**Class design and the usage instructions**

The relationship of each kind of robot



The sequence of the whole program



The relationship of the classes



I use seven packages in my coursework. Each package is independent and the user can add some own file into it.

In the direction package I create a enumeration class which is used to record the direction of the robot and its movement. I also add some method to let the robot could change its face.

In maze package I create a class Maze and use readline method to generate a maze array that record the information of the input maze file. I check the width and the height of the maze automatically.

In position package, I create a class called position that records the origin, destination, the position of the robot and the last position of the robot. Position also records the walk path that the robot reached to facility the painting.

In manager package, I create a manager class to check the maze validation, each movement of robot and the destination. For each time the robot can only move one step and it cannot cross the wall or go out of the maze. If it does so, the manager will let it go back to the last position.

In package robot, I first create an abstract class called abstract robot, which is the super class of all the class in this package. The reason I use abstract class is: the robot have the same field and method such as field position, field try position and some method such as move, try move. These methods have the same name but some times have different function. To use polymorphic methods, I use abstract class rather than interface to contain both fields and methods. The left hand robot, right hand robot and random robot extends the abstract robot class. Then I create another abstract class called intelligence robot, which is the super class of the entire intelligence robot. In this class I complement two methods that the intelligence robot could record its walk path and judge the way according to its walk path. I create two intelligence robots, which called random record robot that will go randomly but record the walk path and greed robot, which use Greedy algorithm to solve the problem.

There are two entries point to my program. The first one is in text package called Begin. In each time you run the program, you could change the maze file in line 25 and change the robot kind in line 37. Directory: zy10595/text. Command: java Begin. The second entry is in main package. In this package I provide GUI interface that allow the user chose the maze file and the robot by click mouse and generate the action of the robot. Directory: zy10595/main. Command: java Launch.