



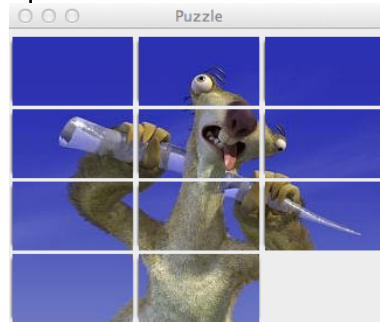
Maze Program

TOPICS

- Graphical Programming
- Using Classes (Objects)
- Multiple Files (Eclipse)



Graphical Programming (1)



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Graphical Programming (2)

- No, we're not going to show the code for the **Puzzle** program! (yet)
- 150 lines of Java Swing code
- What kinds of things does it do?
 - Set window size, title, and location
 - Setup a frame and panel, add buttons
 - Read a photo and extract parts of it
 - Listen for mouse and keyboard events

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Graphical Programming (3)

- But, why not have you write code that controls a graphical program?
- Maze program:
 - Move Chihiro around a maze
 - ~300 lines of graphical programming
 - You write the main method
 - You instantiate the Maze
 - You control the movement

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Maze Program: Objectives

- Use objects (classes) developed by someone else
 - Create an instance of a class
 - Call methods on the object
 - For example: graphical programming!
 - Multiple source files
 - Resource and data files



Maze Program: Initial Code

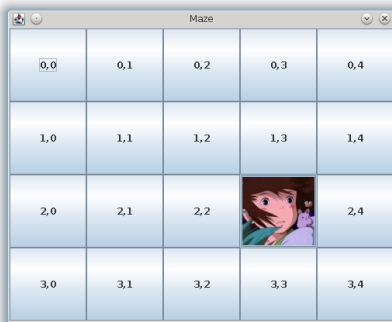
```
int numRows = Integer.parseInt(args[0]);
int numCols = Integer.parseInt(args[1]);

System.out.print("Starting row: ");
int currRow = keyboard.nextInt();
System.out.print("Starting column: ");
int currCol = keyboard.nextInt();

// Create maze
Maze maze =
    new Maze(numRows, numCols, currRow, currCol);
```



Maze Program: User Interface



Maze Program: Moving Chihiro

```
// Move commands
maze.moveTo(--currRow, currCol); // move up
maze.moveTo(++currRow, currCol); // move down
maze.moveTo(currRow, --currCol); // move left
maze.moveTo(currRow, ++currCol); // move right
```

```
// Program output
Chihiro moved to 1,3
Chihiro moved to 0,3
Moved to -1,3 is out of bounds!
```



Maze Program: Overall goals

- Try to achieve the following:
 - Exactly match the specification
 - Always move to adjacent square
 - Do not move Chihiro off the maze
 - Only one loop is required!
 - Make your code efficient



Maze Program: Setup

- `~/workspace/P3`
 - `Chihiro.jpg`
- `~/workspace/P3/src`
 - `Maze.java`, `P4.java`



Associated Exercises

- Recitation R5:
 - ◆ Setup files, create maze, move Chihiro
- Assignment P4:
 - ◆ Determine if Chihiro is on edge
 - ◆ If not on edge, move Chihiro to top
 - ◆ Move Chihiro around entire edge
 - ◆ Counter clockwise direction
 - ◆ Stop when all the way around!