

### Importing the library

```
import pandas as pd
```

### Creating a DataFrame

```
df = pd.DataFrame({"a": [4, 5, 6], "b": [1, 2, 3], "c": [7, 8, 9]})
print(df)
```

|   | a | b | c |
|---|---|---|---|
| 0 | 4 | 1 | 7 |
| 1 | 5 | 2 | 8 |
| 2 | 6 | 3 | 9 |

"a", "b", and "c" are column names  
0, 1, and 2 are indexes

### Working with columns

df["column name"] Refer to one column

a = df["column name"] Store column in a variable

df["new column"] = Add a new column

Example:

```
df["avg"] = df[["a", "b", "c"]].mean(axis=1)
```

Add a new column "avg" with the mean of the values across the specified columns. (axis=0 would find the mean across rows).

### Selecting data

df["a"][x] Value in column "a" with index x

df["a"].loc[df["b"] == x] Values in col "a" with value x in col "b"

You can store selected values in a variable.  
Ex: b\_1 = df["a"].loc[df["b"] == 1]

### Sorting a DataFrame

df.sort\_values(["a"]) Sort DataFrame based on column "a"

df.sort\_values(["a"], ascending = False) Sort in descending order

You can store a sorted DataFrame in a variable.  
Ex: df\_sorted = df.sort\_values(["a"])

### Reading in and writing data

df = pd.read\_csv("file.csv") Read in CSV file

df = pd.read\_table("file.txt") Read in TXT file

df.to\_csv("data.csv", index=False) Output CSV file (index optional)

### pandas functions

len(df) Number of rows in DataFrame

df.head(x) First x lines of DataFrame

df.dtypes Data type of each column

df.columns DataFrame column names

df.count() Number of values in each column

df.sum() Sum of values in each column

df.min() Minimum value in each column

df.max() Maximum value in each column

df.mean() Mean value in each column

df.median() Median value in each column

df.var() Variance of each column

df.std() Standard deviation of each column

Replace df with df["Column Name"] or an equivalent variable to use these functions for a single column or set of selected values.



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