Building an iOS Game

(with cocos2d)

by Justin Shacklette

Me?

- CU Physics 2001
- Gorilla Logic
- Boulder iOS meetup

Why mobile games?

- in your pocket

- instant access

- powerful hardware

- always online

- touch!

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Immersive

What is iOS?

- Apple's mobile OS
- runs on iPhone, iPad, iPod Touch
- App Store
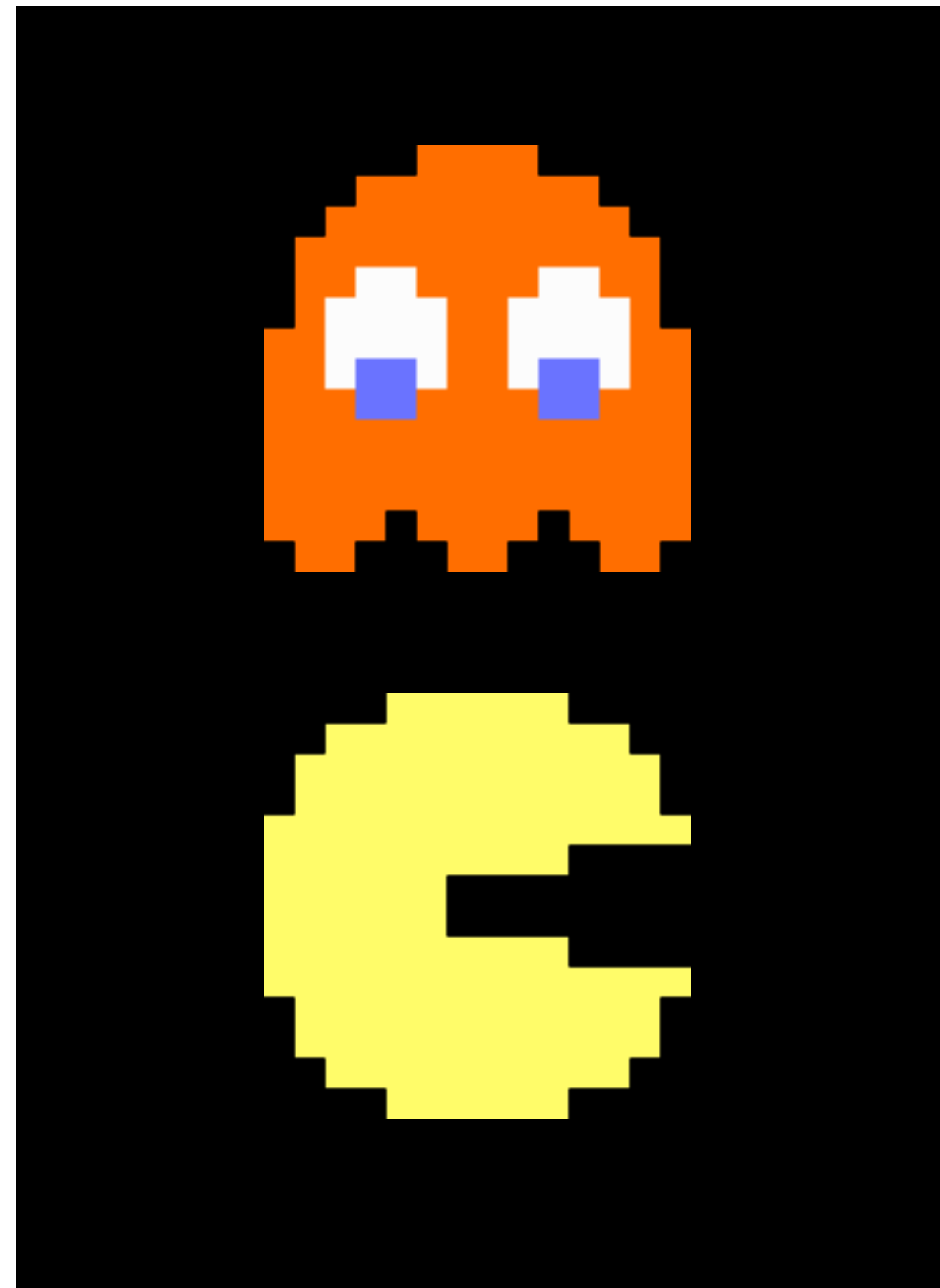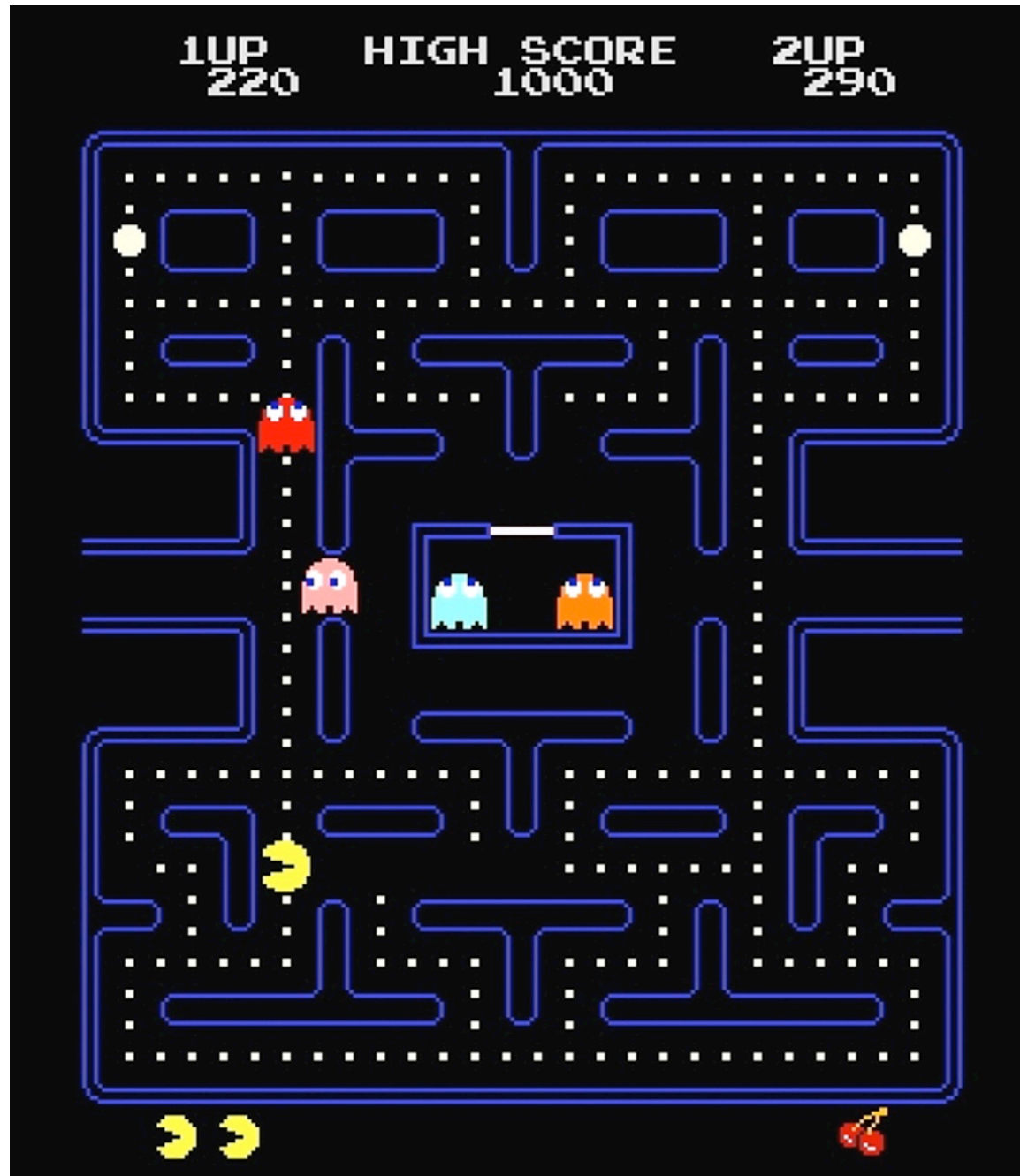- Xcode "IDE"
- Objective-C (or C, or C++)

