

Angry-Birds-using-Pygame

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A CS104 Project Spring 2024-25

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1 INTRODUCTION

This is a two-player Angry Birds Showdown. First one to destroy all of the opponent's blocks wins. All the birds have their own unique special ability and induce variable damage based on their type, speed etc.

2 About the birds

RIGHT MOUSE CLICK ACTIVATES SPECIAL ABILITIES.



Figure 1: RED

2.1 RED

Red does equal damage to all the blocks for a given speed.

Special Ability : It can transform into giant red which is very very powerful and does maximum damage possible.

Usage : It's special ability can be only used once per player.



Figure 2: CHUCK

2.2 CHUCK

Chuck does more damage to wood blocks and less damage to others for a given speed.

Special Ability : Super Speed It attains really high speed which increases it's damage.

Usage : Unlimited. A player can use it's special ability everytime.



Figure 3: BLUE

2.3 BLUE

Blue does more damage to ice blocks and less damage to others for the same speed.

Special Ability : Triplify It can multiply into 3 and triple it's attack area and increase damage.

Usage : Unlimited. A player can use it's special ability everytime.



Figure 4: BOMB

2.4 BOMB

Bomb does more damage to stone blocks and less damage to others for the same speed.

Special Ability : Bomb It can burst upon collision and induce heavy damage on all the blocks.

Usage : It's usage is a gamble. Both players combined can use this ability a total of n times where n is a randomly generated number in the range of 0 to 5. So it may happen that neither player gets to use this ability in a match. Moreover you must time your usage of this ability as the number of times you can use it also depends upon your opponent.

3 MODULES

pygame-ce : An actively maintained and updated version of the original pygame library offering enhanced support, bug-fixes and compatibility with modern python versions for game-dev. This module has been used throughout the game

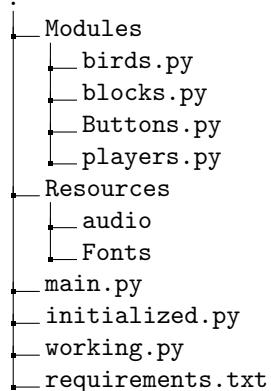
random : The random module in Python implements pseudo-random number generators for various distributions, and also provides functions for random operations on sequences, such as shuffling. I have used this module at instances such as random player activation and assigning maximum bomb ability usage.

os : The os module in Python provides functions for interacting with the operating system. I have used it for the new-game button that restarts the program.

sys : The sys module in Python provides access to system-specific parameters and functions, enabling interaction with the Python runtime environment. This again I used for new-game button and to terminate the current program.

math : The math module in Python is a built-in library providing access to a wide range of mathematical functions and constants. I have used it to get access to trigonometric functions and add modifications to the projectile.

4 DIRECTORY STRUCTURE



- **Modules:** It contains programs that control major part of the game.
- **Resources:** All the audio, images, fonts used in the game.
- **main.py** : The main Game loop.
- **initialized.py**: All the initialization of variables and class instances are here.
- **working.py**: It contains all the functions needed for the working of the game.

5 Running Instruction

5.1 Pre-Requisites

Assuming python is already installed

Run the following commands in order to create a virtual environment to run the game

```
python -m venv venv or python3 -m venv venv  
source venv/bin/activate  
python -m pip install -r requirements.txt  
Game can be run by using  
python3 main.py > /dev/null  
or  
python main.py > /dev/null
```

5.2 Game Navigation and GamePlay

5.2.1 Loading Screen



Figure 5: LOADING SCREEN

5.2.2 Game Start

- **PLAY BUTTON:** Click to begin the game.
- **QUIT BUTTON:** On the upper right corner. Click to exit the game.



Figure 6: MAIN MENU

5.2.3 Player Name Input

Click on the desired input box to type the player name. Press "ENTER" and the name will pop up on the player's side of the screen



Figure 7: PLAYER NAME INPUT

5.2.4 Choose Birds

Each player clicks on their desired bird. Per player a maximum of 3 birds are allowed. Hovering over a bird opens the bird description.



