**TP0: Project Proposal**

**Project Proposal Components**

**Project Description (2.5 pts):**

Name: Fireboy & Watergirl 2.0

Short description: Creating a cooperative two-player game inspired by Fireboy & Watergirl, where players must collaborate to solve puzzles and progress through levels. Different from the original version of the game, the 2.0 version will be divided into a cooperative mode and a confrontation mode.

Cooperative mode: Similar to the classic mode of a game. (Cooperate to solve the mystery, and complete the level)

Confrontation mode: The character who scores by character, collects gems and reaches the exit fastest wins. You can also put obstacles in the way.

**Similar Projects (2.5 pts):**

Analysis of similar projects: Fireboy & Watergirl is a well-known cooperative puzzle game. Our project aims to capture the essence of Fireboy & Watergirl's unique mechanics, emphasizing collaborative gameplay and challenging puzzles. My game will take advantage of what I have learned in this semester 112 and divide it into two modes: cooperative mode and confrontation mode.

Cooperative mode: Using time control, mouse function and key function.

Confrontation mode: Fraction stored, role choices, more interaction.

**Structural Plan (2.5 pts):**

Overview of project organization: The project will be organized into SIX main components: player module, level design module, user interface module, game logic module, audio module ,and graphics module.

**1. Player Module:**

Description: This module manages the characters, Fireboy and Watergirl. Each character will have attributes such as position, health and so on.

Functions:

Player Classes: Fireboy Class: Manages the attributes and actions of the Fireboy character.

Watergirl Class: Manages the attributes and actions of the Watergirl character.

Direction: Handles player movement in response to user input.

Gravity: Set jump height and curve according to gravity

collide: Checks for collisions with obstacles in the game world. (push the box forward and bounce off the wall)

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**2. Level Design Module:**

Description: Responsible for creating and managing game levels. This module includes the layout, obstacles, puzzles, and objectives. (How to add Algorithmic complexity in this module ?) random generative level? enemies? Time limits? Cooperative or Adversarial mode?

Functions:

level: Random generate level & easy/hard mode.

Start/Over: Game completion conditions.

Dragging mouse (): Drag the "elf" in the level to help complete the level.

Obstacles: Defines obstacles such as walls, platforms, and doors.

Collectibles: Specifies items that players need to collect to progress.

time limits: Minimum clearance time limit and best clearance record will be stored. Game can be paused in the middle.

(In adversarial mode -- Score: Keeps track of individual player scores.)

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**3. Game Interface Module:**

Player Health: Displays the health status of Fireboy and Watergirl.

Score Display: Shows the current score of each player.

Game Over Screen:

Result Message: Displays whether the players won or lost.

Restart Button: Allows players to restart the current level.

Pause Menu:

Resume: Resumes the game from the paused state.

Main Menu: Takes players back to the main menu.

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**4. Game Logic Module:**

Cooperative Actions:

Lever Activation: Requires both players to activate certain levers to open doors.

Switches and Pressure Pads: Cooperative actions needed to trigger events.

Puzzle Solving:

Elemental Challenges: Introduce puzzles related to Fire and Water elements.

Synchronization: Challenges that demand players to synchronize their actions.

Enemy Interaction:

Obstacle Avoidance: Players need to avoid enemies or find ways to defeat them.

Dynamic Elements: Animated elements like moving platforms or flowing water.

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**5. Audio Module:**

Description: Enhances the gaming experience with sound effects and background music.

Functions:

Sound: Triggers specific sounds during gameplay events.

Track: Manages the background music throughout the game.

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**6. Graphics Module:**

Description: Utilizes the cmu\_graphics framework to render the game environment and characters.

Functions:

Render: Draws the current game scene on the screen.

Animate: Implements animations for player movements and interactions.

These modules provide a foundation for your Fireboy & Watergirl-inspired game. You can further expand and customize each module based on the unique features and challenges you want to include in your game. Feel free to get creative with the level design, introduce new obstacles, and design exciting cooperative gameplay elements!

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**Algorithmic Plan (2.5 pts):**

Approach to tricky parts: The most challenging aspect involves handling player interaction with the environment. We plan to implement collision detection algorithms to check for obstacles and create a cooperative action system between players for solving puzzles.

**Timeline Plan (2.5 pts):**

**Milestones and deadlines:**

11/20 - 11/24: Project Initialization

·Set up project structure

·Create player classes

11/25 - 11/27: Basic Functionality Implementation

·Implement basic level design

·Integrate player movement

11/28 - 12/01: Cooperative Gameplay Features

·Add features that require player collaboration

·Conduct initial testing for functionality and bug fixes

·Achieve MVP!

**Version Control Plan (1.5 pts):**

Description of version control usage: Use Git for version control, storing the code in a GitHub repository. Regular commits will be made to track changes, and backups will be stored in the cloud for added security.

**https://github.com/Qiqicoder/Fireboy-Watergirl-2.0**

**Module List (1 pt):**

After MVP, I would like to try:

1. Sockets to do my Two-player game interaction
2. AI function to achieve Man-machine combat and cooperation

**TP2** **Updated (1 pt):**

Nothing.

**TP2** **Updated (1 pt):**

Separate into App module, Character module, Button module, Obstacles module right now.

Move all things related to app to a App module and import everything else in it.