

figure

**SCTR's Pune Institute of Information Technology  
Dhankawadi, Pune**

**AN INTERNSHIP REPORT ON**

**Develop A Game Using Love2D framework**

**SUBMITTED BY**

Name: Apurv Henkare

Class: TE 10

Roll no: 33229

**Under the guidance of  
Mr R. M. Murumkar**



**DEPARTMENT OF INFORMATION TECHNOLOGY  
ACADEMIC YEAR 2021-22**



## DEPARTMENT OF INFORMATION TECHNOLOGY

SCTR's Pune Institute of Information Technology  
Dhankawadi, Pune  
Maharashtra 411043

### CERTIFICATE

This is to certify that the SPPU Curriculum-based internship report entitled  
**"Develop A Game Using Love2D framework"**

Submitted by  
Apurv Henkare  
Exam No. T190058581

has satisfactorily completed the curriculum-based internship under the guidance of Mr R. M. Murumkar towards the partial fulfillment of third year Information Technology Semester VI, Academic Year 2021-22 of Savitribai Phule Pune University.

Mr R. M. Murumkar  
Internship Guide  
PICT, Pune

Dr. A. S. Ghotkar  
Head  
Department of Information Technology  
PICT, Pune

Place:  
Date:

## **Acknowledgement**

It gives me great pleasure in presenting the internship report on "Develop A Game Using Love2D framework".

First of all I would like to take this opportunity to thank my internship guide Mr R. M. Murumkar for giving me all the help and guidance needed. I am really grateful for her kind support and valuable suggestions that proved to be beneficial in the overall completion of this internship.

I am thankful to our Head of Information Technology Department, Dr. A.S.Ghotkar, for her indispensable support and suggestions throughout the internship work.

I would also genuinely like to express my gratitude to the Department Internship Coordinator, Prof.T.A.Rane, for his constant guidance and support and for the timely resolution of the doubts related to the internship process.

Finally, I would like to thank my mentor, Dr. Kavita Sultapure for her constant help and support during the overall internship process.

## Contents

|                                       |   |
|---------------------------------------|---|
| 1 Title                               | 2 |
| 2 Introduction                        | 2 |
| 3 Problem Statement                   | 3 |
| 4 Objectives and Scope                | 3 |
| 5 Methodological Details              | 4 |
| 6 Engineering tools used              | 6 |
| 7 Outcome/ results of internship work | 7 |
| 8 Achievements                        | 9 |

## 1 Title

Develop A Game Using Love2D framework

## 2 Introduction

The primary game framework we'll be using throughout the project is Love2d .It works hand in hand with Lua.

This is the programming language that we'll be using predominantly throughout the project.Lua is a dynamic scripting language similar to Python and JavaScript.

Two of the most basic principles of game development, being able to draw shapes and text is what will allow us to render our game on a screen.

DeltaTime, arguably one of the most important variables that we keep track of in any game framework, is the time elapsed since the last frame of execution in our game. LÖVE2D measures DeltaTime in terms of seconds, so we'll see how this concept relates to velocity.

Every game is composed of a series of states (e.g., the title screen state, game-play state, menu state, etc.), so it will be important to understand this concept since we'll want different rendering logic and update logic for each state.



Figure 1: The scripting language which is used in Love2d

### 3 Problem Statement

- Understand Programming Language Lua.
- Develop a Game Vibora Using Love2D frameowrk.
- Add An AI Element In The Game.

### 4 Objectives and Scope

- To implement AI in game.
- To use basic rendering tools like Blender.
- To understand the importance of GameStates In Game Development.
- To implement LeaderBoard of the game.

## 5 Methodological Details

Snake is a video game genre where the player maneuvers a growing line that becomes a primary obstacle to itself. The concept originated in the 1976 two-player arcade game Blockade from Gremlin Industries, and the ease of implementation has led to hundreds of versions (some of which have the word snake or worm in the title) for many platforms. 1982's Tron arcade game, based on the film, includes snake gameplay for the single-player Light Cycles segment. After a variant was preloaded on Nokia mobile phones in 1998, there was a resurgence of interest in snake games as it found a larger audience.

The Vibora Game is basically a replica of snake game. Taking steps from the classic Snake Game but with a potent and clever enemy alike which targets your food and life even if it means its demise. Get your snake rolling and bring your best arcade skills to get survive and thrive!

