Introduction to Programming

(CS200)

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CS 200 Lab 03 Spring 2018

Lab Guidelines

1. Make sure you get your work graded before the lab time ends.
2. You put all your work onto the LMS folder designated for the lab (i.e. "Lab03") before the time of the lab ends.
3. Talking to each other is NOT permitted. If you have a question, ask the lab assistants.
4. The object is not simply to get the job done, but to get it done in the way that is asked for in the lab.
5. Any cheating case will be reported to Disciplinary Committee without any delay.

Marks: Name: _____ Roll #: _____

Task 1	Q1	Q2		Total
	10	10		20

Task 2	Q1	Q2	Q3	Q4		Total
	10	10	10	10		40

Task 3	Q1	Q2	Q3	Q4	Q5		Total
	10	5	10	5	10		40

Let's Begin……

Total marks Obtained

/100

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Task 1: (20)

1. Write a function that takes pointers to two integer variables and exchanges their contents. Overload this function so that it can also be used for variables of double and long data types. 4+3+3=10
2. Write a *main()* function to test this function. 10

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Task 2: (30)

You have been given a pointer to an integer array and array's length.

1. Implement a function called *largest()* which finds the largest integer in the array and returns it. 10
2. Implement a function called *smallest()* which finds the smallest integer in the array and returns it. 10
3. Implement a function called *add()* which adds all the elements of the array and returns the result. 10
4. Write a *main()* function to test the functions you have just written. 10

Note: You are not allowed to use indexing.
However, you may use pointer arithmetic, involving +, -, +=, -=, ++, -- operators, to access elements of the array.

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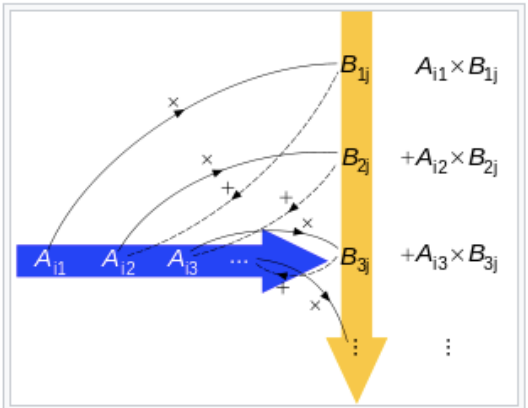
Task 3 (40)

Write a class which represents a matrix. It should have the following methods:

1. Constructor which takes a pointer to a 2D array and two arguments *n* and *m* indicating the number of rows and number of columns respectively in the 2D array. The constructor allocates memory to the 2D array dynamically and initializes it by setting all of its elements to zero. 10
2. A method named *getElement()* which takes two indices *i* and *j* as arguments and returns element at *i*th row and *j*th column. 5
3. A method *multiply()* which takes another matrix as arguments and returns a new matrix after multiplying them. 10
4. A destructor which clears the memory at the time of object destruction. 5
5. Write a *main()* function to test the class you have written. 10

Note: You may use indexing where needed.
Hint: Matrix Multiplication



Arithmetic process of multiplying numbers (solid lines) in row *i* in matrix **A** and column *j* in matrix **B**, *then* adding the terms (dashed lines) to obtain entry *ij* in the final matrix.

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Zip your tasks into one folder with format:

YourRollNo-Lab03

example "**2001001-Lab03**" and upload on LMS before the tab is closed. You will not be given extra time.