**Game Development Project using Unity and C#**

**Ball Blitz** is an endless runner game where players control a ball that navigates a bridge filled with obstacles. The objective is to travel as far as possible without hitting any obstacles or falling off the platform. When the ball hits an obstacle or falls, the game restarts. Developed using Unity, "Ball Blitz" leverages the engine's powerful features to deliver smooth gameplay and engaging visuals.

**Game Features**

* **Gameplay**: The game continues until the player hits an obstacle or falls.
* **Obstacles**: Obstacles are placed at varying intervals and positions to challenge the player.
* **Seamless Restart**: Quick game reset to keep the player engaged.
* **Score Tracking**: The player's score is based on the distance traveled.

**Technical Aspects**

**Core Mechanics**

* **Player Movement**: Smooth and responsive ball movement.
* **Restart Mechanism**: Immediate reset of the game state upon collision or fall.

**Gameplay Features**

* **Power-ups**: Temporary abilities such as increased speed or invincibility.
* **Scoring System**: Points awarded based on distance, obstacles avoided, and power-ups collected.
* **Difficulty Progression**: Increasing challenge with faster speeds and new obstacles.

**Visual and Audio Design**

* **Graphics**: High-quality environments and obstacles with Unity's lighting and shading.
* **Sound Effects and Music**: Engaging sound effects and background music.

**User Interface**

* **HUD (Heads-Up Display)**: Displays live score as well as high score

**Performance Optimization**

* **Efficient Coding**: Optimized scripts for smooth performance on various devices.

**Testing and Debugging**

* **Playtesting**: Extensive testing to identify and fix bugs, balance gameplay, and ensure a smooth experience.

**Deployment**

* **Platform Compatibility**: Smooth gameplay on different platforms (PC, WebGL, etc.) with appropriate controls.

**Future Enhancements**

* **New Power-ups**: Adding more diverse power-ups with unique abilities to enhance gameplay.
* **Level Design**: Incorporating different levels or themes to add variety and keep the game interesting.
* **Customization**: Allowing players to customize the appearance of their ball and environment.

The project hierarchy in Unity is organized as follows:

* **Main Camera**: The camera that follows the player and renders the game view.
* **Directional Light**: Provides lighting to the scene.
* **Ground**: The platform on which the player navigates.
* **Player**: The ball controlled by the player.
* **GameManager**: Manages game states, including restarting the game.
* **EventSystem**: Handles input events in the game.
* **Obstacles**: Dynamic obstacles that appear on the ground.
* **Canvas**: UI elements of the game, including score tracking.
  + **ScoreParent**: Parent object for score-related UI elements.
    - **Score**: Displays the current score.
    - **HighScore**: Displays the highest score achieved.

**Assets**

The project assets are categorized as follows:

* **Materials**:
  + **Ground Materials**: Textures and materials applied to the ground.
  + **Obstacle Materials**: Textures and materials applied to obstacles.
  + **Player Materials**: Textures and materials applied to the player ball.
* **Scenes**:
  + **Game Scene**: The primary scene where the game is played.
* **Scripts**:
  + **FollowPlayerScript**: Controls the camera to follow the player.
  + **GameManager Script**: Manages game states, including restarting the game.
  + **PlayerCollision Script**: Handles collision detection between the player and obstacles.
  + **PlayerMovement Script**: Manages the movement mechanics of the player ball.
  + **Score Script**: Manages score calculation and display.
* **Audio**:
  + **Background Music**: The music that plays during the game to enhance the player's experience.

**Scripts Overview**

* **FollowPlayerScript**: Ensures that the camera follows the player, keeping the player in view at all times.
* **GameManager Script**: Handles the logic for restarting the game when the player collides with an obstacle or falls off the platform.
* **PlayerCollision Script**: Detects collisions between the player and obstacles, triggering game state changes.
* **PlayerMovement Script**: Manages the player's directional control.
* **Score Script**: Tracks the player's score based on the distance traveled and updates the UI elements for the current score and high score.

**Additional Information**

* **Background Music**: A continuous audio track that plays throughout the game, providing an immersive experience for the player.
* **Player Movement**
* **Automatic Forward Movement**: The ball moves forward automatically, driven by the game's internal mechanics.
* **Horizontal Movement**: Players can control the ball's horizontal position to avoid obstacles:
  + Press **'A'** key to move left.
  + Press **'D'** key to move right.

**Itch.io Release**

* **Game Upload**: "Ball Blitz" has been successfully uploaded to [itch.io](https://thecreator19.itch.io/ball-blitz).
* **Link**: [Ball Blitz on itch.io](https://thecreator19.itch.io/ball-blitz)