

# Lecture 10: More animating objects

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CS 51G  
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# Announcements

- Discuss Exercise 9.9.1
- Discuss BoxBall lab & design

# Animations

- import “animation” as animator
- Provides methods:
  - while {cond} pausing (delay) do {...}
  - while {cond} pausing (delay) do {...} finally {...}
  - plus others.
- Methods are asynchronous
  - Following statements continue while animation is going.
  - If want to delay some statements to end of loop, put in finally clause.

# Real Pong

- Ball starts at random angle and bounces off walls and paddle.
  - <http://www.cs.pomona.edu/classes/cs051G/demos/Pong/>
  - PongBall.grace has ball bouncing off walls/paddle
  - PongBallNormalized uses elapsed time to move ball correctly when delay may be too long because computer busy!

# Code Quality

- Code is high quality if it is easy to understand and efficient.
- See CS 51 Style guidelines for readability & comments/formatting
- Some bad code is unnecessarily wordy & inefficient.

# Bad Examples

```
if (dragging == true) then {  
    doSomething  
} elseif {clicking == false} then {  
    doSomethingElse  
}
```

*can be simplified to*

```
if (dragging) then {  
    doSomething  
} elseif {!clicking} then {  
    doSomethingElse  
}
```

# Bad Examples

```
if (theSwatch.contains (point)) then {  
    dragging := true  
} else {  
    dragging := false  
}
```

*can be simplified to*

```
dragging := theSwatch.contains (point)
```

# Images & Active Objects

- Can bring in images from web pages if have url.

drawableImage.at (locn) size (dimensions) url (address) on (canvas)

- See snowman program:
  - <http://www.cs.pomona.edu/classes/cs051G/demos/Snowman/Snowman.grace>
- Falling Leaves program:
  - <http://www.cs.pomona.edu/classes/cs051G/demos/FallingLeaves/FallingLeaves.grace>



# More on Falling Leaves

- Main program creates a tree when mouse clicked.
- Tree repeatedly randomly picks image and starts up a leaf (at random location and speed) with that image.
- Leaf creates drawable image and falls.

Questions?