The lua code for the AI of enemy(worm) is as follows:

```
if(distance(foodPosition.x,foodPosition.y,nx,ny)>8.4) then
    player_enemy_angle=math.atan2((snakeSegments[1].y-1)*30-(enemy[1].y-1)*30,(snakeSegments[1].x-1)*30-(enemy[1].x-1)*30)
    self.xfactor=0.4
    self.yfactor=0.4
else
    player_enemy_angle=math.atan2((foodPosition.y-1)*30-(enemy[1].y-1)*30,(foodPosition.x-1)*30-(enemy[1].x-1)*30)
    self.xfactor=0.66
    self.yfactor=0.66
end

enemy_cos=math.cos(player_enemy_angle)
enemy_sin=math.sin(player_enemy_angle)

enemy[1].x=(enemy[1].x+self.xfactor*enemy_cos)
enemy[1].y=(enemy[1].y+self.yfactor*enemy_sin)
```

Another important component of game development is Gamestates. We manage all our game states using an overarching StateMachine module, which handles the logic for initializing and transitioning between them.

The TitleScreenState will transition to the PlayState via keyboard input.

The BaseState is a skeleton for the other states- it defines empty methods and passes them on via inheritance.

Of particular note in main.lua is the creation of our gStateMachine table to hold function calls to our different states:

PlayState.lua  
Credits.lua  
EnterHighScore.lua  
Info.lua  
GameOverState.lua  
HighScoreState.lua  
Main Menu.lua

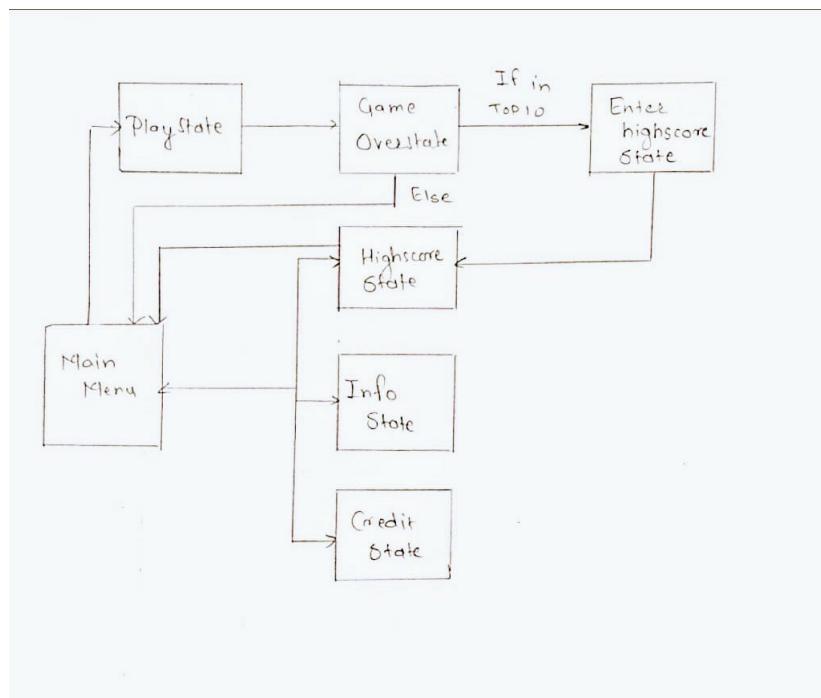


Figure 3: GameState Diagram

## 6 Engineering tools used



Figure 4: Love2d

LÖVE2D is a fast 2D game development framework written in C++ that uses Lua as its scripting language. It contains modules for graphics, keyboard input, math, audio, windowing, physics, and much more. Fortunately, it is completely free and portable to all major desktops and Android/iOS. It's also great for prototyping if you don't plan on using LÖVE2D in the final version of your game!



Figure 5: Blender

Blender is a free and open-source 3D computer graphics software toolset used for creating animated films, visual effects, art, 3D-printed models, 2D-clip arts, 2D-animations, motion graphics, virtual reality, and, formerly, video games.

## 7 Outcome/ results of internship work

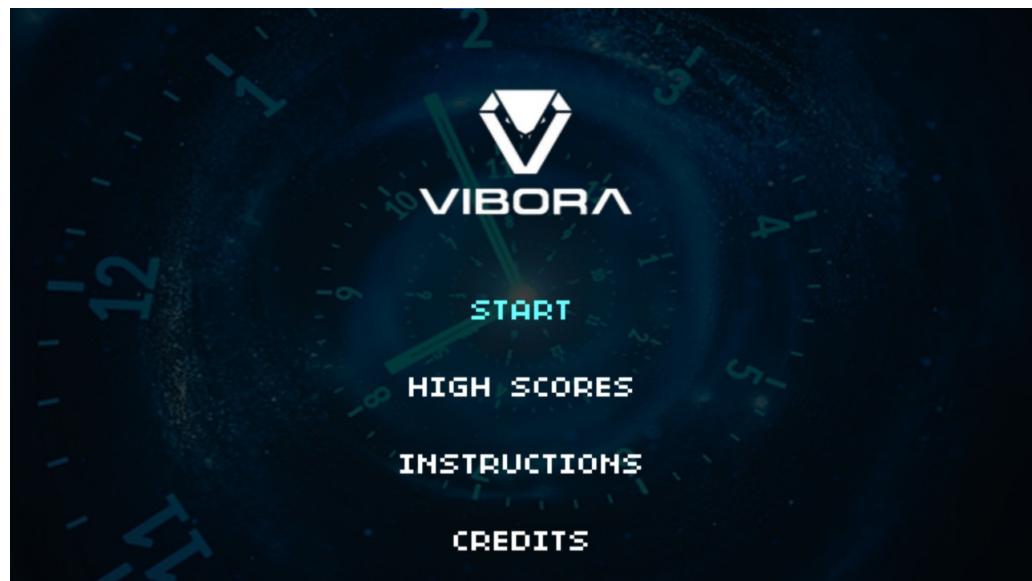


Figure 6: Main Menu



Figure 7: Play State

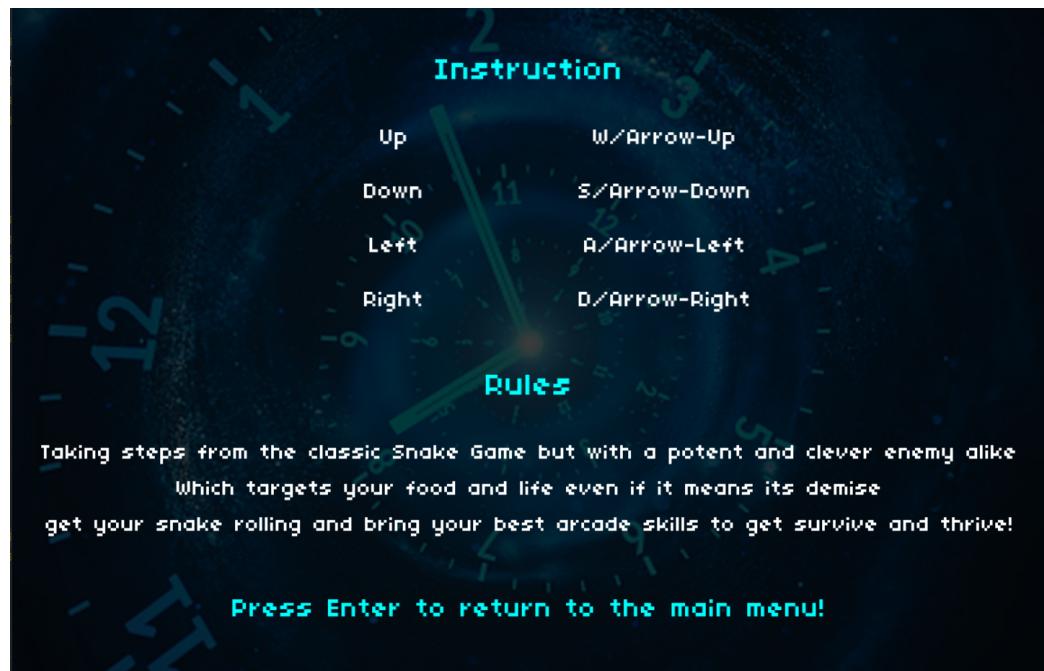


Figure 8: Information State



Figure 9: Highscore State

## 8 Achievements

Successfully implemented AI in Vibora game. Shown the game for the students in PASC event (Human Vs AI) and gained a lot of audience.



Figure 10:



Figure 11: