

# Object Oriented Design

# Object-Oriented Design

- Method for designing computer programs
  - Useful for thinking about large problems
- Consider “objects” interacting in the program
  - Example: a zoo, a gradebook

# Objects

- Objects have state – what they know
- Objects have behaviors – what they can do
- Example: Car

# Classes

- A programming construct to define the state and behaviors of a particular type of object
  - A class is the blueprint
  - An object is an instance of the class

# CRC Cards

- Class, Responsibilities, Collaborators (CRC)
- The CRC card method is a mechanism for discovering the classes that will be part of a program.

# Example: A Card Game

<http://max.cs.kzoo.edu/AP/OOD/OODPresentation/CRC4.html>

- Classes: Card, Deck, Hand, Dealer
- Class: Card
  - Responsibilities:
    - Display self
    - Report suit
    - Report rank
  - Collaborators
    - None

# Example: A Card Game

<http://max.cs.kzoo.edu/AP/OOD/OODPresentation/CRC4.html>

- Classes: Card, Deck, Hand, Dealer
- Class: Deck
  - Responsibilities:
    - Shuffle
    - Deal
    - Report size
  - Collaborators
    - Contains cards

# Exercises

1. Form groups of 2 or 3 and use the CRC method to design a coffee machine. Start with a coffee machine that can dispense black coffee or coffee with cream. Each costs 1.00.