

```
import numpy as np
import pandas as pd
df=pd.read_csv('Social_Network_Ads.csv')
df
```

	User ID	Gender	Age	EstimatedSalary	Purchased
0	15624510	Male	19	19000	0
1	15810944	Male	35	20000	0
2	15668575	Female	26	43000	0
3	15603246	Female	27	57000	0
4	15804002	Male	19	76000	0
...	...	...	...	...	...
395	15691863	Female	46	41000	1
396	15706071	Male	51	23000	1
397	15654296	Female	50	20000	1
398	15755018	Male	36	33000	0
399	15594041	Female	49	36000	1

```
[400 rows x 5 columns]
```

```
df.head()
```

	User ID	Gender	Age	EstimatedSalary	Purchased
0	15624510	Male	19	19000	0
1	15810944	Male	35	20000	0
2	15668575	Female	26	43000	0
3	15603246	Female	27	57000	0
4	15804002	Male	19	76000	0

```
features=df.iloc[:,[2,3]].values
```

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label=df.iloc[:,4].values
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```
features
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```

```

from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression

```

```

for i in range(1,401):

```

```

    x_train,x_test,y_train,y_test=train_test_split(features,label,test_size=0.2,random_state=i)
    model=LogisticRegression()
    model.fit(x_train,y_train)
    train_score=model.score(x_train,y_train)
    test_score=model.score(x_test,y_test)
    if test_score>train_score:
        print("Test {} Train{} Random State
{}".format(test_score,train_score,i))

```

```

Test 0.6875 Train0.63125 Random State 3
Test 0.7375 Train0.61875 Random State 4
Test 0.6625 Train0.6375 Random State 5
Test 0.65 Train0.640625 Random State 6

```

Test 0.675 Train0.634375 Random State 7  
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Test 0.6625 Train0.6375 Random State 393
Test 0.675 Train0.634375 Random State 396
Test 0.7 Train0.628125 Random State 397
Test 0.7125 Train0.625 Random State 400

```

```

x_train,x_test,y_train,y_test=train_test_split(features,label,test_size=0.2,random_state=i)
finalModel=LogisticRegression()
finalModel.fit(x_train,y_train)

```

```
LogisticRegression()
```

```

print(finalModel.score(x_train,y_train))
print(finalModel.score(x_test,y_test))

```

```

0.625
0.7125

```

```

from sklearn.metrics import classification_report
print(classification_report(label, finalModel.predict(features),
zero_division=1))

```

	precision	recall	f1-score	support
0	0.64	1.00	0.78	257
1	1.00	0.00	0.00	143
accuracy			0.64	400
macro avg	0.82	0.50	0.39	400
weighted avg	0.77	0.64	0.50	400