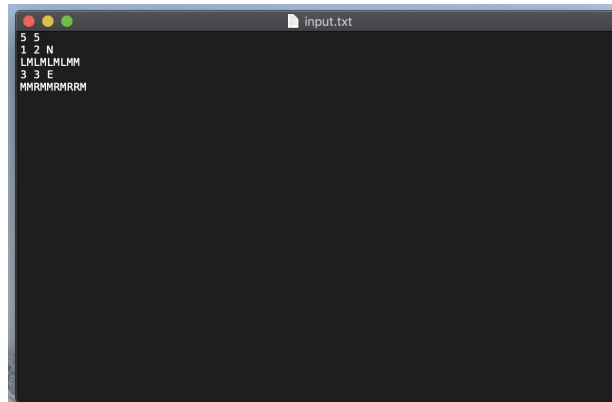


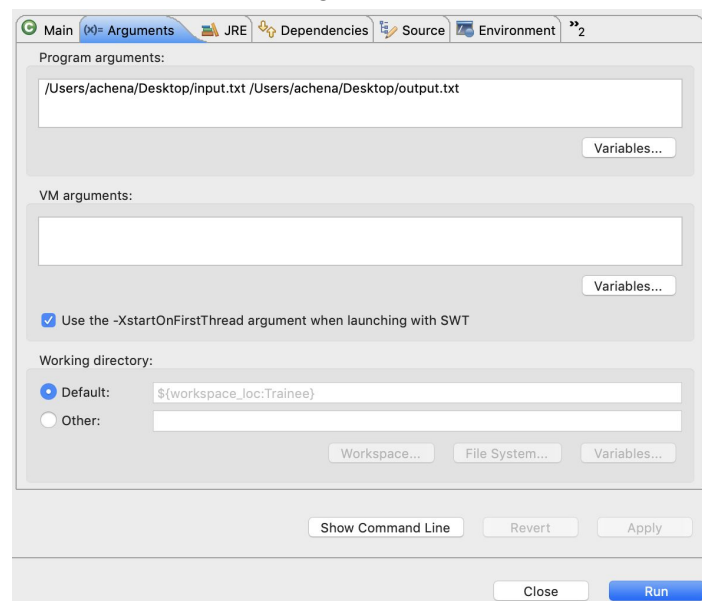
## Explanation:

I have created three classes which are SolutionManager, LocationProcessor and Location. SolutionManager is the entry to run the whole program while LocationProcessor is responsible for reading the input file, proceeding all the instructions in the input file, and after that writing the output file. Location is used to define the Location objects.

I create an input file on the Desktop to store the original data. The following picture is the screenshot of the content of the input file:

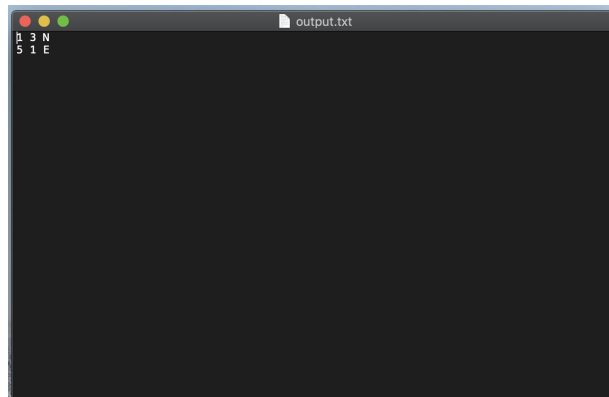


When I run the program, I used the Java command line to specify the input file as well as the output file as the below screenshot showing:

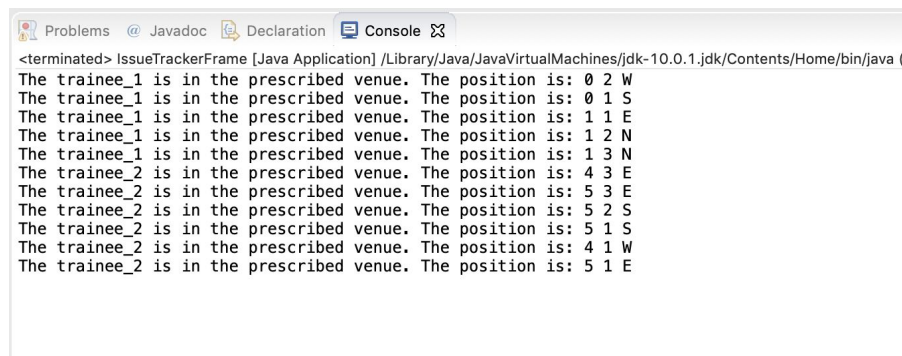


Since the first line in the input file is about the coordinates of the pitch which determine the size of the training site, the content from the second line is the main thing that generates the result I want. As shown in the input file, every two lines from the second line can be treated as a group which contains original coordinates including x and y, and a series of instructions for each trainee. Then for each group stored in ArrayList of String after the program reading the input file, I got the x and y coordinates and the initial heading. Next, I looped the corresponding instructions to carry out each action. The heading is changed according to the instruction of "L" or "R". Else, if the instruction is "M", the x or y coordinate is plus one or minus one, which is determined by the heading. After all the instructions in a group have been executed, the final coordinates produced will be stored as an object in ArrayList.

At the end the results in the ArrayList generated from each instruction are printed into the output file. The content of the output file is as below:



In addition, to check whether the trainee is in the prescribed venue every time he/she moves, I printed each position during the trainee's moving. At the beginning, I got the size of the training site according to the pitch coordinates. Then I can judge if the trainee is out of the training site or not. The below screenshot which are the messages in the console shows that both trainee\_1 and trainee\_2 are always in the scope during their moving.



## Assumptions:

In this program, I assume that the scope of the venue is defined according to the first line in the input file. The first line shows the size of the site and each trainee can not exceed the site when he/she moves each time. Besides, each trainee will be finished sequentially, which means that the second trainee won't start to move until the first one has finished the calibration (from the program requirement).