What is cocos2d?

– 2D **sprite-based** game framework

triggers
animation
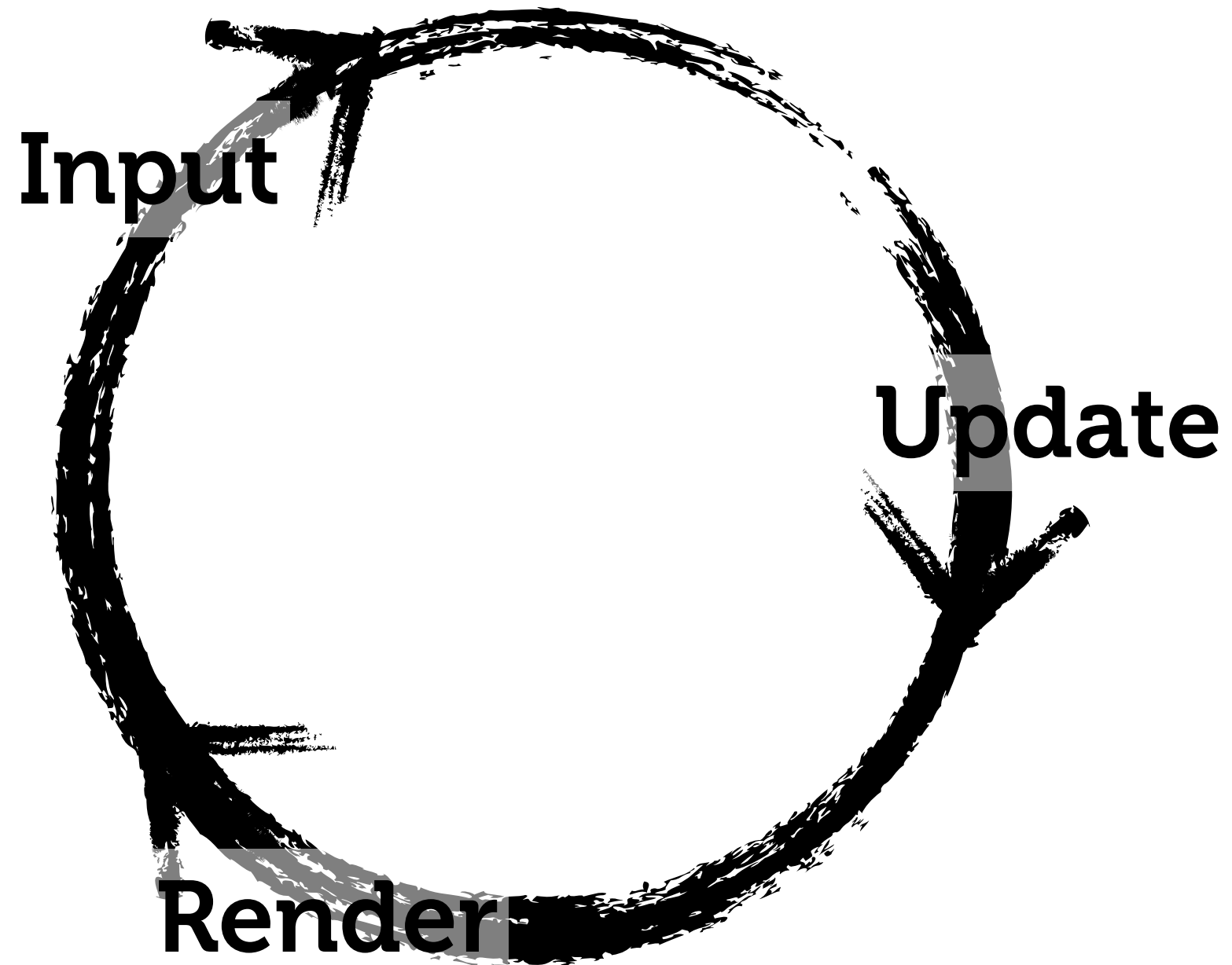actions
particles
audio
drawing
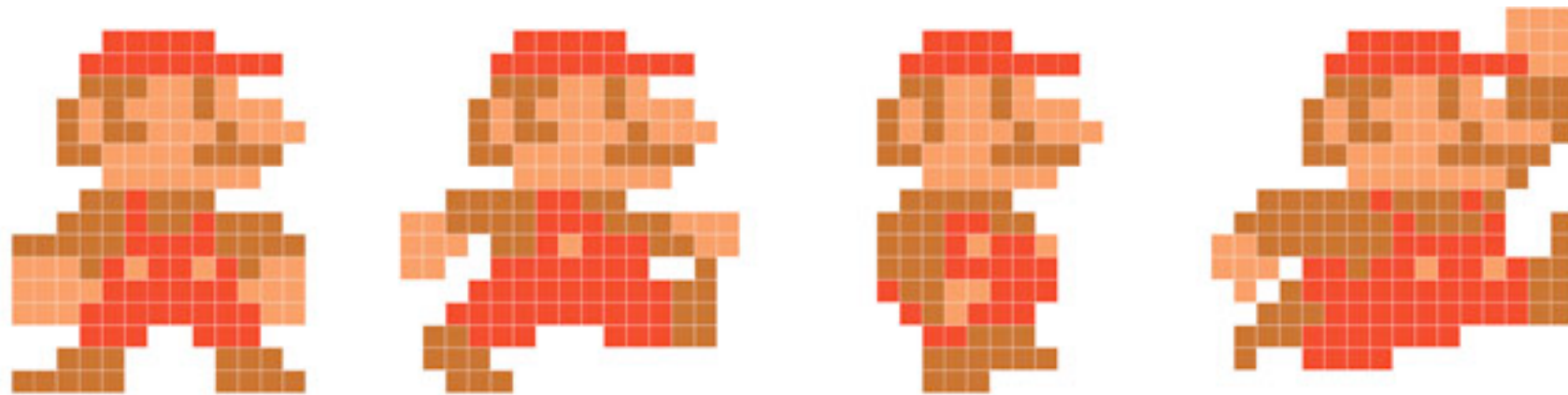physics
events

Sprites

- 2D bitmap

The Game Loop
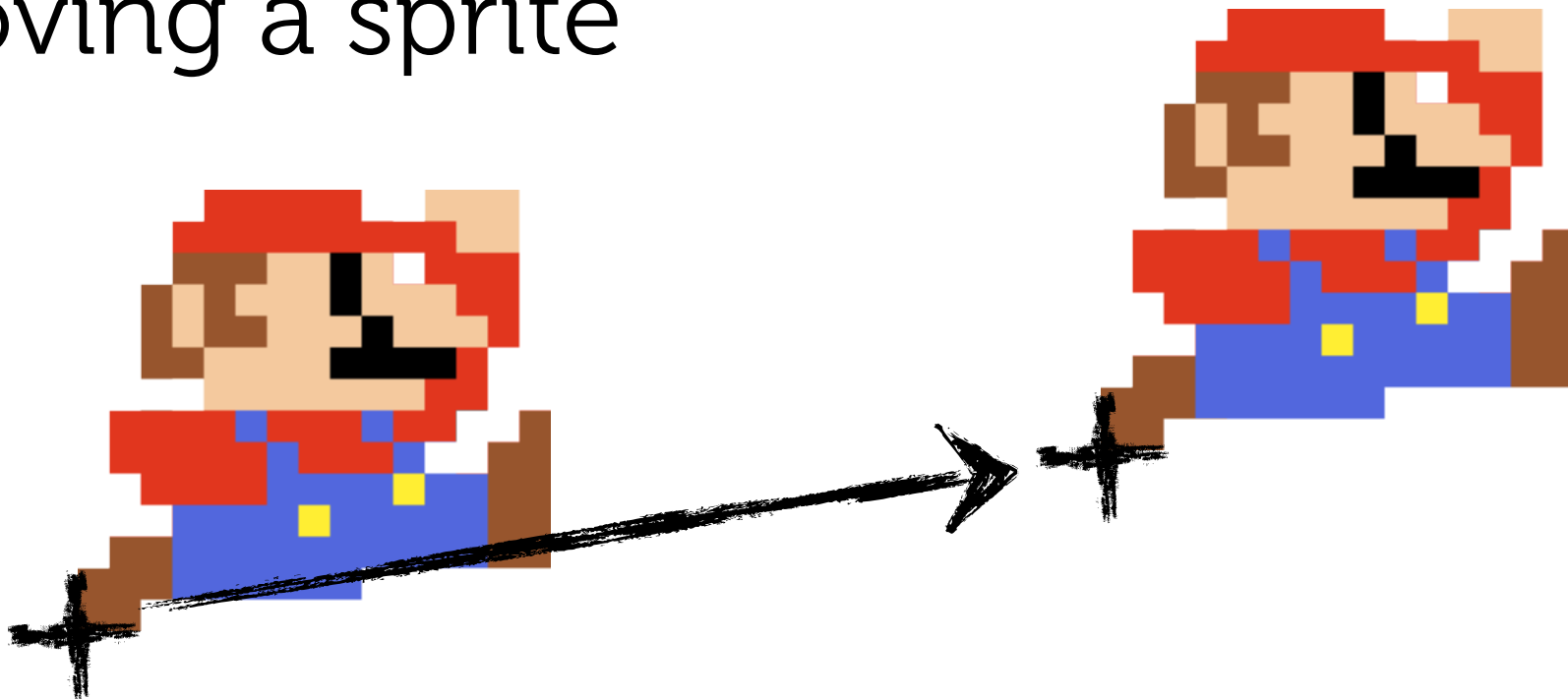
Animation

- Animating a sprite

- Moving a sprite

What makes a game?
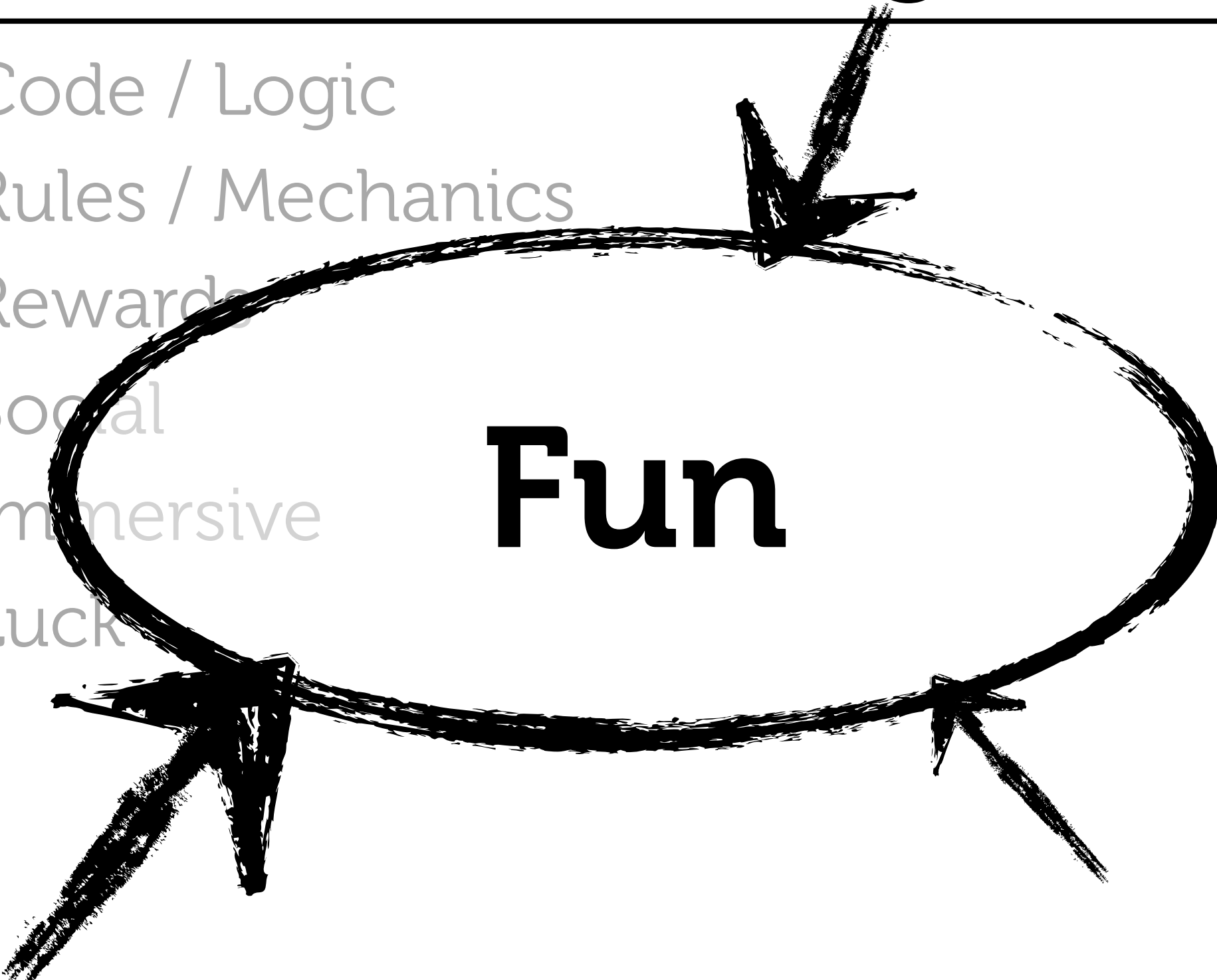
- Code / Logic
- Rules / Mechanics
- Rewards
- Social
- Immersive
- Luck

What makes a game?

