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Program Documentation and Instruction
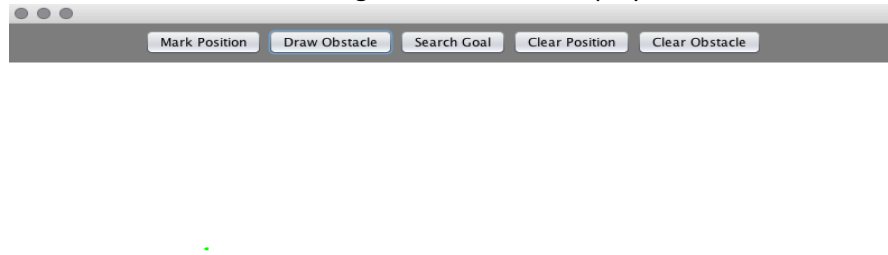
Requirement
- **Java 1.8.0_121(64 bit) or JRE 8 or higher (64 bit)**

Execution Command
- Java –jar ../filePath/PathPlanningRobot.jar

Steps:

After execution of above command following window will be displayed-


Here,
- **Mark Position Button:** After clicking Mark position button, bellow white area will be ready to mark start and goal position.
    - The **1st mouse press** in white panel will be recorded as **starting position** and a **blue circle** will be drawn at that position.
    - The **2nd mouse press** in white panel will be recorded as **goal position** and a **red circle** will be drawn at that position.
    - Without clicking Mark position button, you will not be able to mark start and goal position
    - If Mark position button is clicked, only next two mouse presses in white panel will be recorded, further mouse press will be ignored.
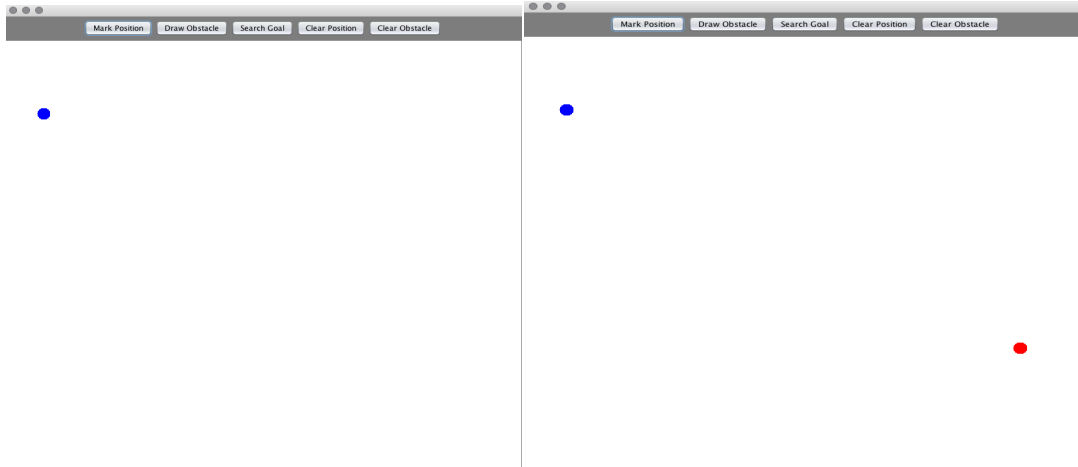
- **Draw Obstacle Button:** After clicking Draw Obstacle button, you can draw obstacle in white panel in following ways
  - **Every mouse press** in white panel will be recorded as a vertex of polygon obstacle in counterclockwise or clockwise order. User can do it in counterclockwise or clockwise, but must be sequential.
  - **After pressing the mouse** for the last vertex of the polygon, user must have to press **Draw Obstacle button again** to add the **last edge of the polygon** and prepare the white panel to **draw the next obstacle**.
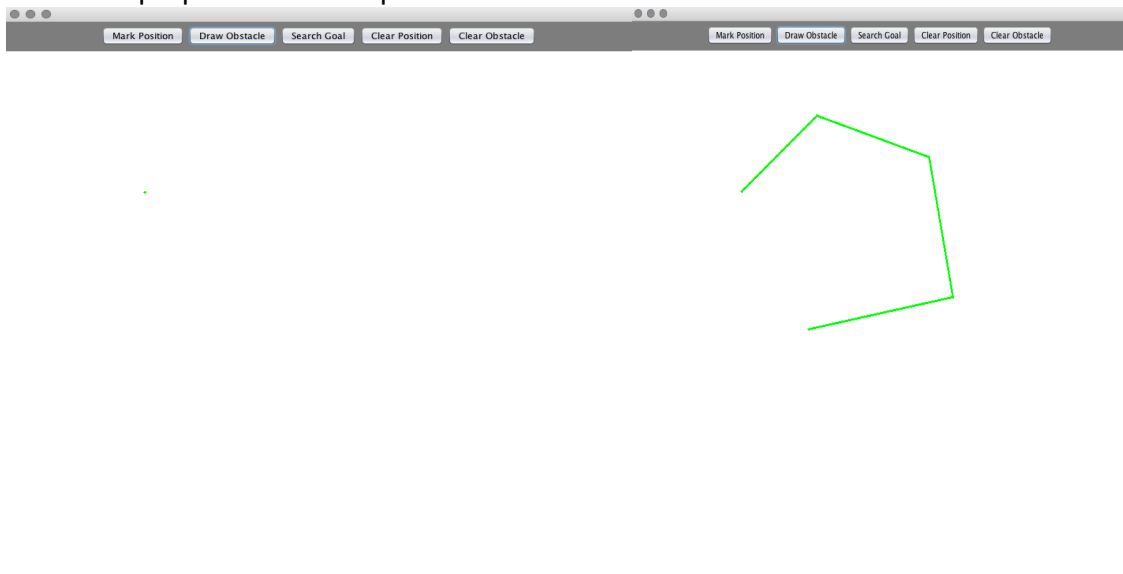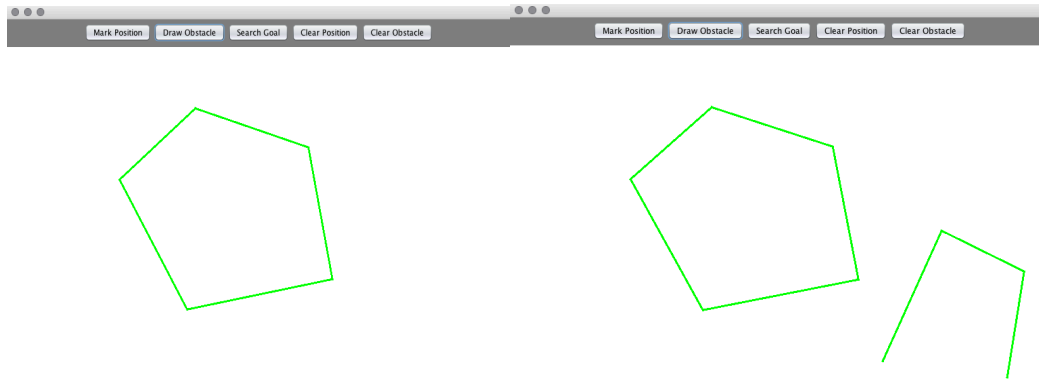
- **Search Goal Button:** Pressing this button will search the goal node using A* search and draw the shortest path from starting position to goal position. It also marks all of the visited vertices with blue dot and all of the expanded but not visited vertices with gray dot.
    - An **input dialog** will appear to take input of number of seconds to wait before generating next state. The input must be **integer**.
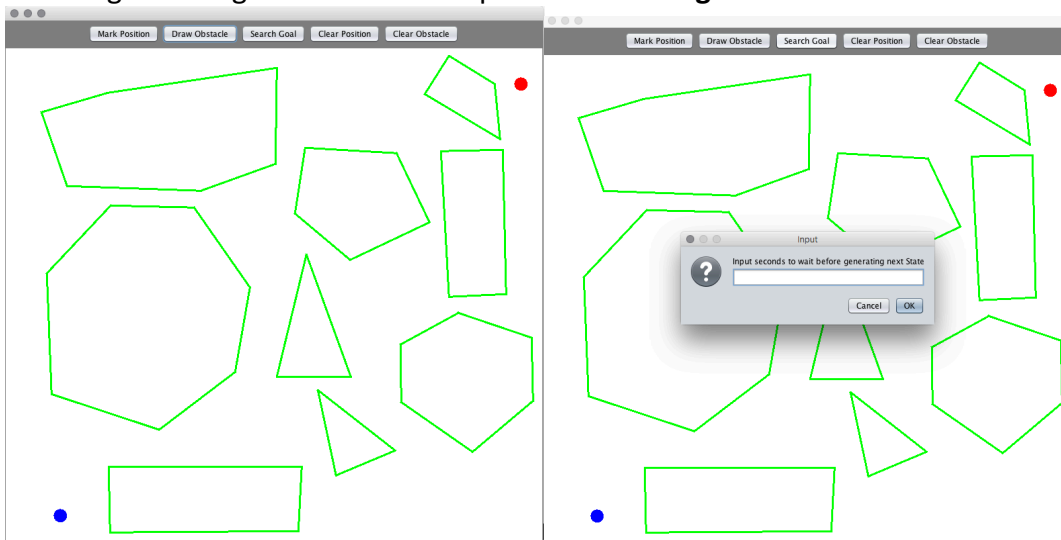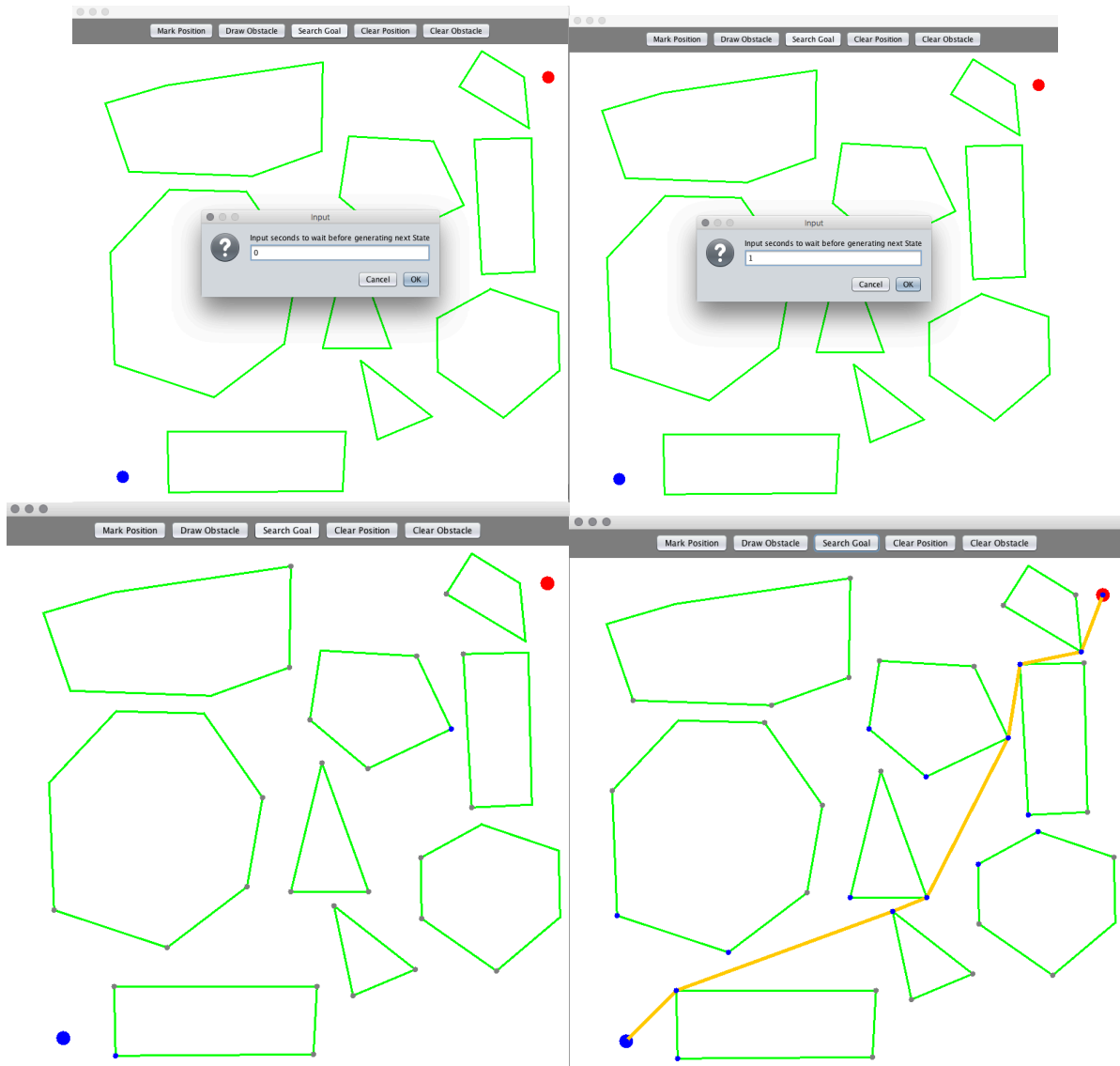
- **Clear Position Button:** Pressing this button will clear the starting and goal position. Again, using Mark position button, user can mark starting and goal position.
- **Clear Obstacle Button:** Pressing this button will clear all of the obstacles in white panel. Again, using **Draw Obstacle button**, user can draw new obstacle.

Known Issues

- The program cannot handle non-convex polygon obstacle. In concave polygon, the path may not be shortest.
- The program cannot handle overlapping obstacle