Object Oriented Programming LAB – BSDSF24

(Both Morning and Afternoon)

Lab 12 – 13-05-2025

use notepad++ and developer command prompt for the following tasks

1. Create a **Painting** class that holds the painting's title, its artist name, and its value. Keep all the data members protected. Write its constructor with 2 parameters title and name, and $400 as value of all paintings. Write a **display** function that displays painting's data. Later create its child class named **FamousPainting**, whose constructor is similar but $25000 to value of painting. In **main** function that declares pointer array of size 7 for Paintings. Prompt the user to enter the title and artist's name for each of the 7 Paintings. If user enter artist name from Degas, Monet, Picasso, or Rembrandt, create object of **FamousPainting**, otherwise **Painting**. At the end display the data 7 Paintings by calling **display** function built in the ***Parent*** class. **[20 marks]**

2. Create a class ***Shape*** with a pure virtual function ***float boundaryLength()***. Inherit classes ***Rectangle*** having length and width as data members, ***Circle*** having radius as data member, ***Triangle*** and ***one more of your choice*** with simplest but appropriate data members. In main logic using array of pointers to Shape, create a collection of various shapes and display their list with respective boundary lengths. You may add data and function members in above mentioned classes, if required. Now, implement and test ***float area()*** function in some of above classes like Rectangle and Circle without making it pure virtual in ***Shape***. **[20 marks]**

3. Topic: Downcasting: Create a class ***Shape*** without function ***float area()***. Inherit classes ***Rectangle*** have length and width as data members, and ***Circle*** having radius as data member. These classes have their own ***float area()*** function. In main logic using array of pointers to Shape, create a collection of at least 6 different shapes and display their list in the following format. **[20 marks]**

```
Sr#    Type              Area     Data
---    ---------    ---------     -------------------------
  1    Circle          63.62     Radius:4.5
  2    Circle        0.00071     Radius:0.015
  3    Rectangle        5.85     Length:3.25, Width:1.8
…
```

4. Complete the tasks provided in **TicTacToe** Lab. **[40 marks]**

Thank you for your patience