- Code / Logic
- Rules / Mechanics
- Rewards
- Social
- Immersive
- Luck

Fun

How?
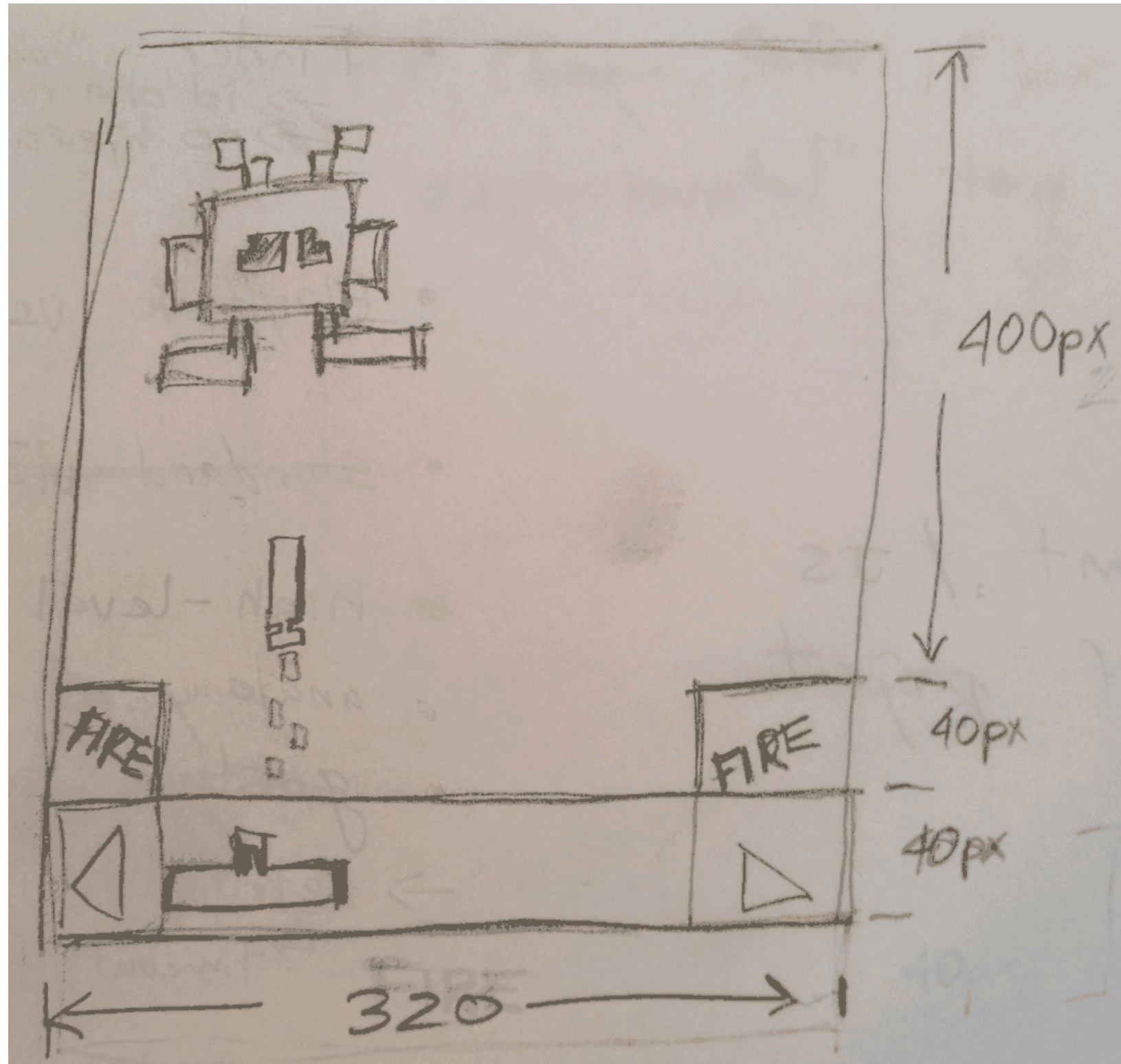
1. Think, then Draw
2. Code
3. Beautiful Design
4. Test
5. Refine / Repeat

