1. Consider the following C++ class definition for Point that models a point \((x, y)\) in the Cartesian coordinate system.

class Point
{
    public:
        // Point operations:
        Point();   // Creates a point at (0,0)
        Point(double initialX, double initialY);  // Creates a point at (initialX, initialY)
        double XCoord();  // Return the x-coordinate of this point
        double YCoord();  // Return the y-coordinate of this point
        //**** Put your new member function prototypes here

    private:
        double x, y;  // point at (x, y)
};

A) Add a member function GetPoint that returns a Point. Write the prototype in the space given above. Write the function definition (i.e., implementation code) for the function in the space below.

B) Add a member function SetPoint that receives the new x and y coordinates and sets the point to those coordinates. Write the prototype in the space given above. Write the function definition (i.e., implementation code) for the function in the space below:

C) Add a member function Norm which returns the distance from the point to the origin. The distance may be calculated from the equation \(d = \sqrt{x^2 + y^2}\).

D) Add a member function Print which prints the values of x and y.
2. The formula \( d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} \) computes the distance between two Cartesian points \((x_1, y_1)\) and \((x_2, y_2)\). Write a C++ function (not a member function) named `Distance` that receives two objects of type `Point` defined in (1) and returns the distance between these two points. (You can use a function `sqrt(x)` that returns \( \sqrt{x} \) in `<cmath>`.)

3. Explain the difference between a `public` and a `private` member of a class.

4. Explain the difference between a class `member` function and an `application` function.

5. How many constructors can a class have?

6. How and why is the `scope resolution operator ::` used in a class definition?

7. Which member functions of a class are created automatically by the compiler if they are not included by the programmer in a class definition?