CS1007: Object Oriented Design and Programming in Java

Lecture #25
Apr 25
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Announcements

• Last class Thursday
  – Will review for final
  – Please let me know which topics you would like to see revisited
    • Feedback
    • Email
  – Please read old class notes/slides
• Make sure you start the homework
• Final: 5/11 (Thursday)
  – In class, 1:10 – 4 pm
Summary

• Last regular class today

• I hope you feel more comfortable working with
  – Java
  – Objects
  – Programming Project Design and Decisions
  – Computers ☺
  – Think before you program

Did I mention?

• Think about design before sitting down to program

• Sketch
• Be ready to throw away a version (doesn’t necessarily apply to homeworks)
• Redo from start (as needed)
Outline

- Some homework help
- Random Java Programming things
- Design choices and issues
- Framework programming and design

Homework

- Any questions on the homework?
- Let's talk about sizing issues
  - How to generalize the size stuff
  - How to leave things the same
  - Some important things to focus on
  - Adding multiple balls
Java Library

• So how do you get java on a regular machine ??
• Download from Sun ?
• Are there any other alternatives ?

• Importance of reading API

Why read the API ?

• Example: you need to use shlomo’s Array class

• When you call Array.add(Element) and the array has no more space left
  – How would it not have more space ?
  – Who is responsible for checking ?
  – How to recover ?
Design choices

• When you build more complex code examples
  – Will have many choices
    • Which libraries
    • Which packages
    • Which systems to support
    • How to distribute

Design tips

• Most of rework in design is usually on optimization step

• Know what you want to do
• Want to do it better/faster

• Remember the 90/10 rule!
  – Use it to your advantage
Random stuff

• We could sit here and go through all the standard libraries

• Rule here: 90% of the time you will be using only 5% (max) of the standard libraries

• Will try to bring to your attention some important DS which are built in to Java

Java.util.*

• Stack class
• Timer
• Vector
• Random
Java.lang.*

- Math
- Enum
- Number
- StringBuffer
  - Usage
  - Advantage for optimization

Definition:

- Anyone familiar with a Tree Data Structure?

- Any other types of Trees?

- Any idea of some of the characteristics of Trees?
Definitions

- Tree Data Structure
- Binary search tree
- Balanced tree
- Heap tree

Game programming

- I’d like to give a couple of words on game programming:
- It’s fun!
Game programming

• Need solid OOP design

• Need to understand Data structures choices

• Need to know Algorithms

• Need to know AI basics
  – Game space exploration
  – Pruning
  – Heuristic programming

Kth number

• We discussed finding the Kth number in a set of unsorted numbers

• Anyone remember the fast algorithm ?

• Is there anything that can be improved ?
Next time

• Please review the material

• Please provide me with what you would like to see covered on Thursdays in class review