In [1]:
```
import numpy as np
import pandas as pd
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder
```

In [2]:
```
# loading the dataset to a pandas DataFrame
df = pd.read_csv("C:\\Users\\Rames\\Project\\IRIS.csv")
df
```

Out[2]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 5 columns

In [3]:
```
# 5 Rows of the Dataset
df.tail()
```

Out[3]:

	sepal_length	sepal_width	petal_length	petal_width	species
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

In [4]:
```
# dataset information
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column        Non-Null Count  Dtype  
---  ------        --------------  -----  
 0   sepal_length  150 non-null    float64
 1   sepal_width   150 non-null    float64
 2   petal_length  150 non-null    float64
 3   petal_width   150 non-null    float64
 4   species       150 non-null    object 
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

In [5]:
```
# checking the number of missing values in each columns
df.isnull().sum()
```

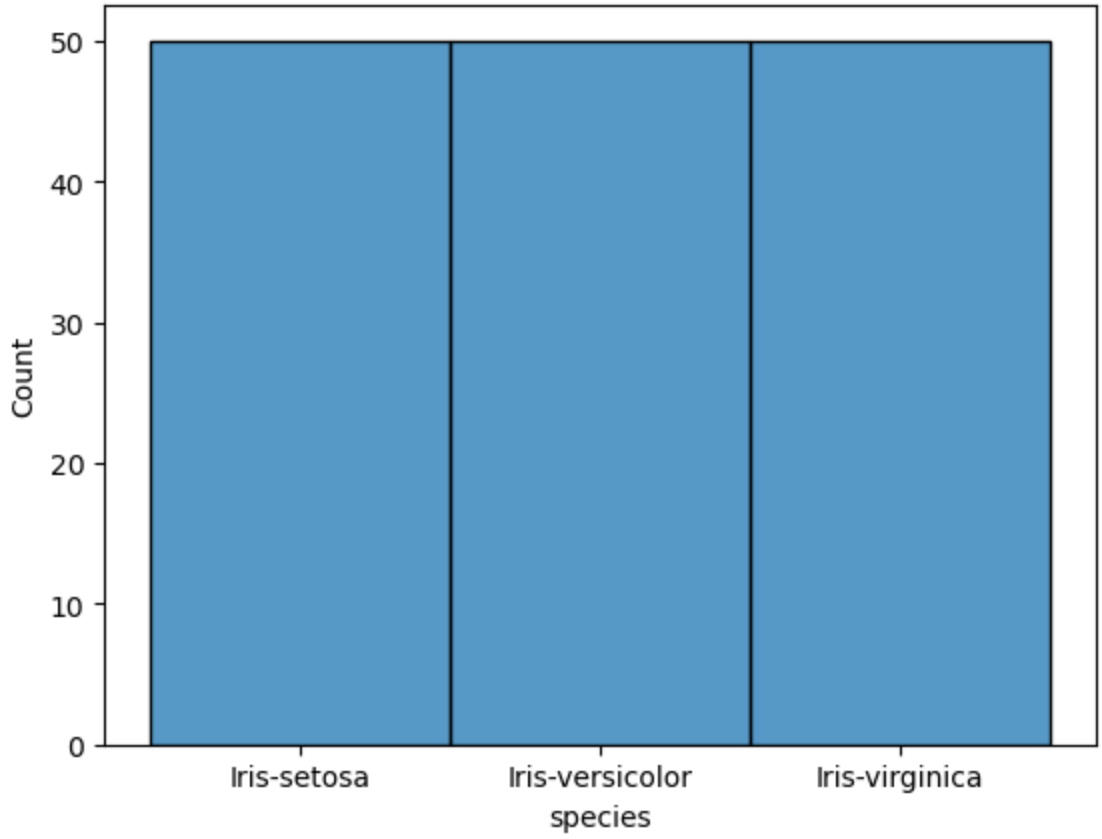
Out[5]:
```
sepal_length    0
sepal_width     0
petal_length    0
petal_width     0
species         0
dtype: int64
```

In [6]:
```
# distribution of legit transactions and fraudulent transactions
visualization = df['species'].value_counts()
visualization
```

Out[6]:
```
Iris-setosa        50
Iris-versicolor    50
Iris-virginica     50
Name: species, dtype: int64
```

In [7]:
```
#visualizing the data using histograms
sns.histplot(x = "species",data = df)
```

Out[7]:
```
<Axes: xlabel='species', ylabel='Count'>
```



In [8]:
```
#convert species column binary format
en = LabelEncoder()
df["species"] =en.fit_transform(df.species)
df
```

Out[8]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	0
1	4.9	3.0	1.4	0.2	0
2	4.7	3.2	1.3	0.2	0
3	4.6	3.1	1.5	0.2	0
4	5.0	3.6	1.4	0.2	0
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	2
146	6.3	2.5	5.0	1.9	2
147	6.5	3.0	5.2	2.0	2
148	6.2	3.4	5.4	2.3	2
149	5.9	3.0	5.1	1.8	2

150 rows × 5 columns

In [9]:
```
df.describe()
```

Out[9]:

	sepal_length	sepal_width	petal_length	petal_width	species
count	150.000000	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667	1.000000
std	0.828066	0.433594	1.764420	0.763161	0.819232
min	4.300000	2.000000	1.000000	0.100000	0.000000
25%	5.100000	2.800000	1.600000	0.300000	0.000000
50%	5.800000	3.000000	4.350000	1.300000	1.000000
75%	6.400000	3.300000	5.100000	1.800000	2.000000
max	7.900000	4.400000	6.900000	2.500000	2.000000

In [10]:
```
# select column
x = df.iloc[:,[0,1,2,3]]
y = df.iloc[:,[4]]
```

In [11]:
```
# Split the dataset into training and testing sets
x_train,x_test,y_train,y_test = train_test_split(x,y,test_size = 0.3,random_state = 42)
```

In [16]:
```
# algorithm like K-Nearest Neighbours
from sklearn.neighbors import KNeighborsClassifier
model = KNeighborsClassifier(n_neighbors=3)
```

In [17]:
```
# training the Logistic Tegression model with Training data
model.fit(x_train,y_train)
```

```
I:\Install Sofware\Anaconda\Lib\site-packages\sklearn\neighbors\_classification.py:228:
DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please
change the shape of y to (n_samples,), for example using ravel().
  return self._fit(X, y)
```

Out[17]:

▼ KNeighborsClassifier

```
KNeighborsClassifier(n_neighbors=3)
```

In [18]:
```
y_pred = model.predict(x_test)
y_pred
```

Out[18]:
```
array([1, 0, 2, 1, 1, 0, 1, 2, 1, 1, 2, 0, 0, 0, 0, 1, 2, 1, 1, 2, 0, 2,
       0, 2, 2, 2, 2, 2, 0, 0, 0, 0, 1, 0, 0, 2, 1, 0, 0, 0, 2, 1, 1, 0,
       0])
```

In [33]:
```
# accyracy and matrix test data

from sklearn.metrics import confusion_matrix, accuracy_score, classification_report
result = confusion_matrix(y_test,y_pred)
print("confusion Matrix : ")
print(result)
print("Accuracy Score : ",accuracy_score(y_test,y_pred))
```

```
confusion Matrix :
[[19  0  0]
 [ 0 13  0]
 [ 0  0 13]]
Accuracy Score :  1.0
```

In [23]:
```
# new values for sepal length, sepal width, petal length, and petal width to see the pre

k = np.array([[5,35,14,2]])
k.shape
```

Out[23]:
```
(1, 4)
```

In [29]:
```
pred = model.predict(k)
pred
```

```
I:\Install Sofware\Anaconda\Lib\site-packages\sklearn\base.py:464: UserWarning: X does n
ot have valid feature names, but KNeighborsClassifier was fitted with feature names
  warnings.warn(
```

Out[29]:
```
array([2])
```

In [32]:
```
df = pd.read_csv("C:\\Users\\Rames\\Project\\IRIS.csv")
print("Predicted Species:",df['species'][pred[0]])
```

```
Predicted Species: Iris-setosa
```

In [ ]:

In [ ]: