```
import pandas as pd


data={

      'ID': [1,2,3,4,5,6],
      'Name': ['Mahati','Ashutosh','Kajal','Jibran','Mukta','Divya'],
      'Age' : [25,30,35,40,45,21],
      'Country' : ['Maharashtra','Tamil Nadu','Kerala','Goa','Uttar Pradesh','Madhya Pradesh'],
      'Sales': [200,450,300,800,150,400]

}


df=pd.DataFrame(data)

print("Orginal Dataset")
print(df)
```

```
Orginal Dataset
   ID      Name  Age         Country  Sales
0   1    Mahati   25     Maharashtra    200
1   2  Ashutosh   30      Tamil Nadu    450
2   3     Kajal   35          Kerala    300
3   4    Jibran   40             Goa    800
4   5     Mukta   45   Uttar Pradesh    150
5   6     Divya   21  Madhya Pradesh    400
```

```
df['Name_Upper']=df['Name'].str.upper()

print("Dataset after adding new column")
print(df[['ID','Name','Name_Upper']])
```

```
Dataset after adding new column
   ID      Name Name_Upper
0   1    Mahati     MAHATI
1   2  Ashutosh   ASHUTOSH
2   3     Kajal      KAJAL
3   4    Jibran     JIBRAN
4   5     Mukta      MUKTA
5   6     Divya      DIVYA
```

```
df_copy1=df.copy()
df_copy2=df.copy()

df_copy1['Sales'] *= 1.1
df_copy2['Age'] += 5

print("\nMulticast (Modified Copies):")
print("Copy 1 (Sales Increased):")
print(df_copy1)
print("\nCopy 2 (Age Increased):")
print(df_copy2)
```

```

Multicast (Modified Copies):
Copy 1 (Sales Increased):
   ID      Name  Age         Country  Sales Name_Upper
0   1    Mahati   25     Maharashtra  220.0     MAHATI
1   2  Ashutosh   30      Tamil Nadu  495.0   ASHUTOSH
2   3     Kajal   35          Kerala  330.0      KAJAL
3   4    Jibran   40             Goa  880.0     JIBRAN
4   5     Mukta   45   Uttar Pradesh  165.0      MUKTA
5   6     Divya   21  Madhya Pradesh  440.0      DIVYA

Copy 2 (Age Increased):
   ID      Name  Age         Country  Sales Name_Upper
0   1    Mahati   30     Maharashtra    200     MAHATI
1   2  Ashutosh   35      Tamil Nadu    450   ASHUTOSH
2   3     Kajal   40          Kerala    300      KAJAL
3   4    Jibran   45             Goa    800     JIBRAN
4   5     Mukta   50   Uttar Pradesh    150      MUKTA
5   6     Divya   26  Madhya Pradesh    400      DIVYA
```

```
high_sales=df[df['Sales']>300]
low_sales=df[df['Sales']<=300]
print("\nConditional Split:")
print("High Sales:")
print(high_sales)
print("\nLow Sales:")
print(low_sales)
```

```
Conditional Split:
High Sales:
   ID      Name  Age         Country  Sales Name_Upper
1   2  Ashutosh   30      Tamil Nadu    450   ASHUTOSH
3   4    Jibran   40             Goa    800     JIBRAN
5   6     Divya   21  Madhya Pradesh    400      DIVYA

Low Sales:
   ID    Name  Age        Country  Sales Name_Upper
0   1  Mahati   25    Maharashtra    200     MAHATI
2   3   Kajal   35         Kerala    300      KAJAL
4   5   Mukta   45  Uttar Pradesh    150      MUKTA
```

```
agg_df=df.groupby('Country')['Sales'].sum().reset_index()
print("\nAggregation:")
print(agg_df)
```

```
Aggregation:
          Country  Sales
0             Goa    800
1          Kerala    300
2  Madhya Pradesh    400
3     Maharashtra    200
4      Tamil Nadu    450
5   Uttar Pradesh    150
```

```
sorted_df=df.sort_values(by='Sales',ascending=False)
print("\nSorted Data:")
print(sorted_df)
```

```
Sorted Data:
   ID      Name  Age         Country  Sales Name_Upper
3   4    Jibran   40             Goa    800     JIBRAN
1   2  Ashutosh   30      Tamil Nadu    450   ASHUTOSH
5   6     Divya   21  Madhya Pradesh    400      DIVYA
2   3     Kajal   35          Kerala    300      KAJAL
0   1    Mahati   25     Maharashtra    200     MAHATI
4   5     Mukta   45   Uttar Pradesh    150      MUKTA
```

```
df['Sales_Category']=df['Sales'].apply(lambda x: 'High' if x>300 else 'Low')
print("\nDerived Column (Sales Category):")
print(df[['ID','Name','Sales','Sales_Category']])
```

```
Derived Column (Sales Category):
   ID      Name  Sales Sales_Category
0   1    Mahati    200            Low
1   2  Ashutosh    450           High
2   3     Kajal    300            Low
3   4    Jibran    800           High
4   5     Mukta    150            Low
5   6     Divya    400           High
```