Product Design Specification

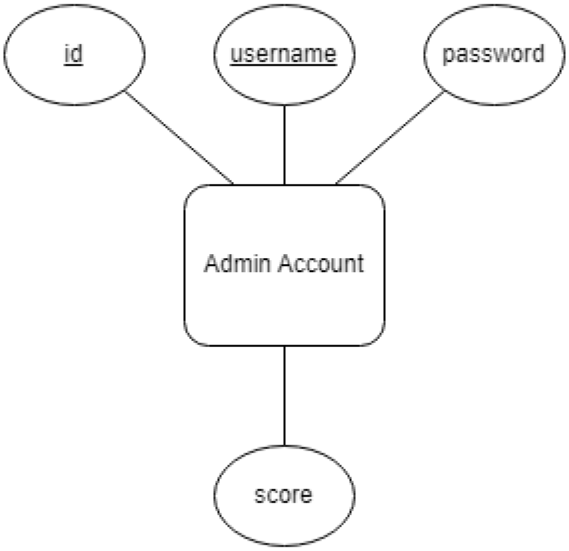
Team/Project info

- **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#, Svelte/Tailwind, Python, Flask
- **List of specific tasks (per person):**
  - **Jonathan:**
    - GitHub for the website and Unity of the project
    - Admin account
    - Movement for playable characters in Unity
  - **Anh:**
    - Mockup Adobe XD
    - Setting up the Gaming Engine side
    - Work on the platform (Sprite Shape)
    - Movement for playable characters in Unity
    - Beautify the website
    - Starting screen
    - Level and sound designer
  - **Logan:**
    - Sprite design and animation
    - Connecting Unity to the database

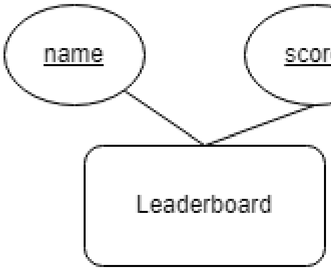
Project Description

- **End Product Description:**
  - The end product will be a website to host our game. Users will be led to a home page that will feature your Jump And Launch game. User can then either play the game and check their high score.
    - If the user chooses to play the game they will be greeted with a Unity game on the home 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 Admin Account



- **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
    - **Animations and sprites** (pixel art)
        - Basic animation for characters moving, shooting, and getting hit
    - **Sounds**
        - Basic sound effects for character movements and shooting etc…

Deployment

- **Describe how to develop your Flask project:**
    - **Heroku**: deployment for the full Flask application and will function as a database of high scores for the Unity game to request scores from
    - **Itch.io**: deployment for game only

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):**
    - Based on movement and platform, set up the backend scoreboard
- **M3 (3/5 - 3/14):**
    - Store user’s basic data in the database, Set up Lvl 1, Add power-up mechanics, Check that Unity works on the website
- **M4 (3/19 - 3/28):**
    - Lvl 2 & 3, add more customization for characters, and power-ups
- **M5 (4/2 - 4/11):**
    - Beautify the website and add a starting screen
- **M6 (4/16 - Finals):**
    - Minor adjustments and testing