```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

```
df=pd.read_csv("/content/exp5.csv")
```

```
df.head()
```

	PassengerId	Survived	Pclass	Name	Sex
0	1	0	3	Braund, Mr. Owen Harris	male
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female
2	3	1	3	Heikkinen, Miss. Laina	female
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female
4	5	0	3	Allen, Mr. William Henry	male

```
df.describe()
```

	PassengerId	Survived	Pclass	Age	SibSp	Parch	F
count	891.000000	891.000000	891.000000	714.000000	891.000000	891.000000	891.00
mean	446.000000	0.383838	2.308642	29.699118	0.523008	0.381594	32.20
std	257.353842	0.486592	0.836071	14.526497	1.102743	0.806057	49.69
min	1.000000	0.000000	1.000000	0.420000	0.000000	0.000000	0.00
25%	223.500000	0.000000	2.000000	20.125000	0.000000	0.000000	7.91
50%	446.000000	0.000000	3.000000	28.000000	0.000000	0.000000	14.45
75%	668.500000	1.000000	3.000000	38.000000	1.000000	0.000000	31.00
max	891.000000	1.000000	3.000000	80.000000	8.000000	6.000000	512.32

```
df.isnull().sum()
```

```
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age            177
SibSp            0
Parch            0
Ticket           0
Fare             0
Cabin          687
Embarked         2
dtype: int64
```

```
df=df.dropna()
```

```
df.isnull().sum()
```

```
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
SibSp          0
Parch          0
Ticket         0
Fare           0
Cabin          0
Embarked       0
dtype: int64
```

```
df.corr()["Survived"]
```

```
PassengerId    0.148495
Survived       1.000000
Pclass        -0.034542
Age           -0.254085
SibSp          0.106346
Parch          0.023582
Fare           0.134241
Name: Survived, dtype: float64
```

```
df = df.drop(['PassengerId','Name','SibSp','Parch','Ticket','Cabin','Embarked','Age
```

```
from sklearn.preprocessing import LabelEncoder
```

```
df["Sex"].unique()
```

```
array(['female', 'male'], dtype=object)
```

```
le=LabelEncoder()
df.Sex = le.fit_transform(df.Sex)
```

```
df
```

	Survived	Pclass	Sex	Fare
1	1	1	0	71.2833
3	1	1	0	53.1000
6	0	1	1	51.8625
10	1	3	0	16.7000
11	1	1	0	26.5500
...	...	...	...	...
871	1	1	0	52.5542

```
x=df[["Pclass","Sex","Fare"]]
y=df["Survived"]
```

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

```
x_train, x_test, y_train, y_test = train_test_split(x,y,train_size=0.7)
```

```
print(x_train)
print(y_train)
```

```
     Pclass  Sex      Fare
245       1    1   90.0000
177       1    0   28.7125
297       1    0  151.5500
66        2    0   10.5000
452       1    1   27.7500
..      ...  ...       ...
275       1    0   77.9583
27        1    1  263.0000
625       1    1   32.3208
701       1    1   26.2875
3         1    0   53.1000

[128 rows x 3 columns]
245    0
177    0
297    0
66     1
452    0
      ..
275    1
27     0
625    0
701    1
3      1
Name: Survived, Length: 128, dtype: int64
```

```
from sklearn.svm import SVC # "Support vector classifier"
classifier = SVC(kernel='linear')
classifier.fit(x_train, y_train)
```

