

2) : Design and develop at least 10 problem statements which demonstrate the use of data structure, functions, Importing / Exporting Data in any data analytics tool.

```
In [3]: import pandas as pd
import matplotlib.pyplot as plt
```

```
In [6]: # Import data from a CSV file
df = pd.read_csv('iris.csv')
df
```

```
Out[6]:
```

	Unnamed: 0	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
0	1	5.1	3.5	1.4	0.2	setosa
1	2	4.9	3.0	1.4	0.2	setosa
2	3	4.7	3.2	1.3	0.2	setosa
3	4	4.6	3.1	1.5	0.2	setosa
4	5	5.0	3.6	1.4	0.2	setosa
...
145	146	6.7	3.0	5.2	2.3	virginica
146	147	6.3	2.5	5.0	1.9	virginica
147	148	6.5	3.0	5.2	2.0	virginica
148	149	6.2	3.4	5.4	2.3	virginica
149	150	5.9	3.0	5.1	1.8	virginica

150 rows × 6 columns

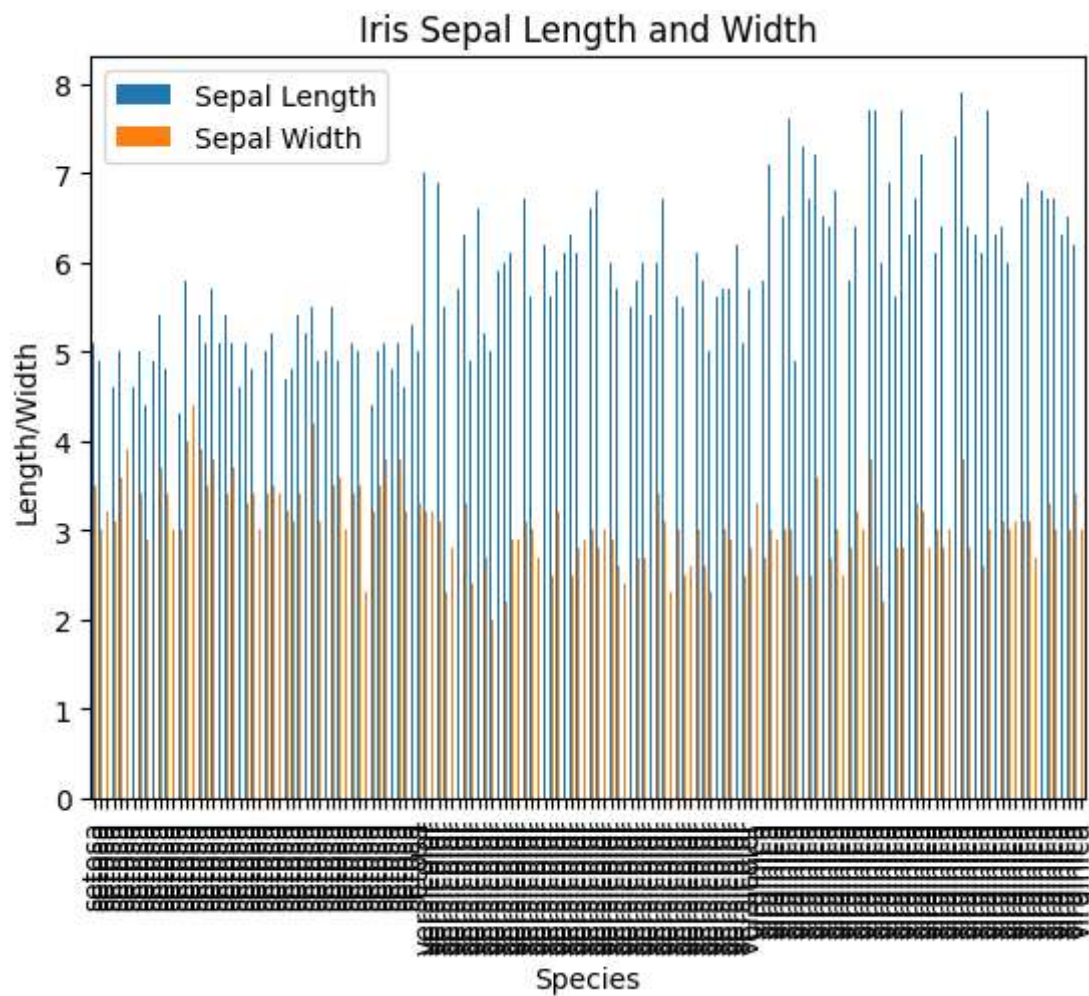
```
In [10]: df.columns
```

```
Out[10]: Index(['Unnamed: 0', 'Sepal.Length', 'Sepal.Width', 'Petal.Length',
            'Petal.Width', 'Species'],
            dtype='object')
```

```
In [16]: # Calculate basic statistics
average_Sepal_Length = df['Sepal.Length'].mean()
average_Sepal_Width = df['Sepal.Width'].mean()
print(average_Sepal_Length)
print(average_Sepal_Width)
```

```
5.843333333333334
3.0573333333333337
```

```
In [18]: # Create a bar chart to visualize sepal length and width
df.plot(kind='bar', x='Species', y=['Sepal.Length', 'Sepal.Width'])
plt.xlabel('Species')
plt.ylabel('Length/Width')
plt.title('Iris Sepal Length and Width')
plt.legend(['Sepal Length', 'Sepal Width'])
plt.show()
```



```
In [20]: print("Average Sepal Length:", average_Sepal_Length)
         print("Average Sepal Width:", average_Sepal_Width)
```

```
Average Sepal Length: 5.843333333333334
Average Sepal Width: 3.0573333333333337
```

```
In [ ]:
```