National University of Computer and Emerging Sciences

Lab Manual 06
Object Oriented Programming

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Objectives
After performing this lab, students shall be able to:
- ✓ Design a class that correctly implements class members by observing access specifiers.
- ✓ Construct a class object by using parameterized constructors.
- ✓ Familiar with the use of a constructor and destructor.

Instructions
  ➢ Make sure memory is deallocated properly
  ➢ implement the functions outside the class
  ➢ Make appropriate functions if you need them.

Task 01:

Write a C++ program that creates a program for a new ice cream vendor called LeCream. The management of LeCream has decided that they are going to sell their ice cream in 7 different flavours namely chocolate, vanilla, strawberry, mango, tutti fruit, almond crunch and coffee. Carefully design the program by observing the following rules.

- LeCream is charging Rs 100 for two scoops and Rs 150 for three scoops. Hence you will need a function to determine the number of scoops and based on that the price. If a user enters more than three scoops your program should display invalid input and it should exit.
- LeCream allows its customers to purchase a vanilla wafer with their ice cream. If the customer wants to purchase the wafer he will have to pay an additional Rs 10. This amount should be added to the total amount payable by the user.
- If the customer asks for chocolate flavour then he will have to pay an additional amount i.e. Rs 120 for two scoops and Rs 180 for three scopes. Design a function that will be called if the customer chooses flavoured ice cream.
- The program should show a menu that asks the customer for his requirements and then displays the final payable amount with full details about the flavour, number of scoops and wafer.
- In the end create a class destructor that displays a thank you message to the user.

Design your program using sound OOP practices. Carefully determine the data members, member functions, access specifiers, activities to be performed in the constructor. Make sure that you use good naming conventions in your code. A good design can earn you higher marks.

Task 02:

VISION is a world leader in manufacturing LCD Televisions. The company has decided that it will allow its customers to give the dimensions of the TV (in length and width). Once the length and width are ordered the company will manufacture the TV according to your requirements. In

this regard they want you to create a program that will assist them. Carefully read all the instructions and follow the requirements.

- Create a class called vision
- Create three constructors as follows:

- A nullary constructor that calls the setlength( ) and setwidth( ) function.
- A parameterized constructor that will receive the length and width as integers
- A parameterized constructor that will receive the length and width in float

- By using a special function calculate the area of the TV
- Create a function to calculate the price of the TV by multiplying the area with Rs. 65.
- Create a display( ) function to show the details of the purchased TV.

In the main you will construct three objects that demonstrate the use of the three constructors. After calling the constructor it will take over and will handover control to the area function, and then the price calculation function. Remember that the user should not have access to modifying the price.

Determine the access specifiers, data members and member functions. Also note that each constructor can / will have a distinct functionality in its body. Hence do not try to copy code from one constructor to the other. Focus on the design clarity and quality of your code.

END