Project 1 - Coin Dash
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HOW TO PLAY THE GAME
In this 2D multiplayer coin-collecting game, two players compete to gather the most coins before time runs out or both players die.

- **Controls**:
  - *Player 1* (darker red character): Uses the arrow keys
  - *Player 2* (lighter blue character): Uses AWSD keys
- **Objective**:
  Players race around the screen to collect coins, while avoiding cacti obstacles. Each coin is worth 1 point, and starting in the second round, a special large coin worth 5 points will spawn. However, the players only have 1 second to collect the large coin before it disappears.
- **Powerups**:
  Starting in the second round, a powerup that increases speed and velocity by 50% will appear. This powerup lasts for 2 seconds. The powerup is a green coin, and the players have 1 second to collect it before it disappears.
- **Game Timer**:
  The game starts with a 30-second timer. Each time the players reach a new level, 5 seconds are added to the timer.
- **Game Over and Revival**:
  If one player dies during a level but the other reaches the next level, the dead player will be revived. The game ends when both players die or the timer runs out.
- **Winning**:
  The player with the most coins at the end of the game wins, and the HUD will display a message announcing the winner. It is also possible for the game to result in a tie.

PLAYTESTING RESULTS
The playtesting phase revealed that the game operates smoothly and is engaging, with clear and straightforward objectives and rules.

- **Gameplay Experience:**
  The game is simple and intuitive, with obvious goals and rules. The core

mechanics of collecting coins and avoiding cacti are easy to grasp, and the game maintains a good balance of challenge, making it fun and appropriately easy for players.

- **Challenges with Two-Player Mode:**
Transitioning the game to support two players introduced several challenges. Signals, which manage interactions between game objects, became more complex, particularly when syncing actions between Player 1 and Player 2. To overcome this, I created a new instance of Player 2 with a slightly modified script but kept it connected to the same signals as Player 1. This adjustment improved the synchronization and overall performance of the two-player experience. Beforehand, each player's scores and sound effects would not properly sync.

- **Powerup and Large Coin Duration:**
The duration for which the large coin and powerup appear in each level is an area that I think needs modification. The brevity of the current appearance times creates urgency and excitement, but fine-tuning these durations based on player feedback could lead to more balanced gameplay.

- **Game Ending Mechanics:**
Originally, the game was set to end when a single player died, which resulted in shorter gameplay. To improve the experience, I changed the logic in the main script so that the game now ends only when both players die or the timer runs out. This change intensifies the competition and makes the gameplay longer.

- **Bug Fixes:**
While playtesting, I encountered an issue where a cactus will occasionally spawn on top of a player at the beginning of a new level, and unfairly kill them. I addressed this by updating the spawn_cacti() function to check for the players' positions before spawning in cacti, which has significantly reduced the frequency of this bug.

CHANGES BETWEEN PHASE I AND PHASE II

Several key adjustments were made between Phase I and Phase II of development:

- **2-Player Mode**:
  - Added a Player 2 instance with different controls and visuals (Player 1 has a red tint #ff9397, Player 2 has a greenish tint #d2f4be).
  - Introduced a revival mechanic, where a dead player is brought back to life if the other player survives to the next level.
  - The game ends when both players die in the same round.
  - Added text to the HUD to announce the winner at the end of the game.

- **Powerups**: A new speed-boosting powerup was added that increases player movement and velocity by 50% for 2 seconds.
- **Big Coin**: A larger coin worth 5 points spawns starting in the second round.
- **HUD/UI Improvements**:
  - Score and time reset when the start button is clicked, no longer waiting for the first coin to be picked up.
  - Time and score display sizes were reduced for better visibility.
- **Visual Enhancements**:
  - The background was changed to a warmer yellowish hue (#ffd063) for better contrast and aesthetic appeal.
- **Bug Fixes**: Improved a bug where cacti could spawn on top of the player at the end of a level, killing them unfairly.