

Data Science
Lab Exercise (Week 3)

1. Finish Ten Minutes exercise,

https://pandas.pydata.org/pandas-docs/stable/getting_started/10min.html#min

2. **Complete the following program**

```
import pandas as pd
```

```
data = {'cities': ['lahore', 'karachi'], 'provinces': ['punjab', 'sindh']}
```

```
# store data as DataFrame object. Assign object name as frame1
```

```
frame1 = _____
```

```
# print frame
```

```
_____
```

```
data2 = {'cities': ["islamabad", "karachi", "peshawar", "quetta"],  
         "provinces": ["capital", "sindh", "KPK", "Balochistan"]}
```

```
# store data as DataFrame object. Assign object name as frame2
```

```
_____
```

```
# combine both objects frame1 and frame2; without any duplicate rows and re-arrange all  
indexes
```

```
frame3 = ..... # combine frame1 and frame2
```

```
frame3 = ..... # remove duplicates rows
```

```
frame3 = ..... # sort based on provinces
```

```
frame3 = ..... # re-arrange all indexes
```

```
..... # print frame3
```

```
   cities provinces  
0  quetta Balochistan  
1 peshawar        KPK  
2 islamabad    capital  
3  lahore    punjab  
4  karachi    sindh
```

Figure1: Screen shot of Final Output for Q2.

3. Consider the following table

Name	Field	Age	Marks
	C		-90
Ali	E		60
Ahmed	E		-10
Nida	C		70
	C		75

Perform following data cleansing operation on the given data.

- i. Drop column **Age** as it does not contain any value
 - ii. All empty strings in the **Name** column should be replaced by "---"
 - iii. In the **Field** column replace "C" with 0 and "E" with 1. The column must contain only numeric values after this operation
 - iv. Negative values are not permitted in **Marks** column. The invalid value in **Marks** column should be replaced with the average of all valid values in the same column
4. Finish Exploratory Data Analysis with Pandas from the following link
- <https://www.kaggle.com/kashnitsky/topic-1-exploratory-data-analysis-with-pandas>
- <https://www.kaggle.com/ekami66/detailed-exploratory-data-analysis-with-python>