

Programming Fundamentals

Section A,F, H, Fall 2019

Assignment 4

Due Date: Thursday, November 14, 2019

A teacher needs to determine the performance of her students. Total class strength (i.e. maximum number of students in a class) is limited to 50. Each student is given a roll number that is a 4 digit integer value ranging from 1000 - 9999. Teacher evaluates the students on 5 different exams, each having different weight-age and total marks.

Teacher needs a program that can:

1. get input from the teacher:
 - weight-age of each of 5 exams sequentially
 - total marks of each of 5 exams sequentially
 - roll number and score of each student in all the 5 exams input on a single line, separated by white space. For multiple students multiple lines are input, terminating with an end of input delimiter taken as 0. If a student was absent in a specific exam then her score in the exam will also be 0. Following is a sample input showing data of 3 students:

```
1050 5 10 0 30 23
1042 7 11 5 19 21
1061 2 13 1 15 17
0
```

2. Compute the total score obtained by each student using the following formula:
$$\sum s_i / t_i * w_i$$
, for i in the range 1 – 5, where,
 s_i represents the score earned in the exam,
 t_i represents total marks of the exam,
 w_i represents weight-age of the exam
3. Display the mark sheet showing for each student: roll number, score obtained in each exam and the total score obtained. Mark sheet needs to be shown either in the **ascending order of roll number** or **descending order of total score**. Ask the teacher to enter the sort order as input.
4. Allow the teacher to search for the marks details of a specific student based upon the roll number

Use **parallel arrays** to implement the program. Implement support for sorting and searching using **Selection Sort** and **Binary Search**.