International journal of advances in engineering and management (IJAEM)
Volume 3, issue 6 june 2021, pp: 1450-1453 www.ijaem.net issn: 2395-5252

GAME DEVELOPEMENT: Comparing Game in Python with Pygame and In Lua with Game Engine of LOVE

Rakshit Tyagi Branch- IT
Group- 7I4 ResearchPaper

Submitted: 01-06-2021 Revised: 14-06-2021 Accepted: 16-06-2021

ABSTRACT: The game flappy bird is used in the process of research .The game is used in both LUAand python programming language and the main aim of the user in game is to move forward by avoiding any contact with tunnel sprite .Also ,Flappy has to stay in air all the time without touching with ground and collects coins in between toincrease the score. The game is 2D.
[1]Flappy Bird is an arcade-style game in which the player controls the bird Faby, which moves persistently to the right. The player is tasked with navigating Faby through pairs of pipes that have equally sized gaps placed at random heights. Faby automatically descends and only ascends when the player taps control . [2]Each successful pass through a pair of pipes awards the player one point. Colliding with a pipe or the ground ends the gameplay.

I. INTRODUCTION

[5] Game Development is the art of creating games and describes the design, development and release of a game. It may involve concept generation, design, build, test and release. While you create a game, it is important to think about the game mechanics, rewards, player engagement and level design.

Game Development can be undertaken by a large Game Development Studio or by a single individual. It can be as small or large as you like. As long as it lets the player interact with content and is able to manipulate the game's elements, you can call it a 'game'.

Game Engines can make the process of creating a game much easier and enable developers to reuse lots of functionality. It also takes care of rendering for 2D and 3D Graphics, physics and collision detection, sound, scripting and much more.
Some Game Engines have a very steep learning curve such as CryEngine or Unreal Engine. Yet, other tools are very accessible to beginners and some do not even need you to be able to write code to create your game.

INTRODUCTION TO LOVE
LÖVE (or Love2D) is an open-source cross-platform engine for developing 2D video games. The engine is written in C++ and uses Lua as its scripting language. It is published under the zlib license.

The API provided by the engine gives access to the video and sound functions of the host machine through the libraries SDL and OpenGL, or since version 0.10 also OpenGL ES 2 and 3. Fonts can be rendered by the FreeType engine.[4] A version of the engine called piLöve has been specifically ported to Raspberry Pi.
It also provides a basic "sandbox" management of the files in order to avoid giving access to all its disk to the executed games

International journal of advances in engineering and management (IJAEM)
Volume 3, issue 6 june 2021, pp: 1450-1453 www.ijaem.net issn: 2395-5252

INTRODUCTION TO PYGAME

Pygame is a cross-platform set of Python modules designed for writing video games. It includes computer graphics and sound libraries designed to be used with the Python programming language.

Pygame uses the Simple DirectMedia Layer (SDL) library,[a] with the intention of allowing real-time computer game development without the low-level mechanics of the C programming language and its derivatives. This is based on the assumption that the most expensive functions inside games can be abstracted from the game logic, making it possible to use a high-level programming language, such as Python, to structure the game.

Other features that SDL doesn't have include vector math, collision detection, 2d sprite scene graph management, MIDI support, camera, pixel-array manipulation, transformations, filtering, advanced freetype font support, and drawing.

Applications using pygame can run on Android phones and tablets with the use of pygame Subset for Android (pgs4a). Sound, vibration, keyboard, and accelerometer are supported on Android.

II. DIFFERENCES

1 SPEED

Game was slower in fps performance in python with respect to lua. In Pygame, you need(!) to catch every Quad that changed in the Frame before and draw only the Changes, otherwise it's impossible to draw Background and Sprites on a Resolution like 1024x768 and 60 FPS.

Lua's performance compares very well to other languages, If performance needs to be further improved you can:

(i) Implement critical parts in C
(ii) Use the LuaJIT compiler. The LuaJIT compiler is a drop in replacement for the stock compiler and provides significant performance improvements.

[6] As we know, Python is an interpreted language.Interpreted code is always slower than direct machine code because it takes a lot more instructions in order to implement an interpreted instruction than to implement an actual machine instruction.

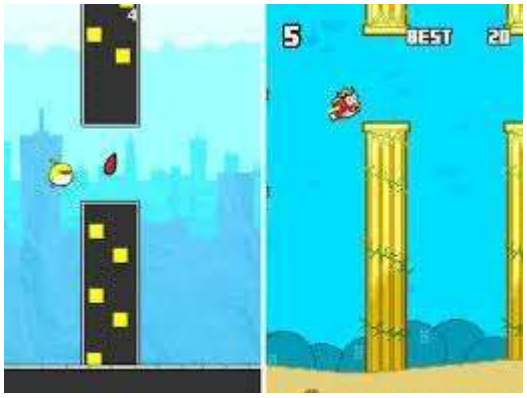
2 Graphics

Python has a huge collection of open-source libraries that do everything, from graphics, physics, and charts to machine learning. There are at least ten really

International journal of advances in engineering and management (IJAEM)
Volume 3, issue 6 june 2021, pp: 1450-1453 www.ijaem.net issn: 2395-5252

well-documented and widely used libraries that help with machine learning alone.

(graphic details)



([5]graphics love vs pygme)

3 Libraries

Python ships with a large standard library, including modules for everything from writing graphical applications, running servers, and doing unit testing. This means that beginners won't need to spend time searching for tools and libraries just to get started on their projects.

Lua has very few libraries. 4 Game Handling With love game engine the game was lagging a lot initially until the code was fully executed on the other hand with pygame game handling was pretty smooth.

International journal of advances in engineering and management (IJAEM)
Volume 3, issue 6 june 2021, pp: 1450-1453 www.ijaem.net issn: 2395-5252

([8]Different libraries of pygame)

III. RESULT

As we know because of more complex and steady graphics in today's world it is easy to make games based on pygame .Although syntax of lua programming language is much easier to learn in comparison to python because of its messy design, but with demand of new features and graphics pygame is ahead of love.

REFERENCES

[1]. "Contributors to Pygame". GitHub.
[2]. Shinners, Pete. "Python Pygame Introduction - History". Pygame.org. Archived from the original on 2019-09-17. Retrieved 2017-04-28.
[3]. "Downloads - Pygame - Python game development". Pypi.python.org.
[4]. Williams, Rhiannon. "What is Flappy Bird? The game taking the App Store by storm". The Daily Telegraph. Archived from the original on January 30, 2014. Retrieved January 30, 2014.
[5]. McCracken, Harry (February 9, 2014). "Where to Get Flappy Bird: On eBay, for $900. Cheap". Time. Archived from the original on March 7, 2014. Retrieved February 9, 2014.
[6]. Molina, Brett (February 10, 2014). "Phones with 'Flappy Bird' app fetching big bids on eBay". USA Today. Archived from the original on February 10, 2014. Retrieved February 10, 2014.
[7]. Thier, Dave (February 10, 2014). "'Flappy Bird' Price Skyrocketing on eBay". Forbes. Archived from the original on February 12, 2014.
[8]. Retrieved February 10, 2014
[9]. Watts, Jack (December 31, 2014). "Google looks back at 2014 trending topics with New Year's Eve 2014 Google Doodle". Daily Express. Archived from the original on December 31, 2014.
[10]. Retrieved January 1, 2015.
[11]. Jump up to:[a b] "Flappy Bird Reviews on Metacritic". Metacritic. Archivedfrom the original on March 2, 2014. Retrieved February 9, 2014.
[12].