Table of Contents

1 Assignment: 📝📝

🎓🎓 Analytics Vidhya conducted an assessment test to hire a Data Scientist. The candidates were evaluated on 5 different subject A, B, C, D, and E. 🎓🎓 The marks of 5 different subjects out of 100 are given below. Help Analytics Vidhya to find out the answers of the following question. 🎗️🎗️

1.0.1 💰 Who scored the highest marks in the subject B?

1.0.2 💰 What is the average marks scored in the subject C?

1.0.3 💰 Who scored the highest percentage of marks?

1.0.4 💰 If considered only top-4 subjects of a candidate, then who scored the highestpercentage of marks?

In [103]:

```
# student marks
student_marks = [['Name',  ['A','B','C','D','E']],
                 ['Ankit',  [41, 34, 45, 55, 63]],
                 ['Aravind',[42, 23, 34, 44, 53]],
                 ['Lakshay',[32, 23, 13, 54, 67]],
                 ['Gyan',   [23, 82, 23, 63, 34]],
                 ['Pranav', [21, 23, 25, 56, 56]]
                ]
```

executed in 5ms, finished 00:47:19

2 Questions and Answers.

2.1 Who scored the highest marks in the subject B?

In [114]:

```
student_marks
```

executed in 9ms, finished 00:48:49

Out[114]:

```
[['Name', ['A', 'B', 'C', 'D', 'E']],
 ['Ankit', [41, 34, 45, 55, 63]],
 ['Aravind', [42, 23, 34, 44, 53]],
 ['Lakshay', [32, 23, 13, 54, 67]],
 ['Gyan', [23, 82, 23, 63, 34]],
 ['Pranav', [21, 23, 25, 56, 56]]]
```

In [115]:

```
from tabulate import tabulate
print(tabulate(student_marks, headers="firstrow"))
```

executed in 13ms, finished 00:48:55

```
Name      ['A', 'B', 'C', 'D', 'E']
-------   -------------------------
Ankit     [41, 34, 45, 55, 63]
Aravind   [42, 23, 34, 44, 53]
Lakshay   [32, 23, 13, 54, 67]
Gyan      [23, 82, 23, 63, 34]
Pranav    [21, 23, 25, 56, 56]
```

Here the first element in the index is similar to headers in the CSV file. So, we will slice the list from the second element.

In [116]:

```
print(student_marks[0])
```

executed in 15ms, finished 00:48:55

```
['Name', ['A', 'B', 'C', 'D', 'E']]
```

In [117]:

```
student_marks[1]
```

executed in 14ms, finished 00:48:56

Out[117]:

```
['Ankit', [41, 34, 45, 55, 63]]
```

Each element in the list from the index 1 contains 2 elements, the first one is the Name and second one is list of marks.

In [118]:

```
""" Marks of Ankit in Subject B. """

print(student_marks[1][0])  # student name
print(student_marks[1][1])  # student marks
```

executed in 12ms, finished 00:48:57

```
Ankit
[41, 34, 45, 55, 63]
```

For highest mark in subject B:

Step1 🔑: Select name of student and marks in subject B

In [119]:

```
for student in student_marks[1:]:
    name = student[0]
    marks_in_b = student[1][1]

    print(name, marks_in_b)
```

executed in 15ms, finished 00:48:58

```
Ankit 34
Aravind 23
Lakshay 23
Gyan 82
Pranav 23
```

Step2 💡: Store the filtered name and marks in another list.

In [120]:

```
# list to store the marks
student_with_marks_in_B = []

for student in student_marks[1:]:
    name = student[0]
    marks_in_B = student[1][1]

    student_with_marks_in_B.append([marks_in_B,name])
```

executed in 24ms, finished 00:49:00

Step3 💡: Sort the list. (We Kept the marks as the first index)*

In [121]:

```
sorted(student_with_marks_in_B)
```

executed in 10ms, finished 00:49:01

Out[121]:

```
[[23, 'Aravind'], [23, 'Lakshay'], [23, 'Pranav'], [3
4, 'Ankit'], [82, 'Gyan']]
```

Step 4 💡: Get the final index of the sorted list which denotes the highest mark.

In [122]:

```
sorted(student_with_marks_in_B)[-1][-1]
```

executed in 18ms, finished 00:49:15

Out[122]:

```
'Gyan'
```

So, we got the answer of the first question. Gyan🥇🥇 has scored the highest marks in subject B.

2.2 💰 What is the average marks scored in the subject C?

In [123]:

```
student_marks
```

executed in 13ms, finished 00:49:20

Out[123]:

```
[['Name', ['A', 'B', 'C', 'D', 'E']],
 ['Ankit', [41, 34, 45, 55, 63]],
 ['Aravind', [42, 23, 34, 44, 53]],
 ['Lakshay', [32, 23, 13, 54, 67]],
 ['Gyan', [23, 82, 23, 63, 34]],
 ['Pranav', [21, 23, 25, 56, 56]]]
```

In [124]:

```
from tabulate import tabulate
print(tabulate(student_marks, headers="firstrow"))
```

executed in 13ms, finished 00:49:22

```
Name     ['A', 'B', 'C', 'D', 'E']
-------  -------------------------
Ankit    [41, 34, 45, 55, 63]
Aravind  [42, 23, 34, 44, 53]
Lakshay  [32, 23, 13, 54, 67]
Gyan     [23, 82, 23, 63, 34]
Pranav   [21, 23, 25, 56, 56]
```

In [125]:

```
marks_in_subject_C = []
```

executed in 17ms, finished 00:51:17

Step1 🔑: Select marks in subject C

In [126]:

```
# getting subject c mark from data
for student in student_marks[1:]:
    marks_in_c = student[1][2]

    marks_in_subject_C.append(marks_in_c)
```

executed in 8ms, finished 00:51:18

In [127]:

```
marks_in_subject_C
```

executed in 14ms, finished 00:51:18

Out[127]:

```
[45, 34, 13, 23, 25]
```

Step2 🔑: Calculating a average of subject marks.

In [128]:

```
average_marks_c = sum(marks_in_subject_C)/len(marks_in_sub
print(average_marks_c)
```

executed in 13ms, finished 00:51:19

```
28.0
```

So, we got the answer of the second question. 28.0🥇🥇 is the average marks in subject C.

2.3 🕵 Who scored the highest percentage of marks?

In [129]:

```
student_marks
```

executed in 9ms, finished 00:52:13

Out[129]:

```
[['Name', ['A', 'B', 'C', 'D', 'E']],
 ['Ankit', [41, 34, 45, 55, 63]],
 ['Aravind', [42, 23, 34, 44, 53]],
 ['Lakshay', [32, 23, 13, 54, 67]],
 ['Gyan', [23, 82, 23, 63, 34]],
 ['Pranav', [21, 23, 25, 56, 56]]]
```

Step 1 🔑: Select name of student and marks in subjects.

In [130]:

```
mark_list_with_name = []
```

executed in 8ms, finished 00:52:14

In [131]:

```
for student in student_marks[1:]:
    name = student[0]
    marks = student[1]

    mark_list_with_name.append([marks ,name])
```

executed in 10ms, finished 00:52:14

In [132]:

```
mark_list_with_name
```

executed in 22ms, finished 00:52:15

Out[132]:

```
[[[41, 34, 45, 55, 63], 'Ankit'],
 [[42, 23, 34, 44, 53], 'Aravind'],
 [[32, 23, 13, 54, 67], 'Lakshay'],
 [[23, 82, 23, 63, 34], 'Gyan'],
 [[21, 23, 25, 56, 56], 'Pranav']]
```

In [133]:

```
print(tabulate(mark_list_with_name))
```

executed in 9ms, finished 00:52:15

```
--------------------  -------
[41, 34, 45, 55, 63]  Ankit
[42, 23, 34, 44, 53]  Aravind
[32, 23, 13, 54, 67]  Lakshay
[23, 82, 23, 63, 34]  Gyan
[21, 23, 25, 56, 56]  Pranav
--------------------  -------
```

Step 2 💡: Calculating percentage and storing it in list

In [134]:

```
percentage_list = []
```

executed in 18ms, finished 00:52:31

In [135]:

```
for student in mark_list_with_name:
    name = student[-1]  # getting name

    total = len(student[0]) * 100  # getting total of 5 su
    indiavidual_per = sum(student[0])  # getting individua

    percentage = (indiavidual_per / total) * 100

    percentage_list.append([round(percentage), name])
```

executed in 14ms, finished 00:52:32

In [136]:

```
percentage_list
```

executed in 24ms, finished 00:52:41

Out[136]:

```
[[48, 'Ankit'], [39, 'Aravind'], [38, 'Lakshay'], [4
5, 'Gyan'], [36, 'Pranav']]
```

Step 3 💡: Getting student name who got highest percentage.

In [137]:

```
sorted(percentage_list)[-1]
```

executed in 21ms, finished 00:52:44

Out[137]:

```
[48, 'Ankit']
```

So, we got the answer of the third question. Ankit🥇🥇 got the highest 48 percentage.

2.4 🧸 If considered only top-4 subjects of a candidate, then who scored the highest percentage of marks?

