

# A Software Agent for Ms. Pac-Man

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## Overview

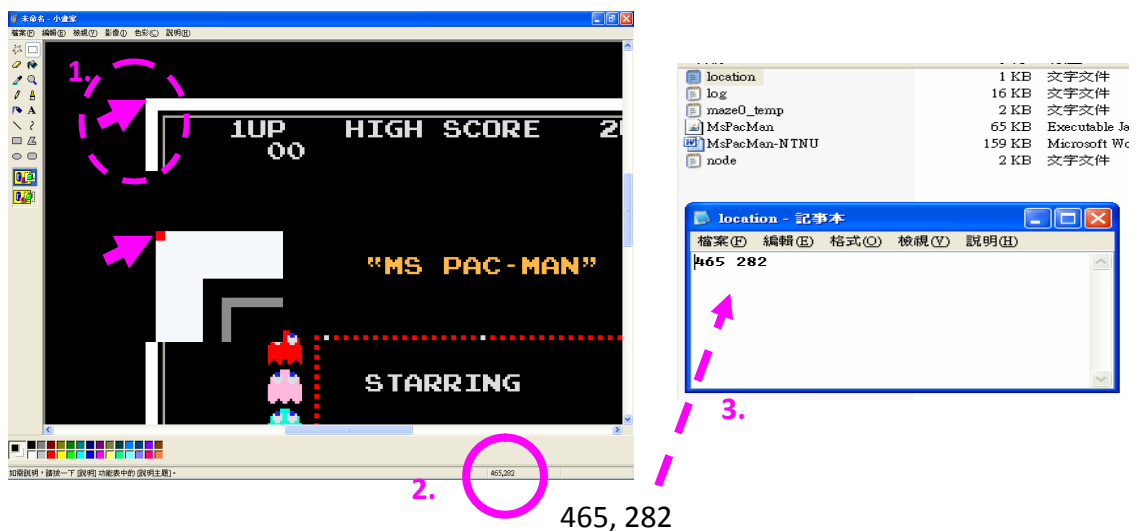
This program was written in Java, and was developed to play the Ms. Pac-Man game (<http://www.webpacman.com/mspacman.htm>).

## Environment

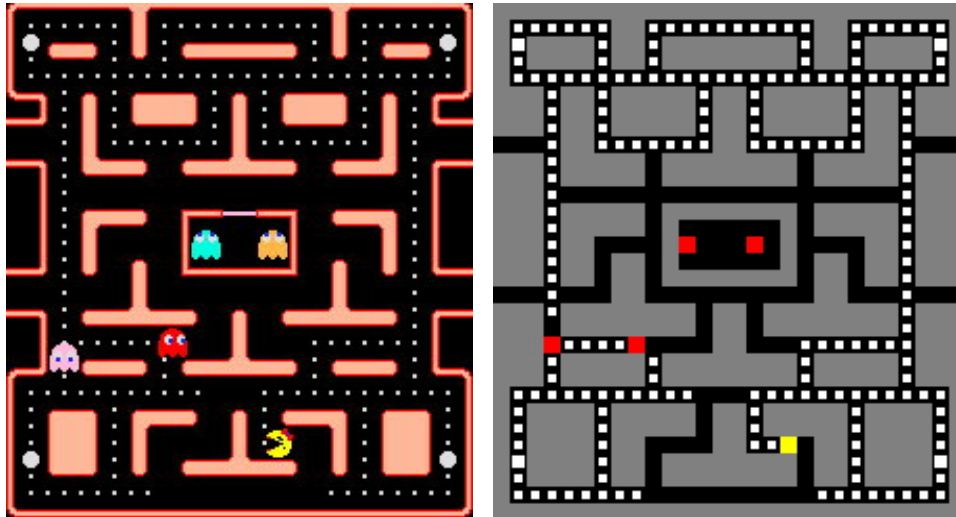
1. Window XP Sp3
2. JDK 6.0
3. Eclipse IDE 3.4.2

## How to run the program

1. Run the game: Open any browser and start the game of Ms. Pac Man by visiting <http://www.webpacman.com/mspacman.htm>.
2. Get the location information:
  - (1) Capture the screen by pressing "Print Screen" on the keyboard.
  - (2) Open the *Paint* program in Windows.
  - (3) Paste the captured screen by pressing "Ctrl + V".
  - (4) Move the cursor to the top-left pixel of the white frame and find the coordinate of that pixel. Fill the coordinate in the file *location.txt*.



3. Run our agent program: Run the executable file *MsPacMan.jar*.
4. Start the game: Press “5” and “1” to start the game.
5. Record the score: Please wait until the game stops. Please repeat step 4 and step 5 to record the scores for multiple trials.



The game of Ms. Pac-Man and game information window

(White squares in the right figure represent “nodes.”)

## Strategies

We save the map information of Ms. Pac-Man in *node.txt* and *maze0\_temp.txt*. When playing the game, Ms. Pac-Man searches the path to the pills and ghosts in a limited-size area and calculates the distance in the unit of node. The suitable direction is chosen by:

1. If there is no safe direction, i.e. moving along every direction will encounter a normal-state ghost, choose the direction that will leave the ghost the farthest.
2. If there is at least one safe direction, choose the direction with the shortest distance to eat edible ghosts, power pills, and pills. The path to eat ghosts has higher priority than the path to eat power pills, and the path to eat power pills has higher priority than the path to eat pills.