Events

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- Common events include:

  - Mouse motion / clicking.

  - Keyboard buttons pressed.

  - Timers expiring.

  - Network data available.

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Responding to Mouse Events

- To respond to events, your program must
  - Indicate that it wants to receive events, and
  - Write methods to handle those events.
- Call the **addMouseListeners()** method to tell your program receive mouse events.
  - This is typically done in **run**.
- Write appropriate methods to process the mouse events.

Methods for Handling Events

- Define any or all of the following mouse event handlers to respond to the mouse:

  - **public void** mouseMoved(MouseEvent e)

  - **public void** mouseDragged(MouseEvent e)

  - **public void** mousePressed(MouseEvent e)

  - **public void** mouseReleased(MouseEvent e)

  - **public void** mouseClicked(MouseEvent e)

  - **public void** mouseEntered(MouseEvent e)

  - **public void** mouseExited(MouseEvent e)

- You must also **import** java.awt.event.*; for the MouseEvent class.

Catching Snow

Time-Out For Announcements!

Friday Four Square!
Today at 4:15PM, outside Gates.

Assignment 3

- Assignment 2 is due at 3:15PM today.
  - Due Monday at 3:15PM with one late day and Wednesday at 3:15PM with two late days.
- Assignment 3 (**Breakout**) goes out now and is due **Monday, February 10** at 3:15PM.
  - Play around with graphics, events, and random numbers.
  - Build a *really* nifty game that you can share!
- Assignment review hours next Tuesday, February 4 from 7:30PM – 8:30PM in Braun Auditorium.
- We love giving out +'s and ++'s on this assignment for nifty extensions. ☺

Alternate Midterm Times

- Midterm 1 is **Wednesday, February 12** from 7PM – 10PM.

    - More logistics and details next week.

- Need to take the exam at an alternate time? Fill out the alternate exam time form sent out this morning by next Wednesday.

Back to CS106A!

A Friendly Circle
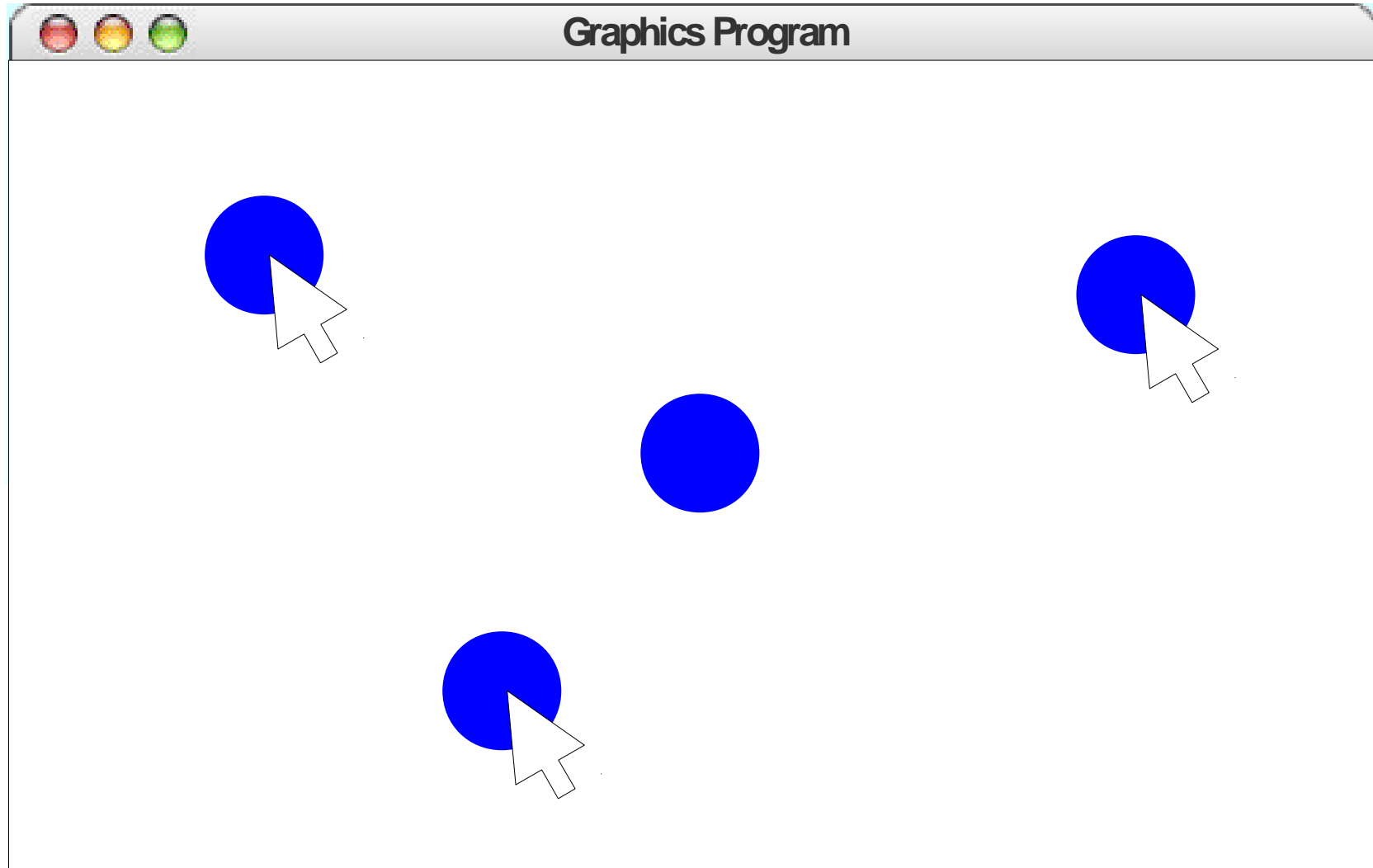
Let's Code it Up!

A Problem of Scoping

- The `mouseMoved` handler has no way of referring to the existing circle because it is a local variable in a different method.

- How do we make it possible for the listener to know about the circle?

Instance Variables

- An **instance variable** (sometimes called a **field**) is a variable that can be read or written by any of the methods of a class.

- Syntax (defined outside of any method):

$$\texttt{private } \textit{type name};$$

- Instance variables are used to store information that

  - Must persist throughout the program, and

  - Cannot be stored as local variables or parameters.

The Importance of Style

- General rule of thumb:

  Don't make a variable an instance variable unless you have to.

- Use local variables for temporary information.

- Use parameters to communicate data into a method.

- Use return values to communicate data out of a method.

- In the next assignment, we will ask you to justify each instance variable you use in your writeup. Feel free to ask your SL for advice about whether it's necessary for certain variables to be instance variables!

The Chaos Game

The Chaos Game

- Pick any three points.
- Starting at any of the points:
  - Choose one of the three points randomly.
  - Move halfway from your current location to the chosen point.
  - Draw a dot at your current location.
  - Repeat.

Sierpinski Triangle