Exam 1 preview, Inner classes, Anonymous listeners

CSSE 221

Fundamentals of Software Development Honors

Rose-Hulman Institute of Technology

ROSE-HULMAN INSTITUTE OF TECHNOLOGY

Announcements

- Questions on Fifteen or GUIs?
- Be prepared to show me or a TA your Fifteen UML and User stories before the end of class today.

This week: Fifteen assignment

- Last class:
  - Fifteen specification
  - GUIs using Java's Swing library
  - Intro to UML as a *design* tool
- Wednesday:
  - **EventListeners: responding to user input**
  - **Shape classes**
- Today:
  - Exam 1 preview
  - Anonymous listeners

Exam 1

Sample posted on Moodle

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Exam 1

- Chapters from Text:
  - 1 to 12 (includes Swing Demo)
- Paper part required resources:
  - 8 ½" by 11" sheet of hand written notes
  - Closed computer or electronic devices
  - Closed book
- Computer Part required resources:
  - Open book, notes, computer
  - Limited network acccess

Exam 1

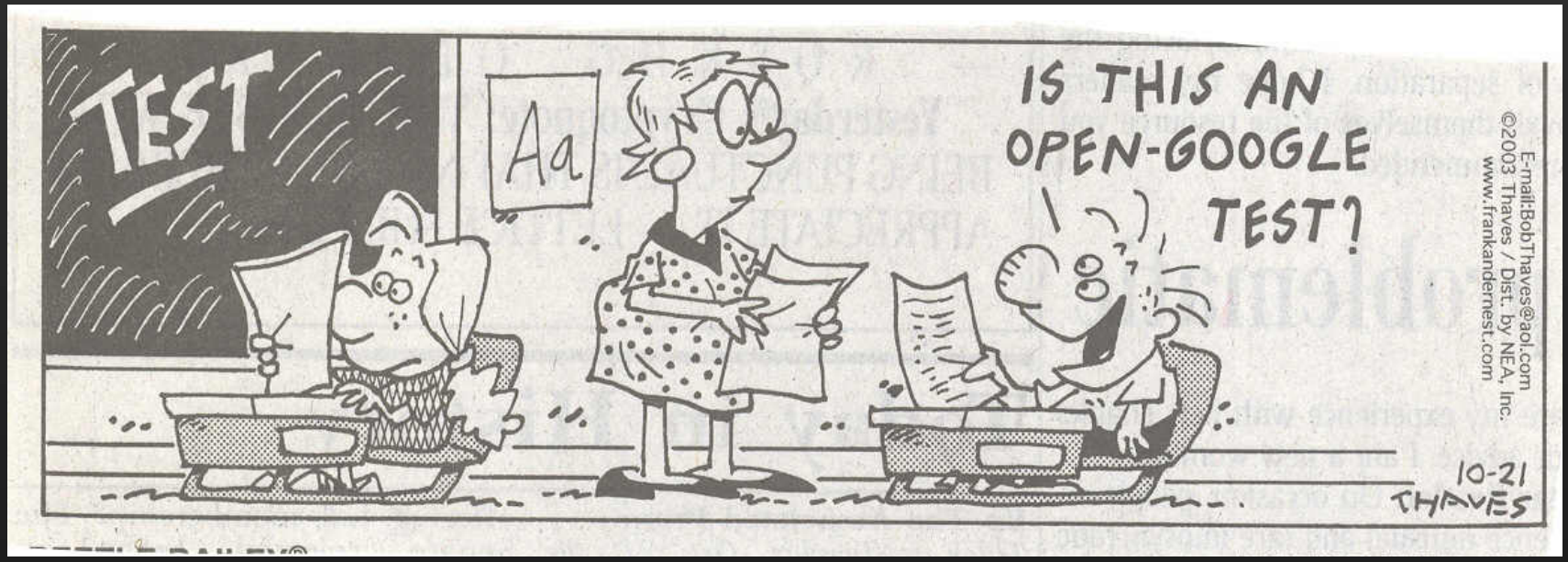
- Covers through start of week 3 (Swing intro)
- Next Wednesday and Friday (~ 2 to 3 hours)
- Sample exam 1 is posted on Moodle
- Short written portion: closed-book
- Programming portion: open-book, 221 website (including summaries and Piazza), Eclipse workspace
  - You may reference any course materials or any code that you did solo or with a partner

Exam 1 details

- Paper part is worth about 50% to 60%
- Computer part is worth about 40% to 50%
- Spend about 40 to 50 minutes on paper part
- Spend about 1 hour on computer part
- Will give some extra time if needed

More Exam 1 Details

- Venue:
  - Section 1: Olin Hall, room 257/231
  - Section 2: Olin Hall, room 167
- What questions do you have?



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Handling Events: Recap

- Many kinds of events:
  - Mouse pressed, mouse released, mouse moved, mouse clicked, button clicked, key pressed, menu item selected, …
- We create **event listener objects**
  - that implement the right **interface**
  - that handle the event as we wish
- We **register** our listener with an **event source**
  - Sources: buttons, menu items, graphics area, …

Using Inner Classes

- Classes can be defined **inside** other classes or methods
- Used for “smallish” helper classes

- Example: `Ellipse2D.Double`

- Often used for `ActionListener`s…

Anonymous Classes

- Sometimes very small helper classes are only used once
  - This is a job for an anonymous class!

