In [133…
```
import pandas as pd
from sklearn.ensemble import RandomForestClassifier
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score,confusion_matrix,classification_report
from sklearn.tree import DecisionTreeClassifier
from sklearn.svm import SVC
from sklearn.naive_bayes import GaussianNB
```

In [134…
```
dataset=pd.read_csv(r"C:\Users\DELL\Downloads\archive.zip")
```

In [135…
```
dataset
```

Out[135…

	age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpeak	slope	ca	thal
0	63	1	3	145	233	1	0	150	0	2.3	0	0	1
1	37	1	2	130	250	0	1	187	0	3.5	0	0	2
2	41	0	1	130	204	0	0	172	0	1.4	2	0	2
3	56	1	1	120	236	0	1	178	0	0.8	2	0	2
4	57	0	0	120	354	0	1	163	1	0.6	2	0	2
…	…	…	…	…	…	…	…	…	…	…	…	…	…
298	57	0	0	140	241	0	1	123	1	0.2	1	0	3
299	45	1	3	110	264	0	1	132	0	1.2	1	0	3
300	68	1	0	144	193	1	1	141	0	3.4	1	2	3
301	57	1	0	130	131	0	1	115	1	1.2	1	1	3
302	57	0	1	130	236	0	0	174	0	0.0	1	1	2

303 rows × 14 columns

In [136…
```
dataset.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 303 entries, 0 to 302
Data columns (total 14 columns):
 #   Column    Non-Null Count  Dtype  
---  ------    --------------  -----  
 0   age       303 non-null    int64  
 1   sex       303 non-null    int64  
 2   cp        303 non-null    int64  
 3   trestbps  303 non-null    int64  
 4   chol      303 non-null    int64  
 5   fbs       303 non-null    int64  
 6   restecg   303 non-null    int64  
 7   thalach   303 non-null    int64  
 8   exang     303 non-null    int64  
 9   oldpeak   303 non-null    float64
 10  slope     303 non-null    int64  
 11  ca        303 non-null    int64  
 12  thal      303 non-null    int64  
 13  target    303 non-null    int64  
dtypes: float64(1), int64(13)
memory usage: 33.3 KB
```

In [137…
```
dataset.isnull().sum()
```

Out[137…
```
age         0
sex         0
cp          0
trestbps    0
chol        0
fbs         0
restecg     0
thalach     0
exang       0
oldpeak     0
slope       0
ca          0
thal        0
target      0
dtype: int64
```

In [138…
```
#part of preprocessing and no null values

x=dataset.iloc[:,0:13]
```

In [139…
```
x
```

Out[139…

	age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpeak	slope	ca	thal
0	63	1	3	145	233	1	0	150	0	2.3	0	0	1
1	37	1	2	130	250	0	1	187	0	3.5	0	0	2
2	41	0	1	130	204	0	0	172	0	1.4	2	0	2
3	56	1	1	120	236	0	1	178	0	0.8	2	0	2
4	57	0	0	120	354	0	1	163	1	0.6	2	0	2
…	…	…	…	…	…	…	…	…	…	…	…	…	…
298	57	0	0	140	241	0	1	123	1	0.2	1	0	3
299	45	1	3	110	264	0	1	132	0	1.2	1	0	3
300	68	1	0	144	193	1	1	141	0	3.4	1	2	3
301	57	1	0	130	131	0	1	115	1	1.2	1	1	3
302	57	0	1	130	236	0	0	174	0	0.0	1	1	2

303 rows × 13 columns

In [140…
```
y=dataset.iloc[:,13:14]
```

In [141…
```
y
```

Out[141…

	target
0	1
1	1
2	1
3	1
4	1
…	…
298	0
299	0
300	0
301	0
302	0

303 rows × 1 columns

In [142…
```
xtrain,xtest,ytrain,ytest=train_test_split(x,y,test_size=0.20)
```

In [143…
```
xtrain.shape
```

Out[143… (242, 13)

In [144…
```
xtest.shape
```

Out[144… (61, 13)

In [145…
```
model1=RandomForestClassifier()
```

In [146…
```
model1.fit(xtrain,ytrain)
```

```
C:\Users\DELL\AppData\Local\Temp\ipykernel_832\3290233780.py:1: DataConversionWarnin
g: A column-vector y was passed when a 1d array was expected. Please change the shap
e of y to (n_samples,), for example using ravel().
  model1.fit(xtrain,ytrain)
```

Out[146… ▾ RandomForestClassifier

RandomForestClassifier()

In [147…
```
prediction1=model1.predict(xtest)
```

In [148…
```
prediction1
```

Out[148…
```
array([1, 0, 0, 1, 0, 0, 0, 1, 1, 0, 1, 0, 1, 1, 1, 0, 1, 1, 1, 1, 0, 1,
       1, 1, 0, 0, 1, 0, 1, 1, 0, 1, 1, 0, 1, 0, 1, 1, 0, 1, 1, 1, 1, 1,
       0, 1, 0, 0, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0], dtype=int64)
```

In [149…
```
ac1=accuracy_score(ytest,prediction1)
```

In [150…
```
ac1
```

Out[150… 0.8360655737704918

In [151…
```
model2=DecisionTreeClassifier()
```

In [152…
```
model2.fit(xtrain,ytrain)
```

Out[152… ▾ DecisionTreeClassifier

DecisionTreeClassifier()

In [153…
```
prediction2=model2.predict(xtest)
```

In [154…
```
prediction2
```

Out[154…
```
array([1, 1, 1, 1, 0, 1, 1, 1, 1, 0, 1, 0, 1, 1, 1, 1, 1, 1, 0, 1, 0, 1,
       1, 0, 0, 0, 1, 0, 1, 0, 0, 1, 1, 1, 0, 0, 1, 1, 0, 0, 1, 1, 1, 1,
       0, 1, 0, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0], dtype=int64)
```

In [155…
```
ac2=accuracy_score(ytest,prediction2)
```

In [156…
```
ac2
```

Out[156…
```
0.7704918032786885
```

In [157…
```
model3=SVC()
```

In [158…
```
model3.fit(xtrain,ytrain)
```

```
C:\Users\DELL\anaconda3\Lib\site-packages\sklearn\utils\validation.py:1143: DataConv
ersionWarning: A column-vector y was passed when a 1d array was expected. Please cha
nge the shape of y to (n_samples, ), for example using ravel().
  y = column_or_1d(y, warn=True)
```

Out[158…
```
SVC
SVC()
```

In [159…
```
prediction3=model3.predict(xtest)
```

In [160…
```
prediction3
```

Out[160…
```
array([1, 0, 0, 1, 0, 1, 1, 1, 0, 0, 1, 0, 1, 1, 1, 1, 0, 1, 0, 1, 0, 1,
       1, 1, 1, 0, 1, 1, 1, 1, 1, 0, 0, 0, 1, 0, 1, 1, 0, 1, 1, 1, 1, 1,
       0, 1, 1, 1, 1, 1, 1, 1, 0, 1, 0, 0, 0, 0, 0, 1, 1], dtype=int64)
```

In [161…
```
ac3=accuracy_score(prediction3,ytest)
```

In [162…
```
ac3
```

Out[162…
```
0.6721311475409836
```

In [163…
```
model4=GaussianNB()
```

In [164…
```
model4.fit(xtrain,ytrain)
```

```
C:\Users\DELL\anaconda3\Lib\site-packages\sklearn\utils\validation.py:1143: DataConv
ersionWarning: A column-vector y was passed when a 1d array was expected. Please cha
nge the shape of y to (n_samples, ), for example using ravel().
  y = column_or_1d(y, warn=True)
```

Out[164…
```
GaussianNB
GaussianNB()
```

In [165…
```
prediction4=model4.predict(xtest)
```

In [166…
```
prediction4
```

Out[166…
```
array([1, 0, 0, 1, 0, 1, 0, 1, 0, 0, 1, 0, 1, 0, 0, 0, 0, 1, 1, 1, 0, 1,
       1, 1, 0, 0, 1, 0, 1, 1, 1, 0, 1, 0, 1, 0, 1, 1, 0, 1, 1, 1, 1, 1,
       0, 1, 0, 0, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1], dtype=int64)
```

In [167…
```
ac4=accuracy_score(prediction4,ytest)
```

In [168…
```
ac4
```

Out[168…
```
0.8360655737704918
```

In [169…
```
#Confusion_marix
```

In [170…
```
cm=confusion_matrix(ytest,prediction2)
```

In [171…
```
cm
```

Out[171…
```
array([[21,  9],
       [ 5, 26]], dtype=int64)
```

In [172…
```
report=classification_report(ytest,prediction2)
```

In [173…
```
print(report)
```

```
              precision    recall  f1-score   support

           0       0.81      0.70      0.75        30
           1       0.74      0.84      0.79        31

    accuracy                           0.77        61
   macro avg       0.78      0.77      0.77        61
weighted avg       0.77      0.77      0.77        61
```