In [2]:
```
import pandas as pd
import numpy as np
empty_df = pd.DataFrame()
print(empty_df)
```

```
Empty DataFrame
Columns: []
Index: []
```

In [3]:
```
data_series = pd.Series([1, 2, 3, 4, 5])
print(data_series)
```

```
0    1
1    2
2    3
3    4
4    5
dtype: int64
```

In [4]:
```
df = pd.DataFrame({
    'A': [1, 2, 3],
    'B': [4, 5, 6]
})
df['C'] = [7, 8, 9]

df.loc[3] = [10, 11, 12]

print(df)
```

```
    A   B   C
0   1   4   7
1   2   5   8
2   3   6   9
3  10  11  12
```

In [5]:
```
column_B = df['B']
print(column_B)
```

```
0     4
1     5
2     6
3    11
Name: B, dtype: int64
```

In [6]:
```
row_condition = df[df['A'] > 2]
print(row_condition)
```

```
    A   B   C
2   3   6   9
3  10  11  12
```

In [7]:
```
sum_values = df['A'].sum()
print("Sum of Column A:", sum_values)
```

```
Sum of Column A: 16
```

In [8]:
```
sqrt_values = np.sqrt(df['A'])
print("Square Root of Column A:", sqrt_values)
```

```
Square Root of Column A: 0    1.000000
1    1.414214
2    1.732051
3    3.162278
Name: A, dtype: float64
```

In [9]:
```
min_value = df['A'].min()
print("Minimum of Column A:", min_value)
```

```
Minimum of Column A: 1
```

In [10]:
```
max_value = df['A'].max()
print("Maximum of Column A:", max_value)
```

```
Maximum of Column A: 10
```

In [11]:
```
sorted_df = df.sort_values(by='A')
print("Sorted DataFrame by Column A:")
print(sorted_df)
```

```
Sorted DataFrame by Column A:
    A   B   C
0   1   4   7
1   2   5   8
2   3   6   9
3  10  11  12
```

In [12]:
```
df1 = pd.DataFrame({
    'key': ['A', 'B', 'C'],
    'X': [1, 2, 3]
})

df2 = pd.DataFrame({
    'key': ['A', 'B', 'D'],
    'Y': [4, 5, 6]
})

merged_df = pd.merge(df1, df2, on='key', how='inner')
print("Merged DataFrame:")
print(merged_df)
```

```
Merged DataFrame:
  key  X  Y
0   A  1  4
1   B  2  5
```

In [13]:
```
array = np.array([10, 20, 30, 40])
array_series = pd.Series(array)
print("Series from Array:")
print(array_series)
```

```
Series from Array:
0    10
1    20
2    30
3    40
dtype: int32
```

In [14]:
```
dict_data = {'a': 1, 'b': 2, 'c': 3}
dict_series = pd.Series(dict_data)
print("Series from Dictionary:")
print(dict_series)
```

```
Series from Dictionary:
a    1
b    2
c    3
dtype: int64
```

In [15]:
```
scalar_series = pd.Series(5, index=['a', 'b', 'c', 'd'])
print("Series with Scalar Value and Index:")
print(scalar_series)
```

```
Series with Scalar Value and Index:
a    5
b    5
c    5
d    5
dtype: int64
```

In [ ]:
```

```