In [138]:

```
student_marks
```

executed in 15ms, finished 00:52:48

Out[138]:

```
[['Name', ['A', 'B', 'C', 'D', 'E']],
 ['Ankit', [41, 34, 45, 55, 63]],
 ['Aravind', [42, 23, 34, 44, 53]],
 ['Lakshay', [32, 23, 13, 54, 67]],
 ['Gyan', [23, 82, 23, 63, 34]],
 ['Pranav', [21, 23, 25, 56, 56]]]
```

In [139]:

```
print(tabulate(student_marks, headers="firstrow"))
```

executed in 12ms, finished 00:52:50

```
Name     ['A', 'B', 'C', 'D', 'E']
-------  --------------------------
Ankit    [41, 34, 45, 55, 63]
Aravind  [42, 23, 34, 44, 53]
Lakshay  [32, 23, 13, 54, 67]
Gyan     [23, 82, 23, 63, 34]
Pranav   [21, 23, 25, 56, 56]
```

Step1 🔑: Select name of student and marks in subjects.

In [140]:

```
marks_with_name = []
```

executed in 11ms, finished 00:52:59

In [141]:

```
for student in student_marks[1:]:
    name = student[0]
    marks = student[1]

    marks_with_name.append([marks ,name])
```

executed in 15ms, finished 00:53:00

In [142]:

```
marks_with_name
```

executed in 11ms, finished 00:53:00

Out[142]:

```
[[[41, 34, 45, 55, 63], 'Ankit'],
 [[42, 23, 34, 44, 53], 'Aravind'],
 [[32, 23, 13, 54, 67], 'Lakshay'],
 [[23, 82, 23, 63, 34], 'Gyan'],
 [[21, 23, 25, 56, 56], 'Pranav']]
```

Step 2 🔑: filter a data and store only top-4 subjects of a candidate and store it in new list along with candidate name.

In [143]:

```
marks_with_name
```

executed in 19ms, finished 00:53:11

Out[143]:

```
[[[41, 34, 45, 55, 63], 'Ankit'],
 [[42, 23, 34, 44, 53], 'Aravind'],
 [[32, 23, 13, 54, 67], 'Lakshay'],
 [[23, 82, 23, 63, 34], 'Gyan'],
 [[21, 23, 25, 56, 56], 'Pranav']]
```

In [144]:

```
top_4_subjects = []
```

executed in 14ms, finished 00:53:11

In [145]:

```
for student in marks_with_name:
    name = student[-1]  # getting name

    top_4 = sorted(student[0])[1:]   # getting top 4 subje

    top_4_subjects.append([top_4, name])
```

executed in 6ms, finished 00:53:12

In [146]:

```
top_4_subjects
```

executed in 6ms, finished 00:53:13

Out[146]:

```
[[[41, 45, 55, 63], 'Ankit'],
 [[34, 42, 44, 53], 'Aravind'],
 [[23, 32, 54, 67], 'Lakshay'],
 [[23, 34, 63, 82], 'Gyan'],
 [[23, 25, 56, 56], 'Pranav']]
```

Step 3 💡: Calculating percentage of top 4 subjects of candidate and storing it in list.

In [147]:

```
top_4_subjects
```

executed in 14ms, finished 00:53:16

Out[147]:

```
[[[41, 45, 55, 63], 'Ankit'],
 [[34, 42, 44, 53], 'Aravind'],
 [[23, 32, 54, 67], 'Lakshay'],
 [[23, 34, 63, 82], 'Gyan'],
 [[23, 25, 56, 56], 'Pranav']]
```

In [148]:

```
top_4_subject_percentage = []
```

executed in 22ms, finished 00:53:16

In [149]:

```
for student in top_4_subjects:
    name = student[-1]  # getting name
    total = len(student[0]) * 100  # getting total of subj
    indiavidual_per = sum(student[0])  # getting individua
    percentage = (indiavidual_per / total) * 100
    top_4_subject_percentage.append([round(percentage), na
```

executed in 13ms, finished 00:53:17

In [150]:

```
top_4_subject_percentage
```

executed in 14ms, finished 00:53:18

Out[150]:

```
[[51, 'Ankit'], [43, 'Aravind'], [44, 'Lakshay'], [5
0, 'Gyan'], [40, 'Pranav']]
```

Step 4 🔑: Getting student name who got highest percentage.

In [151]:

```
sorted(top_4_subject_percentage)
```

executed in 22ms, finished 00:53:22

Out[151]:

```
[[40, 'Pranav'], [43, 'Aravind'], [44, 'Lakshay'], [5
0, 'Gyan'], [51, 'Ankit']]
```

In [152]:

```
sorted(top_4_subject_percentage)[-1]  # last index of sort
```

executed in 22ms, finished 00:53:23

Out[152]:

```
[51, 'Ankit']
```

So, we got the answer of the forth question. Ankit🥇🥇 got the highest 51 percentage from 4 top subjects marks.

In [ ]:

In [ ]:

Thanks.