CS1007: Object Oriented Design and Programming in Java

Lecture #25

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Shlomo Hershkop
shlomo@cs.columbia.edu

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 ?

- Lets 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:
- Its 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