit(x_train,y_train)
```

```
DecisionTreeClassifier
DecisionTreeClassifier(random_state=0)
```

```
y_pred=classifier.predict(x_test) #predicting on test dataset
```

```
#for comparing actual and predicted values of model
result=pd.DataFrame({
    'actual':y_test,#already known values
    'predicted':y_pred #testing dataset
})
print("The result of comparision is:\n",result)
```

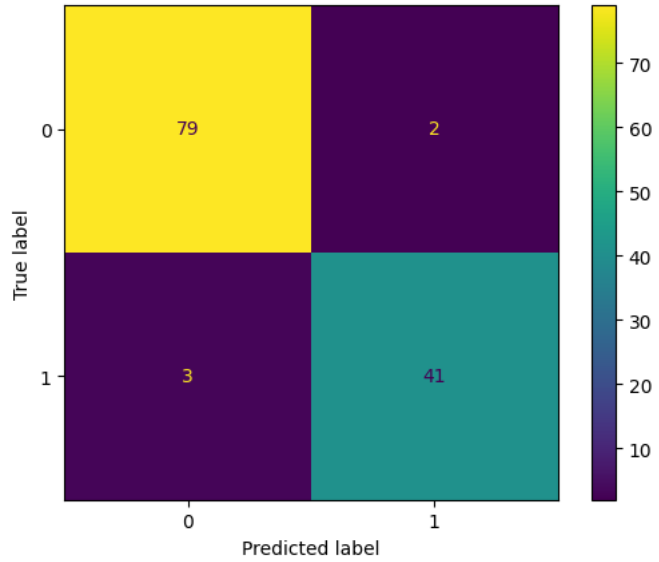
```
The result of comparision is:
      actual  predicted
90         0          0
254        1          1
```

```
283       1          1
445       1          1
461       0          0
..      ...        ...
430       0          0
49        1          0
134       1          1
365       1          1
413       0          0

[125 rows x 2 columns]
```

```
from sklearn.metrics import ConfusionMatrixDisplay,accuracy_score
from sklearn.metrics import classification_report
```

```
ConfusionMatrixDisplay.from_predictions(y_test,y_pred)
```

```
<sklearn.metrics._plot.confusion_matrix.ConfusionMatrixDisplay at 0x7c6baa543be0>
```




```
accuracy=accuracy_score(y_test,y_pred)
print("Accuracy of model is:",accuracy)
```

```
Accuracy of model is: 0.96
```

```
report=classification_report(y_test,y_pred)
print("\t\t\tClassification report\n",report)
```

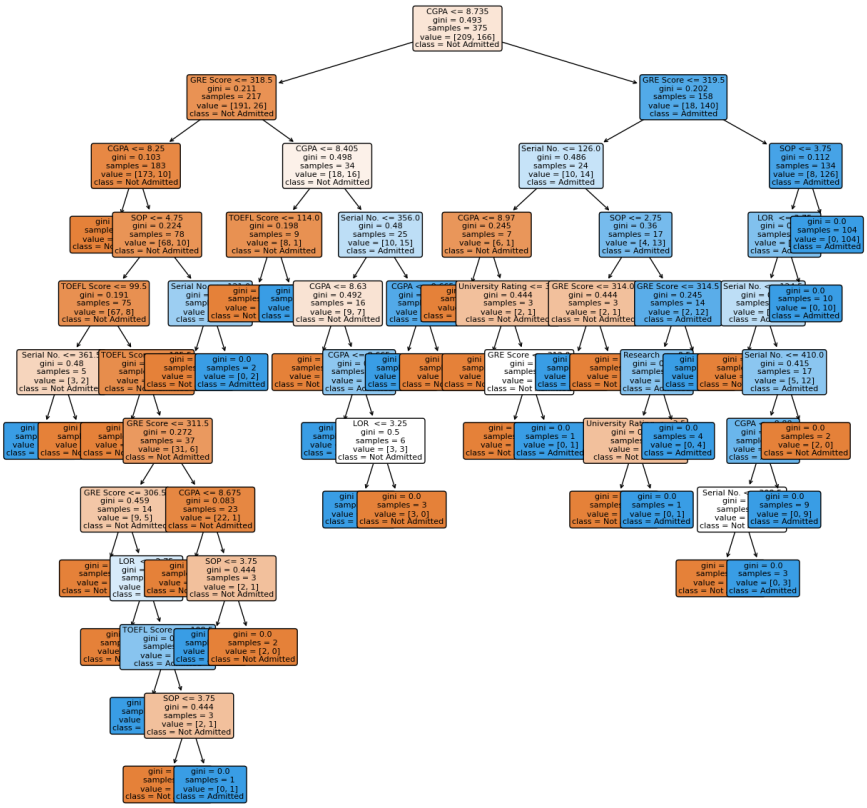
```
                        Classification report
                   precision    recall  f1-score   support

               0       0.96      0.98      0.97        81
               1       0.95      0.93      0.94        44

        accuracy                           0.96       125
       macro avg       0.96      0.95      0.96       125
    weighted avg       0.96      0.96      0.96       125
```

```
New_test=[[499,312,103,4,4.0,5.0,8.43,1]]
classifier.predict(New_test)[0]
```

```
/usr/local/lib/python3.10/dist-packages/sklearn/base.py:439: UserWarning: X does not have valid feature names, but DecisionTreeClas
  warnings.warn(
0
```

```
from sklearn.tree import plot_tree
import matplotlib.pyplot as plt
```

```
plt.figure(figsize=(15,15))
plot_tree(classifier,fontsize=8,filled=True,rounded=True,feature_names=x.columns,class_names=['Not Admitted','Admitted']);
```


CGPA <= 8.735
gini = 0.493
samples = 375
value = [209, 166]
class = Not Admitted
GRE Score <= 318.5
gini = 0.211
samples = 217
value = [191, 26]
class = Not Admitted
GRE Score <= 319.5
gini = 0.202
samples = 158
value = [18, 140]
class = Admitted
CGPA <= 8.25
gini = 0.103
samples = 183
value = [173, 10]
class = Not Admitted
CGPA <= 8.405
gini = 0.498
samples = 34
value = [18, 16]
class = Not Admitted
Serial No. <= 126.0
gini = 0.486
samples = 24
value = [10, 14]
class = Admitted
SOP <= 3.75
gini = 0.112
samples = 134
value = [8, 126]
class = Admitted
SOP <= 4.75
gini = 0.224
samples = 78
value = [68, 10]
class = Not Admitted
TOEFL Score <= 114.0
gini = 0.198
samples = 9
value = [8, 1]
class = Not Admitted
Serial No. <= 356.0
gini = 0.48
samples = 25
value = [10, 15]
class = Admitted
CGPA <= 8.97
gini = 0.245
samples = 7
value = [6, 1]
class = Not Admitted
SOP <= 2.75
gini = 0.36
samples = 17
value = [4, 13]
class = Admitted
gini = 0.0
samples = 104
value = [0, 104]
class = Admitted
TOEFL Score <= 99.5
gini = 0.191
samples = 75
value = [67, 8]
class = Not Admitted
CGPA <= 8.63
gini = 0.492
samples = 16
value = [9, 7]
class = Not Admitted
University Rating <= 3
gini = 0.444
samples = 3
value = [2, 1]
class = Not Admitted
GRE Score <= 314.0
gini = 0.444
samples = 3
value = [2, 1]
class = Not Admitted
GRE Score <= 314.5
gini = 0.245
samples = 14
value = [2, 12]
class = Admitted
gini = 0.0
samples = 10
value = [0, 10]
class = Admitted
Serial No. <= 361.5
gini = 0.48
samples = 5
value = [3, 2]
class = Not Admitted
gini = 0.0
samples = 2
value = [0, 2]
class = Admitted
Research <= 0.5
gini = 0.5
samples = 4
value = [2, 2]
class = Not Admitted
gini = 0.0
samples = 2
value = [0, 4]
class = Admitted
Serial No. <= 410.0
gini = 0.415
samples = 17
value = [5, 12]
class = Admitted
GRE Score <= 311.5
gini = 0.272
samples = 37
value = [31, 6]
class = Not Admitted
LOR <= 3.25
gini = 0.5
samples = 6
value = [3, 3]
class = Not Admitted
gini = 0.0
samples = 1
value = [0, 1]
class = Admitted
gini = 0.0
samples = 4
value = [0, 4]
class = Admitted
gini = 0.0
samples = 2
value = [2, 0]
class = Not Admitted
GRE Score <= 306.5
gini = 0.459
samples = 14
value = [9, 5]
class = Not Admitted
CGPA <= 8.675
gini = 0.083
samples = 23
value = [22, 1]
class = Not Admitted
gini = 0.0
samples = 3
value = [3, 0]
class = Not Admitted
gini = 0.0
samples = 1
value = [0, 1]
class = Admitted
gini = 0.0
samples = 9
value = [0, 9]
class = Admitted
SOP <= 3.75
gini = 0.444
samples = 3
value = [2, 1]
class = Not Admitted
gini = 0.0
samples = 2
value = [2, 0]
class = Not Admitted
gini = 0.0
samples = 3
value = [0, 3]
class = Admitted
SOP <= 3.75
gini = 0.444
samples = 3
value = [2, 1]
class = Not Admitted
gini = 0.0
samples = 1
value = [0, 1]
class = Admitted