Game Design Document

CSC404 Supplemental Notes
The Design Document

- The design document describes all aspects of your game, without actually creating code.
  - Acts as a contract between designer and client.
  - Also acts as a blueprint for future developers.
From Software Engineering

- Based on the idea that computer scientists should create software the way architects create buildings.
  - **Understanding** of what the software will do.
  - **Analysis** of the necessary software components.
  - **Planning** of the development of each component.
  - **Coordination** of the team and the development.
Software Design Documents (SDDs) in the game industry often outline the following:

- High level summary.
- Background on project domain (definition of terms, etc).
- The game requirements, and how to achieve them.
- Constraints (both technical and non-technical).
- Development procedures and coding guidelines.
- Languages and tools that will be used.
- Definitions of variables and a description of their usage.
- Logical structure and logical processing steps.
- Error, alarm and warning messages.
- Performance & reliability.
The Game Design Document

HOW TO CREATE A MODERN GAME DESIGN DOCUMENT
Design Doc Requirements

- Your design document must have:
  - A description of your game
  - A description of your team
  - Gameplay description
  - Character designs
  - Level designs
  - Music & sound design
  - Control flow diagrams
  - Development timeline
Game Description

- Start with the pitch of your current game.
- Elaborate with more details:
  - Aesthetics (reference samples > mood boards)
  - Dynamics (player experience)
  - Controls (player actions, interface devices, etc)
  - Inspiration (reference specific mechanics from specific games)
Team Description

- For each team member, state the strengths and the areas of responsibility.
  - Remember that these roles indicate who takes the lead for certain game elements.
  - The entire team must work on the entire game!
Gameplay Description

- How is the player meant to play the game?
  - Overall game arc
  - Player goals, as tied to the mechanic
    - Find the keys, light the cauldrons, etc.
  - Mechanism that the player uses to achieve these goals.
  - What are the main fun elements?
  - What else will make this fun?

- Illustrations help tell this story.
Character Designs

- Player character (detailed)
- Non-player characters (less detailed)
- Character development systems (stats, powerups)
- Other level assets
  - Items that are key to the gameplay.
- More than just sketches, please!
  - Prove that you can make these.
Level Design

- Invest time here.
  - Overall level progression.
  - Show the purpose of each level, and how these levels introduce skills and build up the experience.
  - Show the thought and polish you’ve put into your level designs.
    - Be sure you can make them!

5-minute paper sketches do not inspire confidence.
Music & Sound Design

- What are the music and sound elements that your game will feature?
  - If you’re not all in constant contact, this is a good time to set up an agreed mode of communication.
Control Flow Diagrams

- Do you have a levelling system?
  - Show how the progression works.
- Do you have a puzzle to solve?
  - Show how the player needs to solve it.
- Do you manage a complex set of inputs?
  - Show how these inputs come together.
Development Timeline

- Assign somebody (usually team lead) to coordinate development from the GDD to the playable prototype.
  - Set up SMART goals for everybody on the team.
  - Have the team commit to these goals.
- Always have something playable.
  - Take lessons from the game jams. Don’t assemble all the parts just before the next presentation!
- Work on things that are easy and important first, with a priority on important.
General GDD considerations

- The #1 item when creating a document:
  
  * Do not approach any document like a checklist.
  * The list items on the previous page are a reminder of what you need, not a linear set of instructions to follow.
  * There has to be a sense of flow and cohesion.

- The #2 item when creating a document:
  
  * Create the document with your reader in mind.
  * Should answer all questions on how to create the game.
Example
Game Design
Presentation
Rocket Launcher

- Game starts with general game options:
  - Instructions & controls.
- Gameplay is broken down into the following stages:
  - Adjust rocket speed and angle.
  - Perform launch simulation.
  - Player can choose to replay or return to main menu.
Level Design

- Each level is made up of a starting planet (Earth), a highlighted target planet, and several intermediate planets.
- Players are given a chance to observe the planets’ movements before launching.
Gameplay Outline

- 10 levels total.
- When players click on “Launch”, the rocket takes off at the specified angle and speed.
- As the trajectory approaches the planets in the field, the movement is affected by the equation for universal gravitation:

\[ F_g = G \frac{m_1 m_2}{d^2} \]
Score breakdown

- Score is awarded as a sum of time and proximity factors:
  - Each 50 ms of travel time adds 1 point to the overall score.
  - Traveling within 1000 km of a planet increases score by 10 for every 50 ms spent close to planet.

- Level is cleared if target planet is reached, and score is over 100 points.
  - Stars are awarded for every 25 points above 100, to a maximum of three stars.