



# Teaching Java to Novices

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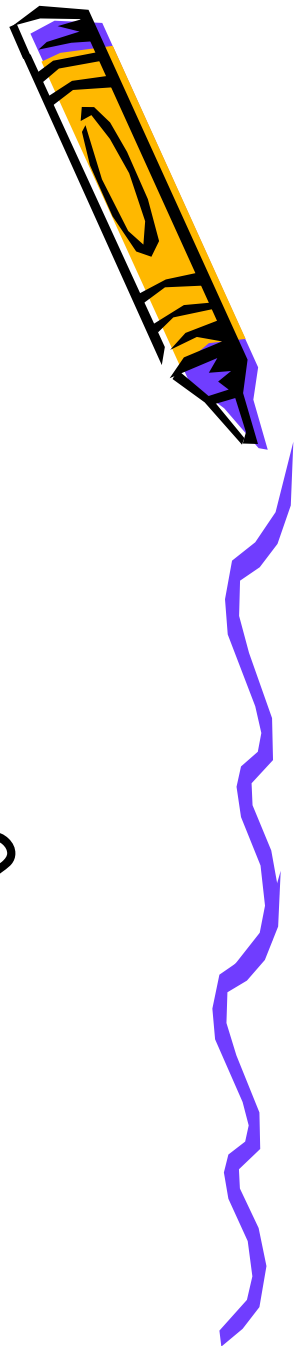
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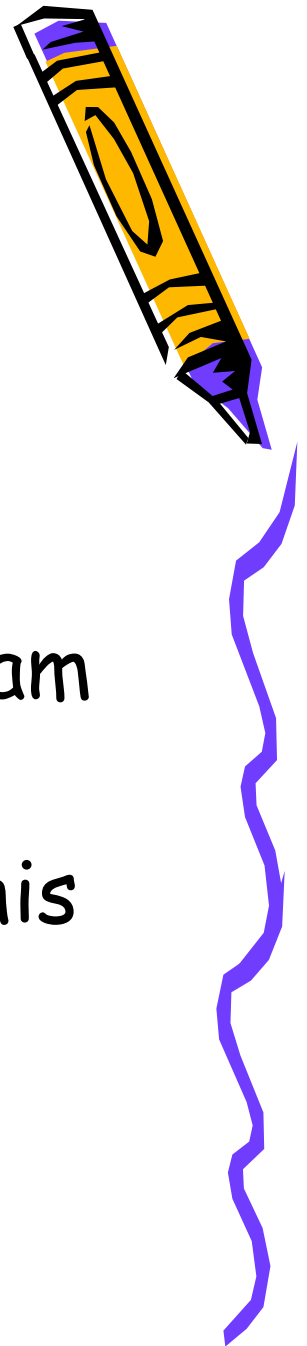
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# The Pre-Test

- How many people have a degree in Computer Science?
- Mathematics?
- Business?
- Other?
- How many CS classes did you take?
- Less than 1
- 1 to 2
- More than 2





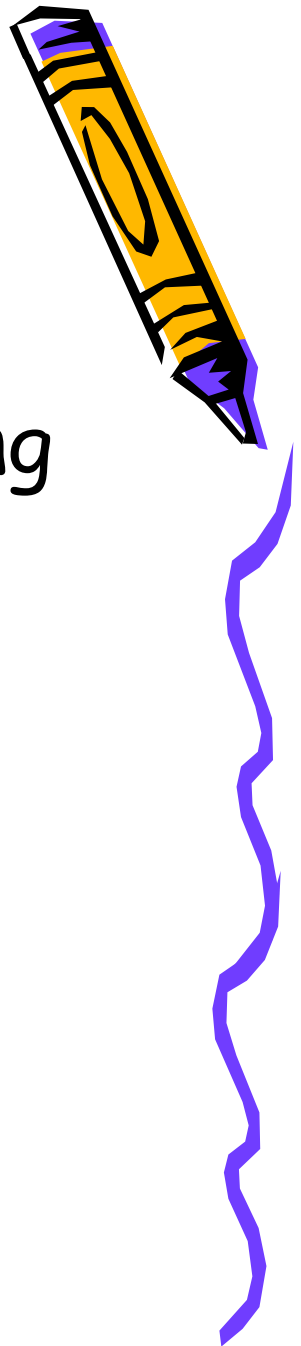
# The Pre-Test (continued)

- How many will give the AP exam at the end of this semester?
- How many think passing the AP exam will give them credit for CS1?
- How many learned Java just for this year's AP exam?
  - How many people understand OO programming?



