Announcements

- Course time last week
- Mostly reasonable (8-11 hours)
- A few people spent a LOT of time (15-20 hours)
  - If you spent more than 3 hours/person on the
    prototype you can "charge" this to your project
  - If you're ahead on project hours (target 6/person/week) you can reduce them this week
  - Project hours include client meetings, team
    interaction, XP planning & reporting, as well as
    pair programming
- A few people spent very little time (2-3 hours)
  - Offloading onto teammates is OK for one week
    (with their permission!) but you need to make it
    up

7 October 2005

Class Diagrams

- Used to model OO design
  - Classes
  - Attributes & Methods
  - Associations: relationships among
    classes
  - Aggregation
  - Multiplicities
  - Inheritance / subtyping
- Can also be used to capture model of
  information in requirements domain
  - What attributes does each concept have?
  - How are domain concepts related?

7 October 2005
Use Cases

- Describe a scenario of using system
- Name
- Description
- Pre/Post-condition
- Normal flow
- Alternative/Exceptional flow
- The diagram is almost useless
  - At least shows actors in each use case
  - Suggest areas where you should study external domains

Sequence Diagrams

- Show order of interactions in scenario
- Actors and components
- Message sends, nested messages
- Useful to pin down and easily visualize temporal properties of scenario

Statechart Diagrams

- Shows how system reacts to events
  - States
  - Transitions triggered by events
  - Initial and final states
  - Maybe no final states!
  - Nested state machines
- Especially useful for reactive control systems
- Vs. sequence diagram
  - Exhaustive coverage vs. one trace
  - Events vs. calls
Statechart Analysis

- Simulation
  - How does the machine run given these inputs?
- Model checking
  - Can the machine get into bad states?
  - From the start state, explore all possible transitions to another states; repeat for each of these states

EclipseUML Tool

- Free academic license
- CMU key will be on Blackboard

More to explore

- Statecharts
  - Guard conditions & actions
- Object diagram
  - Like a class diagram, but a snapshot of objects in the heap
- Collaboration diagram
  - Like sequence diagram, but shows structure instead of timing
- Activity diagram
  - Shows flow of data and control in system
- Component diagram
  - Shows system organization & dependencies
- Deployment diagram
  - Shows how components map to processing nodes

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