Maze Program

TOPICS

• Graphical Programming
• Using Classes (Objects)
• Multiple Files (Eclipse)
• Resource Files (Eclipse)

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

Graphical Programming (3)

- But, why not have you write code that controls a graphical program?
- Maze program:
  - Control fish in a maze
  - ~300 lines of graphical programming
  - You write the main method
  - You control Dory…
  - …and help to find Nemo
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

```java
// Create robot
Maze maze = new Maze(fileName);

// Query size
mazeWidth = maze.getCols();
mazeHeight = maze.getRows();
System.out.println("Maze width: " + mazeWidth);
System.out.println("Maze height: " + mazeHeight);
```

Maze Program: Moving Dory

```java
// Move commands
boolean moved;
moved = maze.moveUp();
moved = maze.moveDown();
moved = maze.moveLeft();
moved = maze.moveRight();
if (moved)
    System.out.println("Successful");
else
    System.out.println("Failed");
```

Maze Program: Multiple Files

- ~/workspace/P3
- easyMaze.txt, hardMaze.txt
- ~/workspace/P3/src
- Maze.java, P3.java
- ~/workspace/P3/bin
- Dory.jpg, Nemo.jpg, Both.jpg, Shark.jpg, Jelly.jpg
Moving Around: Easy Maze

- Easy maze has Dory and Nemo on the same row.
- Maze provides methods to move up/right/left/down.
- A simple for loop will do the trick!

Moving Around: Hard Maze

- Easy maze has Dory and Nemo on different rows.
- Must check return values from move methods.
- When an obstacle is met move up and right!

Associated Exercises

- **Recitation:**
  - Setup all files, create the maze and move Dory.
- **Assignment:**
  - Have the user input commands in a loop to move Dory left, right, up, or down.
  - Add a command to solve the maze without user interaction.

Maze Program: Overall goals

- Try to achieve the following:
  - Correct loop (for easy maze)
  - Add conditionals (for hard maze)
  - Methodical test and debug
  - Generality of solution
  - Efficiency and minimal code