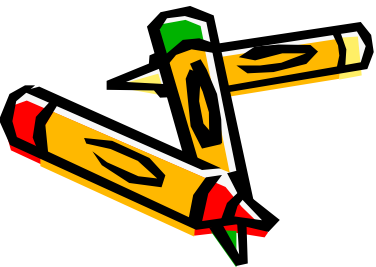
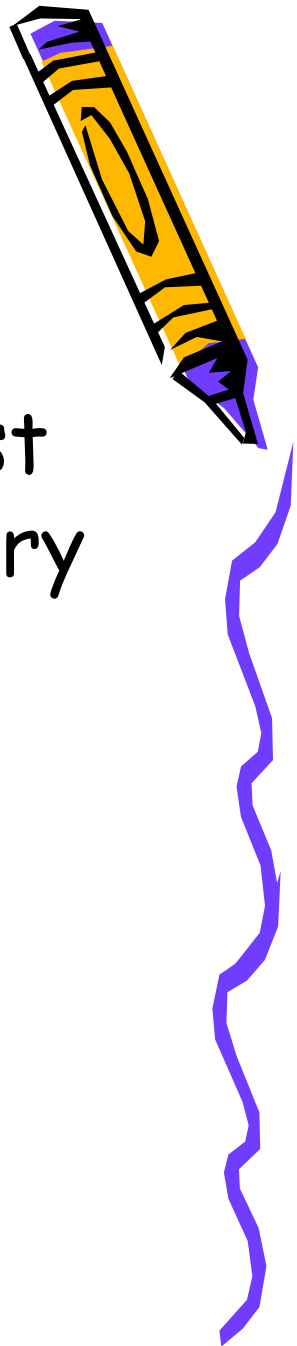
# A Simple Problem

- What is the answer to the following arithmetic problem:
  - $5 - 7 + 2$



# Class Participation Time

- What do you find to be the hardest thing about teaching an introductory programming course?



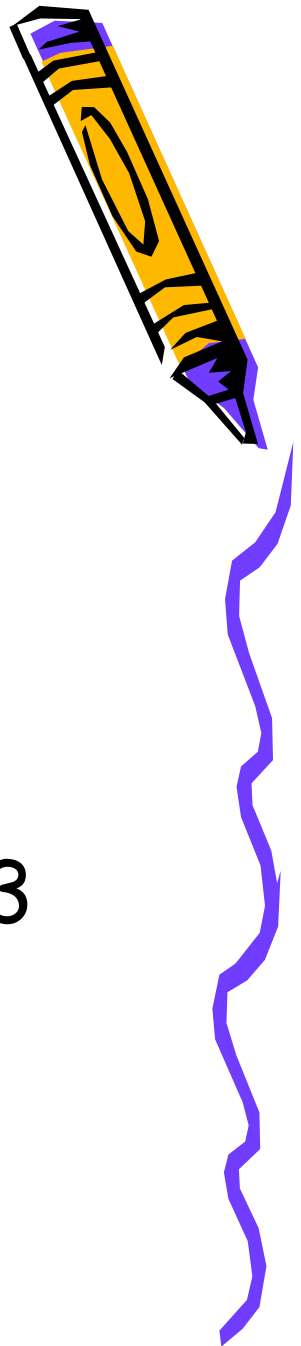
# My Answer

- CSE 113 vs. CSE 115
- What are we trying to teach when we teach computer science?
  - Problem solving?
  - Programming prowess?
  - Object-Oriented Programming
  - Imperative Programming?



# A study of non-majors

- How is it best to learn OO programming if that is the goal.
- Expose them to objects early
- "A Tale of Two Paradigms", CCSC Eastern Conference, October 2003



# Now, for the test

- Your assignment is to write a program that displays a warehouse of television sets. The warehouse should have at least four TVs located at different positions on the screen. Each TV should have a power button that the user can push by clicking on it with the mouse. When the user clicks on the power button, the TV should indicate whether it is broken or working by responding in one of two ways. It will show a fuzzy screen if broken, or will display a good picture (the fuzz or picture will turn off automatically a short time after the power button is pressed). You should have at least two TVs that respond by showing a fuzzy screen, and at least two TVs that respond by displaying a good, working picture. Each TV will react in the same way during the program -- that is, a particular TV that shows fuzz will never show a working picture.





# Provided Classes



- cs015.SP.TV
- **Purpose:**
- This class models a TV with a screen.
- **Methods:**
- cs015.SP.TV(java.awt.Point location);  
The constructor initializes the TV and makes it appear in a window based on the java.awt.Point location you passed it.
- void showFuzzyScreen();  
This method displays a fuzzy image on the TV screen. It will turn off automatically after a short period.
- void showWorkingScreen();  
This method displays a working picture on the TV screen. It will turn off automatically after a short period.



