**Game Overview**

* **Title:** Brain Bounce
* **Genre:** Platformer with trivia elements
* **Target Audience:** General
* **Game Description:**
  + This is a 2D platformer game with trivia elements. Players control a character navigating through levels with platforms and obstacles, aiming to reach the exit gate. When players collide with the exit gate, they must answer a trivia question to proceed.

**Gameplay**

* **Game Mechanics:**
  + The game features traditional platforming mechanics such as jumping and horizontal movement.
  + Players navigate through levels while avoiding enemies and utilizing platforms.
  + Trivia questions are presented when the player collides with the exit gate at the end of each level.
* **Game Modes:**
  + Single-player mode only.
* **Progression and Levels:**
  + Players progress through levels by reaching the exit gate.
  + Trivia questions must be answered correctly to advance to the next level.
* **Player Abilities and Skills:**
  + The player can move left and right, jump, and interact with the environment.
  + Players can avoid obstacles and enemies.
* **Controls:**
  + **Movement:** Arrow keys (left and right) to move the character.
  + **Jump:** Spacebar to jump.
  + **Interaction:** Trivia questions answered via keyboard input.

**Sprite List:**

1. **Guy1:**
   * **Role:** The player's character, which the player controls.
   * **Appearance:** Represented by the image "guy1.png".
   * **Size:** The sprite is set to a size of 50x50.
   * **Functionality:**
     + Can move left, right, and jump.
     + Affected by gravity when in the air.
     + Collides with platforms, adjusting position and stopping vertical movement.
     + Interacts with the exit gate and enemies.
2. **Platforms:**
   * **Role:** Structures that the player can jump on and navigate.
   * **Appearance:** Represented by the image "platform.png".
   * **Size:** Each platform is set to a size of 60x30.
   * **Positioning:** Platforms are positioned at different locations to create obstacles and navigation paths for the player.
3. **Ghosts:**
   * **Role:** Enemies that pose a threat to the player.
   * **Appearance:** Represented by the image "enemy.png".
   * **Size:** The sprite is set to a size of 30x25.
   * **Movement:** Ghosts move vertically and reset position if they reach the bottom of the screen.
   * **Interaction:** Colliding with a ghost ends the game.
4. **Exit:**
   * **Role:** The gate that the player must reach to progress to the next level.
   * **Appearance:** Represented by the image "gate.png".
   * **Size:** The sprite is set to a size of 60x60.
   * **Positioning:** The exit is positioned in the top right of the screen.
   * **Functionality:**
     + Colliding with the player presents a trivia question and plays a sound effect.
     + Correctly answering the trivia question allows the player to proceed to the next level.
5. **Buttons:**
   * **StartButton:**
     + **Role:** Allows the player to start the game.
     + **Appearance:** Represented by the image "start\_btn.png".
     + **Size:** The sprite is set to a size of 110x70.
     + **Positioning:** Located in the intro page at a specific position.
     + **Interaction:** Clicked to start the game.
   * **ExitButton:**
     + **Role:** Allows the player to quit the game.
     + **Appearance:** Represented by the image "exit\_btn.png".
     + **Size:** The sprite is set to a size of 110x70.
     + **Positioning:** Located in the intro page at a specific position.
     + **Interaction:** Clicked to exit the game.
6. **Other Sprites:**
   * **Trivia:** A trivia object is initialized and used to generate trivia questions for the player when interacting with the exit gate.

**Story and Characters**

* **Story:**
  + The game features a light story focused on navigating through levels and answering trivia questions. Players aim to progress through the levels to complete the game.
* **Characters:**
  + **Player Character (Guy1):**
    - The player's character controlled throughout the game.
    - Starts each level on a starting platform and navigates to the exit gate.
  + **Enemies (Ghosts):**
    - Ghosts move down from the top of the screen and reset when reaching the bottom.
    - Contact with ghosts causes the player to lose.
* **Supporting Characters:**
  + There are no supporting characters in the game.

**Game World**

* **Setting:**
  + The game world consists of multiple 2D levels with platforms and obstacles.
  + The world includes a variety of environments (e.g., sky, plains, etc.).
* **Enemies:**
  + Ghosts are enemies that the player must avoid during levels.

