COMP 504: Graduate Object-Oriented Programming and Design

Lecture 14: Inter-Ball Collisions

Mack Joyner (mjoyner@rice.edu)

https://www.clear.rice.edu/comp504

Announcements & Reminders

HW #3 due Wednesday, Oct 7th at 11:59pm

Collisions

- Collisions between a moving ball and a stationary boundary wall
  - Ball bounces off wall
  - Wall doesn't move
- How do we handle collisions between 2 moving objects (balls)?
- For HW #4, no new interfaces will be given.
  - Add interface(s) needed to meet design spec

Design Specification

- Balls can now collide with other balls
- When balls collide, they interact with each other in some way
- Type of interaction depends on interaction strategy
- Need to support 10 unique interaction strategies
- What are the use cases for inter-ball collisions?

Collisions

- The inter-ball collision should be broken into 2 parts

- A criteria for interaction
  - Overlapping radii (collision)
  - More generally (same/different color, group, location)

- An interaction behavior
  - Spawning
  - Eating
  - Destroying, etc…

Design Decisions

- What design decisions might need to be made in inter-ball collisions?

- Where does inter-ball collision detection belong in the API?

Collision Command Recipe

1. Send out command to other balls to see if anyone's collided with context ball
   - How will command "remember" who sending ball is
2. Make sure the ball is not yourself.
   - Remember the dispatcher sends the command and doesn't care who the receiver is
3. Are the two balls within collision distance
   - If so, determine the effect of the collision on each other
   - If not, command should end

Worksheet #9: Design Interaction Strategy

How should we design the interaction strategy?

Should an interaction strategy have a different interface from the other strategies?

If your answer is yes, what should be different about the interface?

If your answer is no, then why should the interface be the same?