PROGRAM 10.5.1:

```python
#RA2311004010332 ECE/F
#AMIT CHAUHAN

# Import pandas library
import pandas as pd

# --- Part A: Creating a Pandas Series ---
marks_list = [85, 90, 78, 92, 88]
student_names = ['John', 'Alice', 'Bob', 'David', 'Eva']
marks_series = pd.Series(marks_list, index=student_names)

print("Pandas Series - Student Marks:")
print(marks_series)
print("\nSeries Operations:")
print("Total Marks:", marks_series.sum())
print("Average Marks:", marks_series.mean())
print("Highest Marks:", marks_series.max())
print("Lowest Marks:", marks_series.min())

# --- Part B: Creating a Pandas DataFrame ---
student_data = {
    'Name': ['John', 'Alice', 'Bob', 'David', 'Eva'],
    'Roll_No': [101, 102, 103, 104, 105],
    'Marks': [85, 90, 78, 92, 88],
    'Department': ['CSE', 'ECE', 'EEE', 'CSE', 'IT']
}

df = pd.DataFrame(student_data)

print("\nPandas DataFrame - Student Details:")
print(df)

# Basic DataFrame Operations
print("\nBasic DataFrame Operations:")
print("Mean Marks:", df['Marks'].mean())
print("Maximum Marks:", df['Marks'].max())
print("Minimum Marks:", df['Marks'].min())
```

```
Pandas Series - Student Marks:
John     85
Alice    90
Bob      78
David    92
Eva      88
dtype: int64

Series Operations:
Total Marks: 433
Average Marks: 86.6
Highest Marks: 92
Lowest Marks: 78

Pandas DataFrame - Student Details:
    Name  Roll_No  Marks Department
0   John      101     85        CSE
1  Alice      102     90        ECE
2    Bob      103     78        EEE
3  David      104     92        CSE
4    Eva      105     88         IT

Basic DataFrame Operations:
Mean Marks: 86.6
Maximum Marks: 92
Minimum Marks: 78
```

PROGRAM 10.5.2:

```python
#RA2311004010332 ECE/F
#AMIT CHAUHAN

import pandas as pd
# Data for the CSV file
data = {
    'Name': ['John', 'Alice', 'Bob', 'David', 'Eva'],
    'Roll_No': [101, 102, 103, 104, 105],
    'Marks': [85, 90, 78, 92, 88],
    'Department': ['CSE', 'ECE', 'EEE', 'CSE', 'IT']
}
# Convert the dictionary to a DataFrame
df = pd.DataFrame(data)
# Write the DataFrame to a CSV file
df.to_csv('students.csv', index=False)
print("students.csv file created successfully!")
# Step to create the JSON file
import json
# Data for the JSON file
data = [
    {"Name": "John", "Roll_No": 101, "Marks": 85, "Department": "CSE"},
    {"Name": "Alice", "Roll_No": 102, "Marks": 90, "Department": "ECE"},
    {"Name": "Bob", "Roll_No": 103, "Marks": 78, "Department": "EEE"},
    {"Name": "David", "Roll_No": 104, "Marks": 92, "Department": "CSE"},
    {"Name": "Eva", "Roll_No": 105, "Marks": 88, "Department": "IT"}
]
# Write to a JSON file
with open('students.json', 'w') as json_file:
    json.dump(data, json_file, indent=4)
print("students.json file created successfully!")
# Import pandas library
import pandas as pd
# --- Reading from CSV ---
print("Reading data from CSV file:\n")
csv_data = pd.read_csv('students.csv')
print(csv_data)
print("\nFirst three records from CSV file:")
print(csv_data.head(3))  # Display first 3 rows
# --- Reading from JSON ---
print("\nReading data from JSON file:\n")
json_data = pd.read_json('students.json')
print(json_data)
print("\nDisplaying JSON data with only Names and Marks:")
print(json_data[['Name', 'Marks']])
```

```
students.csv file created successfully!
students.json file created successfully!
Reading data from CSV file:

    Name  Roll_No  Marks Department
0   John      101     85        CSE
1  Alice      102     90        ECE
2    Bob      103     78        EEE
3  David      104     92        CSE
4    Eva      105     88         IT

First three records from CSV file:
    Name  Roll_No  Marks Department
0   John      101     85        CSE
1  Alice      102     90        ECE
2    Bob      103     78        EEE

Reading data from JSON file:

    Name  Roll_No  Marks Department
0   John      101     85        CSE
1  Alice      102     90        ECE
2    Bob      103     78        EEE
3  David      104     92        CSE
4    Eva      105     88         IT

Displaying JSON data with only Names and Marks:
    Name  Marks
0   John     85
1  Alice     90
2    Bob     78
3  David     92
4    Eva     88
```