University of Sargodha

BS 2nd Term Examination 2019

Subject: Computer Science **Paper: Object Oriented Programming (CMP-2124)**

Time Allowed: 2:30 Hours **Maximum Marks: 60**

Note: Objective part is compulsory. Attempt any three questions from subjective part.

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (12*2)

i. What is the main difference between a class and an object?
ii. What is Constructor overloading?
iii. Differentiate between single and multiple inheritance.
iv. If class A is a friend of class B ,which member function in class A have access to the private member of class B.
v. What is the difference between compile-time binding and run-time binding?
vi. Explain the concept of "this" pointer.
vii. Explain the static data member of a class.
viii. What is template class? Define proper syntax for template class?
ix. What is Operator overloading?
x. Why destructors are not overloaded?
xi. Which OOPS concept is used as a reuse mechanism? Explain with an example.
xii. What are all the operators that cannot be overloaded?

Subjective Part (3*12)

Q.2. Create a class Course that includes data members that hold the course name (for example, OOP), and the course number (for example, 101). All of the data members need to be initialized with parameterized constructors (may be multiple). The class includes a Display () member function that displays the detail of Course. Create a subclass named Labcourse that include data member lab course credit hour(Labhrs), *which is assign 4.00 if the user* enter course name such as ICT, OOP and OS. This class also include a Show () method to display that the course is a lab course or otherwise. Write a main () function that instantiate one object of Labcourse and displays its data.

Q.3. Write a class Shape with the data member X and Y (Coordinates with type integer) and name of Shape (defined as an array of type char or string). Shape class have following member functions (make the appropriate member functions as const.)

- no-argument constructor (initialized data members with default values)
- Getdata () that takes all coordinate values and shape name from the user.
- Showdata () to display the data on Screen.
- overloaded assignment (= =) operator

Create two objects of shape class in main () function, inputs the values from the user and compare the two objects of shape. If all coordinates and name of two shape are same then both shape are equal.

Q.4. A publishing company that markets both book and audiocassette versions of its works. Create a class called publication that stores the *title* (a string or c-string) and *price* (type float) of publication. This class includes getdata() and showdata() member functions for input and output data members. This class also include a pure virtual member function "*ISOversize ()*". From this class derive two classes: book, which has a page *count* (type int) and Tape class which has a playing time in *minutes* (type float). Each of these two derive classes should override the base class member functions. Let's say that a book with more than 500 pages, or a tape with a playing time longer than 90 minutes, is considered oversize. You can access members functions from main () and display the string "Oversize" for oversized books and tapes when you display their data.
Write a main () program that creates an array of pointers to publication. In a loop, ask the user for data about a particular book or tape.

Q.5. Create a 'DISTANCE' class with following:-feet (type int) and inches (type float) as data members.- overloaded stream extraction operator (>>) for input and overload insertion operator (<<) for output of class data members.
Write a main () to test all the functions in the class and allows the user to enter data, and displays the data members that is entered by the user. The main () function should display an appropriate thrown error message if user enter negative distance value from the command prompt.

Q.6. Create a user define class that read a text file. Process to read a text file by class member functions in the following order:

i. Convert all text into upper case. **ii.** Count the frequency of **"is"** words in the text file.