Figure 8: BIRD MENU

5.3 Player VS Player



Figure 9: VS

5.3.1 Game Starts

- **RETRY BUTTON:** Click to restart the match.
- **PAUSE BUTTON:** Click to pause the game.
- **WIND BUTTON:** Click at any point of time in the game to either oppose the opponent projectile or benefit your own. You are only allowed to use it once per player.



Figure 10: GAME PLAY



Figure 11: GAME INTERFACE

5.4 Playing the game

The three birds that you choose keep circulating one by one. Drag and release the mouse to launch the bird. A trajectory is shown for some distance between the sling and the block based on which you can aim at the blocks.

5.5 Game Over

First Player To 0 health loses.

A new game button pops up which restarts the program

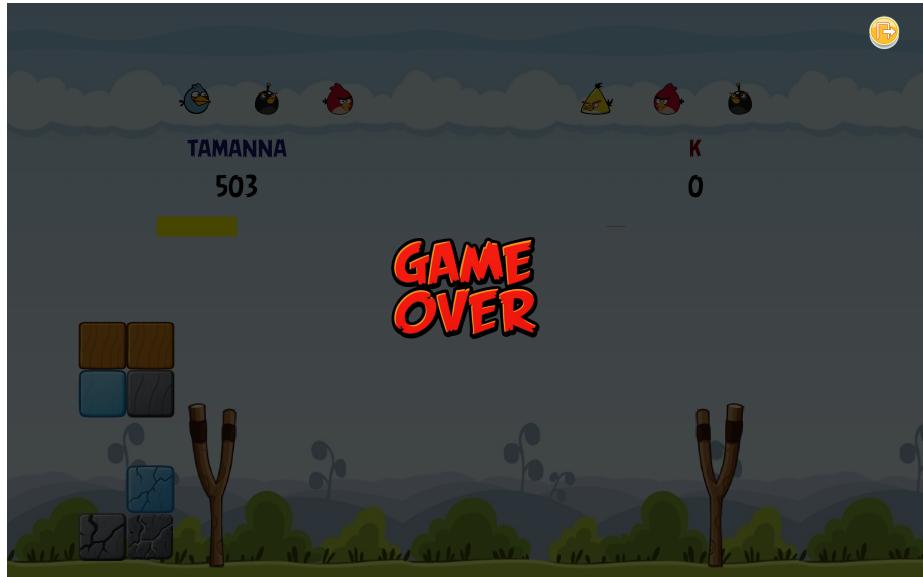


Figure 12: GAME OVER



Figure 13: NEW GAME

5.6 Various Implementations In The Code

For Pygame functions I referred to the documentaion of pygame[2] and pygamece[1] For sprite images I used reference image generation tools and open source websites[4]. For inspiration, I went through some single-player Implementations which helped me ideate and formulate my own game.[3]

5.6.1 Customizations in the game

A list of Customizations made in the game

- Added special abilities for each of the birds
- Music and Sound
- Added WIND ability for the players
- Added various audio and image sources which make the game more dynamic.
- Customized Fonts
- Unique Bird Selection Menu.
- Added a Pause/Unpause Button
- Added a retry button to restart a game from the beginning
- Added a new game button to make the game replayable.
- Added additional animations apart from the projectile

References

- [1] Pyagme's Official Documentation <https://pyga.me/docs/>.
- [2] Pygame Official Documentation <https://www.pygame.org/docs/>.
- [3] Estevão Fonseca. *Angry Birds Clone in Python*.
<https://github.com/estevaofon/angry-birds-python>
marblexu. *PythonAngryBirds*.
<https://github.com/marblexu/PythonAngryBirds>.
- [4] Tools (AI and non-AI) for images, backgrounds and audio.
chatgpt.com
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<https://www.myinstants.com/en/index/in/>