Object-oriented design

IS 313
4.3.2003
Outline

- CRC cards
- Group activity
Program Design

- Design is hard
  - “wicked problem”
- Not just functional goals
  - extensibility
  - maintainability
  - adaptability
  - economics
**OO Design**

- Adds more complexity
- Goal is not just a problem solution
- A set of objects
  - that jointly solve the problem, and
  - that represent the problem domain
Identifying Classes

- What are the “things” that the program is about?
- Often good candidates are nouns in the problem description
Identifying Responsibilities

- Classes have responsibilities
- Primary
  - Keeping track of data
  - Usually means storing in an instance variable
- Think of this as an object’s “state”
Other Responsibilities

- Creating objects
- Invoking methods of other objects
- Gather data
- Transmit data
Example

- Member
  - name
  - member id
  - # miles
  - benefit level
  - others?
Collaborations

- What other classes work with a given class
- Consequences
  - instances of class A need to call method foo on an instance of class B
  - instance variable to reference such an instance
  - this variable must be set somewhere
Holism

- These considerations are holistic
  - we have to think about the whole design
- Need an overview of the class structure
CRC Cards

- Class-Responsibilities-Collaborations
- Deliberately low-tech
- One class per card
Exercise

- Design a system for an airline frequent flyer program