

```
import pandas as pd
```

```
df = pd.read_csv('content/drive/MyDrive/Automobile_data.csv')
```

```
print(df.head(10))
```

```
↗ index company body-style wheel-base length engine-type \
0 0 alfa-romero convertible 88.6 168.8 dohc
1 1 alfa-romero convertible 88.6 168.8 dohc
2 2 alfa-romero hatchback 94.5 171.2 ohcv
3 3 audi sedan 99.8 176.6 ohc
4 4 audi sedan 99.4 176.6 ohc
5 5 audi sedan 99.8 177.3 ohc
6 6 audi wagon 105.8 192.7 ohc
7 9 bmw sedan 101.2 176.8 ohc
8 10 bmw sedan 101.2 176.8 ohc
9 11 bmw sedan 101.2 176.8 ohc

num-of-cylinders horsepower average-mileage price
0 four 111 21 13495.0
1 four 111 21 16500.0
2 six 154 19 16500.0
3 four 102 24 13950.0
4 five 115 18 17450.0
5 five 110 19 15250.0
6 five 110 19 18920.0
7 four 101 23 16430.0
8 four 101 23 16925.0
9 six 121 21 20970.0
```

```
df2 = pd.read_csv('content/drive/MyDrive/Automobile_data.csv')
```

```
df2 = df2.drop('company', axis = 1)
```

```
print(df2.head())
```

```
↗ index body-style wheel-base length engine-type num-of-cylinders \
0 0 convertible 88.6 168.8 dohc four
1 1 convertible 88.6 168.8 dohc four
2 2 hatchback 94.5 171.2 ohcv six
3 3 sedan 99.8 176.6 ohc four
4 4 sedan 99.4 176.6 ohc five

horsepower average-mileage price
0 111 21 13495.0
1 111 21 16500.0
2 154 19 16500.0
3 102 24 13950.0
4 115 18 17450.0
```

```
print(df)
```

```
↗ index company body-style wheel-base length engine-type \
0 0 alfa-romero convertible 88.6 168.8 dohc
1 1 alfa-romero convertible 88.6 168.8 dohc
2 2 alfa-romero hatchback 94.5 171.2 ohcv
3 3 audi sedan 99.8 176.6 ohc
4 4 audi sedan 99.4 176.6 ohc
.. ... ..
56 81 volkswagen sedan 97.3 171.7 ohc
57 82 volkswagen sedan 97.3 171.7 ohc
58 86 volkswagen sedan 97.3 171.7 ohc
59 87 volvo sedan 104.3 188.8 ohc
60 88 volvo wagon 104.3 188.8 ohc

num-of-cylinders horsepower average-mileage price
0 four 111 21 13495.0
1 four 111 21 16500.0
2 six 154 19 16500.0
3 four 102 24 13950.0
4 five 115 18 17450.0
.. ... ..
56 four 85 27 7975.0
57 four 52 37 7995.0
58 four 100 26 9995.0
59 four 114 23 12940.0
60 four 114 23 13415.0
```

```
[61 rows x 10 columns]
```

```
print(df.tail(5))
```

```
↗ index company body-style wheel-base length engine-type \
56 81 volkswagen sedan 97.3 171.7 ohc
57 82 volkswagen sedan 97.3 171.7 ohc
```



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| | | | | | | |
|----|----|------------|-------|-------|-------|-----|
| 58 | 86 | volkswagen | sedan | 97.3 | 171.7 | ohc |
| 59 | 87 | volvo | sedan | 104.3 | 188.8 | ohc |
| 60 | 88 | volvo | wagon | 104.3 | 188.8 | ohc |

| | num-of-cylinders | horsepower | average-mileage | price |
|----|------------------|------------|-----------------|---------|
| 56 | four | 85 | 27 | 7975.0 |
| 57 | four | 52 | 37 | 7995.0 |
| 58 | four | 100 | 26 | 9995.0 |
| 59 | four | 114 | 23 | 12940.0 |
| 60 | four | 114 | 23 | 13415.0 |

```
toyotoCar = df[df['company'] == 'toyoto']
print(toyotoCar)
```

↗ Empty DataFrame
Columns: [index, company, body-style, wheel-base, length, engine-type, num-of-cylinders, horsepower, average-mileage, price]
Index: []

```
carPerCompany = df.groupby('company').size()
carPerCompany
```

↗

| 0 | |
|---------------|---|
| company | |
| alfa-romero | 3 |
| audi | 4 |
| bmw | 6 |
| chevrolet | 3 |
| dodge | 2 |
| honda | 3 |
| isuzu | 3 |
| jaguar | 3 |
| mazda | 5 |
| mercedes-benz | 4 |
| mitsubishi | 4 |
| nissan | 5 |
| porsche | 3 |
| toyota | 7 |
| volkswagen | 4 |
| volvo | 2 |

dtype: int64

```
highestPrice = df.groupby('company')['price'].max()
```

```
highestPrice
```



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price

company

| | |
|---------------|---------|
| alfa-romero | 16500.0 |
| audi | 18920.0 |
| bmw | 41315.0 |
| chevrolet | 6575.0 |
| dodge | 6377.0 |
| honda | 12945.0 |
| isuzu | 6785.0 |
| jaguar | 36000.0 |
| mazda | 18344.0 |
| mercedes-benz | 45400.0 |
| mitsubishi | 8189.0 |
| nissan | 13499.0 |
| porsche | 37028.0 |
| toyota | 15750.0 |
| volkswagen | 9995.0 |
| volvo | 13415.0 |

dtype: float64

```
milage = df.groupby('company')['average-mileage']  
print(milage)
```



<pandas.core.groupby.generic.SeriesGroupBy object at 0x7c763d199f60>

```
sort = df.sort_values(by = 'price')  
print(sort)
```

#ascending order



| | index | company | body-style | wheel-base | length | engine-type | \ |
|----|-------|---------------|------------|------------|--------|-------------|---|
| 13 | 16 | chevrolet | hatchback | 88.4 | 141.1 | l | |
| 27 | 36 | mazda | hatchback | 93.1 | 159.1 | ohc | |
| 48 | 66 | toyota | hatchback | 95.7 | 158.7 | ohc | |
| 36 | 49 | mitsubishi | hatchback | 93.7 | 157.3 | ohc | |
| 28 | 37 | mazda | hatchback | 93.1 | 159.1 | ohc | |
| .. | ... | ... | ... | ... | ... | ... | |
| 11 | 14 | bmw | sedan | 103.5 | 193.8 | ohc | |
| 35 | 47 | mercedes-benz | hardtop | 112.0 | 199.2 | ohcv | |
| 22 | 31 | isuzu | sedan | 94.5 | 155.9 | ohc | |
| 23 | 32 | isuzu | sedan | 94.5 | 155.9 | ohc | |
| 47 | 63 | porsche | hatchback | 98.4 | 175.7 | dohcv | |

| | num-of-cylinders | horsepower | average-mileage | price |
|----|------------------|------------|-----------------|---------|
| 13 | three | 48 | 47 | 5151.0 |
| 27 | four | 68 | 30 | 5195.0 |
| 48 | four | 62 | 35 | 5348.0 |
| 36 | four | 68 | 37 | 5389.0 |
| 28 | four | 68 | 31 | 6095.0 |
| .. | ... | ... | ... | ... |
| 11 | six | 182 | 16 | 41315.0 |
| 35 | eight | 184 | 14 | 45400.0 |
| 22 | four | 70 | 38 | NaN |
| 23 | four | 70 | 38 | NaN |
| 47 | eight | 288 | 17 | NaN |

[61 rows x 10 columns]

```
sort = df.sort_values(by = 'price', ascending = False)  
print(sort)
```

#ascending order



| | index | company | body-style | wheel-base | length | engine-type | \ |
|----|-------|---------------|-------------|------------|--------|-------------|---|
| 35 | 47 | mercedes-benz | hardtop | 112.0 | 199.2 | ohcv | |
| 11 | 14 | bmw | sedan | 103.5 | 193.8 | ohc | |
| 34 | 46 | mercedes-benz | sedan | 120.9 | 208.1 | ohcv | |
| 46 | 62 | porsche | convertible | 89.5 | 168.9 | ohcf | |
| 12 | 15 | bmw | sedan | 110.0 | 197.0 | ohc | |
| .. | ... | ... | ... | ... | ... | ... | |



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| | | | | | | |
|----|----|-----------|-----------|------|-------|-------|
| 27 | 36 | mazda | hatchback | 93.1 | 159.1 | ohc |
| 13 | 16 | chevrolet | hatchback | 88.4 | 141.1 | 1 |
| 22 | 31 | isuzu | sedan | 94.5 | 155.9 | ohc |
| 23 | 32 | isuzu | sedan | 94.5 | 155.9 | ohc |
| 47 | 63 | porsche | hatchback | 98.4 | 175.7 | dohcv |

| | num-of-cylinders | horsepower | average-mileage | price |
|----|------------------|------------|-----------------|---------|
| 35 | eight | 184 | 14 | 45400.0 |
| 11 | six | 182 | 16 | 41315.0 |
| 34 | eight | 184 | 14 | 40960.0 |
| 46 | six | 207 | 17 | 37028.0 |
| 12 | six | 182 | 15 | 36880.0 |
| .. | ... | ... | ... | ... |
| 27 | four | 68 | 30 | 5195.0 |
| 13 | three | 48 | 47 | 5151.0 |
| 22 | four | 70 | 38 | NaN |
| 23 | four | 70 | 38 | NaN |
| 47 | eight | 288 | 17 | NaN |

[61 rows x 10 columns]



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