```
import pandas as pd

df = pd.read_csv('Iris.csv')
df
```

	5.1	3.5	1.4	0.2	Iris-setosa
0	4.9	3.0	1.4	0.2	Iris-setosa
1	4.7	3.2	1.3	0.2	Iris-setosa
2	4.6	3.1	1.5	0.2	Iris-setosa
3	5.0	3.6	1.4	0.2	Iris-setosa
4	5.4	3.9	1.7	0.4	Iris-setosa
...	...	...	...	...	...
144	6.7	3.0	5.2	2.3	Iris-virginica
145	6.3	2.5	5.0	1.9	Iris-virginica
146	6.5	3.0	5.2	2.0	Iris-virginica
147	6.2	3.4	5.4	2.3	Iris-virginica
148	5.9	3.0	5.1	1.8	Iris-virginica

149 rows × 5 columns

Next steps: Generate code with df | View recommended plots | New interactive sheet

a) Display total no of rows and column

```
print("Total rows and columns:", df.shape)
```

```
Total rows and columns: (149, 5)
```

b) Display type of each column

```
print("\nColumn data types:\n", df.dtypes)
```

```
Column data types:
 5.1            float64
3.5            float64
1.4            float64
0.2            float64
Iris-setosa     object
dtype: object
```

c) Sort the data in descending order , by considering column sepal.length

```
column_names = ['sepal.length', 'sepal.width', 'petal.length', 'petal.width', 'Species']
df = pd.read_csv('Iris.csv', header=None, names=column_names)
df_sorted = df.sort_values(by='sepal.length', ascending=False)
print("\nSorted dataset (descending by sepal.length):\n", df_sorted.head())
```

```
Sorted dataset (descending by sepal.length):
     sepal.length  sepal.width  petal.length  petal.width         Species
131           7.9          3.8           6.4          2.0  Iris-virginica
122           7.7          2.8           6.7          2.0  Iris-virginica
118           7.7          2.6           6.9          2.3  Iris-virginica
117           7.7          3.8           6.7          2.2  Iris-virginica
135           7.7          3.0           6.1          2.3  Iris-virginica
```

d) Slice the data: rows 11 to 20, and only 'sepal.length' and 'Species' columns

```
df_sliced = df.loc[10:19, ['sepal.length', 'Species']]
print("\nSliced dataset:\n", df_sliced)
```

```
Sliced dataset:
     sepal.length      Species
10            5.4  Iris-setosa
11            4.8  Iris-setosa
12            4.8  Iris-setosa
13            4.3  Iris-setosa
14            5.8  Iris-setosa
15            5.7  Iris-setosa
16            5.4  Iris-setosa
17            5.1  Iris-setosa
18            5.7  Iris-setosa
19            5.1  Iris-setosa
```

e) Rename the column 'Species' to 'Type'

```
df_renamed = df.rename(columns={'Species': 'Type'})
print("\nDataset with renamed column:\n", df_renamed.head())
```

```
Dataset with renamed column:
    sepal.length  sepal.width  petal.length  petal.width         Type
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
```

f) Describe the dataset after renaming

```
print("\nDataset description:\n", df_renamed.describe())
```

```
Dataset description:
        sepal.length  sepal.width  petal.length  petal.width
count    150.000000   150.000000    150.000000   150.000000
mean       5.843333     3.054000      3.758667     1.198667
std        0.828066     0.433594      1.764420     0.763161
min        4.300000     2.000000      1.000000     0.100000
25%        5.100000     2.800000      1.600000     0.300000
50%        5.800000     3.000000      4.350000     1.300000
75%        6.400000     3.300000      5.100000     1.800000
max        7.900000     4.400000      6.900000     2.500000
```

g) Apply normalization to all columns except 'Species'

```
from sklearn.preprocessing import MinMaxScaler

scaler = MinMaxScaler()
df_normalized = df_renamed.copy()
numeric_columns = ['sepal.length', 'sepal.width', 'petal.length', 'petal.width']
df_normalized[numeric_columns] = scaler.fit_transform(df_renamed[numeric_columns])

print("\nNormalized dataset:\n", df_normalized.head())
```

```
Normalized dataset:
    sepal.length  sepal.width  petal.length  petal.width         Type
0       0.222222     0.625000      0.067797     0.041667  Iris-setosa
1       0.166667     0.416667      0.067797     0.041667  Iris-setosa
2       0.111111     0.500000      0.050847     0.041667  Iris-setosa
3       0.083333     0.458333      0.084746     0.041667  Iris-setosa
4       0.194444     0.666667      0.067797     0.041667  Iris-setosa
```

Start coding or generate with AI.