- **Anonymous** → no name
- A special case of inner classes

- Used for the simplest **`ActionListener`**s…

Inner Classes and Scope

- **Inner classes can access any variables in surrounding scope**

- Caveats:
  - Local variables must be `final`
  - Can only use instance fields of surrounding scope if we're inside an instance method

- Example:
  - Prompt user for what porridge tastes like

Summary on inner classes

- You can define a class inside another class
  - This is called a nested class
  - It has access to the outer class' fields and methods
  - Useful if the inside class is a "helper class" of interest only to the outside class
- You can define a class and construct an instance of it **inside a method**
  - This is called a local inner class
  - Useful if the class is small and the object refers to variables in the outside class
- You can even make the inside class anonymous.
  - This is called an anonymous inner class

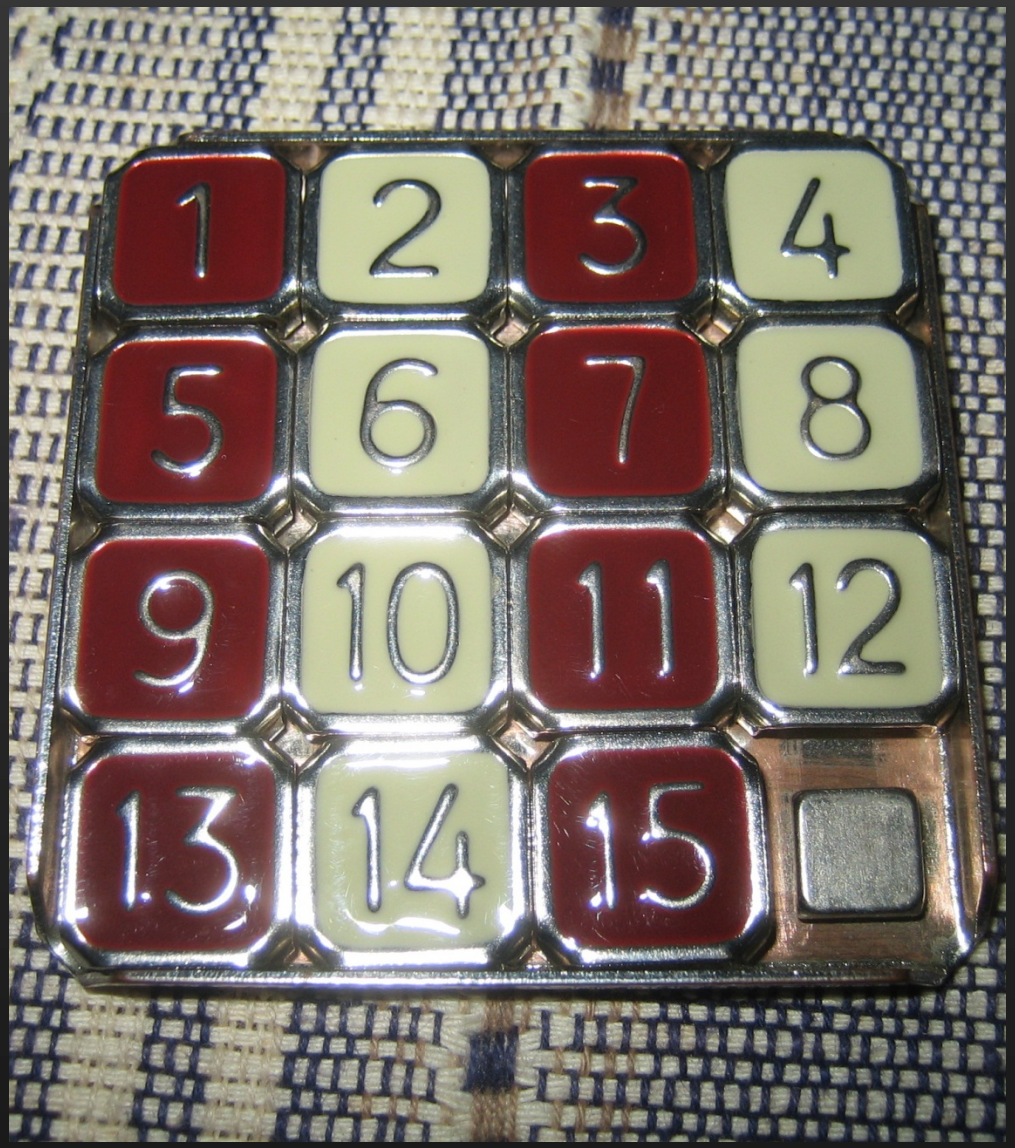
This nomenclature is not universal. See http://blogs.oracle.com/darcy/entry/nested_inner_member_and_top for more than you could possibly want to know about this subject

“Fifteen”

Arrays (especially 2D)

Creating GUIs using Swing

Responding to mouse clicks



Show us your Fifteen Design

- Show us your UML
- Show us your user stories