

# Iris prediction Made by Aashish

```
In [1]: import seaborn as sns
import numpy as np
import pandas as pd
```

```
In [2]: df=sns.load_dataset('iris')
```

```
In [3]: df.head()
```

```
Out[3]:   sepal_length  sepal_width  petal_length  petal_width  species
      0           5.1         3.5          1.4         0.2    setosa
      1           4.9         3.0          1.4         0.2    setosa
      2           4.7         3.2          1.3         0.2    setosa
      3           4.6         3.1          1.5         0.2    setosa
      4           5.0         3.6          1.4         0.2    setosa
```

```
In [4]: df=df[df['species']!='virginica']## REMOVE VERGINICA BECAUSE solve for binary classific
```

```
In [5]: df['species'].unique()
```

```
Out[5]: array(['setosa', 'versicolor'], dtype=object)
```

```
In [6]: ##Let find the how many unique species are there
df['species'].unique()
```

```
Out[6]: array(['setosa', 'versicolor'], dtype=object)
```

```
In [7]: df['species']=df['species'].map({'setosa':0,"versicolor":1}) ##converting labael encodi
```

```
In [8]: ##how to find the labels,dived feastures into inderpendent and dependent features\
x=df.iloc[:, :-1]
y=df.iloc[:, -1]
```

```
In [9]: x
```

```
Out[9]:   sepal_length  sepal_width  petal_length  petal_width
      0           5.1         3.5          1.4         0.2
      1           4.9         3.0          1.4         0.2
```

	sepal_length	sepal_width	petal_length	petal_width
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2
...	...	...	...	...
95	5.7	3.0	4.2	1.2
96	5.7	2.9	4.2	1.3
97	6.2	2.9	4.3	1.3
98	5.1	2.5	3.0	1.1
99	5.7	2.8	4.1	1.3

100 rows × 4 columns

In [10]:

```
y
```

Out[10]:

```
0    0
1    0
2    0
3    0
4    0
 ..
95   1
96   1
97   1
98   1
99   1
Name: species, Length: 100, dtype: int64
```

In [11]:

```
from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.20, random_state=
```

In [12]:

```
x_train
```

Out[12]:

	sepal_length	sepal_width	petal_length	petal_width
55	5.7	2.8	4.5	1.3
88	5.6	3.0	4.1	1.3
26	5.0	3.4	1.6	0.4
42	4.4	3.2	1.3	0.2
69	5.6	2.5	3.9	1.1
...	...	...	...	...
60	5.0	2.0	3.5	1.0
71	6.1	2.8	4.0	1.3

	sepal_length	sepal_width	petal_length	petal_width
14	5.8	4.0	1.2	0.2
92	5.8	2.6	4.0	1.2
51	6.4	3.2	4.5	1.5

80 rows × 4 columns

```
In [13]: from sklearn.linear_model import LogisticRegression
regression=LogisticRegression() ##initialise
```

```
In [16]: from sklearn.model_selection import GridSearchCV## gridsearchcv for parameter
parameter={'C':[0.5,1,2,3,5,7,9,10,13,45],'penalty':['l1','l2','elasticnet']}
log_regressor=GridSearchCV(regression,parameter,scoring='accuracy',cv=5)
log_regressor.fit(x,y)
```

```
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  File "C:\Users\91706\anaconda3\lib\site-packages\sklearn\linear_model\_logistic.py", line 443, in _check_solver
    raise ValueError("Solver %s supports only 'l2' or 'none' penalties, "
ValueError: Solver lbfgs supports only 'l2' or 'none' penalties, got l1 penalty.

    warnings.warn("Estimator fit failed. The score on this train-test"
C:\Users\91706\anaconda3\lib\site-packages\sklearn\model_selection\_validation.py:615: FitFailedWarning: Estimator fit failed. The score on this train-test partition for these
parameters will be set to nan. Details:
Traceback (most recent call last):
  File "C:\Users\91706\anaconda3\lib\site-packages\sklearn\model_selection\_validation.py", line 598, in _fit_and_score
    estimator.fit(X_train, y_train, **fit_params)
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ValueError: Solver lbfgs supports only 'l2' or 'none' penalties, got elasticnet penalty.

    warnings.warn("Estimator fit failed. The score on this train-test"
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```

```
warnings.warn("Estimator fit failed. The score on this train-test"
C:\Users\91706\anaconda3\lib\site-packages\sklearn\model_selection\_search.py:922: UserWarning: One or more of the test scores are non-finite: [nan 1. nan nan 1. nan nan 1.
nan nan 1. nan nan 1. nan nan 1. nan
nan 1. nan nan 1. nan nan 1. nan nan 1. nan]
warnings.warn(
Out[16]: GridSearchCV(cv=5, estimator=LogisticRegression(),
param_grid={'C': [0.5, 1, 2, 3, 5, 7, 9, 10, 13, 45],
'penalty': ['l1', 'l2', 'elasticnet']},
scoring='accuracy')
```

```
In [17]: print(log_regressor.best_params_)
```

```
{'C': 0.5, 'penalty': 'l2'}
```

```
In [19]: print(log_regressor.best_score_)
```

```
1.0
```

```
In [21]: ##predict
prediction_log=log_regressor.predict(x_test)
```

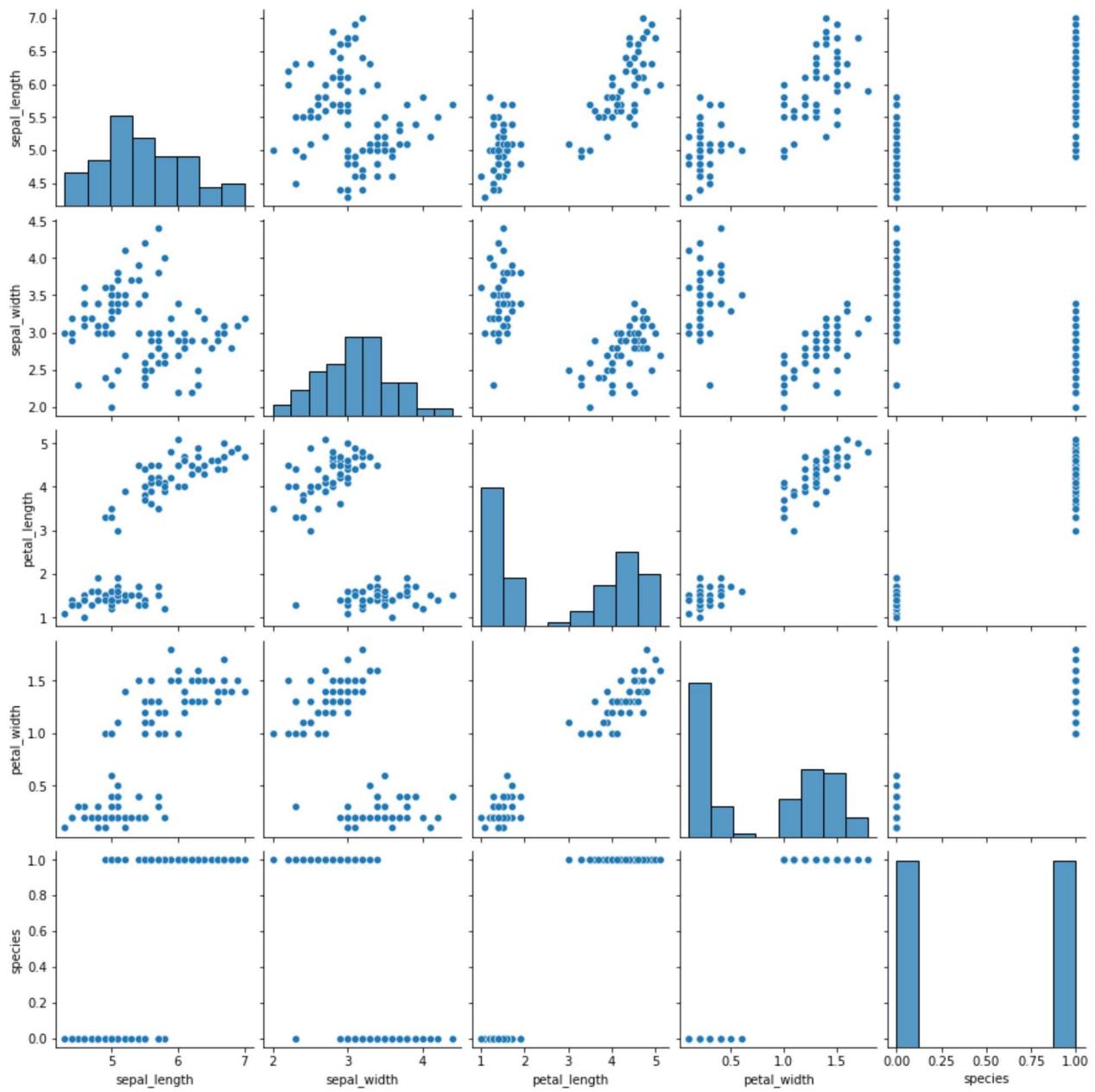
```
In [22]: df.corr()
```

```
Out[22]:
```

	sepal_length	sepal_width	petal_length	petal_width	species
sepal_length	1.000000	-0.205926	0.812458	0.789608	0.728290
sepal_width	-0.205926	1.000000	-0.602663	-0.570883	-0.690684
petal_length	0.812458	-0.602663	1.000000	0.979322	0.969990
petal_width	0.789608	-0.570883	0.979322	1.000000	0.960307
species	0.728290	-0.690684	0.969990	0.960307	1.000000

```
In [24]: sns.pairplot(df)
```

```
Out[24]: <seaborn.axisgrid.PairGrid at 0x1e72ac0f970>
```



```
In [26]: #accuracy,beta value=1 its means=false positive true positive
from sklearn.metrics import accuracy_score,confusion_matrix,precision_recall_curve,roc_

```

```
In [27]: confusion_matrix(y_test,prediction_log)
```

```
Out[27]: array([[12,  0],
   [ 0,  8]], dtype=int64)
```

```
In [29]: f1_score(y_test,prediction_log)
```

```
Out[29]: 1.0
```

```
In [ ]:
```