CSE 112 : Object Oriented Programming Lab
Lab - 8

Intake 52
Section - 03

April 18, 2024

Lab Tasks

Task 1

- Create a C++ class called `FullName` with a single private member variable of type `string` to store a name.
- Overload the '+' operator to allow concatenation of `FullName` objects.
- In the `main()` function, create three `FullName` objects named `firstname`, `middlename`, and `lastname`, each initialized with a name.
- Use the overloaded '+' operator to concatenate these objects and generate the following output:

```
Sachin Ramesh Tendulkar
```

Task 2

- **Base Class - Rectangle:**
  - Create a base class named `Rectangle` with two private attributes: `length` and `width`.
  - Implement a default constructor that prints "Default base constructor is called" and a parameterized constructor that initializes the attributes and prints "Parameterized base constructor is called"
  - Implement a member function named `show_l_w()` that displays the length and width.
  - Implement a destructor that prints "Base object destroyed."
- **Derived Class - Box:**
  - Create a derived class named `Box` that publicly inherits from the `Rectangle` class.
  - Add a private attribute `height` to the `Box` class.
  - Implement a default constructor that prints "Default derived constructor is called" and a parameterized constructor for the `Box` class that initializes the length and width through the base class constructor and initializes the height. Print "Derived Parameterized cosntructor is called" in the constructor.
  - Implement a member function named `show_h()` that displays the height.
  - Implement a member function named `show_l_w_h()` that calls the `show_l_w()` function from the base class and displays the height. Print "Derived Object is destroyed" in the destructor.

- **Main Function:**
  - Inside the `main()` function, create an object of the `Box` class named `b` with length 10, width 20 and height 30.
  - Call the `show_h()` and `show_l_w_h()` functions of the `Box` class to display the height and overall dimensions.

Task 3

- Create two base classes: `Vehicle` and `ElectricDevice`.
  - The `Vehicle` class should have private attributes like `brand` and `model`.
  - The `ElectricDevice` class should have attributes like `voltage` and `powerConsumption`.
  - Implement parameterized constructors for both classes.
- Derive a class called `ElectricCar` from both `Vehicle` and `ElectricDevice`.
- Implement a parameterized constructor and a function named `displayDetails()` in the `ElectricCar` class.
  - The `displayDetails()` function should display information about the electric car, including details from both base classes (`Vehicle` and `ElectricDevice`).

Task 4

- Consider a class named `A` with a member function `showA()` that displays the message "Euler circuit is a circuit containing all the edges of a graph".
- Classes `C` and `D` inherit from class `A`, and class `E` inherits from both classes `C` and `D`.
- Now create an object of E and call the showA() function.