**Trivia Mechanics**

* **Trivia Questions:**
  + Trivia questions are presented when the player collides with the exit gate.
  + Questions are in multiple-choice format with options A, B, C, and D.
* **Trivia Progression:**
  + Players must answer trivia questions correctly to proceed to the next level.
  + Incorrect answers may prompt players to try again.

**Audio and Visuals**

* **Audio Design:**
  + Background music plays during gameplay.
  + Sound effects include applause and buzzers when answering trivia questions.
* **Visual Design:**
  + The game features simple 2D graphics and sprites.
  + Visuals contribute to a light, casual game atmosphere.

**User Interface**

* **UI Elements:**
  + The user interface includes menus and buttons such as Start and Exit buttons in the intro scene.
  + Trivia questions are displayed in the game.

**Technical Details**

* **Game Engine:**
  + The game is developed using the SimpleGE framework and Pygame.
* **Input Handling:**
  + Keyboard input is used for character movement and answering trivia questions.
* **Music and Sound Effects:**
  + Music and sound effects are handled using Pygame's mixer.

**PSUEDOCODE:**

MAIN FUNCTION:

initialize game\_state as "intro"

initialize game\_level as 0

while game\_state is not "quit":

if game\_state is "intro":

create intro\_scene

start intro\_scene

if intro\_scene response is "play":

set game\_state to "game"

if intro\_scene response is "quit":

set game\_state to "quit"

if game\_state is "game":

create game\_scene

set game\_scene.level to game\_level

start game\_scene

update game\_level from game\_scene.level

if game\_scene is over:

set game\_state to "intro"

print "Game has exited" when loop exits

INTRO SCENE:

initialize scene with background image

create StartButton and ExitButton

add StartButton and ExitButton to scene

process user interactions:

if StartButton is clicked:

set scene response to "play"

stop scene

if ExitButton is clicked:

set scene response to "quit"

stop scene

GAME SCENE:

initialize scene with background image

create Guy1 (player character) sprite

create list of Ghost (enemy) sprites

create list of Platform (platforms) sprites

create Exit sprite and add to scene

add Guy1, Ghosts, Platforms, and Exit to scene

play background music

process game:

handle player movement and interactions

handle enemy movement and interactions

handle collisions with exit sprite and present trivia questions

if player collides with exit sprite:

ask trivia question

if player answers correctly:

increment game\_level

stop scene and proceed to next level

if player answers incorrectly:

handle incorrect answer as desired

GUY1 (PLAYER CHARACTER):

initialize Guy1 image, size, and position

initialize Guy1 state (inAir as true)

process player character:

apply gravity if inAir

handle key presses for movement and jumping

check for collisions with platforms

adjust position and state if necessary

GHOST (ENEMY):

initialize Ghost image, size, position, and speed based on level

move Ghost downward at set speed

process enemy:

check for collisions with player

if collision with player occurs:

handle collision accordingly

EXIT SPRITE:

initialize Exit image, size, and position

process exit sprite:

check for player collisions

if player collides with Exit:

play applause sound

ask trivia question

if player answers correctly:

increment game\_level

stop scene to proceed to next level

if player answers incorrectly:

handle incorrect answer as desired

START BUTTON AND EXIT BUTTON:

initialize button image, size, and position

process button clicks:

if button is clicked:

set appropriate response (play or quit)

stop scene

TRIVIA:

initialize list of trivia questions with answers and choices

get random trivia question:

return random question from list

**GAME ASSETS:**

A cartoon of a landscape

Description automatically generated with medium confidence

Intro page Background Image. plainField.png

<https://opengameart.org/content/background-3>

A blue sky with white clouds

Description automatically generated

Gameplay background Image. sky.png

<https://opengameart.org/content/daytime-background-1024x800>

A logo with white letters

Description automatically generatedA sign with white letters

Description automatically generated

Start\_btn.png exit\_btn.png

<https://opengameart.org/>



Enemy.png

<https://opengameart.org/>

A black and brown rectangular object with a white line

Description automatically generated with medium confidence

Gate.png

<https://opengameart.org/>

**Sound Effects**

Applause sound.

Applause.wav

<https://opengameart.org/content/applause>

Buzzer sound

Buzzer.mp3

<https://pixabay.com/sound-effects/search/wrong/>



Platform.png

<https://opengameart.org/>