# Lab 14

## Task 01 (20 Marks)

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 10 for Paintings. Prompt the user to enter the title and artist's name for each of the 10 Paintings. If user enter artist name from Degas, Monet, Picasso, or Rembrandt, create object of **FamousPainting**, otherwise **Painting**. At the end display the data 10 Paintings by calling **display** function built in the ***Parent*** class.

## Task 02 (30 Marks)

Create a **Ship** class that has ***private*** data members **name** of the ship (a string), **year** that the ship was built (a string). Create constructor and required setter / getters, and a ***virtual*** **print** function that displays the ship's **name** and the **year** it was built.
Next, create a **CruiseShip** class derived from the ***Ship*** class. The **CruiseShip** class should have only data member for maximum number of passengers (integer). Write constructor and appropriate getters and setters. Redefine the ***print*** function of the base class in **CruiseShip** class. The **print** function should display only the ship's name and the maximum number of passengers.
Next, create a **CargoShip** class derived from the ***Ship*** class. The **CargoShip** class has only data member for capacity in tons (integer). Write constructor and appropriate getter and setters. Redefine **print** function of base class in **CargoShip** class. The CargoShip class's print function should display only the ship's name and the ship's cargo capacity.
Write main function to test various aspects of inheritance, through creating object of type Ship, CruiseShip and CargoShip, and calling print function. Next a Pointer to a Ship points to a Ship object, another Ship pointer points to its derived type, and calling print function. Adding functions in Ship as derived classes. Adding more data and functions members in base as well as derived classes.
Write main function that has an array of Ship pointers. The array elements should be initialized with the addresses of dynamically allocated Ship, CruiseShip, and CargoShip objects. The program should then step through the array, calling each object's print function.