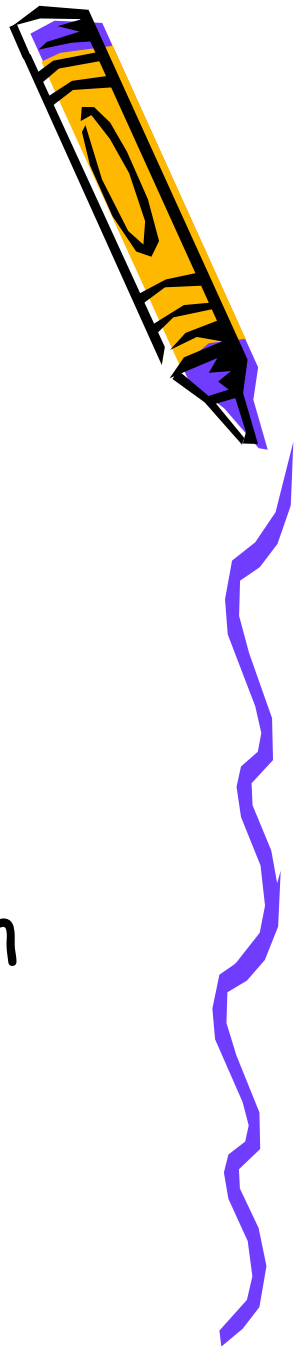
# Provided Classes

- `cs015.SP.PowerButton`
- **Purpose:**
- This class models the power button of your TV.
- **Methods:**
- `cs015.SP.PowerButton(java.awt.Point location);`  
The constructor initializes the power button and positions it in a window based on the `java.awt.Point` location you passed it. It will automatically position itself correctly with regard to a TV in the same location.
- `void react();`  
This method is called automatically when the user clicks on the power button. It does nothing at present. If you want this method to do something, you need to subclass from `cs015.SP.PowerButton` and redefine this method.



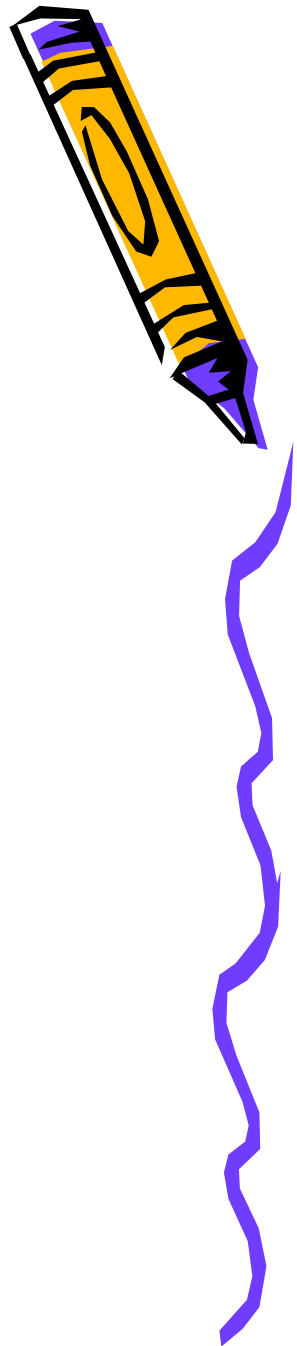
# Problem Discussion

- Let's hear your solutions
- What is this problem testing?
  
- Here's the punchline:
- We have not taught selection when this problem is given in class!

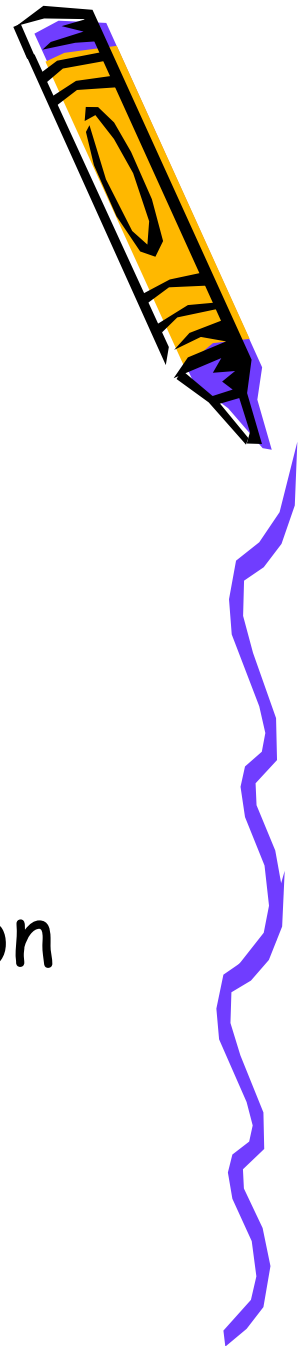


# Other Fun Projects

- Demos from Vince



# What can I do to help my students?



- SIGCSE - ACM's special interest group on Computer Science Education.
- FIE - Frontiers in Education conference.
- AP Board - find out what is going on with the new AP exams.

