National University of Computer & Emerging Sciences, Karachi

Spring-2022 CS-Department

Mid-Term Examination
Paper A

04th April 2022, 11:50 am – 01:20 pm

Course Code: CL-1004	**Course Name: Object Oriented Lab**
Instructor Name / Names: Mubashra Fayyaz	
Student Roll No:	**Section No: BCY-2B**

Instructions:

- Return the question paper.
- Read each question completely before answering it. There are 3 questions and 2 pages · In case of any ambiguity, you may make assumptions. But your assumption should not contradict any statement in the question paper.
- Submit the solution on google classroom: 01:00pm onwards time is restricted for submissions only.
- Your submission should not have any zip folder, only .cpp files and screenshots are required.

Time: 90 minutes. **Max Marks:** 25 points (5+10+10)

Question#1

Write a function named "location_of_largest" that takes as its arguments the following:

(1) an array of integer values;

(2) an integer that tells how many integer values are in the array.

The function should return as its value the subscript of the cell containing the largest of the values in the array.Thus, for example, if the array that's passed to the function looks like this:

0 1 2 3 4

58 | 26 | 90 | 34 | 71

then the function should return the integer 2 as its value. If there is more than one cell containing the largest of the values in the array, then the function should return the smallest of the subscripts of the cells containing the largest values. For example, if the array that's passed to the function is

0 1 2 3 4 5 6

58 | 26 | 91 | 34 | 70 | 91 | 88

then the largest value occurs in cells 2 and 5 , so the function should return the integer value 2 .

Question#2

Consider a class named Person with attributes Name, Age and Work that provide following functionalities.

a method named getName that returns the Name of a Person.
a method named getAge that returns Age of a person.
a method named getWork that returns details of work.

Provide a default constructor for Person that sets every variable to "Zero"/0. Create another class named Player that inherits from a superclass Person which overrides the function "getWork()" with respect to the game and returns a different, subclass-specific string. Player Class should have Batting and fielding average details like RUNS, Matches,ODIs,T20s,Wickets, Fours and Sixes etc.
Create another class named Umpire class that inherits from the Player class which overrides the function "getWork()" with respect to the game and returns a different, subclass-specific string. This Class should have Umpiring Career Statistics like ump_career_start_year, noT20s,noODIs, noTests etc. Provided Parameterized Constructor and accessor/ mutator functions and display function for the classes.
The “int main()” function should contain program statements which are as follows:

```
Person( )
Player p1("Generic Person1")
p1.setAge(25)
p2.setWork("Sweeper")
Player p2("Player 1", 33,"Right-Handed Batsman",300,80,45,10,12,5);
Coach c1 ("Coach 1,55," ICC Elite Panel Official",400,100,50,50,25,10,2001,77,60,4);
```

Sample Output

```
Name: Generic Person 1
Age:25    Work: Sweeper

Name: Player 1
Age:33              Work:Right-Handed Batsman        Runs: 300          Matches:80
ODIs:45             Wickets:10                       Fours:12           Sixes:5

Name: Umpire 1
Age:55              Work: ICC Elite Panel Official   Runs: 400          Matches:100
ODIs:50             Wickets:50                       Fours:25           Sixes:10
ump_career_start_year:2001                           noT20s:77                noODIs:60
noTests:4
```

Question#3

Create a RestaurantMeal class that holds the name and price of a food item served by a restaurant. Its constructor requires arguments for each field. Create a HotelService class that holds the name of the service, the service fee, and the room number to which the service was supplied. Its constructor also requires arguments for each field. Create a RoomServiceMeal class that inherits from both RestaurantMeal and HotelService. Whenever you create a RoomServiceMeal object, the constructor assigns the string “room service” to the name of the service field, and Rs. 400 is assigned to the service fee inherited from HotelService. Include a RoomServiceMeal function that displays all of the fields in a RoomServiceMeal by calling display functions from the two parent classes. Additionally, the display function should display the total of the meals plus the room service fee. In a main()function, instantiate a RoomServiceMeal object that inherits from both classes. For example, a “steak dinner” costing Rs. 2000 is a “room service” provided to room 1202 for a Rs. 400 fee.