Lecture 2:

Game Mechanics
Eventually…
Next Thursday

Paper Prototyping!
Tuesday

Brainstorming and Prototyping
Today

Game Mechanics
What is a game?
Describe your favorite game

- Partner should understand
  - what you do
  - why it’s awesome
What is a game?
Is this a game?
Is this a game?

life in general
Tracy Fullerton

a closed, formal system that engages players in structured conflict and resolves its uncertainty in an unequal outcome

(Game Design Workshop)
Ernest Adams

a form of **interactive entertainment**

where *players*

must overcome *challenges*,

by taking actions that are governed by *rules*,

in order to meet a *victory condition*

*(Fundamentals of Game Design)*
a system in which players engage in artificial conflict, defined by rules, that results in a quantifiable outcome

(Rules of Play)
a form of *interactive entertainment*

where *players*

must overcome *challenges*,

by taking actions that are governed by *rules*,

in order to meet a *victory condition*

**a system**

in which *players*

engage in *artificial conflict*,

defined by *rules*,

that results in a *quantifiable outcome*
Sid Meier

a series of
interesting decisions

(GDC 2012)
Civilization
Civilization

Gandhi the Pious of India
Given the circumstances, destroying you would make victory all the sweeter.
'Very well, we will mobilize our armies for WAR! You will pay for your foolish pride!'
Common Threads

- Goals
- Rules
- Decisions
Common Threads

• Goals
• Rules
• Decisions
Goals

- Anything a player might strive for
What are the goals?
What are the goals?
Be careful with this
Braid’s Slow-moving Cloud
Common Threads

- Goals
- Rules
- Decisions
Rules

Game Mechanics

Actions

Interactions
Actions

- **Verbs** that describe what the player can do
  - Walk
  - Run
  - Jump
  - Shoot

- Might not involve an avatar
  - Build
  - Swap
  - Rotate
What are the actions?
What are the actions?
What are the actions?
Actions tend to map to a *single* input

- button press
- key press
- click on something
- drag something
Actions combine

run + jump = jump further

shoot + slide = strafing attack
Action Bloat

- A common problem is having *too many actions*
Action Bloat
Key Lesson of this Class #2

people can only keep track of a few things
Key Lesson of this Class #1

nobody reads and nobody listens
Game Mechanics

- Actions
- Interactions
Game Mechanics

Actions

Interactions
Interactions

- Things that happen *because* of an action
- Player does not have direct control
What are the interactions?
What are the interactions?
What are the interactions?
Game Mechanics

Actions

Interactions
Norway Apple App Store, 2012

sales

Angry Birds

DragonBox
Common Threads

- Goals
- Rules
- Decisions
Common Threads

- Goals
- Rules
- Decisions
What are the decisions?
What are the decisions?
What are the decisions?
Common Threads

- Goals
- Rules
- Decisions
Common Threads

- Goals
- Rules
- Decisions
Growth in complexity
Growth in Complexity
# Growth in Complexity

![Image of a game board displaying multiples of 19](image-url)

<table>
<thead>
<tr>
<th>Level:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiples of 19</strong></td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>202</td>
</tr>
<tr>
<td>84</td>
<td>101</td>
</tr>
<tr>
<td>123</td>
<td>171</td>
</tr>
<tr>
<td>168</td>
<td>133</td>
</tr>
<tr>
<td>54</td>
<td>202</td>
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</tbody>
</table>

Press a key to start

Score: 10
Flower
Flow
Anxiety
Boredom
Flow State
Flow State

Source: gosugamers.net
Flow

Challenge

Anxiety

Boredom

Skill
Flow

Challenge

Anxiety

Boss Fight

Boredom

Skill (Time)
Common Threads

- Goals
- Rules
- Decisions
- Growth in complexity
Growth in Complexity

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Score: 10
Common Threads

- Goals
- Rules
- Decisions
- Growth in complexity
- Story
Story
It was perfect. Everything. It was all perfect.
Group Activity

- Goals
- Actions
- Interactions
- Decisions
- Growth in complexity
Today: Recap

• Many definitions of games
• Tend to involve
  • goals
  • actions
  • interactions
  • decisions
  • complexity
• Game design ideas need to have these components
Assignment 2
Before starting…

- Download the *debug player* of Flash
Classes

public class MyClass {
    
}

- Only one class per file!
- Class name must match file name
Inheritance

public class MyClass extends OtherClass
{
}

import flash.display.Sprite;

public class MyClass extends Sprite
{
}

Constructors

```typescript
import flash.display.Sprite;

public class MyClass extends Sprite {
    public function MyClass() {
    }
}
```
package mygame
{
    import flash.display.Sprite;

    public class MyClass extends Sprite
    {
        public function MyClass()
        {
        }
    }
}
Hello World! (finally)

```ActionScript
package mygame {
    import flash.display.Sprite;

    public class MyClass extends Sprite {
        public function MyClass() {
            trace("hello world!");
        }
    }
}
```
Variables

```javascript
var a: int = 0;
```
var a:int = 0;

function addOne(input:int):int {
    return input + 1
}
package mygame
{
import flash.display.Sprite;

public class MyClass extends Sprite
{
private var a:int;

public function MyClass()
{
}
}
}
package mygame
{
    import flash.display.Sprite;

    public class MyClass extends Sprite
    {
        public function MyClass()
        {
            trace(addOne(2));
        }

        public function addOne(input:int):int {
            return input + 1;
        }
    }
}
The Stage

MyChildClass

MyClass
Adding Children

```actionscript
package mygame {

    import flash.display.Sprite;

    public class MyClass extends Sprite {
        public function MyClass() {
            var myChildClass:Sprite = new Sprite();
            addChild(myChildClass);
        }
    }
}
```
package mygame
{
    import flash.display.Sprite;

    public class MyClass extends Sprite
    {
        // inherits x, y

        public function MyClass()
        {
        }

        public function move()
        {
            x = 100;
        }
    }
}
package mygame
{
    import flash.display.Sprite;

    public class MyClass extends Sprite
    {
        public function MyClass()
        {
            addEventListener(MouseEvent.MOUSE_CLICK, click);
        }

        public function click(event:MouseEvent):void
        {
            // do something
        }
    }
}
Removing Event Listeners

package mygame
{
    import flash.display.Sprite;

    public class MyClass extends Sprite
    {
        public function MyClass()
        {
            addEventListener(MouseEvent.MOUSE_CLICK, click)
        }

        public function click(event:MouseEvent):void
        {
            removeEventListener(MouseEvent.MOUSE_CLICK, click)
        }
    }
}
package mygame
{
    import flash.display.Sprite;

    [Embed(source='image.png')]
    private var background:Class;

    public class MyClass extends Sprite
    {
        public function MyClass()
        {
            var image:Bitmap = new background();
            addChild(image);
        }
    }
}
Summary

- Flash is pretty easy
- However, some peculiarities