

School of Computer Science, University of Windsor
60-141: Introduction to Algorithms and Programming II
Term: Summer 2014 (July-August)
Instructor: Dr. Asish Mukhopadhyay

Assignment 3

Posted: 18th July, 2014

Due: 27 July, 2014, 11:59pm

Preamble: This assignment has been designed to help you understand how pointers to functions can be used to write menu-driven programs.

Grading Scheme: The problem is worth 10 points, 2 for program documentation, 2 for effort, 6 for correctness. Mail your solution to parti@uwindsor.ca before the due date. The submission should have the Assignment number, your name and student ID on it as well as on the subject line of the e-mail, with an attachment that contains a script file and a source file.

Credits: The problem and its description is from your textbook, chapter 7, Exercise 7.25.

Problem: The problem refers to the code in Fig.6.22 of your textbook for processing student grades. Modify this program to create a menu-driven interface that uses pointers to function. The menu should look like this:

Enter a choice:

- 0 Print the array of grades
- 1 Find the minimum grade
- 2 Find the maximum grade
- 3 Print the average on all tests for each student
- 4 Quit

One restriction on using arrays of pointers to functions is that all the pointers must have the same type. The pointers must be to functions that return the same type and receive arguments of the same type and number. For this reason the functions in Fig. 6.22 must be modified so that each return the same type and take the same parameters, in number and type. Modify functions `minimum` and `maximum` to print the minimum or maximum value and return nothing. For option 3, modify function `average` of Fig. 6.22 to output the average for each student (not a specific student).

Function `average` should return nothing and take the same parameters as `printarray`, `minimum` and `maximum`. Store the pointers to the four functions in array `processGrades` as below

```
void (*processGrades[4]){printArray, minimum, maximum, average};
```

and use the choice made by the user as the array subscript to call a particular function.