

MSc12 Semester 2
Advanced C, C++ and Introduction to Java
Test -1 (Lab)

19_4_23
Time:90 mts
Marks:30

1. Write a Program in C++ that does the following:

- Contain 4 classes, namely master, sqr, avg, and odr.
- master class in a way plays the role of a master or controller.
- First, a method in master will take an integer number input from the user.
- This number is sent to the class sqr by master.
- sqr will use one of its methods to calculate "square" of the number and returns the result to master.
- master will then send this result from sqr, along with 2 more integer numbers to the "avg" class.
- avg class will take these 3 numbers, calculates the average and returns the same to master.
- Now master will take the result of avg, and along with the same will send another 5 integer numbers to odr class.
- odr class will take all the numbers, calculates largest and smallest of these numbers, and sends back the same to master.
- master also displays the result(s) of avg, sqr and odr.

NOTE: Use any number of methods in any of the classes. Use any technique to return Values from any method(s). Make sure mandates not compromised.

2. Write a Program in C to implement a doubly linked list with the following features/clauses:

- DLL contains 16 nodes, each with an integer value as data
- insertion and deletion of nodes should be allowed with the following protocol
 - any insertion can happen only at position 4 or position 8.For every data that needs to be inserted, user should also input its position (4 or 8)
- After every insertion operation, the whole DLL should be displayed.
- Deletion of node can happen only at position 3. This means, once the deletion option is selected by the user, the node at position 3 should be the one deleted.
- After every deletion operation entire DLL should be displayed.

3. Write a program in java that showcases:

- String Pool
- Abstract class
- Wrapper class "Integer"
- Working of Constructor

A single program should show all the above features. The output should convince us of the working of these concepts.