Lab 2b - Pandas – Series and DataFrames

1. Accessing and Slicing of Series

Create a Pandas Series from the list `[10, 20, 30, 40, 50]` with index labels `['a','b','c','d','e']`.

- Access the element with label `'c'`.
- Slice the series from index `'b'` to `'d'`.
- Retrieve the first three elements.

2. Accessing and Slicing of DataFrames

Create the below DataFrame:

```
   ID   Name   Age  Marks
0   1   Alex    22    85
1   2   Bella   20    90
2   3   Chris   23    78
3   4   Diana   21    92
```

- Select the column `Name`.
- Select rows with indices `1` and `2`.
- Slice the DataFrame to display the first two rows and two columns.
- Access the element at row index `2` and column `Marks`.

3. Arithmetic and Logical Operations on DataFrame

Create the below DataFrame:

```
   A   B
0  5   10
1  15  20
2  25  30
```

- Add 10 to all elements of column `A`.
- Multiply column `B` by 2.
- Create a boolean mask showing where column `A` > 10.
- Filter the rows where column `B` is less than 25.

4. Index Objects

- Create a DataFrame with index labels `['one','two','three']` and columns `['X','Y']` as below:

```
       X   Y
one    5   6
two    7   8
three  9   10
```

- Print the index object of the DataFrame.
- Access the row with index label `'two'`.
- Check if `'four'` is present in the index.

5. Re-indexing

Create the below DataFrame:

```
   Score
a     85
b     90
c     78
```

- Re-index it with `['a','b','c','d','e']`.
- Fill missing values with `0`.
- Re-order the index to `['c','a','b']`.

6. Drop Entry

For the data frame given in Question 2

- Drop the row with index `2`.
- Drop the column `Marks`.

7. Selecting Entries

For the data frame given in Question 2

- Select students with `Marks > 80`.
- Select only the `Name` and `Marks` columns.
- Select students whose `Age` is between 20 and 22 (inclusive).