

```
import numpy as np
import pandas as pd
```

```
ds=pd.read_csv("/content/Iris.csv")
```

```
ds.head()
```

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	1	5.1	3.5	1.4	0.2	Iris-setosa
1	2	4.9	3.0	1.4	0.2	Iris-setosa
2	3	4.7	3.2	1.3	0.2	Iris-setosa
3	4	4.6	3.1	1.5	0.2	Iris-setosa
4	5	5.0	3.6	1.4	0.2	Iris-setosa

```
ds.tail()
```

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
145	146	6.7	3.0	5.2	2.3	Iris-virginica
146	147	6.3	2.5	5.0	1.9	Iris-virginica
147	148	6.5	3.0	5.2	2.0	Iris-virginica
148	149	6.2	3.4	5.4	2.3	Iris-virginica
149	150	5.9	3.0	5.1	1.8	Iris-virginica

```
ds.describe()
```



	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm
count	150.000000	150.000000	150.000000	150.000000	150.000000
mean	75.500000	5.843333	3.054000	3.758667	1.198667
std	43.445368	0.828066	0.433594	1.764420	0.763161
min	1.000000	4.300000	2.000000	1.000000	0.100000
25%	38.250000	5.100000	2.800000	1.600000	0.300000
50%	75.500000	5.800000	3.000000	4.350000	1.300000
75%	112.750000	6.400000	3.300000	5.100000	1.800000
max	150.000000	7.900000	4.400000	6.900000	2.500000

```
ds.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 6 columns):
#   Column          Non-Null Count  Dtype
---  ---
0   Id               150 non-null   int64
1   SepalLengthCm    150 non-null   float64
2   SepalWidthCm     150 non-null   float64
3   PetalLengthCm    150 non-null   float64
4   PetalWidthCm     150 non-null   float64
5   Species          150 non-null   object
dtypes: float64(4), int64(1), object(1)
memory usage: 7.2+ KB
```

```
ds.value_counts("Species")
```

```
Species
Iris-setosa      50
Iris-versicolor  50
Iris-virginica   50
dtype: int64
```

```
ds.max()
```

```
Id          150
SepalLengthCm  7.9
SepalWidthCm   4.4
PetalLengthCm  6.9
PetalWidthCm   2.5
Species      Iris-virginica
dtype: object

ds.min()

Id          1
SepalLengthCm  4.3
SepalWidthCm   2.0
PetalLengthCm  1.0
PetalWidthCm   0.1
Species      Iris-setosa
dtype: object

ds.isnull()
```

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
	0	False	False	False	False	False
	1	False	False	False	False	False
	2	False	False	False	False	False
	3	False	False	False	False	False
	4	False	False	False	False	False
...
	145	False	False	False	False	False
	146	False	False	False	False	False
	147	False	False	False	False	False
	148	False	False	False	False	False
	149	False	False	False	False	False

150 rows × 6 columns

```
ds.isnull().sum()

Id          0
SepalLengthCm  0
SepalWidthCm  0
PetalLengthCm  0
PetalWidthCm  0
Species      0
dtype: int64

ds.to_numpy()
```

```
array([[1, 5.1, 3.5, 1.4, 0.2, 'Iris-setosa'],
       [2, 4.9, 3.0, 1.4, 0.2, 'Iris-setosa'],
       [3, 4.7, 3.2, 1.3, 0.2, 'Iris-setosa'],
       [4, 4.6, 3.1, 1.5, 0.2, 'Iris-setosa'],
       [5, 5.0, 3.6, 1.4, 0.2, 'Iris-setosa'],
       [6, 5.4, 3.9, 1.7, 0.4, 'Iris-setosa'],
       [7, 4.6, 3.4, 1.4, 0.3, 'Iris-setosa'],
       [8, 5.0, 3.4, 1.5, 0.2, 'Iris-setosa'],
       [9, 4.4, 2.9, 1.4, 0.2, 'Iris-setosa'],
       [10, 4.9, 3.1, 1.5, 0.1, 'Iris-setosa'],
       [11, 5.4, 3.7, 1.5, 0.2, 'Iris-setosa'],
       [12, 4.8, 3.4, 1.6, 0.2, 'Iris-setosa'],
       [13, 4.8, 3.0, 1.4, 0.1, 'Iris-setosa'],
       [14, 4.3, 3.0, 1.1, 0.1, 'Iris-setosa'],
       [15, 5.8, 4.0, 1.2, 0.2, 'Iris-setosa'],
       [16, 5.7, 4.4, 1.5, 0.4, 'Iris-setosa'],
       [17, 5.4, 3.9, 1.3, 0.4, 'Iris-setosa'],
       [18, 5.1, 3.5, 1.4, 0.3, 'Iris-setosa'],
       [19, 5.7, 3.8, 1.7, 0.3, 'Iris-setosa'],
       [20, 5.1, 3.8, 1.5, 0.3, 'Iris-setosa'],
       [21, 5.4, 3.4, 1.7, 0.2, 'Iris-setosa'],
       [22, 5.1, 3.7, 1.5, 0.4, 'Iris-setosa'],
       [23, 4.6, 3.6, 1.0, 0.2, 'Iris-setosa'],
       [24, 5.1, 3.3, 1.7, 0.5, 'Iris-setosa'],
       [25, 4.8, 3.4, 1.9, 0.2, 'Iris-setosa'],
       [26, 5.0, 3.0, 1.6, 0.2, 'Iris-setosa'],
       [27, 5.0, 3.4, 1.6, 0.4, 'Iris-setosa'],
       [28, 5.2, 3.5, 1.5, 0.2, 'Iris-setosa'],
       [29, 5.2, 3.4, 1.4, 0.2, 'Iris-setosa'],
```

```
[30, 4.7, 3.2, 1.6, 0.2, 'Iris-setosa'],
[31, 4.8, 3.1, 1.6, 0.2, 'Iris-setosa'],
[32, 5.4, 3.4, 1.5, 0.4, 'Iris-setosa'],
[33, 5.2, 4.1, 1.5, 0.1, 'Iris-setosa'],
[34, 5.5, 4.2, 1.4, 0.2, 'Iris-setosa'],
[35, 4.9, 3.1, 1.5, 0.1, 'Iris-setosa'],
[36, 5.0, 3.2, 1.2, 0.2, 'Iris-setosa'],
[37, 5.5, 3.5, 1.3, 0.2, 'Iris-setosa'],
[38, 4.9, 3.1, 1.5, 0.1, 'Iris-setosa'],
[39, 4.4, 3.0, 1.3, 0.2, 'Iris-setosa'],
[40, 5.1, 3.4, 1.5, 0.2, 'Iris-setosa'],
[41, 5.0, 3.5, 1.3, 0.3, 'Iris-setosa'],
[42, 4.5, 2.3, 1.3, 0.3, 'Iris-setosa'],
[43, 4.4, 3.2, 1.3, 0.2, 'Iris-setosa'],
[44, 5.0, 3.5, 1.6, 0.6, 'Iris-setosa'],
[45, 5.1, 3.8, 1.9, 0.4, 'Iris-setosa'],
[46, 4.8, 3.0, 1.4, 0.3, 'Iris-setosa'],
[47, 5.1, 3.8, 1.6, 0.2, 'Iris-setosa'],
[48, 4.6, 3.2, 1.4, 0.2, 'Iris-setosa'],
[49, 5.3, 3.7, 1.5, 0.2, 'Iris-setosa'],
[50, 5.0, 3.3, 1.4, 0.2, 'Iris-setosa'],
[51, 7.0, 3.2, 4.7, 1.4, 'Iris-versicolor'],
[52, 6.4, 3.2, 4.5, 1.5, 'Iris-versicolor'],
[53, 6.9, 3.1, 4.9, 1.5, 'Iris-versicolor'],
[54, 5.5, 2.3, 4.0, 1.3, 'Iris-versicolor'],
[55, 6.5, 2.8, 4.6, 1.5, 'Iris-versicolor'],
[56, 5.7, 2.8, 4.5, 1.3, 'Iris-versicolor'],
[57, 6.3, 3.3, 4.7, 1.6, 'Iris-versicolor'],
[58, 4.6, 3.4, 3.2, 1.0, 'Iris-versicolor']
```

```
ds.duplicated()
```

```
0      False
1      False
2      False
3      False
4      False
...
145     False
146     False
147     False
148     False
149     False
Length: 150, dtype: bool
```

```
import matplotlib.pyplot as plt
```

```
ds.boxplot()
```



