


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

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



	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

```
df.head()
```

	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

```
df.tail()
```

	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

```
df.index
```

```
RangeIndex(start=0, stop=150, step=1)
```

```
df.columns
```

```
Index(['sepal_length', 'sepal_width', 'petal_length', 'petal_width',
      'species'],
      dtype='object')
```

```
df.shape
```

```
(150, 5)
```

```
df.dtypes
```

```

sepal_length    float64
sepal_width     float64
petal_length    float64
petal_width     float64
species         object
dtype: object

```

```
df.columns.values
```

```
array(['sepal_length', 'sepal_width', 'petal_length', 'petal_width',
      'species'], dtype=object)
```

```
df.describe()
```

	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

```
df['sepal_length']
```

```

0      5.1
1      4.9
2      4.7
3      4.6
4      5.0
...
145    6.7
146    6.3
147    6.5
148    6.2
149    5.9
Name: sepal_length, Length: 150, dtype: float64

```

```
df.sort_index(axis=1,ascending=False)
```

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

150 rows × 5 columns

```
df.iloc[5]
```

```

sepal_length    5.4
sepal_width     3.9
petal_length    1.7
petal_width     0.4

```

```
species      Iris-setosa
Name: 5, dtype: object
```

```
df[0:3]
```

	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

```
df.loc[:,['sepal_length','petal_length']]
```

	sepal_length	petal_length
0	5.1	1.4
1	4.9	1.4
2	4.7	1.3
3	4.6	1.5
4	5.0	1.4
...
145	6.7	5.2
146	6.3	5.0
147	6.5	5.2
148	6.2	5.4
149	5.9	5.1

150 rows × 2 columns

```
df.iloc[:10,:]
```

	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
5	5.4	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	1.5	0.2	Iris-setosa
8	4.4	2.9	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa

```
df.iloc[:, :4]
```

	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
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
...
145	6.7	3.0	5.2	2.3
146	6.3	2.5	5.0	1.9
147	6.5	3.0	5.2	2.0
148	6.2	3.4	5.4	2.3
149	5.9	3.0	5.1	1.8

150 rows × 4 columns

```
df.iloc[:5,:4]
```

	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
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

```
df.iloc[3:5,0:2]
```

	sepal_length	sepal_width
3	4.6	3.1
4	5.0	3.6

```
df.iloc[[1,2,4],[0,2]]
```

	sepal_length	petal_length
1	4.9	1.4
2	4.7	1.3
4	5.0	1.4

```
df.iloc[[1,2,3,4],[0,2,3]]
```

	sepal_length	petal_length	petal_width
1	4.9	1.4	0.2
2	4.7	1.3	0.2
3	4.6	1.5	0.2
4	5.0	1.4	0.2

```
df.iloc[1:3,:]
```

	sepal_length	sepal_width	petal_length	petal_width	species
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa