**National University of Computer and Emerging Sciences**


# Lab Manual 04
# Object Oriented Programming

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## Objectives

After performing this lab, students will practice:

- ✓ Classes, Contructors, Parameterized Constructors
- ✓ Destructors, Objects, Setters, Getters

**TASK-1:**

Create a class named as '**Triangle**' having the following functionalities:

1. Private Data Members
    - Length of the triangle
    - Height of the triangle
    - Width of the triangle
2. A default constructor.
3. An overloaded/parameterized Constructor of Triangle class that initializes the data members of triangle class with the received parameters and prints "Overloaded/parameterized Constructor Called"
4. Destructor.
5. Getter and Setter:
    - Sets the length, width and height of the triangle
    - Returns the length, width and height of the triangle.
6. Functions to print the area and perimeter of a triangle having sides of 3, 4 and 5 units.

**TASK-2:**

You are developing a library management system. Create a class called "**Book**" having following functionalities:

- Private member variables for title, author, and availability status.
- Implement getter and setter methods for each variable by using **this** keyword.
- Constructor that initializes the title, author, and availability status.
- Parametrized Constructor which initializes the data members with the received parameters.
- Include a function called "borrowBook" that changes the availability status to indicate that the book is borrowed.

**TASK-3:**

You are building a shopping cart for an e-commerce website. Create a class called "**CartItem**" with the following functionalities:

- private member variables for product name, quantity, and price per item.
- Implement getter and setter methods for each variable by using **this** keyword.
- Write a constructor that initializes the product name, quantity, and price per item.
- Parametrized Constructor which initializes the data members with the received parameters.
- Destructor.
- A function called "calculateTotalPrice" that returns the total price of the cart item (quantity multiplied by price per item).

**TASK-4:**

Create a class named **"Pizza"** that stores information about a single pizza. It should contain the following:

- **Private data members** to store the size of the pizza (either small, medium, or large), the number of cheese toppings, the number of pepperoni toppings, and the number of ham toppings.
- **Constructor** that set all of the instance variables.
- **Parameterized Constructor** of Pizza class that initializes the data members of Pizza class with the received parameters and prints "Overloaded/parameterized Constructor Called"
- **Public methods** to get and set the instance variables.
- A public method named calcCost( ) that returns a double that is the cost of the pizza. Pizza cost is determined by: Small: $10 + $2 per topping Medium: $12 + $2 per topping Large: $14 + $2 per

topping.

- public method named getDescription( ) that returns a String containing the pizza size, quantity of each topping.

Write C++ Code to create several pizzas and output their descriptions. For example, a large pizza with one cheese, one pepperoni and two ham toppings should cost a total of$22.

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