CSCI 1106
Lecture 18

High Level Game Design

Announcements

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

• Come up with an idea for a game
• Design the game
• Implement the game in Flash
  – You should use the provided game template
  – You do have the option of not using the template
  – 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

Provided Game Template

• aidRunner.fla - This is the main file for the game, containing all graphical objects.
• Main.as - This is the code to run the game. It is linked to aidRunner.fla.
• Level1.as - This is the code to run the first level of the game.

• Can be downloaded from course website
Example of the Template

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 changes made to the game.</td>
</tr>
<tr>
<td>D</td>
<td>Some modifications were made to the original project files but the game is still 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: .swf file
- The user manual (3 pages)
- The technical manual (7 pages)
- Presentation of your game during the presentation period

- The .swf file must be submitted via the course website by 8:35am of your presentation period
  - Section B01: December 4, 2012
  - Section B02: November 30, 2012
- All deliverables are due
  - on 8:35am, December 5, 2012
  - In electronic copy (via course website)
  - In hard copy (at the instructor’s office [CS 208])
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

Technical Manual
- Contents
  - Title and Authors
  - Introduction
  - Description of aidRunner.fla
  - Description of Main.as
  - Description of Level1.as
  - Additional sections describing additional AS files
  - Future Work
- 7 pages, 11pt font
- 80% of the written component

- Templates are available on course website
- Rubric is in the project specification

High-Level Game Design

- Game Elements
  - Mechanics
  - Story
  - Technology and 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 foiling 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