

Product Design Specification

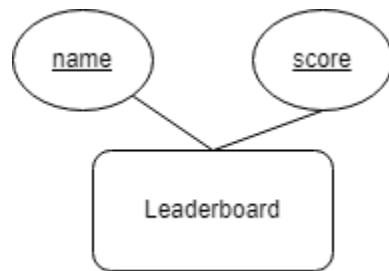
Team/Project info

- **Project Title:** Jump and Launch
- **Team Name:** JAL (Jump And Launch)
- **Team Members:** Jonathan Thomas, Minh Anh Ton, Logan Joven
- **Why the team is named:** Combined our initials
- **Backend/frontend technology:** Unity, C#
- **List of specific tasks (per person):**
 - **Jonathan:**
 - GitHub for the website and Unity of the project
 - Movement for playable characters in Unity
 - Movement for moving platforms and triggers
 - Game mode 3 (CO-OP)
 - **Anh:**
 - Work on the platform (Sprite Shape)
 - Movement for playable characters in Unity
 - Minor transition scenes like title, tutorial, saving score, game mode picker, customizing character, scoreboard, etc...
 - Sprite designs and beautifies the website
 - Game mode 2 (PONG)
 - **Logan:**
 - Connecting Unity to the database
 - Split screen camera for things like game mode 1 and tutorial
 - Game mode 1 (Race to the Top)

Project Description

- **End Product Description:**
 - The end product will be a game hosted on itch.io. Users will be able to play our game anytime as long as they have access to itch.io. User can play the game and check their high score that is saved locally.
 - If the user chooses to play the game they will be greeted with a Unity game on the itch.io page and can play with one other friend
 - Player 1 will use WASD and Player 2 will use arrow keys for their movement and action buttons (S and down arrow keys)
 - Players can then customize their character from the start screen of the game
 - Once they are done customizing, they can then pick out a map they would like to fight their friend in and start the game
 - Two players will then be placed on their chosen map and fight it out
 - Scores will then be recorded after the game ended
 - If the user chooses to check their high score
 - They will be greeted with a long table showcasing all recorded users' high scores, with the highest score up top

- **ERD for Leaderboard**



- **Product Mockup in Adobe XD** ([Link](#))
- **Algorithms/ML/AI schemes used in the core engine:**
 - **Leaderboard:**
 - Access the table to check what position in the leaderboard your score would be
 - Time complexity: $O(n)$
 - **SortScore:**
 - Sorting scores on the leaderboard where it's higher score first
 - Time complexity: $O(n * \log(n))$
 - **Characters' movement:**
 - WASD and arrow keys for movement
 - If the user presses (key) then ...
 - Time complexity: $O(1)$
- **Market space for application and selling point:**
 - The nostalgia aspect, similar to the old 2 player Flash games, will draw people in
 - The game also offers competitive gameplay that 2 people can play on the same device

Functional specifications

- **Complete list of the product features:**
 - **Multiple levels**
 - There will be at least 2 different platform levels where the maps are copies of each other and placed side by side
 - **Player vs player** (Multiplayer 10% Bonus)
 - Player 1 will use WASD movement and Player 2 will use arrow keys
 - Levels will be split into two and the players will race each other to the "finish line"
 - **Save states**
 - Scores can be saved
 - **Sprites** (pixel art)
 - Custom-made sprites (not ai generated)
 - **Sounds**
 - Basic sound effects for character movements and shooting etc...

Deployment

- **Describe how to develop your Flask project:**
 - **Itch.io:** deployment full game for ease of use/test

List of features that will be accomplished in the following milestones:

- **M1 (2/6 - 2/15):**
 - All document details, product specifications, Adobe XD Prototype, and Setting up code and game engine
- **M2 (2/20 - 2/29):**
 - Set up basic movements and platforms
- **M3 (3/5 - 3/14):**
 - Set up game mode 1, Check that Unity works on the itch.io
- **M4 (3/19 - 3/28):**
 - Set up game modes 2 and 3, add minor transition scenes and scoreboard
- **M5 (4/2 - 4/11):**
 - Finish up all three game modes
- **M6 (4/16 - Finals):**
 - Beautify the website, minor adjustments, and testing