

2D VIDEO GAME DEVELOPMENT WITH MACRUBY

MATT AIMONETTI

RUBYCONF 2009

TEST YOUR MEMORY

2

卷之三

5

310
AAAAA

00

D



©1978 ATARI INC

④

1UP HIGH SCORE
00 00





Walk to
Push
Pull
Give

Open
Close
Read

Walk to
Pick up
What is

New Kid Turn on
Unlock Turn off
Use Fix

Стоя
Болт
Соедин

Кеды
Стоян
Обеи

Мягк та
Блск пъ
Матк со

Пог
Питоск
Чем кра

Ех
Плю от
Чем кра



Chickeneater's auction

CHICKENUGGETS ON THE

GOWB



2700

HIGH SCORE
50000



ITEM
PRESENTS

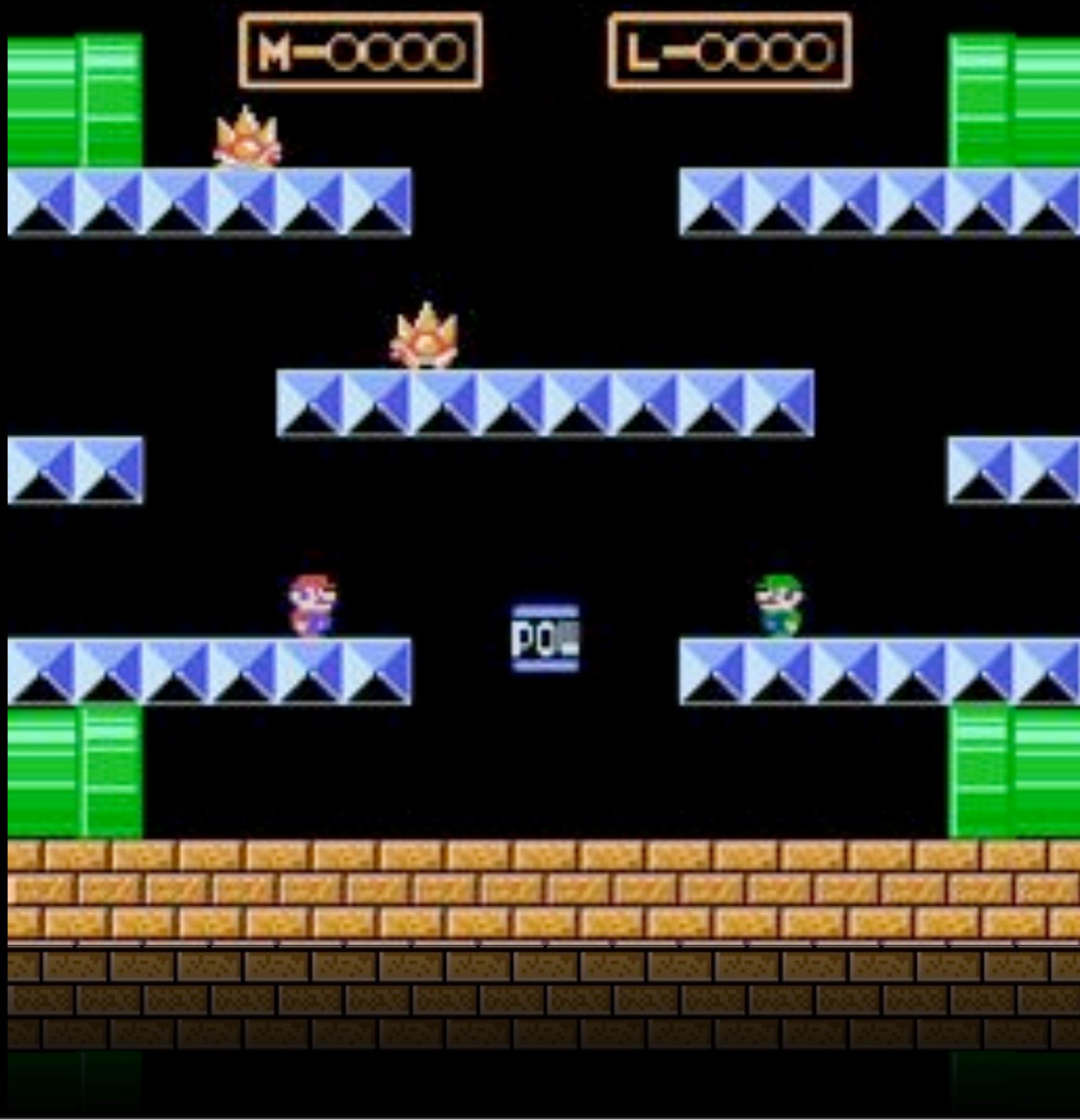
Alley Cat™

By
Bill Williams













LEVEL 1

▶▶▶





CONTESTANT PRACTICE

1:12

0







Walk to table covered with junk
Give PICK UP USE
Open LOOK at PUSH
CLOSE TALK to PULL













**VIDEO GAMES
ARE FUN**

RUBY
PROGRAMMING
IS FUN

YOU HAVE A MAC

(IF NOT, GET ONE!)

OLD SCHOOL

VIDEO GAMES ON OSX

FROM SCRATCH

TRUTH

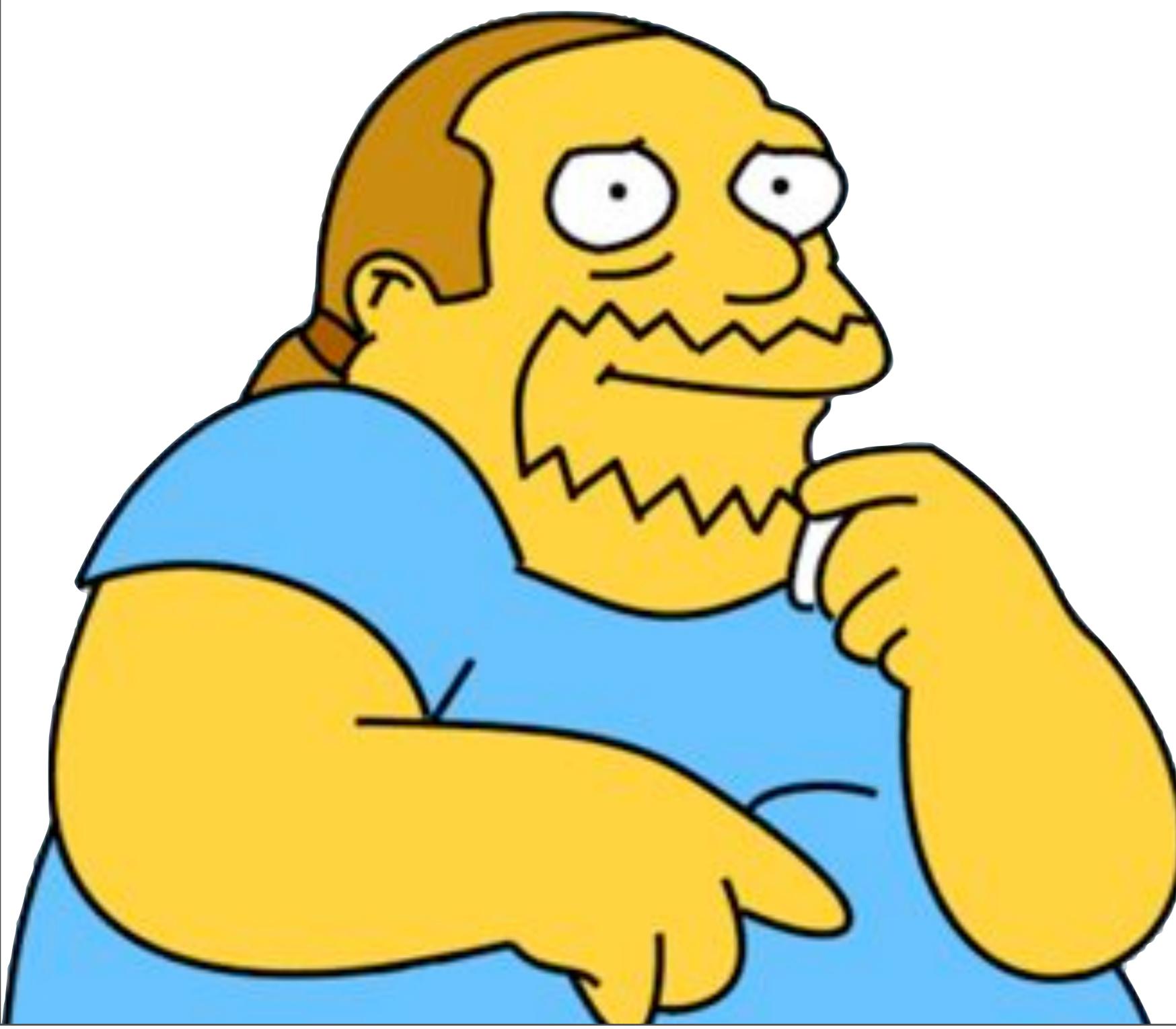


LEGENDARY

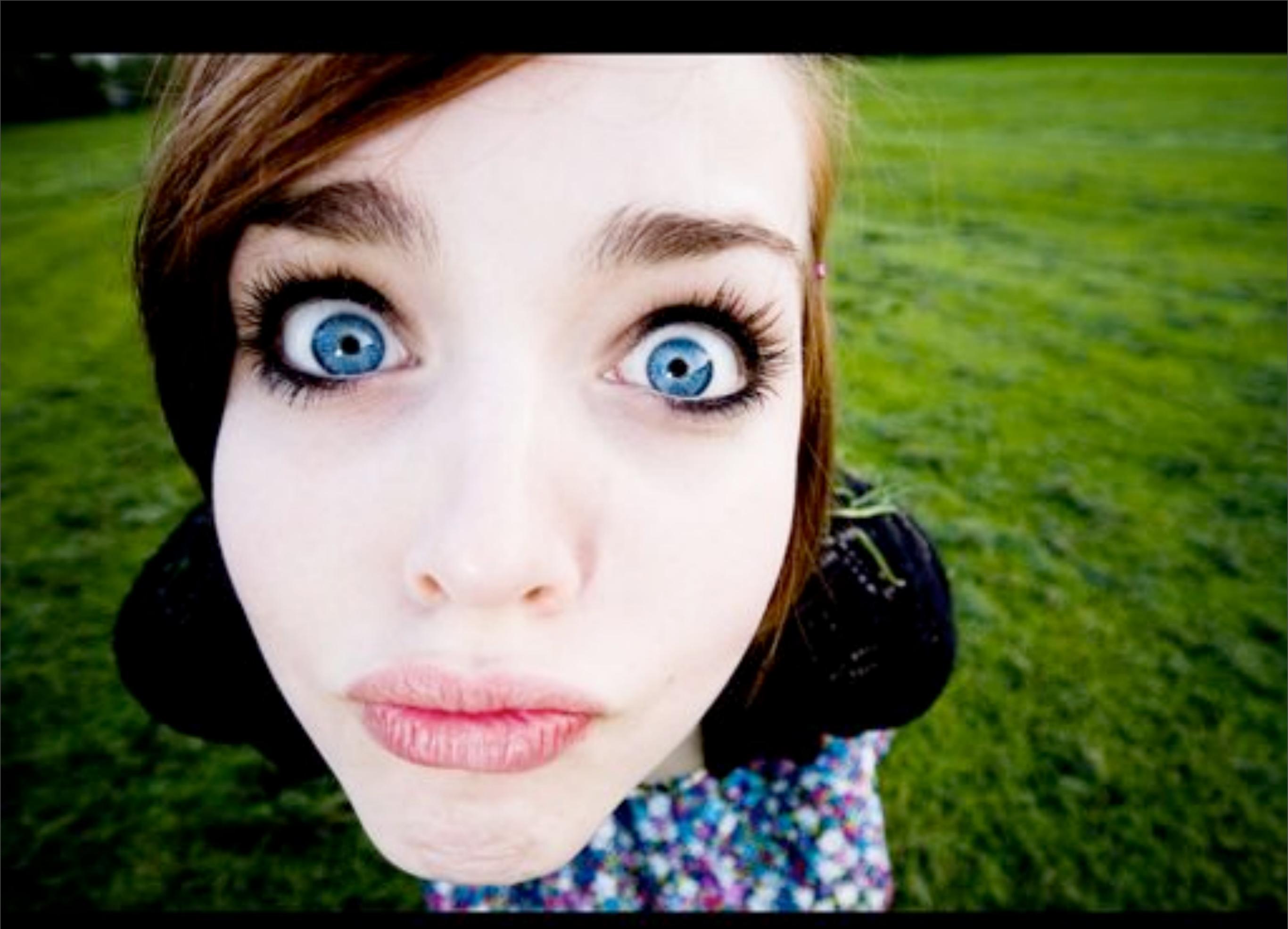
BARNEY STINSON

TO SUCCEED YOU HAVE TO STOP BEING ORDINARY
AND BE LEGEND - WAIT FOR IT - DARY





BUT





POPULAR GAMES

MASIVELY MULTIPLAYER ONLINE ROLE-PLAYING GAMES (MMORPG)



SECOND
LIFE



© 2004 - 2008 Blizzard Entertainment

Sunday, November 22, 2009

Gamer's Del

Current Location:

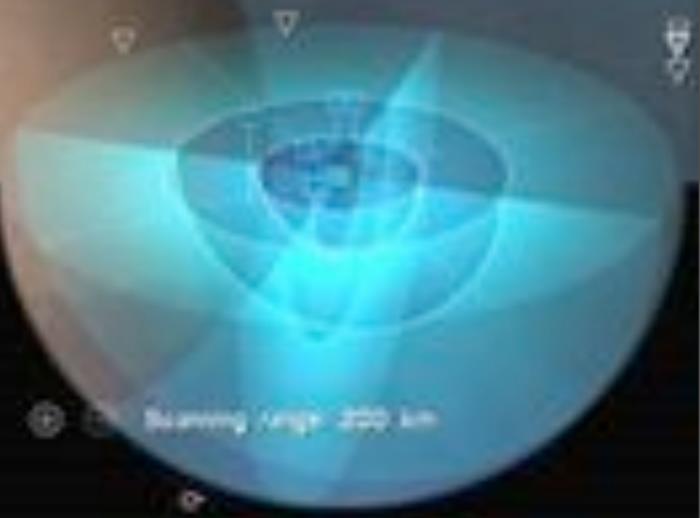
■ TODAKI

Region: Lanetree
Constellation: Kamala
Security Level: 4.00

Position

	Sec	SDs	SDs	SDs	SDs
Packets out	1	2	2	3	3
Packets in	8	8	18	19	42
Klastytes out	01	02	02	04	07
Klastytes in	20	34	40	50	524
Outstanding	0	0	0	0	0
Blocking Calls	634	0	0	0	0
				Billing time	12m 4s

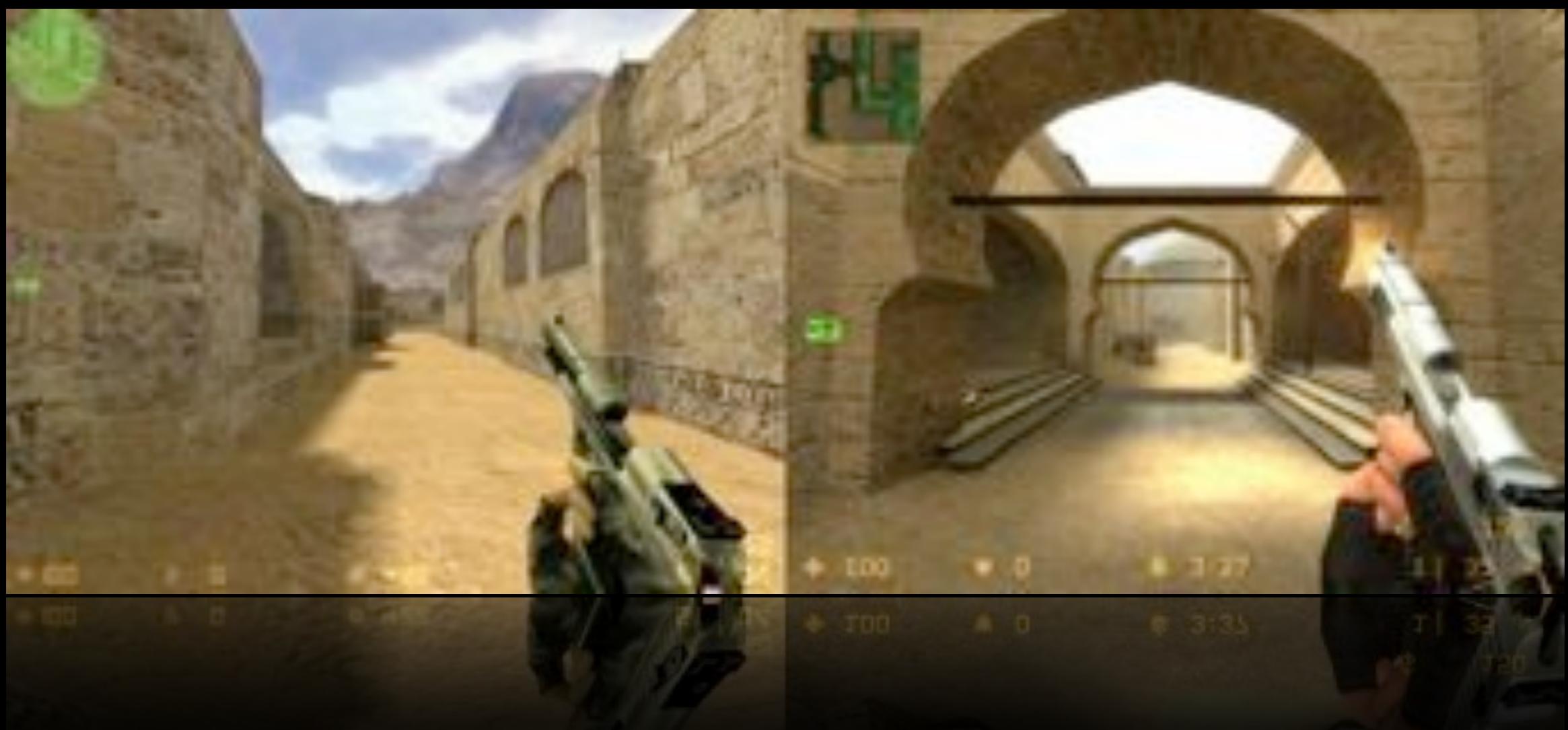
RESET



SPEED: 95 m / s
SHIELD: 500 / 500
REPAIR: 1250 / 1250
CAP: 1000 / 1000
STR: 850 / 850
Basic Miner | Inactive

TOO MUCH WORK FOR A
HACKING PROJECT

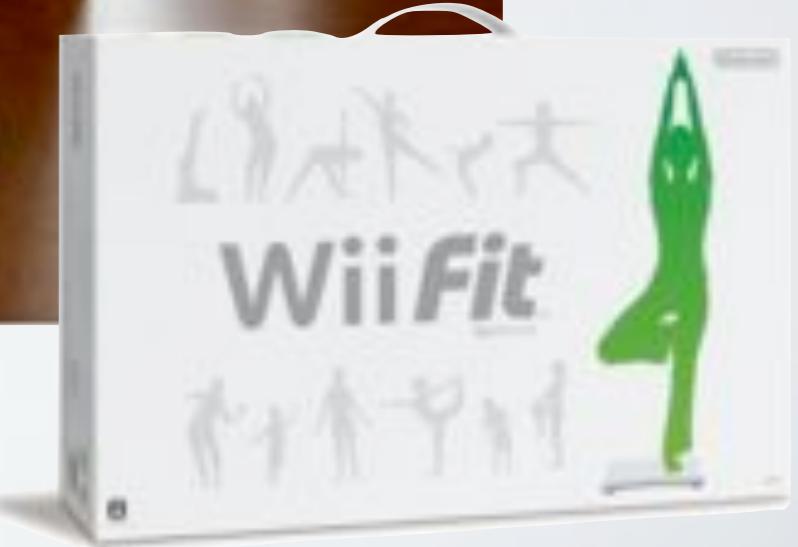
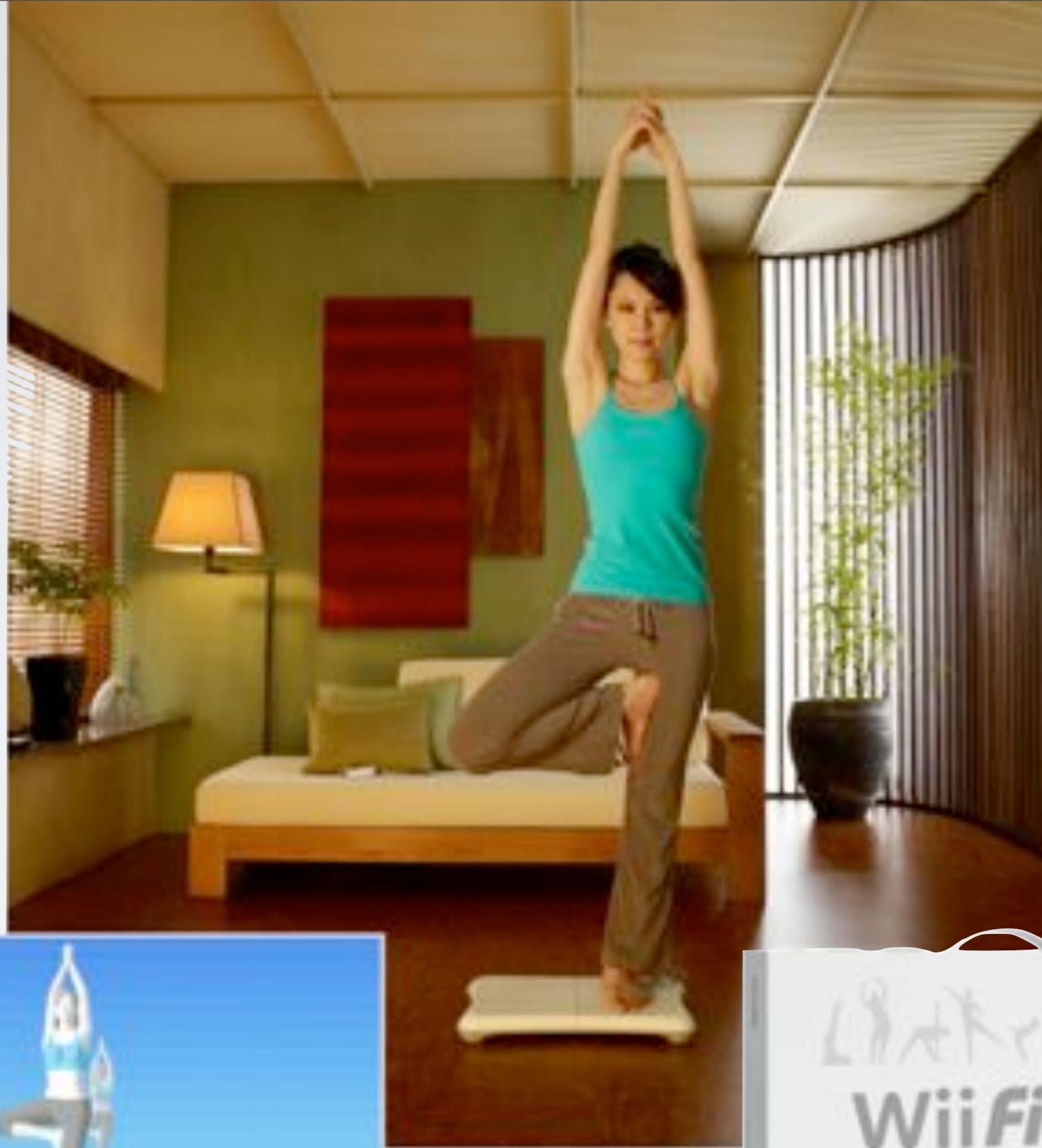
FIRST PERSON SHOOTER







NEW TYPES OF GAMES



63.83 m

27.0



ONLINE GAMES



1,017

Menu

HINT

LIVE

BBO



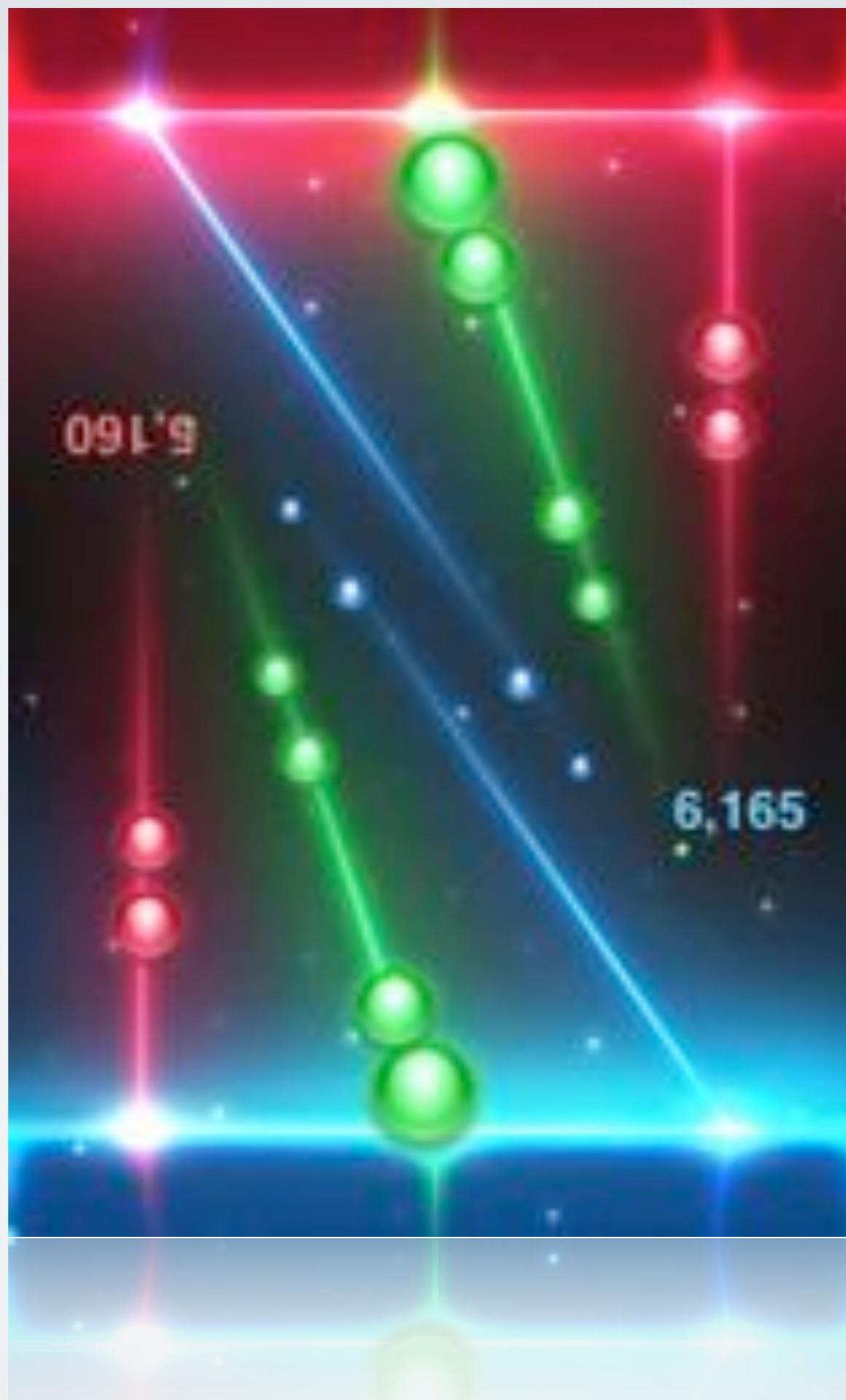


IPHONE GAMES

AIRCRAFT LANDED: 00048

MISSES: 00080





DEMO

MACRILEY



RUBY FOR SCOTTISH



LAURENT SAMSONETTI







ON
OBJ-C RUNTIME
AND GC



COCOA

Apple's Objective-C based programming environment for
Mac OS X

VIDEO

GAME





keyboard



key event



keyboard



keyboard

key event



GameData

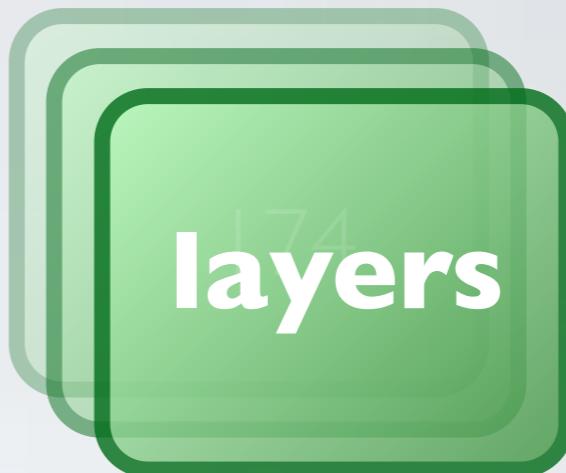


game loop



game loop

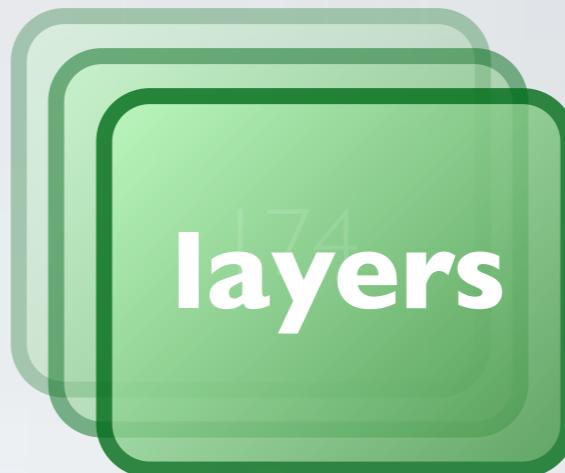
① update



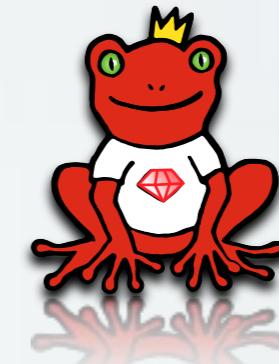


game loop

① update



update

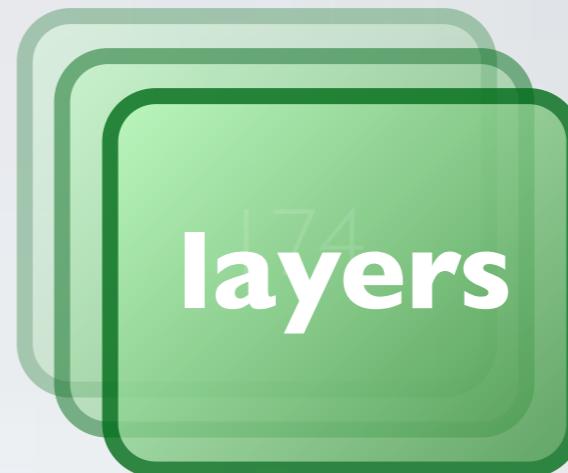


game items

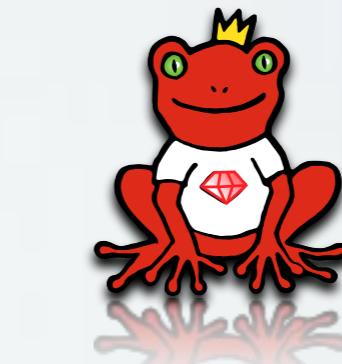


game loop

① update



update



game items

reposition

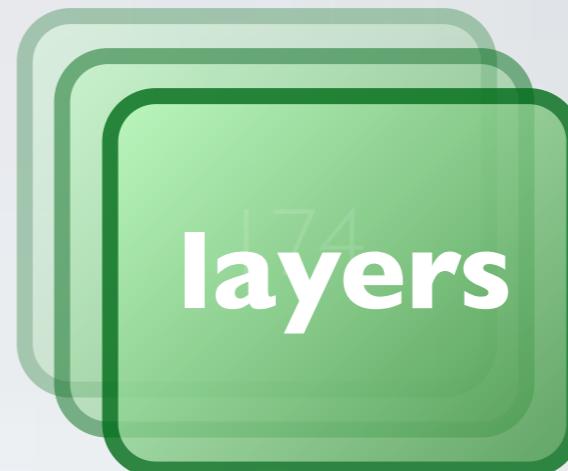


game loop

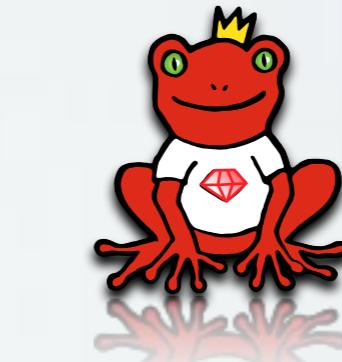


② collisions

① update

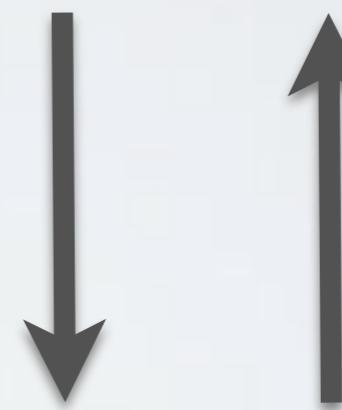


update



game items

reposition





game loop

② collisions



lives

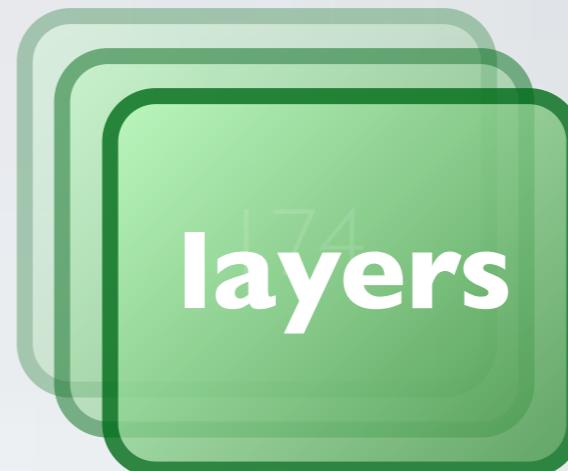


points

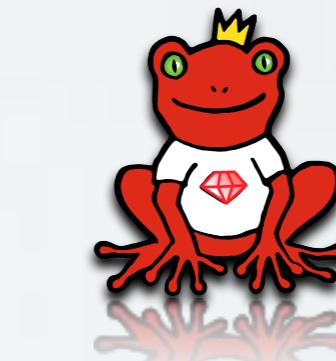


sound

① update



update



game items

reposition

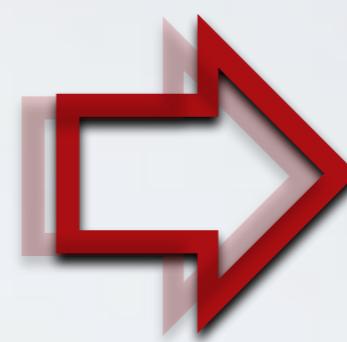
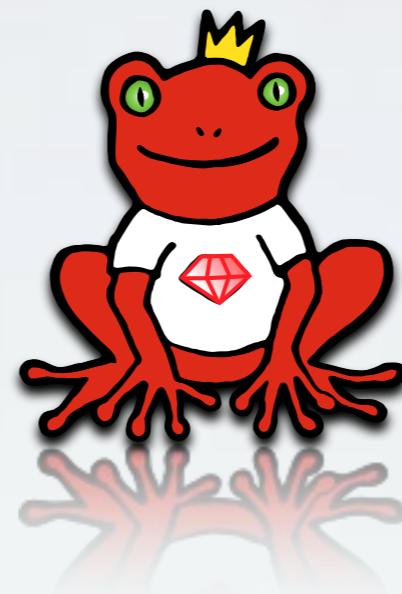


GAME

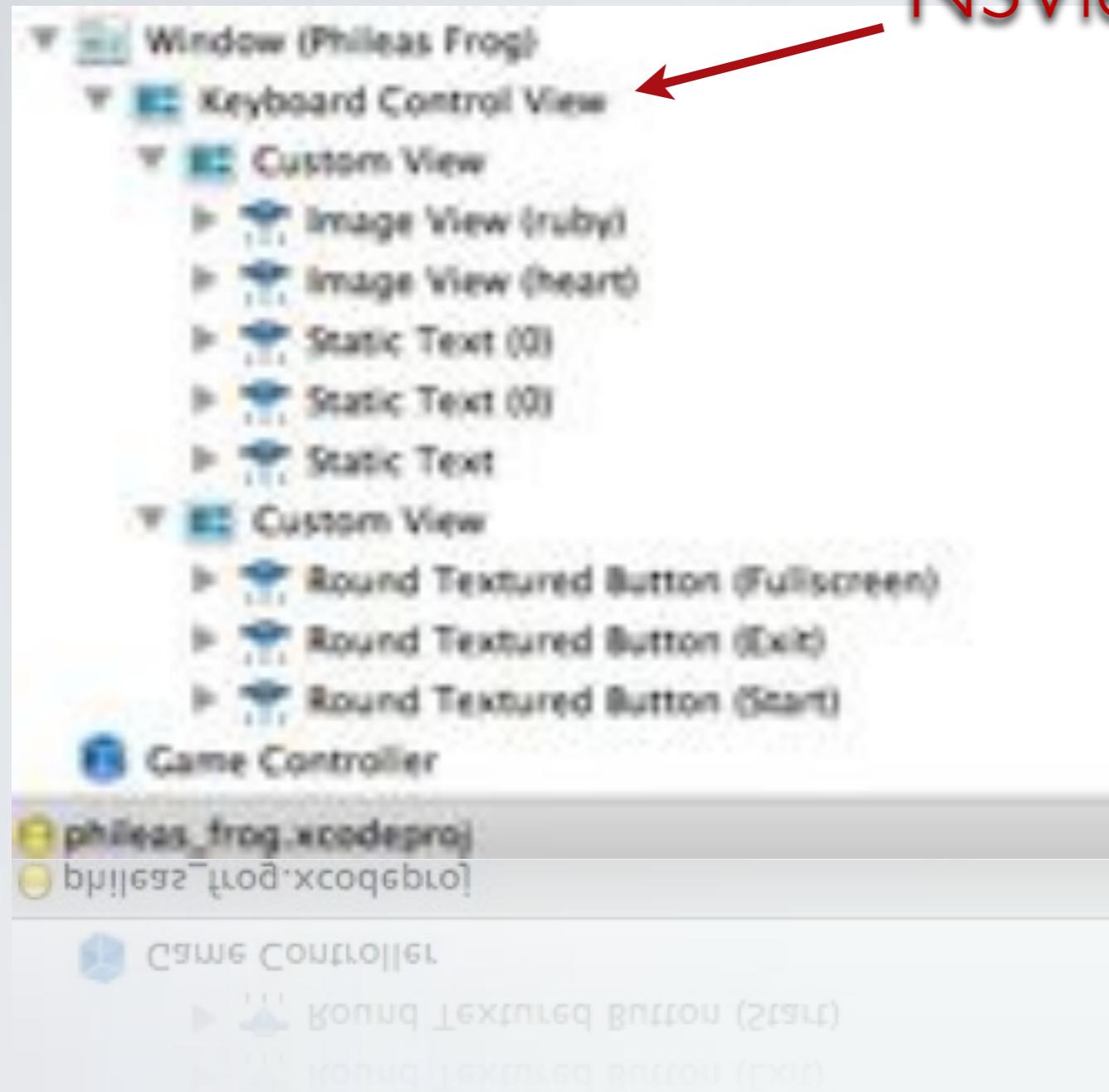
DATA LOAD PLAY

Game

Play

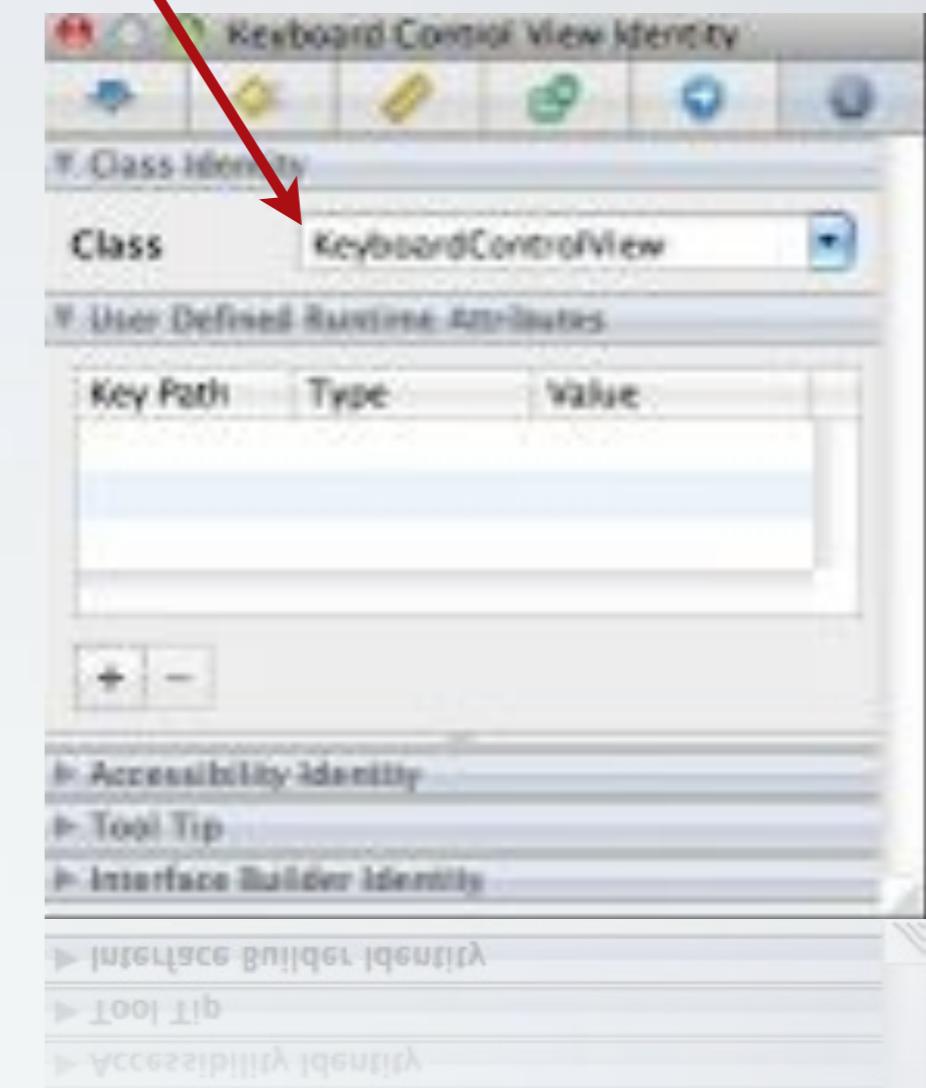
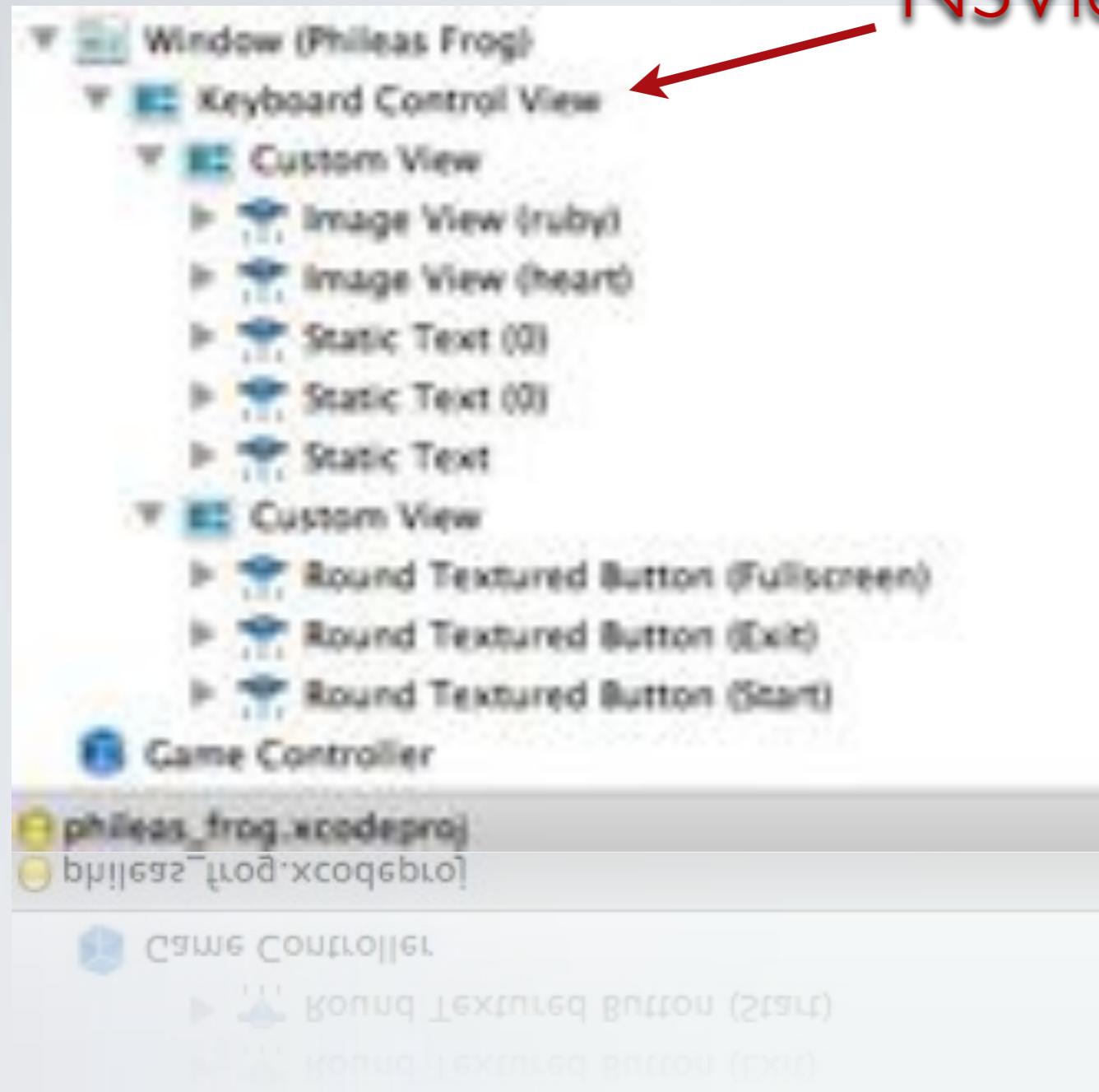


NSView subclass



Interface Builder

NSView subclass



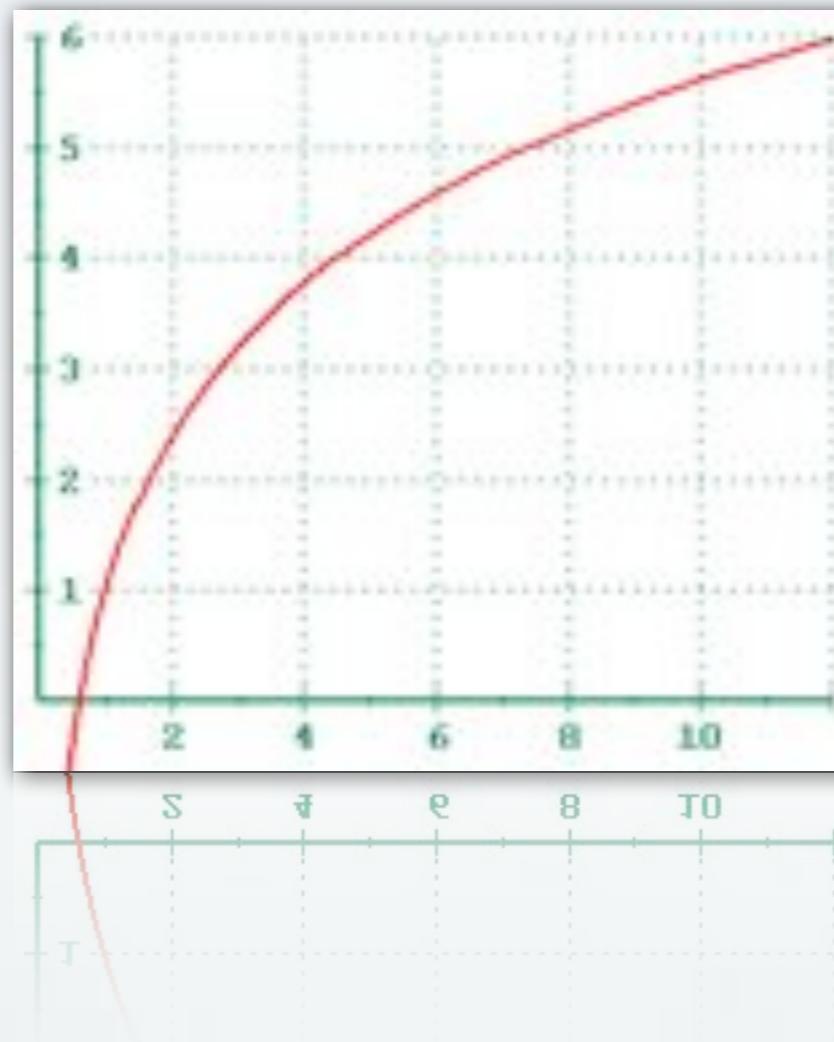
Interface Builder

```
class KeyboardControlView < NSView  
  
def keyDown(event)  
end  
  
end
```

```
class KeyboardControlView < NSView  
  
def keyDown(event)  
end  
  
end
```

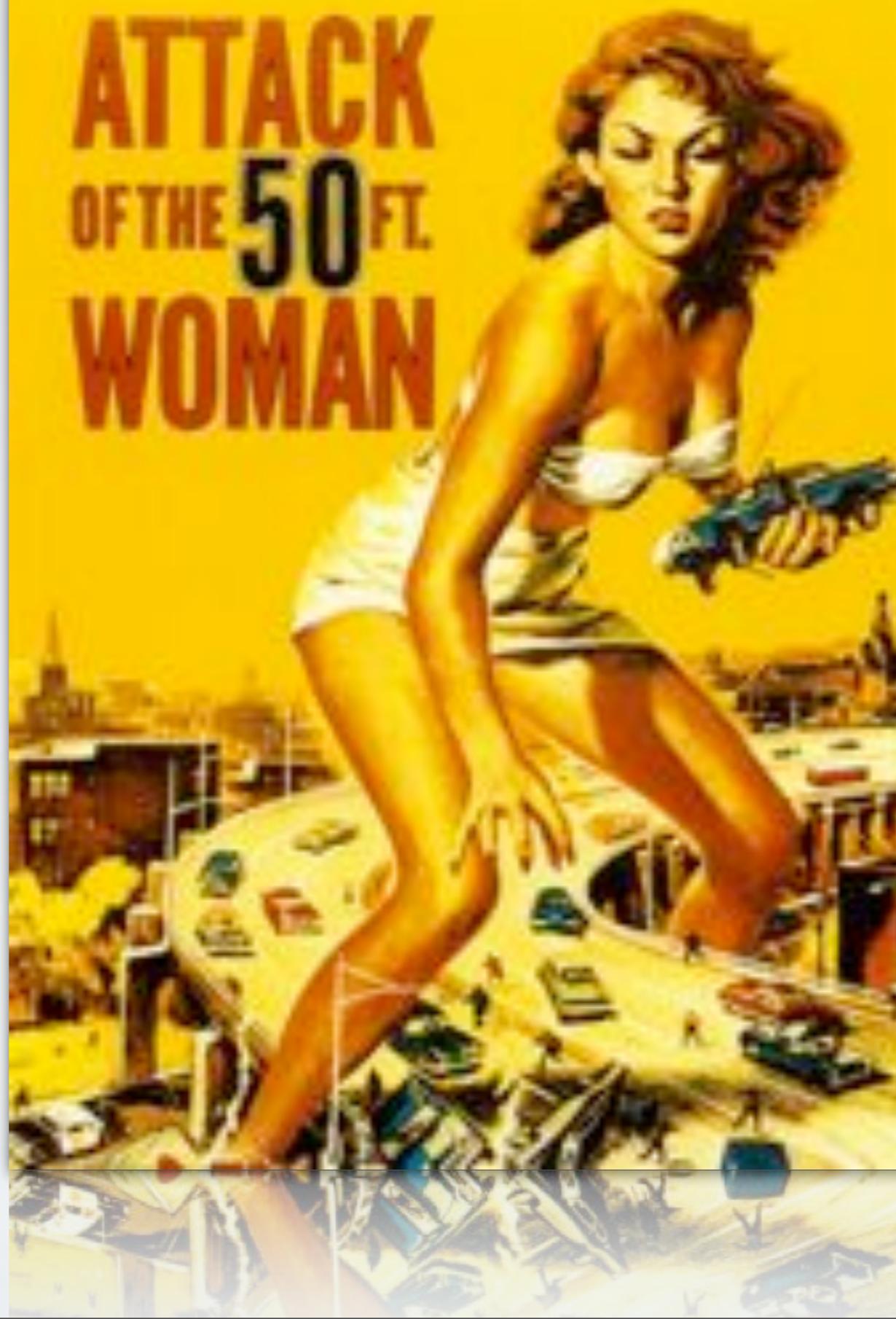


ACCELERATION



RELATIVE POSITIONING

ATTACK OF THE 50 FT. WOMAN



GAME
LIVE

USUAL WORKFLOW



USUAL WORKFLOW

VIDEO GAME



VIDEO GAME

38 X

FER

SECOND

MOVES PLAYER

MOVES OBJECTS

RESOLVES COLLISIONS

UPDATES SCORE/LEVEL

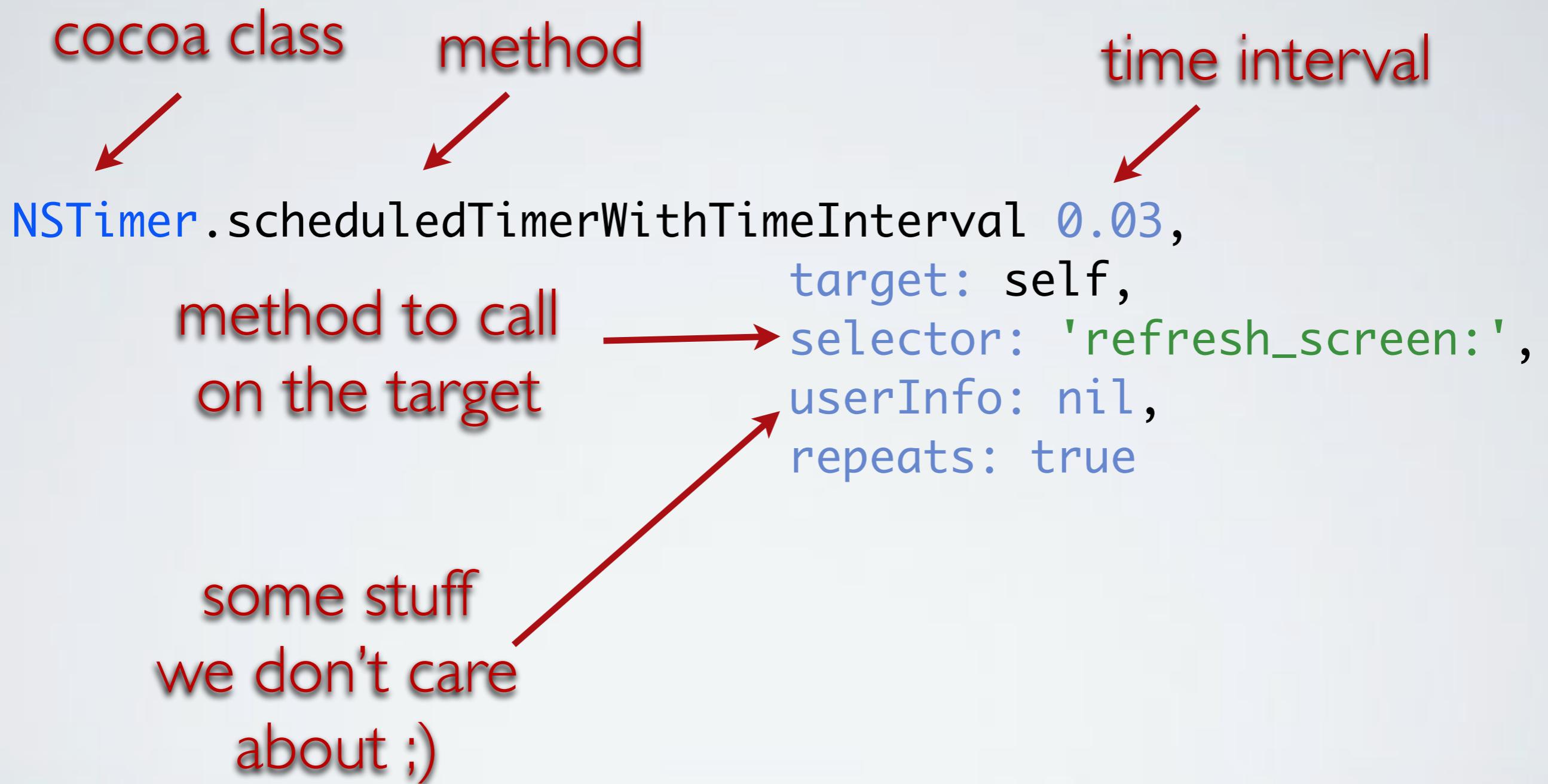
REDRAWS GRAPHICS

PLAYS SOUNDS

```
module GameLoop
  def start_refreshing
    @timer = NSTimer.scheduledTimerWithTimeInterval 0.03,
      target: self,
      selector: 'refresh_screen:',
      userInfo: nil,
      repeats: true
  end

  def refresh_screen(timer=nil)
    #...
  end

end
```



```
IntervalTimer.new(0.03, :target => self,  
:selector => 'refresh_screen:')
```

```
def refresh_screen(timer=nil)
    GameData.all_layers.each{ |layer| layer.update }
    collided_bombs, collided_rubies=GameData.collisions
    if !collided_bombs.empty?
        loose_a_life
        collided_bombs.each{|layer| layer.item.reset! }
    else
        collided_rubies.each do |layer|
            GameData.increase_points(layer.item.points)
            points.attributedStringValue =
                GameData.points.to_s
            layer.item.reset!
        end
        SoundEffects.collision(0.2) unless
        collided_rubies.empty?
        level_change! if change_level?
    end
end
```

```
GameData.all_layers.each do |layer|
  layer.update
end
```

```
collided_bombs, collided_rubies =  
    GameData.collisions
```

```
def collide_with?(other_rect)
  NSIntersectsRect(rect_version, other_rect)
end
```

```
if !collided_bombs.empty?  
    loose_a_life  
    collided_bombs.each do |layer|  
        layer.item.reset!  
    end
```

```
else
  collided_rubies.each do |layer|
    GameData.increase_points(layer.item.points)
    update_points_display
    layer.item.reset!
end
```

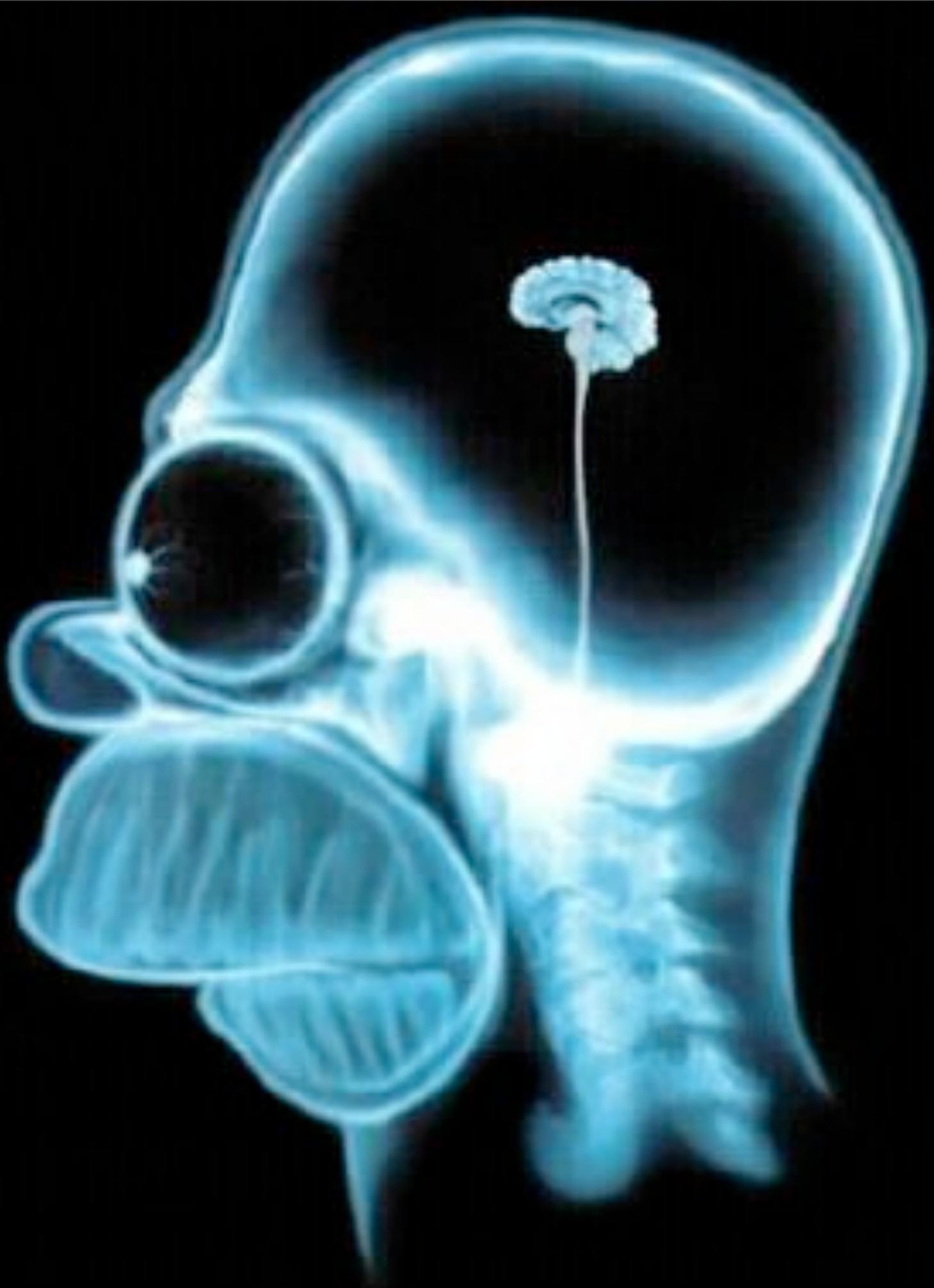
```
unless collided_rubies.empty?  
    SoundEffects.frog(0.2)  
end  
level_change! if change_level?  
end
```

```
module SoundEffects
  module_function
  @frog = NSSound.soundNamed("Frog")

  def frog(delay=0)
    @frog.performSelector(:play,
      withObject: nil,
      afterDelay: delay)
  end
end
```

GAME

DATH



```
module GameData
    module_function
end
```

```
class GameController
  def awakeFromNib
    GameData.register_controller(self)
  end
end
```

`GameData.all_layers`

```
class GameController
  def display_item(item)
    new_layer =
      ImageLayer.alloc.initWithItem(item)
    GameData.all_layers << new_layer
    # [...]
  end
end
```

```
module GameConfig
```

```
  module_function
```

```
    def data
```

```
      @data ||= { :levels => [
          { :name => 'Pond',
            :rubies => 3,
            :bombs => 12,
            :score_limit => 30,
            :vehicle => 'nenuphar',
            :bomb_image => 'bomb',
            :bomb_ratio => 1,
            :ruby_ratio => 1.5,
            :player_width => 0.2,
            :player_height => 0.2
          }]
    }
```

```
  end
```

COCA

HAWAII

CocoaClass \approx RubyClass

DOH'IT

LIKE A H

API?

WRAP IT

```
class NSButton
```

```
def title_color=(color)
  current_font =
    self.attributedTitle.attribute(NSFontAttributeName,
                                    atIndex: 0,
                                    effectiveRange: nil)
  opts = { NSForegroundColorAttributeName => color,
           NSFontAttributeName => current_font }
  self.attributedTitle =
    NSAttributedString.alloc.initWithString( self.title,
                                             attributes: opts)
end

end
```

COMPILED

New Target

Choose a template for your new target:

User Templates

Empty

Mac OS X

Cocoa

Application Plug-in

BSD

System Plug-in

Other

 Compile

 Embed MacRuby

 Embed MacRuby

Target that embeds MacRuby framework inside the current application bundle. This is useful in case you want to ship a MacRuby application to users who don't necessarily have MacRuby installed.

Cancel

Previous

Next

CREATE

SEARCH

```
PATH="$PATH:/usr/local/bin"  
macruby_deploy "$TARGET_BUILD_DIR/  
$PROJECT_NAME.app" --embed --no-stdlib  
--compile
```

WATHNA

HACK?

BEST SCORE

POET SCORE

Open FRAMEWORK

CHIMUNK

PHYSICS

[HTTP://GITHUB.COM/
MATTETTI/PHILEAS_FROG](http://github.com/mattetti/phileas_frog)

Official MacRuby Book



OMG MacRuby

Matt Aimonetti

Author

THANKS