Programming Project 3

You have learned that organizing your programs in terms of objects is a very powerful idea and would like to start giving Object Oriented Programming (OOP) a try. You plan to write a simple program, *RobotDriver.cpp*, which relies on a *Robot* class for its functionality.

The robots operate in a square grid of size 100 by 100 squares and should never go outside even if asked to do so. The x and y coordinate for a grid square is a number between 0 and 99. The program creates a few robot objects and gives them tasks to execute at different locations in the grid. The description of the capabilities of a robot is given to you in the Robot class in the RobotDriver.cpp file. **All you have to do is implement the functions of the robot class and create a few robots in the main function and instruct them to execute tasks.**

A sample run for the given main function is pasted below:

```
************************************************************
Robot Zero located at (0, 0)
Task: none
Destination: (0, 0)
Energy level: 100
************************************************************
************************************************************
Robot Rob located at (10, 10)
Task: none
Destination: (0, 0)
Energy level: 100
************************************************************
************************************************************
Robot Walle located at (50, 10)
Task: none
Destination: (0, 0)
Energy level: 100
************************************************************
Robot Rob unable to complete task.
Destination unreachable with current energy level.
18 more energy units are needed to carry out this task.
************************************************************
Robot Rob located at (10, 10)
Task: Pick up book
Destination: (88, 50)
Energy level: 100
************************************************************
************************************************************
Robot Walle located at (88, 50)
Task: Completed: Pick up book
Destination: (88, 50)
Energy level: 122
************************************************************
************************************************************
Robot Rob located at (10, 10)
Task: Transfered to Walle
Destination: (10, 10)
Energy level: 0
************************************************************
```

Hints:

- This program is very straight forward if you understand classes and objects. The starter file has been given to you. All you have to do is implement the functions for the Robot class and then the client code in the main that uses the Robot class.
- The Robot class relies on the Point class since it uses Point objects for its current position and its destination. To get you started, the Point class has been given to you completed.
- The code in the main function should be very simple since all the functionality is encapsulated in the Robot class.

Deliverables:

You should submit a zip file named **project3_first_last.zip** (where first and last are your first and last name) containing **ONLY the files below.**

RobotDriver.cpp	(copy the file from your IDE)
report.txt	(a short text file saying "I have tested this program and it has no issues" and a sample output from your program (like the examples given above but with your own input). If your program has some problem/bug that you are aware of, you should document that in the report.)

How you get points:

Functionally correct solution	70 points
Good program structure	20 points
Good variable names, style and comments	10 points

How you lose points:

- You do not submit a report file.
- Your code is not organized as described above.
- You make changes to the given code "for fun". **Do not change the given Point or Robot classes. Just implement the member functions for the Robot class and write the client code in the main.**
- You submit your whole project folder or executable files. **Copy and submit only the .cpp file the project asks for.**