In [1]:
```
#EXP-12
```

In [2]:
```
#Aim:To perform and analysis of random forest classifier
```

In [3]:
```
# Name:Payal Devanand Manwar
# Roll no.: 37
# Sec:A
# Subject:ET1
# Date: 29/09/2025
```

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

Random forest classifier

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 [13]:
```
from sklearn.ensemble import RandomForestClassifier
```

In [15]:
```
rf=RandomForestClassifier()
```

In [16]:
```
rf.fit(x_train, y_train)
```

Out[16]:
```
RandomForestClassifier()
```

In [17]:
```
y_pred5=rf.predict(x_test)
```

In [18]:
```
from sklearn.metrics import accuracy_score
```

In [20]:
```
accuracy_score (y_test,y_pred5)
```

Out[20]:
```
0.9853658536585366
```

In [21]:
```
x_train
```

Out[21]:

	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 [22]:
```
x_test
```

Out[22]:

	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 [23]:
```
y_train
```

Out[23]:
```
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 [24]:
```
y_test
```

Out[24]:
```
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 [ ]:
```

```