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# Initial Python Project Report

## On

# Catch the falling apple game

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## Introduction:

"Catch the Falling Apples" is a simple yet engaging arcade-style game created using Python and the Pygame library. The game involves controlling a basket to catch falling apples and earn points. The user has to move the basket left and right to catch the apples that randomly fall from the top of the screen. The player is given a set number of chances to miss before the game ends. The primary objective is to catch as many apples as possible, avoid missing too many, and level up by achieving higher scores.

The game starts with a main menu that allows players to either start the game or quit. Upon starting, the player controls a basket at the bottom of the screen with the arrow keys. Apples fall from random positions at the top of the screen, and the player must catch them to increase their score. As the game progresses and the score increases, the level rises, and the speed at which apples fall increases. If the player misses too many apples, the game ends, and the player is shown the option to retry or return to the main menu.

## Objective and Scope:

The primary objective of this game is to provide an entertaining and interactive experience by testing a player's ability to react and catch falling objects. The game has different levels, each with increasing difficulty, which keeps the player engaged. The game's scope includes multiple gameplay features like:

- **Levels and Difficulty:** With each level, the speed of the falling apples increases, making the game more challenging.
- **Score Tracking:** Players accumulate points by catching apples. The score is displayed on the screen and serves as a motivation to continue playing.
- **Chances to Miss Apples:** Players are allowed to miss a certain number of apples before the game ends. This adds a layer of strategy and risk management.
- **Sound Effects and Music:** Background music and sound effects (catch-and-miss sounds) enhance the gaming experience by making it more immersive.
- **Pause and Resume Options:** The game includes a pause feature that allows players to take a break if needed.
- **Game Over and Retry Options:** When the player loses, they are presented with options to either retry or return to the main menu.

The scope of this project is limited to the game's functionality in Python using the Pygame library,

and it is intended for single-player use. The game can be expanded by adding multiplayer features, power-ups, and other interactive elements in future versions.

## **Application Tools:**

The tools used to develop the "Catch the Falling Apples" game are:

1. **Python:** Python is a versatile and powerful programming language that is used for a variety of software development purposes. It is simple, easy to learn, and has a rich ecosystem of libraries and frameworks. In this game, Python is used for handling the game logic, player input, and user interface.
2. **Pygame:** Pygame is an open-source Python library used for creating video games. It provides functionalities to create games with graphical displays, handle user input, and manage sound and music. Pygame is used to render the game screen, handle user interactions, and create animations for falling apples and moving baskets.
3. **Graphics:** The game uses custom images for the basket, apples, and background. These images are loaded and displayed using Pygame functions. Image processing techniques such as resizing and scaling are applied to adjust the image sizes for the game screen.
4. **Sound Effects:** The game uses sound effects for various actions such as catching apples and missing them. Pygame's mixer module is used to load and play sound effects. Background music plays continuously during the game to enhance the experience.
5. **Development Environment:** The game is developed in an integrated Python environment like IDLE or any code editor such as PyCharm or VS Code. The Pygame library is installed through the Python package manager pip.

## **Flow Chart:**

The flow of the "Catch the Falling Apples" game can be broken down into several steps as illustrated in the flowchart:

1. **Start Menu:**
  - The game starts at the main menu, where the player can either start a new game or quit.
  - Clicking "Start Game" resets the game state and moves to the gameplay phase.
  - Clicking "Quit" ends the program.
2. **Game Playing:**
  - The game enters the playing state, and apples start falling.

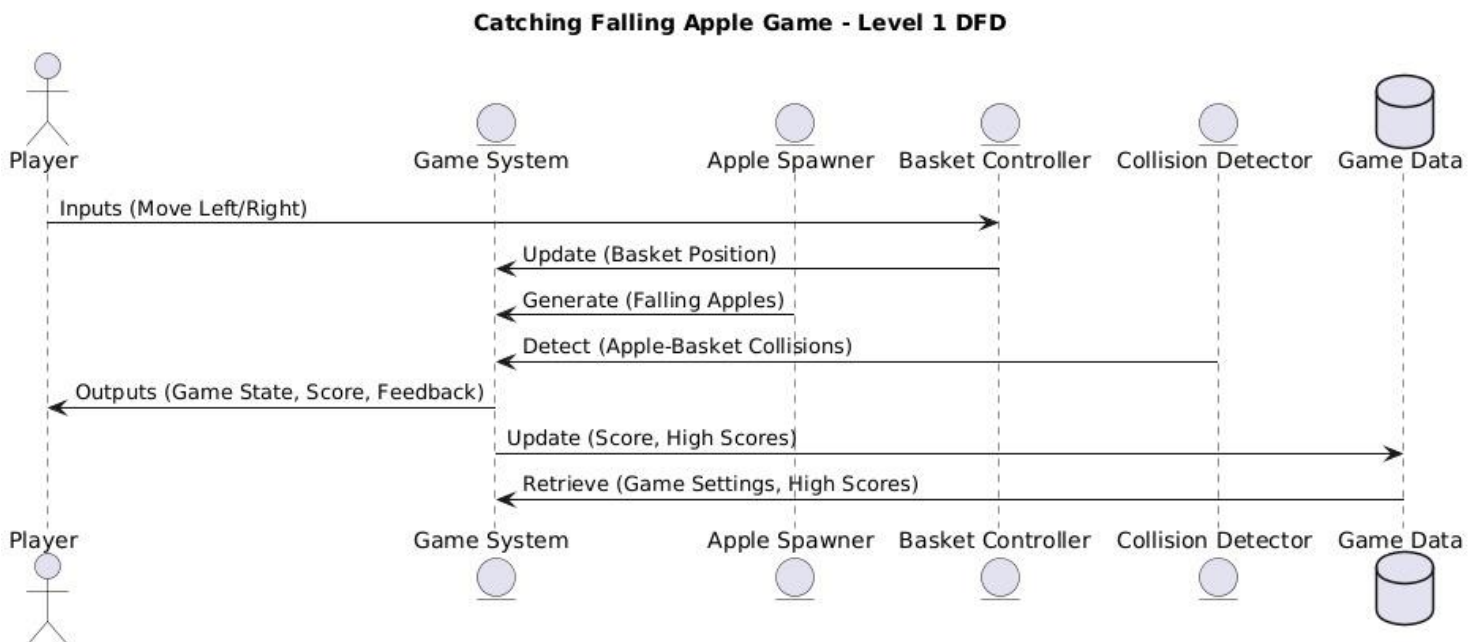
- The player controls the basket using the left and right arrow keys to catch falling apples.
- For each apple caught, the score increases.
- The game tracks missed apples, and the number of allowed misses is limited.
- As the score increases, the level increases, and the apple speed also increases.
- If the player misses too many apples, the game moves to the game-over state.

### 3. Game Over:

- When the game ends, the player is shown the final score.
- The player can either retry the game or return to the main menu.

### 4. Pause Option:

- The player can pause the game at any time, and then either resume or return to the main menu.



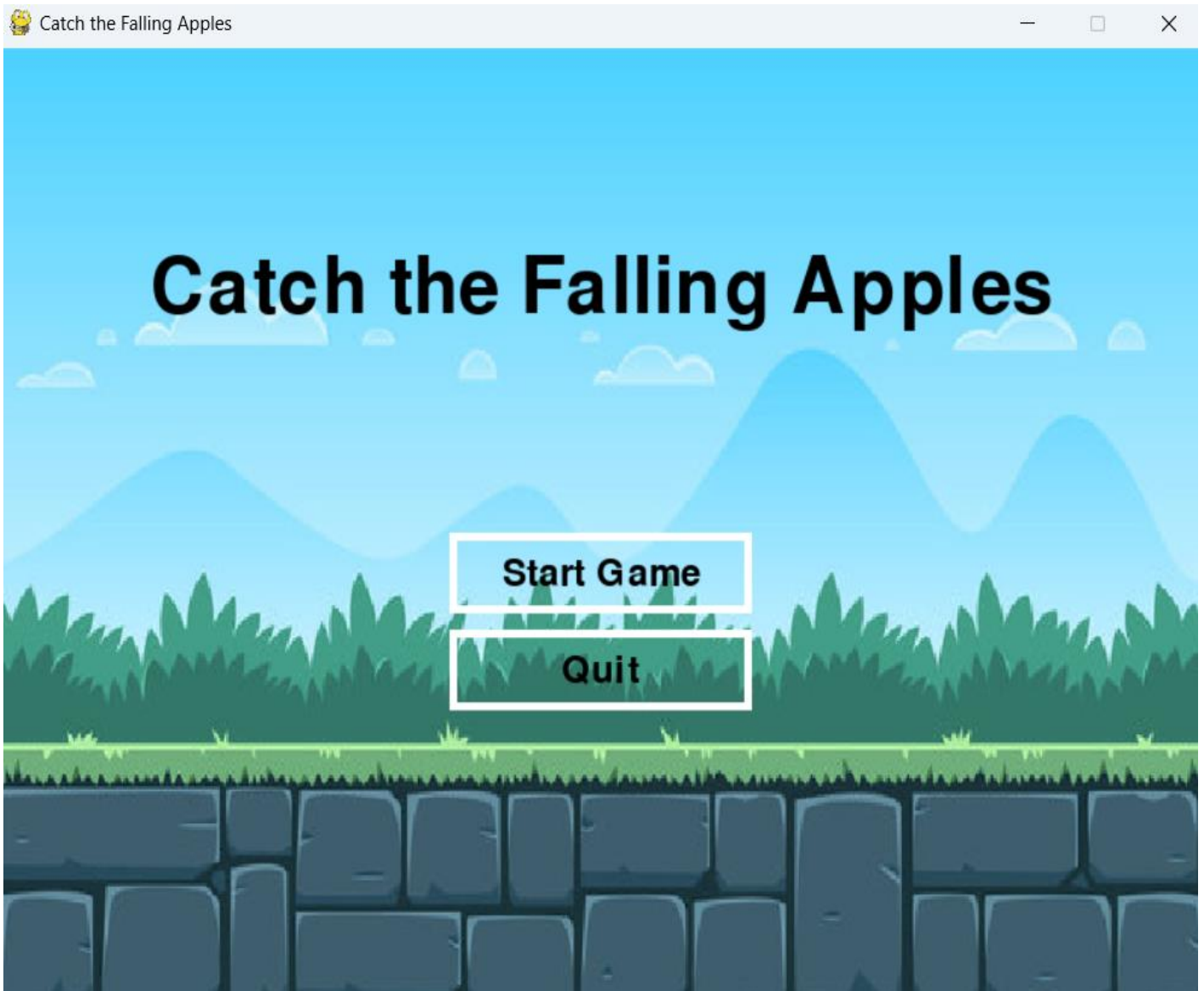
## Preview:

The game presents a visually appealing interface with:

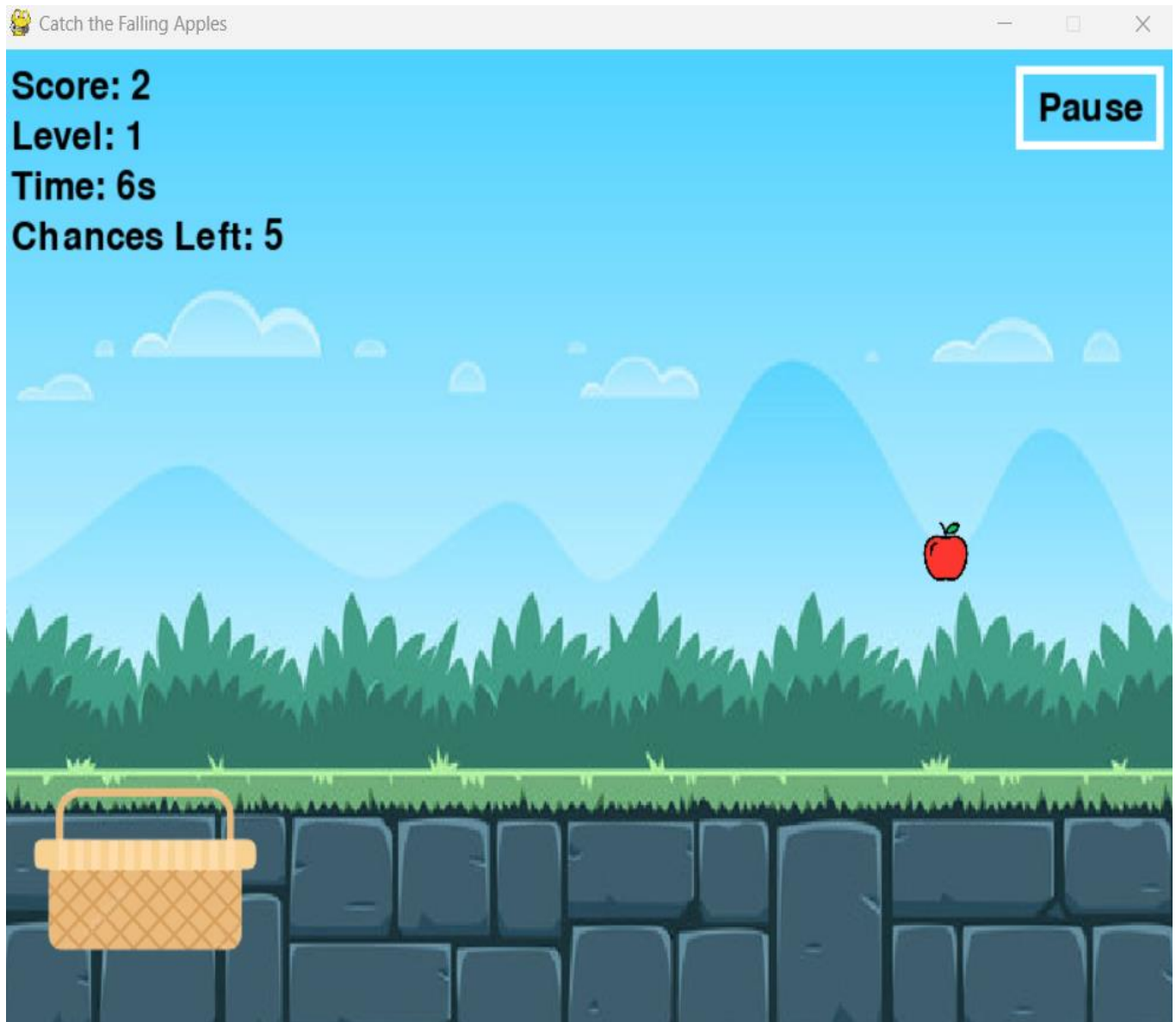
- **Background Image:** A custom background image enhances the atmosphere.
- **Basket and Apples:** Images of a basket and apples are used for a more realistic appearance.
- **Score and Timer:** The score, level, and remaining time are prominently displayed.
- **Buttons:** Options for starting the game, retrying, pausing, and quitting are available at appropriate times.

Here's a brief preview of how the game appears:

1. **Main Menu:** The screen shows the game title "Catch the Falling Apples" with buttons for starting or quitting the game.

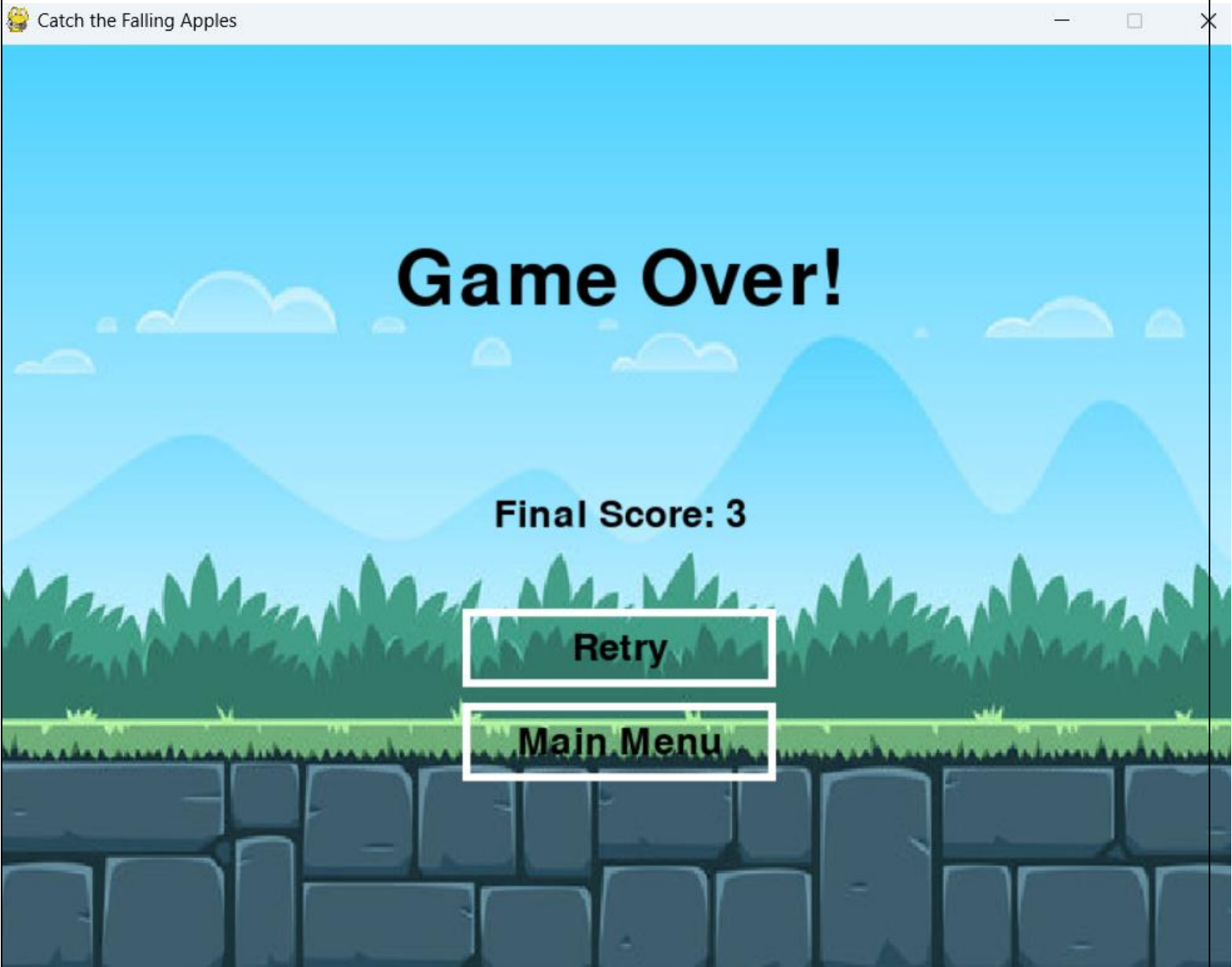


2. **Gameplay:** The player sees the falling apples and the basket at the bottom of the screen. The score, level, timer, and chances left are displayed at the top.





3. **Game Over:** When the game ends, a final score is shown, with options to retry or return to the main menu.



## **Conclusion:**

The "Catch the Falling Apples" game is a fun and engaging Python project that demonstrates the use of the Pygame library for creating interactive applications. The game provides a simple but effective gameplay loop that challenges players to react quickly and manage their chances of missing apples. Features such as levels, sound effects, and a pause/resume option make the game more dynamic and enjoyable. The use of custom images and sound effects enhances the player's experience, making it both visually and audibly appealing.

This game can be expanded in future versions by introducing new elements like power-ups, obstacles, or multiplayer modes. The project serves as a great example for beginners looking to explore Python game development and learn how to use libraries like Pygame to create interactive applications.