**Introduction to Piggy Farm**

### ****Background Story and Motivation****

**Piggy Farm** is a fun and relaxing casual game inspired by simple yet engaging gameplay mechanics. In this game, an adorable little black pig is busy catching falling eggs, preventing them from hitting the ground and breaking.

I wanted to create a game that is easy to pick up and play anytime, anywhere, serving as a stress-reliever for players. Additionally, I hope this game carries a **special meaning for couples**, as "piggy" is often used as a term of endearment between lovers. Through this game, I want to offer a fun and interactive experience for couples, where the pig protecting the falling eggs symbolizes how lovers care for and support each other.

### ****Game Concept****

Players take control of a pig on a farm, moving it left and right to **catch as many eggs as possible** and earn a high score.

* **Controls:**
  + Use the **left and right arrow keys** to move the pig.
  + Every successfully caught egg increases the **score**.
  + **Missing an egg will end the game immediately**.

### ****Core Gameplay Mechanics****

#### ****1. Game State Management****

* **Start Screen:** The game begins in an idle state (run = false), displaying a **"Press Space to Start"** message.
* **Game Running:** When the player presses the **space key**, the game starts (run = true), and eggs begin to fall.
* **Game Over:** If an egg hits the ground, the game stops (run = false), displaying a **"Game Over"** screen, where the player can press the space key to restart.

#### ****2. Pig Movement****

* The pig’s movement is controlled by two boolean states: **moveLeft** and **moveRight**.
* The pig’s x-coordinate (p\_x) updates based on player input:
* If **moveLeft is true**, the pig moves left (p\_x -= pig\_step).
* If **moveRight is true**, the pig moves right (p\_x += pig\_step).
* **Boundary Limits:** The pig cannot move outside the screen edges.

#### ****3. Randomly Falling Eggs****

* **Egg Spawn Position:**
* An e\_x list stores the x-coordinates of falling eggs, randomly generating a new position each time a new egg appears.
* **Egg Falling Speed:**
* The speed of the falling eggs (e\_speed) starts within a range of **3 to 5**.
* As the score increases, the falling speed gradually increases:
* Every time the **score reaches a multiple of 10**, the **upper speed limit (**es\_high**) increases**.
* Every time the **score reaches a multiple of 5**, the **lower speed limit (**es\_low**) increases**.
* **The maximum speed is capped at 7**, preventing the game from becoming too difficult.

#### ****4. Detecting Egg Collection****

* **Timing for Detection:** When an egg's y-coordinate (e\_y) reaches the pig's height, the game checks whether it was caught.
* **Successful Catch Condition:** The egg’s x-coordinate (e\_x) must fall within the pig's hitbox (p\_x ≤ e\_x ≤ p\_x + pig\_width - egg\_width). If the egg lands within this range, it is caught; otherwise, it falls to the ground, and the game ends.
* **Feedback for a Successful Catch:**
* The **score increases**.
* A **"oink" sound effect** plays.
* The pig enters a **happy state**, momentarily displaying a version with red hearts.

### ****Anticipated Player Experience****

At the beginning, the eggs fall slowly, making the game seem deceptively easy. However, as the **falling speed gradually increases**, players will quickly realize the challenge. Since each new egg spawns at a random position, players must **react quickly and predict movement paths** to keep up with the increasing difficulty.

Through repeated attempts, players may discover **strategies to improve their performance**, such as:

* **Anticipating egg spawn locations** to preemptively position the pig for an easy catch.
* **Controlling movement rhythm efficiently**, avoiding unnecessary movements that could lead to missed eggs.

Ultimately, I hope this game not only brings fun and relaxation but also fosters friendly competition among players. Whether played alone, with friends, or as a cute challenge between couples, **Piggy Farm** provides an enjoyable experience where players can **compete for high scores and show off their reflexes!**

4o