

In [1]: `#EXP-11`

In [2]: `#Aim:To perform and analysis of decision tree`

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In [4]: `import pandas as pd
import numpy as np`

In [5]: `import os`

In [6]: `os.getcwd()`

Out[6]: 'C:\\Users\\USER'

In [7]: `os.chdir("C:\\Users\\USER\\Desktop")`

In [8]: `data=pd.read_csv("heart - heart.csv")`

In [9]: `data.head()`

Out[9]:

	age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpeak	slope	ca	thal	target
0	52	1	0	125	212	0	1	168	0	1.0	2	2	3	0
1	53	1	0	140	203	1	0	155	1	3.1	0	0	3	0
2	70	1	0	145	174	0	1	125	1	2.6	0	0	3	0
3	61	1	0	148	203	0	1	161	0	0.0	2	1	3	0
4	62	0	0	138	294	1	1	106	0	1.9	1	3	2	0

In [10]: `data.tail()`

Out[10]:

	age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpeak	slope	ca	thal	target
1020	59	1	1	140	221	0	1	164	1	0.0	2	0	2	1
1021	60	1	0	125	258	0	0	141	1	2.8	1	1	3	0
1022	47	1	0	110	275	0	0	118	1	1.0	1	1	2	0
1023	50	0	0	110	254	0	0	159	0	0.0	2	0	2	1
1024	54	1	0	120	188	0	1	113	0	1.4	1	1	3	0

decision tree

```
In [11]: x=data.drop("target", axis=1)
         y=data["target"]
```

```
In [12]: #splitting the data into training and testing data sets
         from sklearn.model_selection import train_test_split
         x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2 ,random_state=42)
```

```
In [14]: from sklearn.tree import DecisionTreeClassifier
```

```
In [18]: dt=DecisionTreeClassifier()
```

```
In [19]: dt.fit(x_train, y_train)
```

```
Out[19]: DecisionTreeClassifier()
```

```
In [20]: y_pred4=dt.predict(x_test)
```

```
In [21]: from sklearn.metrics import accuracy_score
```

```
In [22]: accuracy_score (y_test,y_pred4)
```

```
Out[22]: 0.9853658536585366
```

```
In [23]: x_train
```

```
Out[23]:
```

	age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpeak	slope	ca	thal
835	49	1	2	118	149	0	0	126	0	0.8	2	3	2
137	64	0	0	180	325	0	1	154	1	0.0	2	0	2
534	54	0	2	108	267	0	0	167	0	0.0	2	0	2
495	59	1	0	135	234	0	1	161	0	0.5	1	0	3
244	51	1	2	125	245	1	0	166	0	2.4	1	0	2
...
700	41	1	2	130	214	0	0	168	0	2.0	1	0	2
71	61	1	0	140	207	0	0	138	1	1.9	2	1	3
106	51	1	0	140	299	0	1	173	1	1.6	2	0	3
270	43	1	0	110	211	0	1	161	0	0.0	2	0	3
860	52	1	0	112	230	0	1	160	0	0.0	2	1	2

820 rows × 13 columns

In [24]:

```
x_test
```

Out[24]:

	age	sex	cp	trestbps	chol	fbs	restecg	thalach	exang	oldpeak	slope	ca	thal
527	62	0	0	124	209	0	1	163	0	0.0	2	0	2
359	53	0	2	128	216	0	0	115	0	0.0	2	0	0
447	55	1	0	160	289	0	0	145	1	0.8	1	1	3
31	50	0	1	120	244	0	1	162	0	1.1	2	0	2
621	48	1	0	130	256	1	0	150	1	0.0	2	2	3
...
832	68	1	2	118	277	0	1	151	0	1.0	2	1	3
796	41	1	1	135	203	0	1	132	0	0.0	1	0	1
644	44	1	2	120	226	0	1	169	0	0.0	2	0	2
404	61	1	0	140	207	0	0	138	1	1.9	2	1	3
842	58	1	2	112	230	0	0	165	0	2.5	1	1	3

205 rows × 13 columns

In [25]:

```
y_train
```

Out[25]:

```
835    0
137     1
534     1
495     1
244     1
..
700     1
71      0
106     0
270     1
860     0
Name: target, Length: 820, dtype: int64
```

In [26]:

```
y_test
```

Out[26]:

```
527     1
359     1
447     0
31      1
621     0
..
832     1
796     1
644     1
404     0
842     0
Name: target, Length: 205, dtype: int64
```

In []: