Assignment : Your first full game (10%)

Due date : Octobre 11 2024
Individually

This assignment tasks you to make a simple platformer

> **You need to create an assignment repo by going to https://classroom.github.com/a/r_MuQ12h and clone the template.**

1. Menu System

- **Main Menu:**
  - **Play Button** → Loads the **first level**.
  - **Quit Button** → Exits the game.
- **Pause Menu:**
  - Players can **pause/unpause the game** using the **Escape key**.
  - The **pause menu** should allow players to:
    - Resume the game.
    - Restart the level.
    - Quit to the main menu.
- **End Screen:**
  - Displays the **final score**.
  - **Restart Button** → Resets the score and reloads the **first level**.

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2. Player Mechanics

- **Basic Movement:**
  - The player can **walk, run, jump, and double jump**.
  - **Shift key** toggles **Run**.
  - **Spacebar** triggers **Jump**.
  - **Double Jump** plays a **Flip animation**.
  - Double Jump can only trigger while in mid-air and the player has the power up active.
- **Animations:**
  - Uses **BlendSpace** for smooth transitions between **Idle, Walk, and Run**.

    - Double Jump should have a **special animation effect** like a sound or a particle effect when you do the animation.

- **Power-ups:**
    - **Speed Boost Pickup (Orange Pickup)** → Increases movement speed for **5 seconds**.
    - **Jump Boost Pickup (Blue Pickup)** → Enables **Double Jump** for **30 seconds**.
    - **Score Pickup (Green Pickup)** → Adds **50 points**.
    - Pickups should:
        - **Hover and rotate**.
        - **Disappear when collected**.
        - Trigger a **particle effect** upon collection.

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3. HUD & UI

- **Score Display:**
    - Score must always be visible in the **top-right corner**.
    - At the end of the game, the **final score** must be displayed.
- **Health System:**
    - The player should have **3 health points**.
    - **Colliding with a Red Trap removes 1 health point**.
    - If the player **loses all health**, the level **restarts**.
- **Timer System:**
    - A **timer should count up** from **0**.
    - When the player finishes the game, the **final time is displayed**.

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4. Game Structure & Progression

- **Levels & Scene Transitions:**
    - The game should contain **at least 4 levels**.
    - Each level must have a **physical end goal object** (e.g., portal, door, checkered flag).
    - **Interacting with the end goal** should transition the player to the **next level**.
    - The **final goal object** should lead to the **end screen**.
- **Traps & Challenges:**

  - **Red Traps** reduce health by **1 point**.
  - Falling off the level **resets the level** and reduces health.
- **Game Manager:**
  - The **Game Manager should be a Singleton**.
  - It should **retain the score** across levels.
  - The **Game Manager must NOT be destroyed when loading new scenes**.

How to submit your project :

1. Submit your changes on Github.

Grading Criteria

Category	Points	Details
Menu System	10	Play, Quit, Pause Menu, End Screen (score + restart).
Player Mechanics	20	Movement, Jump, Double Jump (with power-up), Animations using BlendSpace.
HUD & UI	10	Score display, health system, timer functionality.
Game Progression	20	At least **4 levels**, **physical end goal objects**, proper scene transitions.
Pickups & Power-ups	15	**Speed, Jump, and Score pickups**, hover & rotate, disappear & reappear.
Traps & Death System	10	Red traps remove health, falling restarts level, Game Manager retains score.
Code Structure	10	Uses **separate scripts**, Singleton for Game Manager, AnimationController used correctly.
Polish & Optimization	5	Smooth transitions, clear UI, minimal bugs.
TOTAL	**100**	-