```
SVC(kernel='linear')
```

```
#Diff support vector attribute
classifier.support_vectors_
```

```
array([[  1.    ,   1.    ,  90.    ],
       [  1.    ,   0.    ,  28.7125],
       [  1.    ,   0.    , 151.55  ],
       [  1.    ,   1.    ,  27.75  ],
       [  1.    ,   1.    ,  79.65  ],
       [  1.    ,   1.    , 106.425 ],
       [  1.    ,   1.    ,  26.55  ],
       [  1.    ,   1.    ,  52.    ],
       [  1.    ,   1.    ,  38.5   ],
       [  1.    ,   1.    , 247.5208],
       [  1.    ,   1.    ,  79.2   ],
       [  1.    ,   1.    , 211.5   ],
       [  1.    ,   1.    ,   0.    ],
       [  1.    ,   1.    ,  79.2   ],
       [  1.    ,   1.    , 153.4625],
       [  1.    ,   1.    ,  33.5   ],
       [  1.    ,   1.    ,   5.    ],
       [  3.    ,   0.    ,  10.4625],
       [  1.    ,   1.    , 263.    ],
       [  1.    ,   1.    ,  25.5875],
       [  1.    ,   1.    ,  71.    ],
       [  1.    ,   1.    ,   0.    ],
       [  1.    ,   1.    ,  35.5   ],
       [  1.    ,   1.    ,  29.7   ],
       [  1.    ,   1.    ,  29.7   ],
       [  2.    ,   0.    ,  10.5   ],
       [  1.    ,   1.    ,  51.8625],
       [  1.    ,   0.    , 151.55  ],
       [  3.    ,   0.    ,  10.4625],
       [  1.    ,   1.    ,  26.55  ],
       [  2.    ,   1.    ,  12.875 ],
       [  3.    ,   1.    ,   7.65  ],
       [  1.    ,   1.    ,  52.    ],
       [  1.    ,   1.    ,  26.55  ],
       [  1.    ,   1.    ,  34.0208],
       [  1.    ,   1.    , 263.    ],
       [  1.    ,   1.    ,  32.3208],
       [  1.    ,   1.    , 120.    ],
       [  1.    ,   1.    ,  89.1042],
       [  1.    ,   0.    ,  78.2667],
       [  1.    ,   1.    , 110.8833],
       [  1.    ,   1.    , 120.    ],
       [  2.    ,   1.    ,  26.    ],
       [  1.    ,   1.    ,  52.5542],
       [  3.    ,   0.    ,  16.7   ],
       [  1.    ,   0.    ,  78.2667],
       [  1.    ,   1.    ,  76.7292],
       [  1.    ,   1.    ,  35.5   ],
       [  1.    ,   1.    ,  31.    ],
       [  1.    ,   1.    ,  57.    ],
       [  1.    ,   1.    ,  55.4417],
       [  1.    ,   1.    ,  63.3583],
       [  1.    ,   1.    ,  26.2875],
       [  1.     ,   0.     , 120.    ],
       [  1.     ,   1.     ,  30.5   ],
       [  1.     ,   1.     ,  90.    ],
       [  1.     ,   1.     , 512.3292],
       [  1.     ,   0.     ,  69.3   ],
```

```
classifier.n_support_
```

```
    array([37, 41], dtype=int32)
```

```
classifier.support_
```

```
    array([  0,   1,   2,   4,   7,   8,  16,  21,  23,  25,  27,  29,  31,
            33,  39,  41,  42,  49,  50,  52,  57,  65,  69,  70,  77,  86,
            87,  94,  97, 102, 107, 113, 114, 116, 118, 124, 125,   6,   9,
            10,  11,  13,  14,  17,  19,  20,  22,  24,  26,  30,  37,  38,
            43,  45,  46,  51,  54,  59,  61,  66,  67,  71,  76,  78,  81,
            83,  95,  96,  98, 100, 103, 106, 109, 110, 111, 119, 126, 127],
          dtype=int32)
```

```
#Predicting the test set result
y_pred= classifier.predict(x_test)
print(y_pred)
```

```
    [1 0 1 0 0 0 1 1 0 0 1 0 0 1 0 1 0 1 1 1 1 0 1 1 0 0 0 1 0 0 1 0 0 1 1 1 1
     0 0 1 1 1 0 0 1 1 0 0 0 1 1 0 0 1 0]
```

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

```
ac= accuracy_score(y_pred, y_test)
print(ac)
```

```
    0.7636363636363637
```

```
cr= classification_report(y_pred,y_test)
print(cr)
```

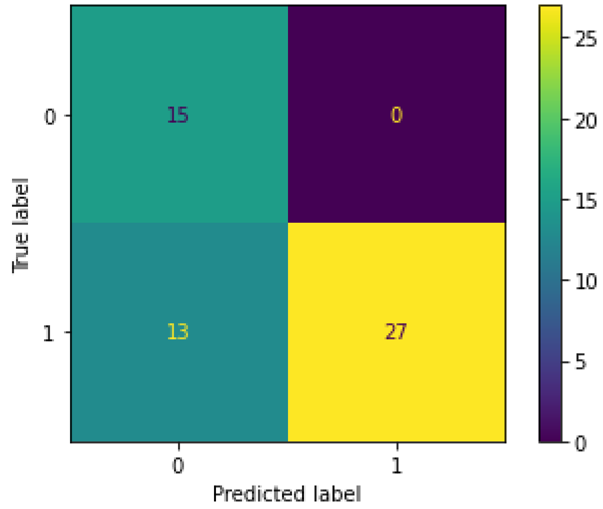
```
                  precision    recall  f1-score   support

               0       1.00      0.54      0.70        28
               1       0.68      1.00      0.81        27

        accuracy                           0.76        55
       macro avg       0.84      0.77      0.75        55
    weighted avg       0.84      0.76      0.75        55
```

```
confusion_matrix(y_pred, y_test)
```

```
    array([[15, 13],
           [ 0, 27]])
```

```
plot_confusion_matrix(classifier, x_test, y_test)
```

```
/usr/local/lib/python3.7/dist-packages/sklearn/utils/deprecation.py:87: Future
  warnings.warn(msg, category=FutureWarning)
<sklearn.metrics._plot.confusion_matrix.ConfusionMatrixDisplay at 0x7f3b1c336a
```



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