Invaders Mockup

Let's Code

1. Sprite motion
2. Touch handling
3. Sprite animation
4. Sounds
5. Hit test
6. Actions
7. Invaders - the game!

Get the Code

git clone https://github.com/
saturnboy/cocos2d_simple_game.git

open cocos2d_simple_game/
invaders1/Invaders1.xcodeproj

1 - Sprite Motion

```objc
@implementation MainLayer {
    CCSprite *alien;
}

-(id) init {
    if ((self=[super init])) {
        alien = [CCSprite spriteWithFile:@"alien.png"];
        [self addChild:alien];
        [self scheduleUpdate];
    }
    return self;
}

-(void) update:(ccTime)delta {
    alien.position = ccpAdd(ccp(1,1), alien.position);
}

@end
```
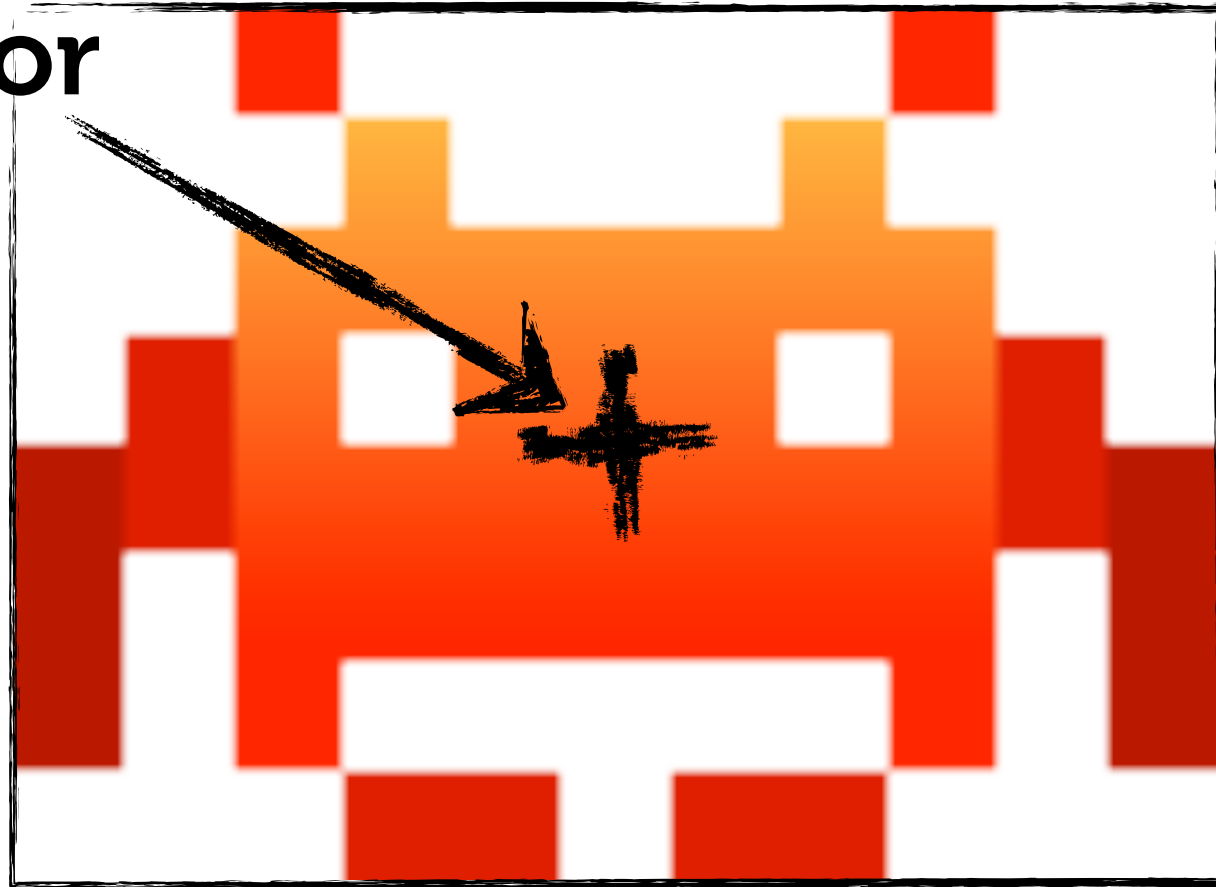
alien.png

anchor

(44px, 32px)

2 - Touch Handling

```objc
@implementation MainLayer {
 CCSprite *alien;
}

-(id) init {
    if ((self=[super init])) {
        self.isTouchEnabled = YES;

        alien = [CCSprite spriteWithFile:@"alien.png"];
        [self addChild:alien];
    }
    return self;
}

-(void) ccTouchesEnded:(NSSet *)touches withEvent:(UIEvent *)event {
    CGPoint touch = [self convertTouchToNodeSpace:touches.anyObject];
    alien.position = touch;
}

@end
```
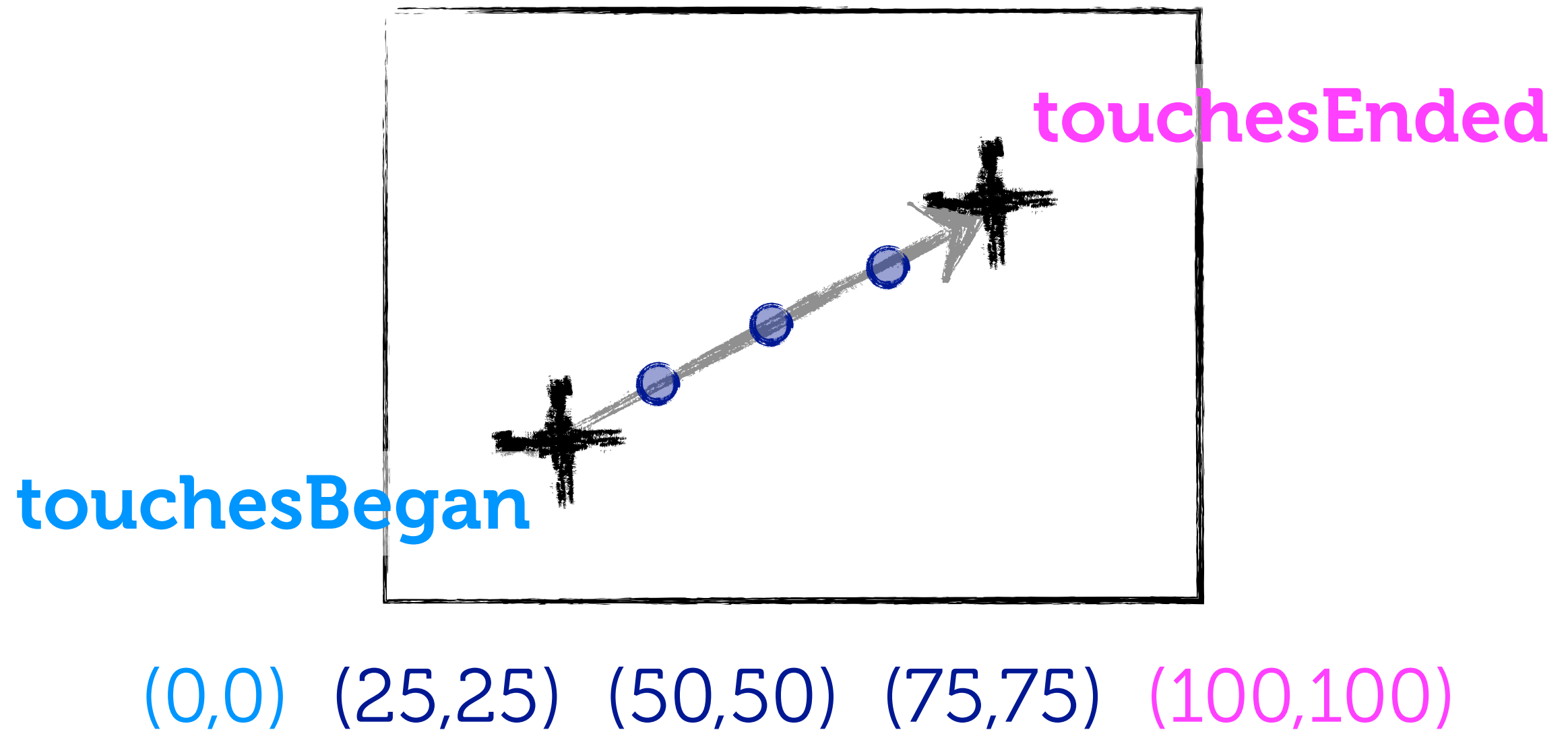
Touch Handlers

touchesEnded

touchesBegan

(0,0) (25,25) (50,50) (75,75) (100,100)

3 - Sprite Animation

```objc
    //load the texture
[[CCSpriteFrameCache sharedSpriteFrameCache]
    addSpriteFramesWithFile:@"tex.plist"];
CCSprite *sheet = [CCSpriteBatchNode batchNodeWithFile:@"tex.png"];
[self addChild:sheet];

//draw the alien
alien = [CCSprite spriteWithSpriteFrameName:@"alien1.png"];
[self addChild:alien];

//build the animation frame-by-frame
NSArray *frames = [NSArray arrayWithObjects:
    [[CCSpriteFrameCache sharedSpriteFrameCache]
        spriteFrameByName:@"alien1.png"],
    ...,
    nil];

//build the animation "action"
CCAnimation *anim = [CCAnimation animationWithSpriteFrames:frames
    delay:0.1f];
CCAction *action = [CCAnimate actionWithAnimation:anim];
```

4 - Sounds

```
//preload it
[[SimpleAudioEngine sharedEngine]
    preloadEffect:@"fire.caf"];

//play it
[[SimpleAudioEngine sharedEngine]
    playEffect:@"fire.caf"];
```
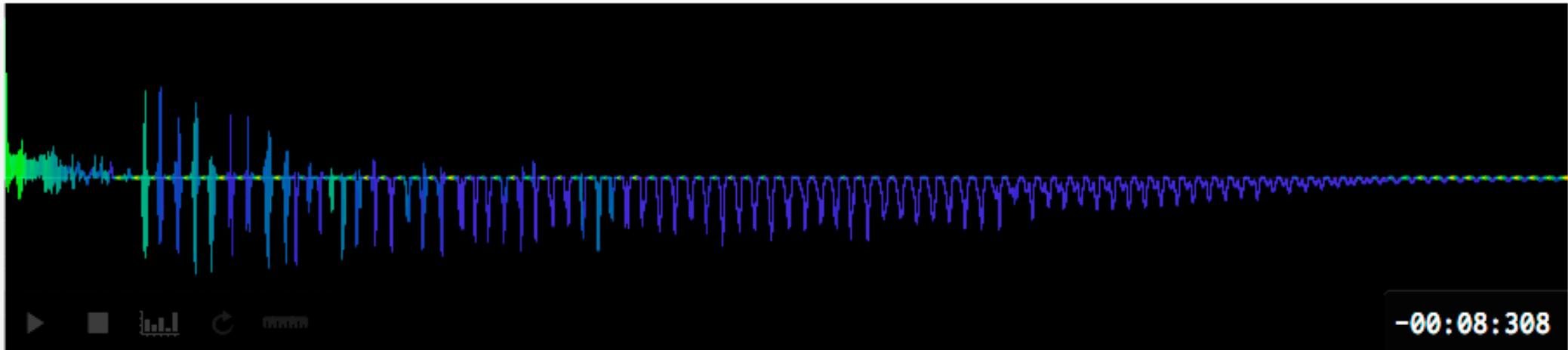
FreeSound.org

Audacity
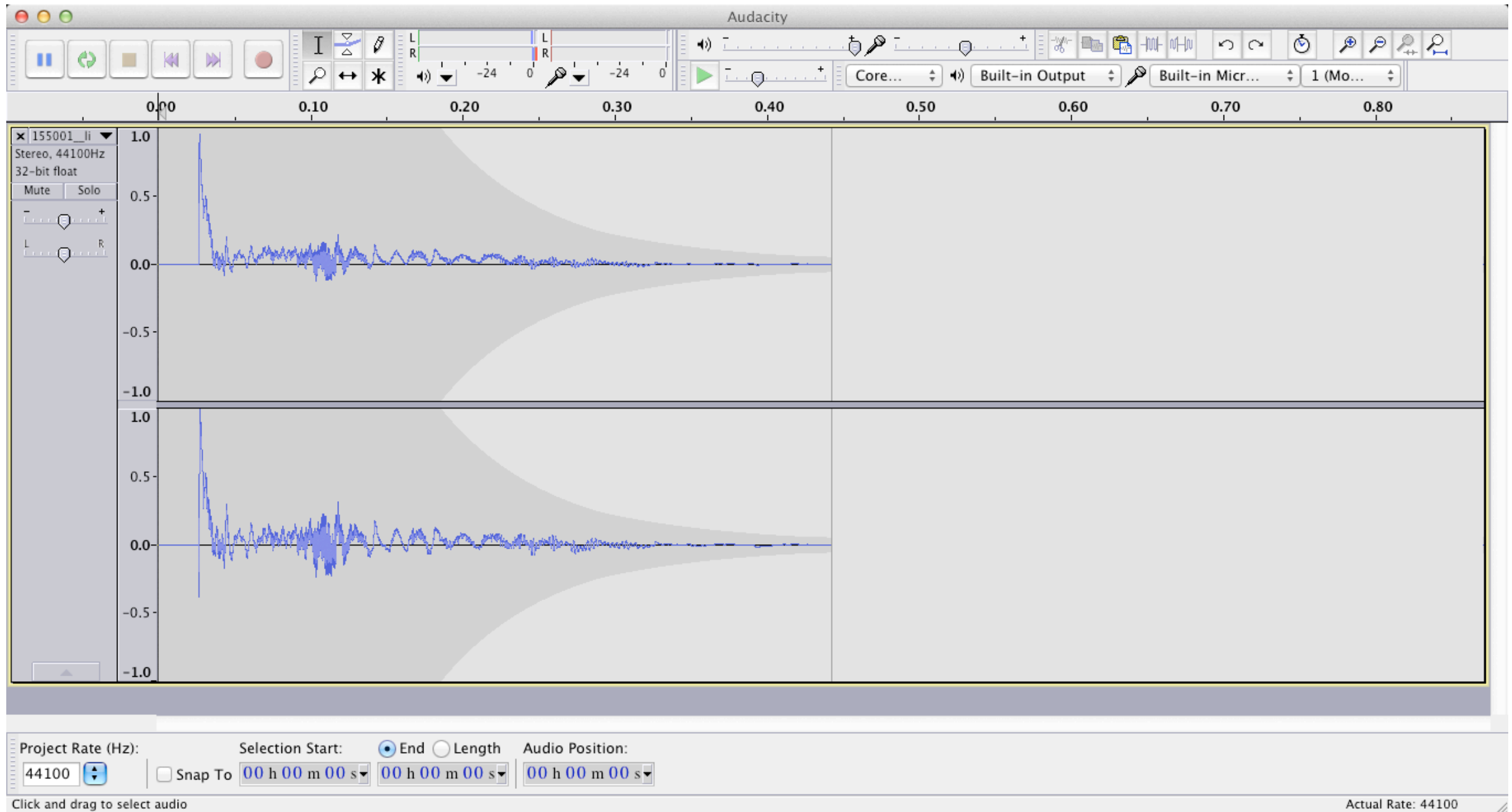
5 - Hit Test

```
    CGPoint touch = [self
      convertTouchToNodeSpace:touches.anyObject];

if (CGRectContainsPoint(alien.boundingBox, touch)) {
    //hit
    [[SimpleAudioEngine sharedEngine]
        playEffect:@"fire.caf"];
} else {
    //miss
    [[SimpleAudioEngine sharedEngine]
        playEffect:@"miss.caf"];
}
```

6 - Actions

```
 CCSequence *seq = [CCSequence actions:
[CCMoveTo actionWithDuration:1 position:ccp(100,H-100)],

[CCSpawn actions:
  [CCMoveTo actionWithDuration:1 position:ccp(W-100,H-100)],
  [CCRotateBy actionWithDuration:1 angle:360],
 nil],

[CCDelayTime actionWithDuration:1],

[CCEaseInOut actionWithAction:
  [CCMoveTo actionWithDuration:1 position:ccp(W-100,100)] rate:3],

[CCMoveTo actionWithDuration:1 position:ccp(100,100)],

nil];

[alien runAction:seq];
```
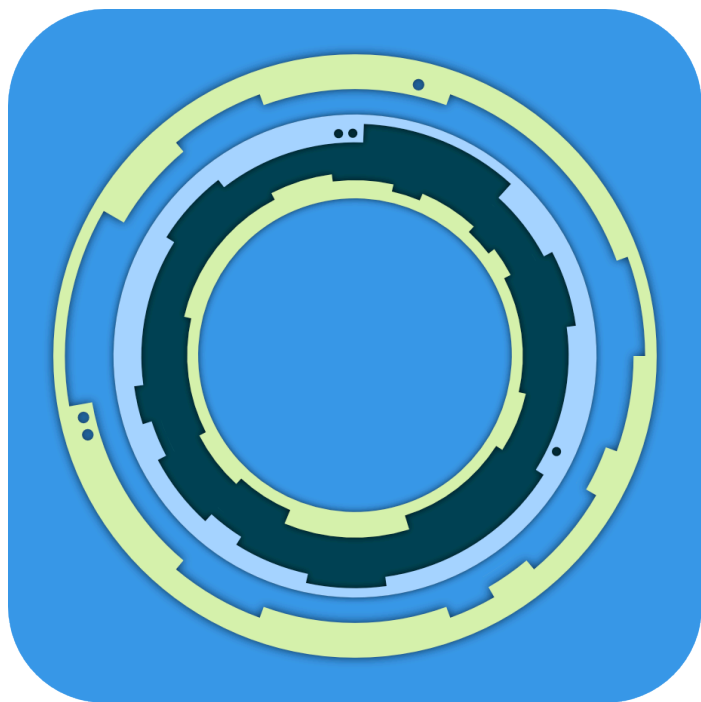
7 - Invaders

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