```python
1.class Matrix:
    def __init__(self, data):
        self.data = data

    def add(self, other):
        result = []
        for i in range(len(self.data)):
            row = []
            for j in range(len(self.data[0])):
                row.append(self.data[i][j] + other.data[i][j])
            result.append(row)
        return Matrix(result)

    def transpose(self):
        result = []
        for i in range(len(self.data[0])):
            row = []
            for j in range(len(self.data)):
                row.append(self.data[j][i])
            result.append(row)
        return Matrix(result)

    def display(self):
        for row in self.data:
            print(row)

m1 = Matrix([[1, 2], [3, 4]])
m2 = Matrix([[5, 6], [7, 8]])

sum_matrix = m1.add(m2)
transpose_matrix = sum_matrix.transpose()

print("Sum of matrices:")
sum_matrix.display()

print("Transpose of the result:")
transpose_matrix.display()

2.import pandas as pd

df = pd.DataFrame([['Alice', 25], ['Bob', 30], ['Charlie', 22]],
           columns=['Name', 'Age'],
           index=['ID1', 'ID2', 'ID3'])

print(df)

3.import pandas as pd
```

```python
df = pd.DataFrame([['Alice', 25], ['Bob', 30]], columns=['Name', 'Age'])
df.to_excel('data.xlsx')
```

4.import pandas as pd

```python
df = pd.DataFrame([['Alice', 25], ['Bob', 30]], columns=['Name', 'Age'])
df.to_excel('data.xlsx')
```

5.import pandas as pd

```python
df = pd.read_excel('data.xlsx')
print(df)
```

6.import csv

```python
data = [
    ['SN', 'Name', 'Country', 'Contribution', 'Year'],
    [1, 'Linus Torvalds', 'Finland', 'Linux Kernel', 1991],
    [2, 'Tim Berners-Lee', 'England', 'World Wide Web', 1990],
    [3, 'Guido van Rossum', 'Netherlands', 'Python', 1991]
]

with open('contributors.csv', 'w', newline='') as file:
    writer = csv.writer(file)
    writer.writerows(data)
```

7.import pandas as pd

```python
data = {
    'Name': ['Alice', 'Bob', 'Charlie'],
    'Age': [25, 30, 22],
    'Country': ['USA', 'UK', 'Canada']
}

df = pd.DataFrame(data)
print(df)
```

8.import pandas as pd

```python
df = pd.read_csv('auto.csv')
df.dropna(inplace=True)
df.reset_index(drop=True, inplace=True)

print(df[df['price'] == df['price'].max()]['company'].values[0])
print(df[df['company'].str.lower() == 'toyota'])
print(df['company'].value_counts())
print(df.loc[df.groupby('company')['price'].idxmax()])
print(df.groupby('company')['average-mileage'].mean())
```

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

9.
```python
import pandas as pd

df = pd.read_csv('auto.csv')
print(df.head())
```

10.
```python
import pandas as pd
import matplotlib.pyplot as plt

df = pd.DataFrame({
    'rollno': [1, 2, 3, 4, 5],
    'name': ['Alice', 'Bob', 'Charlie', 'David', 'Eva'],
    'place': ['NY', 'LA', 'TX', 'FL', 'WA'],
    'mark': [85, 90, 78, 88, 92]
})
df.to_csv('stud.csv', index=False)

df = pd.read_csv('stud.csv')
df.set_index('rollno', inplace=True)

print(df)
print(df[['name', 'mark']])
print(df.sort_values('name')[['name', 'mark']])
print(df.sort_values('mark', ascending=False)[['name', 'mark']])
print(df['mark'].mean())
print(df['mark'].median())
print(df['mark'].mode()[0])
print(df['mark'].min())
print(df['mark'].max())
print(df['mark'].var())
print(df['mark'].std())

df['mark'].hist()
plt.show()

df.drop(columns='place', inplace=True)
print(df)
```

11.
```python
import pandas as pd
import matplotlib.pyplot as plt

data = pd.read_csv("company_sales_data.csv")

plt.scatter(data['month_number'], data['toothpaste'])
plt.show()

plt.bar(data['month_number'] - 0.2, data['facecream'], width=0.4)
```

```python
plt.bar(data['month_number'] + 0.2, data['facewash'], width=0.4)
plt.show()

products = ['facecream', 'facewash', 'toothpaste', 'bathingsoap', 'shampoo', 'moisturizer']
sales = [data[p].sum() for p in products]
plt.pie(sales, labels=products)
plt.show()
```

12.import matplotlib.pyplot as plt

```python
x = [1, 2, 3, 4, 5]
y1 = [10, 20, 25, 30, 40]
y2 = [5, 15, 20, 25, 35]

plt.plot(x, y1, label='Line 1')
plt.plot(x, y2, label='Line 2')

plt.xlabel('X Axis')
plt.ylabel('Y Axis')
plt.title('Two Line Plot Example')
plt.legend()
plt.show()
```

13.import pandas as pd

```python
df = pd.read_csv("employee.csv")

print(df.head(7))
print(df['name'].sort_values())
print(df.loc[df['salary'].idxmax(), 'name'])
print(df[df['gender'] == 'Male']['name'])
print(df['team'].unique())
```

14.import csv

```python
with open('student_marks.csv', 'w', newline='') as f:
    writer = csv.writer(f)
    writer.writerow(['Reg_no', 'Name', 'Sub_Mark1', 'Sub_Mark2', 'Sub_Mark3'])
    writer.writerow([10001, 'Jack', 76, 88, 76])
    writer.writerow([10002, 'John', 77, 84, 79])
    writer.writerow([10003, 'Alex', 74, 79, 81])
```

15.import os

```python
for item in os.listdir():
    print(item)
```

16.import numpy as np

```python
a = np.random.randint(0, 21, (3, 3))
b = np.random.randint(0, 21, (3, 3))

add = a + b
mul = a @ b
trans = mul.T

print("Matrix A:\n", a)
print("Matrix B:\n", b)
print("Addition:\n", add)
print("Multiplication:\n", mul)
print("Transpose of Product:\n", trans)
```

17.
```python
import pandas as pd

df = pd.read_csv('student.csv')

print(df['CGPA'].mean())
print(df[df['CGPA'] > 9])
print(df[(df['Branch'] == 'CSE') & (df['CGPA'] > 9)])
print(df.loc[df['CGPA'].idxmax()])
print(df.groupby('Branch')['CGPA'].mean())
```

18.
```python
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv('weather.csv')

print(df.head(10))
print(df['temperature'].max(), df['temperature'].min())
print(df[df['temperature'] < 28]['place'])
print(df[df['weather'] == 'Cloudy']['place'])
print(df['weather'].value_counts().sort_index())

plt.bar(df['date'], df['temperature'])
plt.xticks(rotation=45)
plt.show()
```