CSCI 1106
Lecture 07
High Level Game Design
Announcements

• Today’s Topics
  – The Game Design Project
  – High-level game design
    • The Unifying Theme
    • The Game Story
    • Game Mechanics
Your Mission: Write a Video Game

• Come up with an idea for a game
• Design the game
• Implement the game in Scratch
  – If it is not a first-person action game, be sure to clear it with the instructor first!
• Test and polish your game
• Create a user manual for the game
• Create a technical manual for the game
Design Considerations

• What is the theme and objective of the game?
• How will the player move?
• How will the player win and lose?
• How will the player know how well they are doing?
• How will additional levels differ?
• How will you communicate the purpose, rules, and controls of the game?
## Project Evaluation

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>No game.</td>
</tr>
<tr>
<td>D</td>
<td>Sprites are moving on the stage, some interaction between sprites but game is not playable.</td>
</tr>
<tr>
<td>C-</td>
<td>Player movement is successfully added to the game.</td>
</tr>
<tr>
<td>C</td>
<td>The game tracks collisions between the player and game objects and responds to them.</td>
</tr>
<tr>
<td>C+</td>
<td>The game has a clear objective (including the use of positive and/or negative game objects).</td>
</tr>
<tr>
<td>B-</td>
<td>The player is able to easily track their progress through the game (in the form of points or some other measure / approach).</td>
</tr>
<tr>
<td>B</td>
<td>Winning and losing the game are both possible and the game rules, purpose and how to play are clearly communicated to the player.</td>
</tr>
<tr>
<td>B+</td>
<td>The game includes multiple levels that increase in difficulty.</td>
</tr>
<tr>
<td>A-</td>
<td>The game has some polish (looks OK) and includes audio effects.</td>
</tr>
<tr>
<td>A</td>
<td>The game is polished (looks good) and has some interesting special effects.</td>
</tr>
<tr>
<td>A+</td>
<td>The game is highly polished (looks really good) and is compelling.</td>
</tr>
</tbody>
</table>

To achieve a certain grade you must also have all of the features of the lower grades.
Deliverables

• The game: .zip file
• The user manual (3 pages)
• The technical manual (7 pages)
• Presentation of your game during the presentation period

• The .zip file must be submitted via prof1106@cs.dal.ca of **February 13** before your presentation period
• All deliverables are due
  – On **February 24**, 2014
  – In hard copy (in class)
The User and Technical Manuals

User Manual
• Contents:
  – Title page with screenshot
  – Game overview
  – Rules
  – How to play
• 3 pages, 11pt font
• Worth 20% of the written component
• Templates are available on course website
• Rubric is in the project specification

Technical Manual
• Contents
  – Title and Authors
  – Introduction
  – Description of Concept
  – Description of Sprites
  – Description of Stage
  – High-level Description
  – Description of Important Scripts
  – Description of Artwork and Sound
  – Future Work
• 7 pages, 11pt font
• 80% of the written component
High-Level Game Design

• Game Elements
  – Story
  – Mechanics
  – Technology
  – Aesthetics

• Idea: The elements work together to create a unifying theme in the game
Unifying Theme

• What experience do you want to convey?
  – e.g., pirate life, civilization simulation, a wild west adventure

• Structure your story and mechanics to reinforce your theme

• Examples:
  – Wild west
    • Lots of primitive actions
    • Lots of chance
    • A simple backstory
  – Civilization
    • Mostly strategic actions
    • Some chance, with medium small affects
    • An epic story
The Game Story

• There’s nothing like a good story to pull you in...
• A story is composed of:
  – A "world"
    • A place with consistent properties
    • e.g. physics, magic, culture, etc.
  – Characters
    • Individuals with likes/dislikes, personalities, and goals
    • Stock Characters: e.g. soldiers, clerics, plumbers
  – A quest
    • Why are we/they here?
• The story immerses the player
  – Transports them into the “world”
  – Whets the interest of the player (first 100 pages)
• Separates great games from ok games
Story Considerations

• Depth
  – How detailed or grand is the story to be?
  – Epic? (Star Wars)
  – Simple backstory? (Angry Birds)

• Delivery
  – How is the story communicated to the player?
  – Prologue? Snippets? Chapters?
  – Does the player choose the direction of the story?

• Pacing
  – Rate of story telling corresponds to speed of the game
Game Mechanics

• Idea: Use game mechanics to
  – Implement the game story
  – Support the unifying theme of the game

• Game mechanics comprise
  – Rules
  – Environment
  – Actions
  – Chance (Randomness)
  – Skills
Game Mechanics: Rules

• Written rules of play (what happens when I...)
  – User manual
  – Game code

• Unwritten rules
  – Etiquette
  – Sportsmanship

• Object of the game (how do I win the game)
  – Clear
  – Achievable
  – Rewarding/Fun
Game Mechanics: Environment

• Spaces
  – Discrete or continuous?
  – Boundaries?
  – Nested Spaces?

• Number of players
  – Computer
  – Human

• Physics
  – Interaction of objects
Game Mechanics: Actions

• Primitive Actions (private’s view)
  – Moving the player
  – Shooting

• Strategic Actions (general’s view)
  – Protecting a zone
  – Ambushing

• Most games require combination of both types of actions
Game Mechanics: Chance

• Adds a surprising or unexpected elements
  – The so called "secret of fun"

• Consider how probabilities will factor into the play over the duration of the game
  – Power-ups
  – Density of projectiles

• Some predictability is useful! Why?

• The “chance trade-off”
  – A lot of randomness: game is about tactics, short term
  – A little randomness: game is about strategy, long term
  – Good games have the right mix
Game Mechanics: Skills

• Idea: The right amount of challenge will keep the player interested

• Three types of skills:
  – Physical Skills
    • Strength, dexterity, coordination, and endurance
    • E.g. How fast can I hit that button?
  – Mental Skills
    • Memory, observation, and problem solving
    • E.g., The answer is ...
  – Social Skills
    • Reading and fooling opponents
    • Coordinating with teammates

• Many successful games combine skills from multiple categories
Modeling Game Mechanics

• How do we depict what happens in our game?
• Need to model
  – Actions: human and computer
  – States of the characters and objects
  – Rules as a result of actions
• Idea: Use state transition diagrams
  – E.g., Mario eats a mushroom
  – E.g., Mario gets hit
Game Genres

• Idea: A set of stock (standard) mechanics that are used by similar games is called *genre*

• Examples:
  – Card games
    • Take turns playing cards
    • Rules govern what the cards mean and who wins
  – Racing games
    • Drive a vehicle on a race course
    • Get across
  – First-person shoot-em up

• Right choice of genre supports the unifying theme