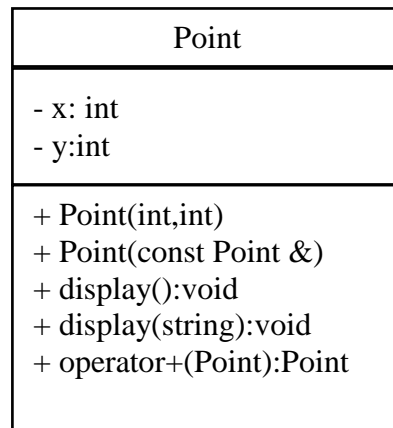


Problem**[30 Marks]**

1. Define a class name Point based on the following class diagram.



The description for each function member is given below.

Point (int,int)	Constructor to set the data members.
Point(const Point &)	Copy constructor.
display():void	Method that displays the coordinates. <i>Example:</i> x = 3 y = 6
display(string):void	Method that displays the coordinates with title. <i>Example A</i> Point 1 : x = 3 y = 6 <i>Example B</i> Coordinates : x = 5 y=10 Note: “Point 1 ” and “Coordinates” are the titles of the points.
operator+(Point):Point	Overloaded + operator which is meant for point addition. <i>Example :</i> Point1: x = 1, y = 2. Point2: x = 2, y = 3. Point1 + Point2 : x = 3, y = 5.

2. Define a friend function to class Point name **slope** which calculates the slope between two points. The formula of calculating the slope is as follow.

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

3. Write an appropriate main function that do the following
- Create two Point objects with the following coordinates: $x=1, y=2$ and $x=3$, and $y=4$.
 - Create a third Point object and assign the object with the addition of two objects in (a).
 - Display the coordinates of the first and second points in (a) without title.
 - Display the coordinates of the third point in (b) with the title “Third point”.
 - Print the slope between the two points in (a).

```
x= 1   y=2
x= 3   y=4
Third Point: x= 4   y=6
Slope = 1
```

Figure 1: Sample output

Table 1: Assessment Criteria

Item	Criteria	Marks
A	i) The program is able to run.	2
	ii) Using an appropriate structure for the program (e.g. the code is properly indented, all the required header files are included, the main function is properly written, etc.).	1
B	The definition of class Point	
	i. Data members	1
	ii. Point(int,int)	2
	iii. Point(const Point &)	3
	iv. display():void	2
	v. display(string):void	3
	vi. operator+(Point):Point	4
C	The declaration and definition of friend function slope .	3
D	Function main	
	i. Object 1 and object 2 creation	2
	ii. Object 3 creation	2
	iii. Coordinates display of the two objects without title	2
	iv. Third coordinates display with title	1
	v. Print the slope between two points	2
Total		30