

# Applying Functions (map, apply, lambda)

## 1. Assignment 1 -map()

```
In [7]: import pandas as pd

data = {
    'Name': ['Ramiz', 'Aman', 'Neha'],
    'Marks': [88, 76, 95]
}
df = pd.DataFrame(data)

print(df)

df['Marks_plus5'] = df['Marks'].map(lambda x: x + 5)

df['Name_upper'] = df['Name'].map(str.upper)

print(df)
```

	Name	Marks
0	Ramiz	88
1	Aman	76
2	Neha	95

  

	Name	Marks	Marks_plus5	Name_upper
0	Ramiz	88	93	RAMIZ
1	Aman	76	81	AMAN
2	Neha	95	100	NEHA

## Assignment 2 - apply()

```
In [42]: import pandas as pd

# Data
data = {'Name': ['Ramiz', 'Aman', 'Neha'],
        'Marks': [88, 76, 95]}
df = pd.DataFrame(data)

df['Marks_plus5'] = df['Marks'].map(lambda x: x + 5)

df['Name_upper'] = df['Name'].map(str.upper)

print(df)
```

	Name	Marks	Marks_plus5	Name_upper
0	Ramiz	88	93	RAMIZ
1	Aman	76	81	AMAN
2	Neha	95	100	NEHA

## Assingment 3 -> Lambda Fucntion :

```
In [41]: import pandas as pd

data = {'Salary': [20000, 35000, 50000, 60000]}
df = pd.DataFrame(data)

df['Tax'] = df['Salary'].apply(lambda x: x * 0.1)

df['Net_Salary'] = df.apply(lambda x: x['Salary'] - x['Tax'], axis=1)

print(df)
```

	Salary	Tax	Net_Salary
0	20000	2000.0	18000.0
1	35000	3500.0	31500.0
2	50000	5000.0	45000.0
3	60000	6000.0	54000.0

## Assingment 4 -> Mini Project: Calculated Fields :

```
In [58]: import pandas as pd

data = {'Name': ['Ramiz', 'Aman', 'Neha'],
        'Maths': [90, 70, 88],
        'Science': [85, 75, 92]}

df = pd.DataFrame(data)

print(df)
df['Average'] = df.apply(lambda x: (x['Maths'] + x['Science']) / 2, axis=1)

print(df)

df['Grade'] = df['Average'].apply(lambda x: "A" if x >= 85 else "B" if x >= 70 else "C")

print(df)
```

	Name	Maths	Science
0	Ramiz	90	85
1	Aman	70	75
2	Neha	88	92

  

	Name	Maths	Science	Average
0	Ramiz	90	85	87.5
1	Aman	70	75	72.5
2	Neha	88	92	90.0

  

	Name	Maths	Science	Average	Grade
0	Ramiz	90	85	87.5	A
1	Aman	70	75	72.5	B
2	Neha	88	92	90.0	A

## compile Final Data Processing Project

```
In [59]: import pandas as pd

# ----- Assignment 1 -----
print("Assignment 1: Add 5 to Marks and Convert Names to Uppercase")
data1 = {
    'Name': ['Ramiz', 'Aman', 'Neha'],
    'Marks': [88, 76, 95]}
df1 = pd.DataFrame(data1)
df1['Marks_plus5'] = df1['Marks'].map(lambda x: x + 5)
df1['Name_upper'] = df1['Name'].map(str.upper)
print(df1)
print("\n")

# ----- Assignment 2 -----
print("Assignment 2: Same as Assignment 1 (Reinforcement)")
data2 = {
    'Name': ['Ramiz', 'Aman', 'Neha'],
    'Marks': [88, 76, 95]}
df2 = pd.DataFrame(data2)
df2['Marks_plus5'] = df2['Marks'].map(lambda x: x + 5)
df2['Name_upper'] = df2['Name'].map(str.upper)
print(df2)
print("\n")

# ----- Assignment 3 -----
print("Assignment 3: Calculate Tax and Net Salary")
data3 = {
    'Salary': [20000, 35000, 50000, 60000]}
df3 = pd.DataFrame(data3)
df3['Tax'] = df3['Salary'].apply(lambda x: x * 0.1)
df3['Net_Salary'] = df3.apply(lambda x: x['Salary'] - x['Tax'], axis=1)
print(df3)
print("\n")

# ----- Assignment 4 -----
print("Assignment 4: Calculate Average and Grade")
data4 = {
    'Name': ['Ramiz', 'Aman', 'Neha'],
    'Maths': [90, 70, 88],
    'Science': [85, 75, 92]}
```

```

}
df4 = pd.DataFrame(data4)
df4['Average'] = df4.apply(lambda x: (x['Maths'] + x['Science']) / 2, axis=1)
df4['Grade'] = df4['Average'].apply(lambda x: "A" if x >= 85 else "B" if x >= 70 else "C")
print(df4)

```

Assignment 1: Add 5 to Marks and Convert Names to Uppercase

	Name	Marks	Marks_plus5	Name_upper
0	Ramiz	88	93	RAMIZ
1	Aman	76	81	AMAN
2	Neha	95	100	NEHA

Assignment 2: Same as Assignment 1 (Reinforcement)

	Name	Marks	Marks_plus5	Name_upper
0	Ramiz	88	93	RAMIZ
1	Aman	76	81	AMAN
2	Neha	95	100	NEHA

Assignment 3: Calculate Tax and Net Salary

	Salary	Tax	Net_Salary
0	20000	2000.0	18000.0
1	35000	3500.0	31500.0
2	50000	5000.0	45000.0
3	60000	6000.0	54000.0

Assignment 4: Calculate Average and Grade

	Name	Maths	Science	Average	Grade
0	Ramiz	90	85	87.5	A
1	Aman	70	75	72.5	B
2	Neha	88	92	90.0	A

In [ ]: