A
PROJECT REPORT
ON

"TILE MASTER GAME"

Submitted In the Partial Fulfillment of the Requirement of the Post Graduation Course Of

M.Sc – II
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ACKNOWLEDGEMENT

We express our sincere gratitude to all those who have helped us in the completion of the project titled "**Tile Master (Tile Based Plat former Game)**".We are extremely thankful to *Mrs. Ritambara Korpal* for her constant guidance and valuable support. We are also grateful to all our colleagues for continuously inspiring us to complete this project. Last but not the least we express a deep sense of gratitude to our parents for their plenteous moral support and without whose encouragement and understanding it would not have been possible for us to achieve this.

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Introduction

Overview

Existing System:

Pygame is cross-platform set of Python modules which is used to create video games. It consists of computer graphics and sound libraries designed to be used with the python programming language. It uses the Simple Direct Media Layer library and several other popular libraries to abstract the most common function making writing these programs a more intuitive task. Commonly Pygame adds functionality on top of the excellent SDL library. This allows you to create fully featured games and multimedia programs in the python language.

Need of the System

A game is a structured form of play, usually undertaken for entertainment or fun. Basically platformer game needs platforms. In pygame platforms themselves are sprites, just like your playable sprite. This game requires the player to manoeuvres their characters across platforms to reach a goal, while confronting enemies and avoiding obstacles along the way. In this game we have need of different data levels because player finish each one after that it will go to next one and according to that he will collect coins.

Overview of the Project

Project Tile Master(Tile Based Platformer game) is the game in which mainly we have used total 3 modules, i.e. pygame which is used for creating video games. Another one is pickle module which is used for level data setting, commonly it is used for serializing and de - serializing a python object structure. And last one is mixer module which is used for control music and sound effects which used in pygame programs. In this game player completes each level and after that he will jump next one and continuously collects the count and if game over then count will set to 0. If by chance player dropped down into lava then game will restart.

Hardware and Software Requirement

- Hardware requirements:

  - Modern Operating System:
    a. Windows 7 or 10
    b. Mac OS X 10.11 or higher, 64-bit
    c. Linux: RHEL 6/7, 64-bit (almost all libraries also work in Ubuntu)

  - x86 64-bit CPU (Intel / AMD architecture) and above CPU

  - 2 GB RAM

  - 2 GB minimum hard disk space required

- Software requirements:

  - Python 3.7/3.8
  - PyCharm IDE

System Development Lifecycle

Requirements from User:

- ✓ Any Laptop/Desktop.
- ✓ No need of internet connection

Feasibility Study

Operational Feasibility:

The "Tile Master" game is having a very user-friendly UI. It doesn't require any special training or guidance for its use. Even after complete development, game going to be updated constantly. To import graphics into the game Python has great library functions. With keyboard, mouse and skill anyone should be able to navigate through the game. Power Ups can help you along the way to get health and more firepower

Economic Feasibility:

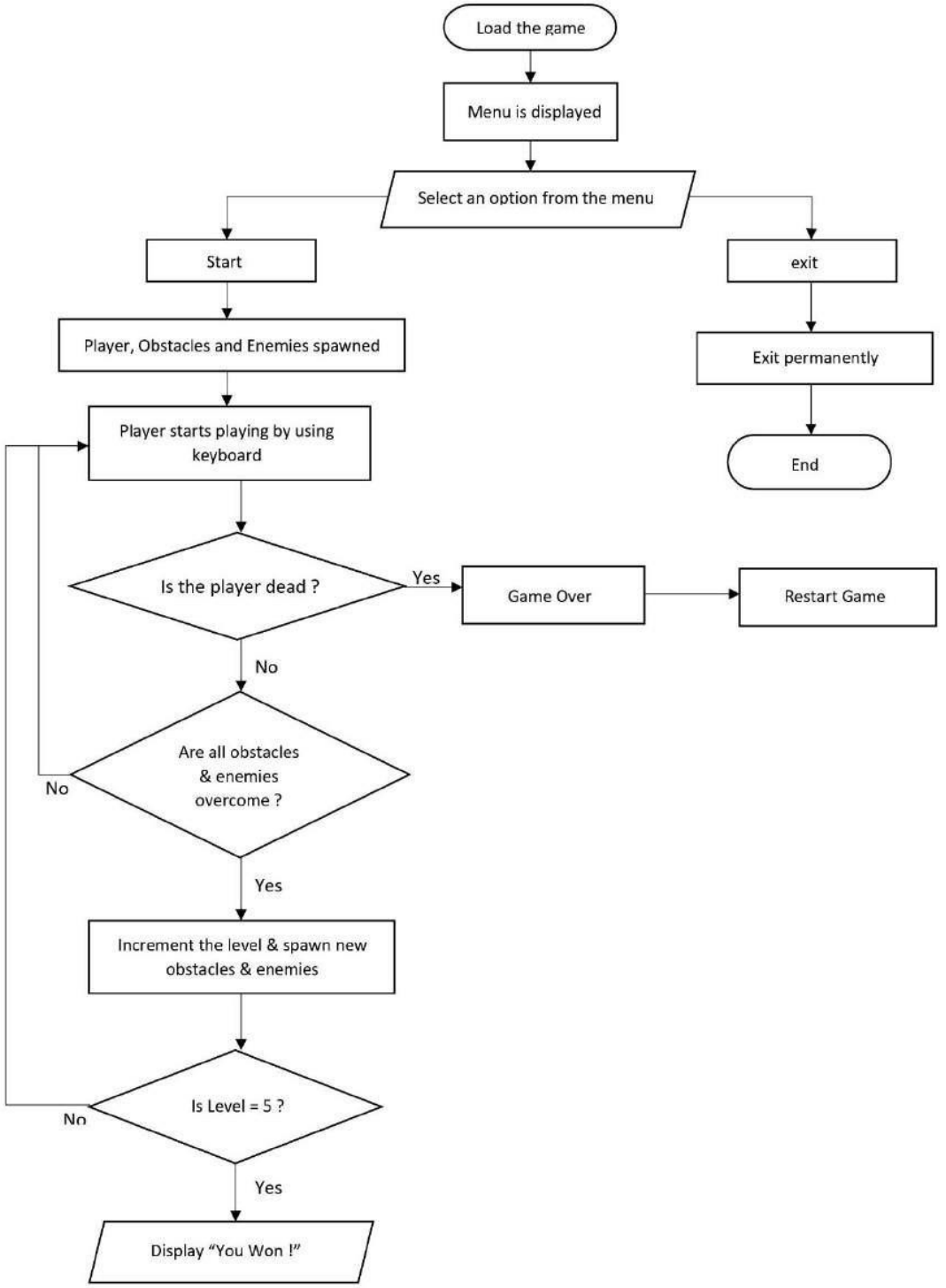
The system is economical feasible because it does not require any expensive technology or expensive hardware resources. Also does not require any high-end system like graphic cards, more RAM or latest operating system though. What user needs, is just a working machine to play the game. It does not require large memory to be stored at the user-side. In addition to this the system is going to be developed in Python language which is open-source language, so in terms of development also it is economically feasible.

Technical Feasibility:

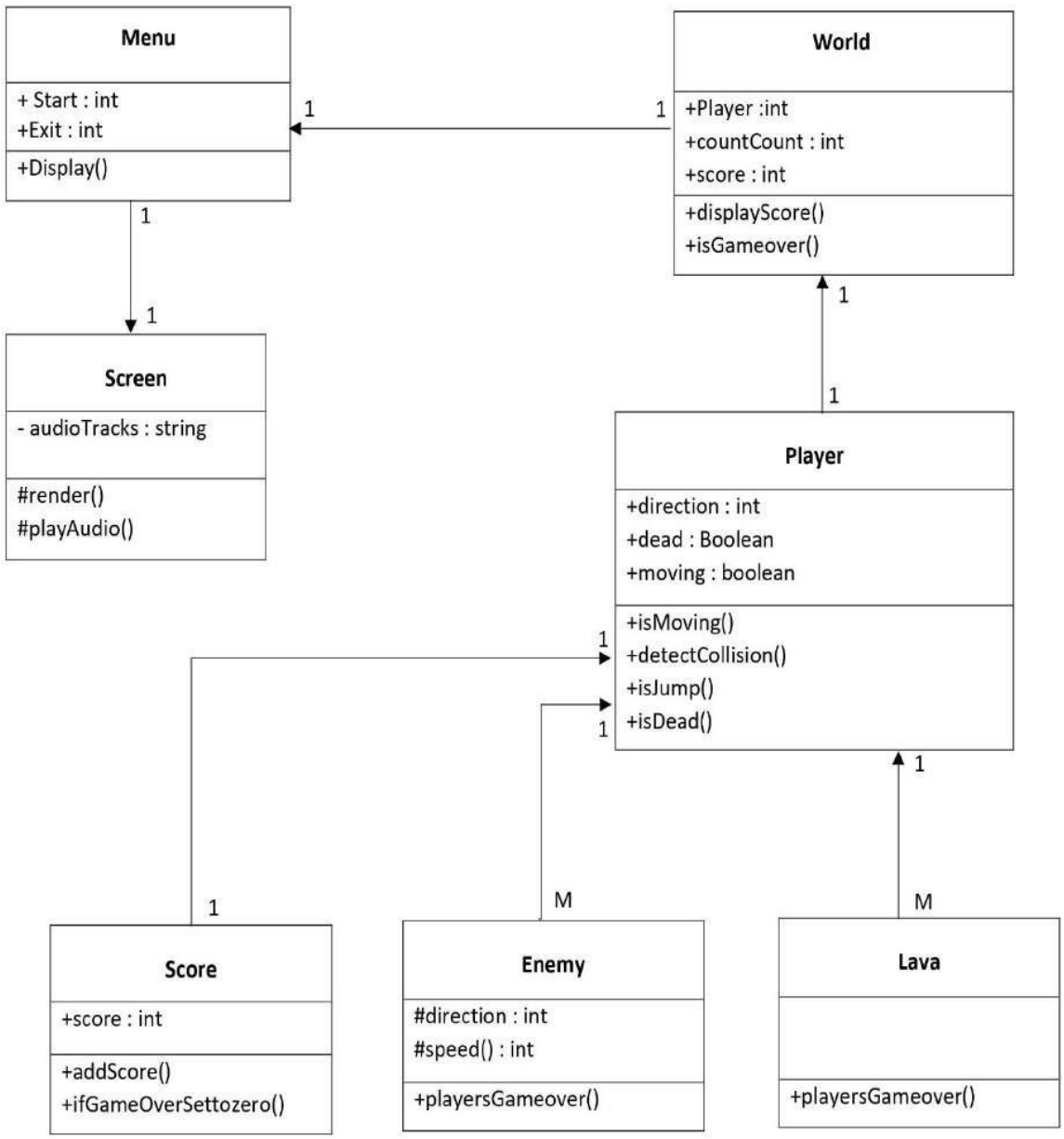
Project "Tile Master" Game is a complete Python application. Our application is technically feasible because it will be developed at machines which are not too costly. The system is technically feasible because it doesn't require any high-end hardware and software tools to design, develop and run the system and are available easily.

UML Diagram

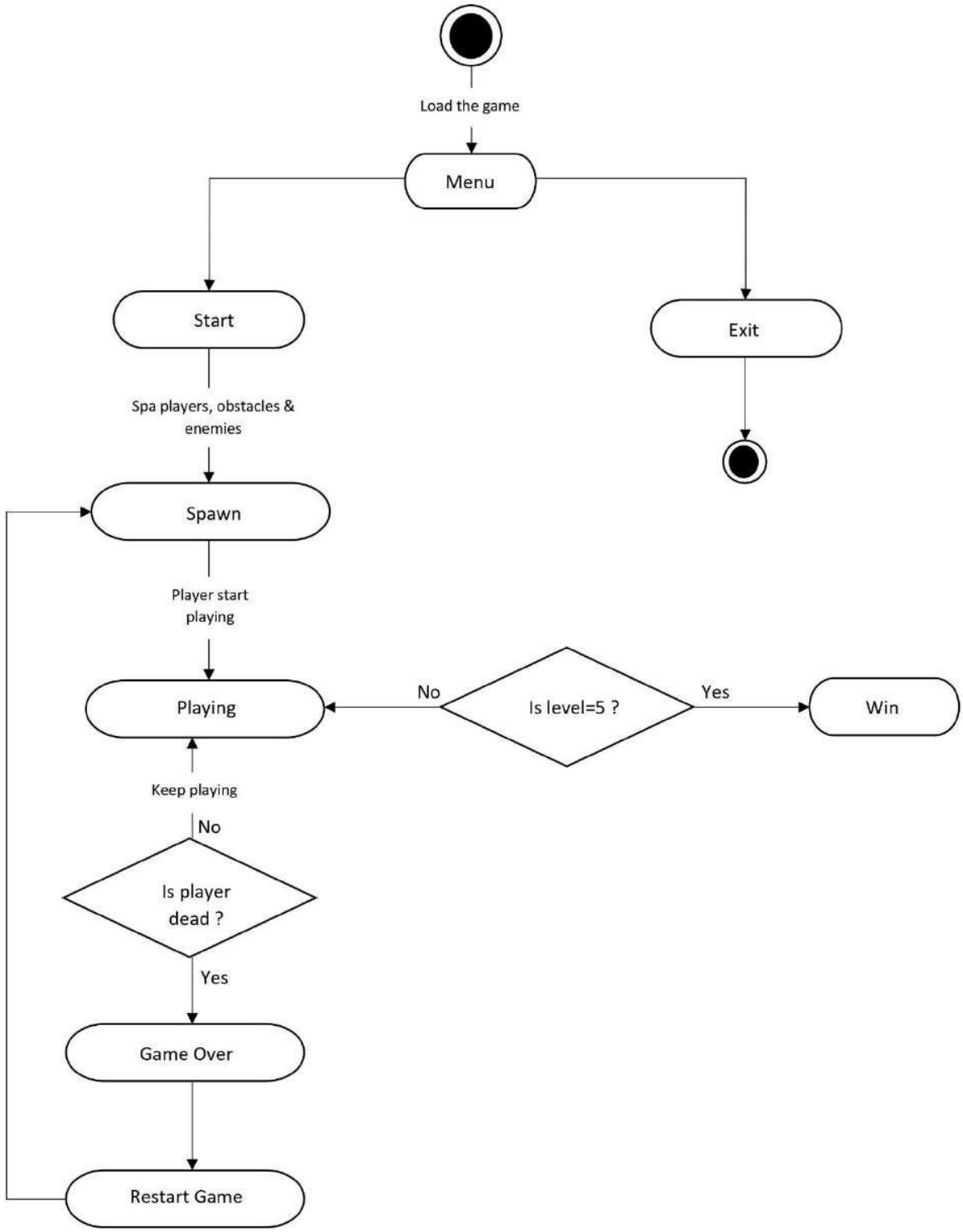
Flowchart:



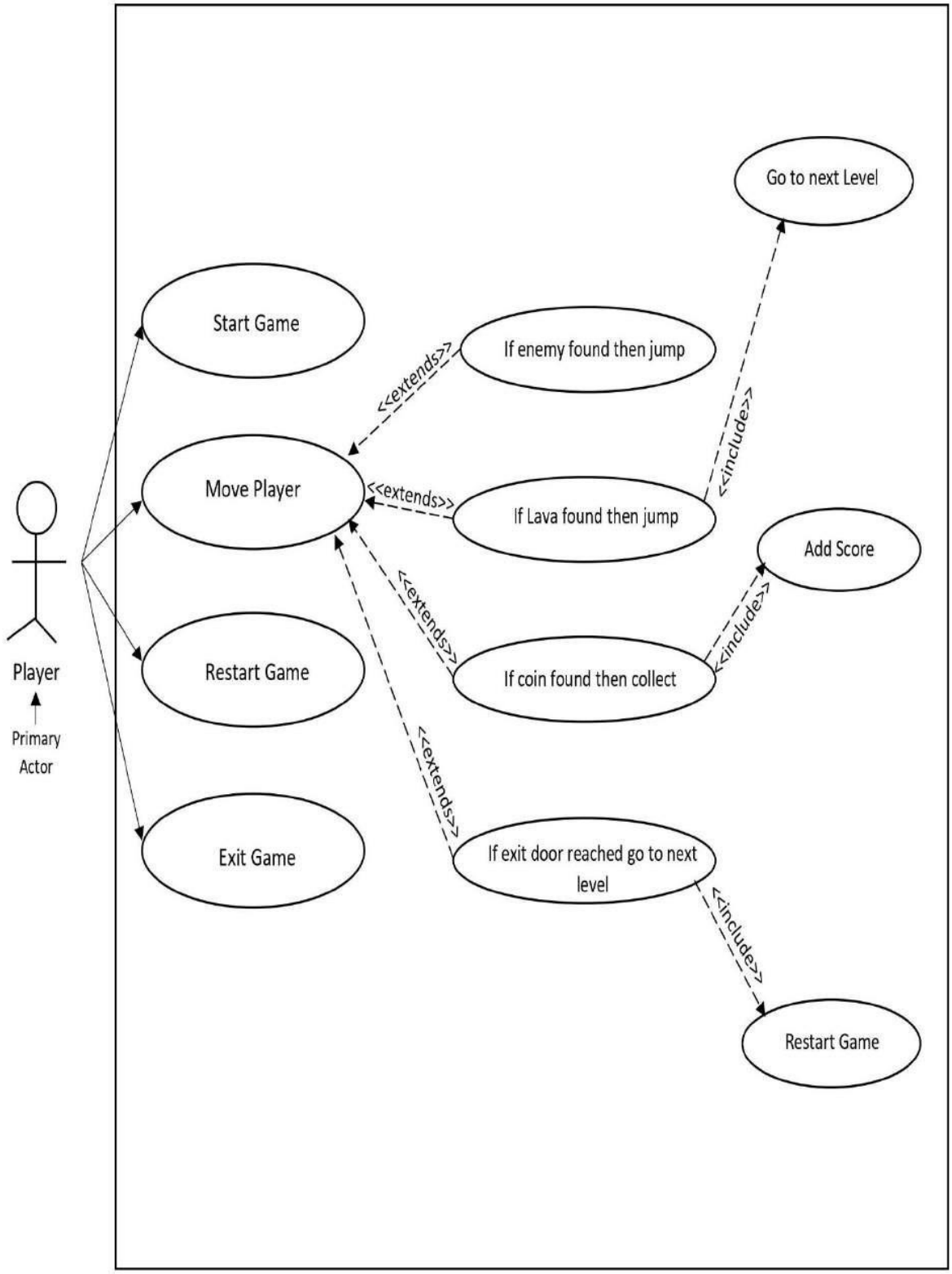
Class Diagram:



Activity Diagram:

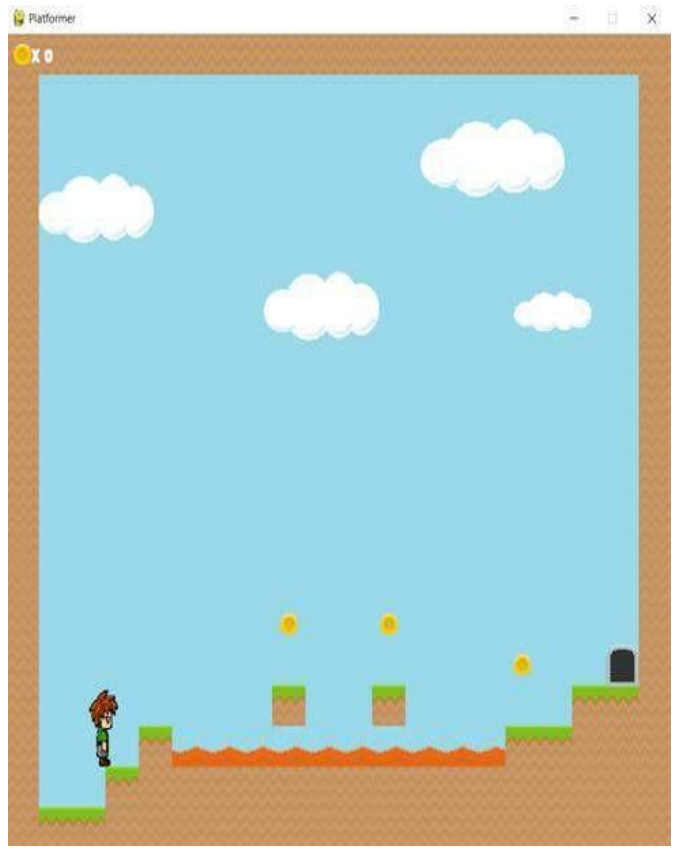


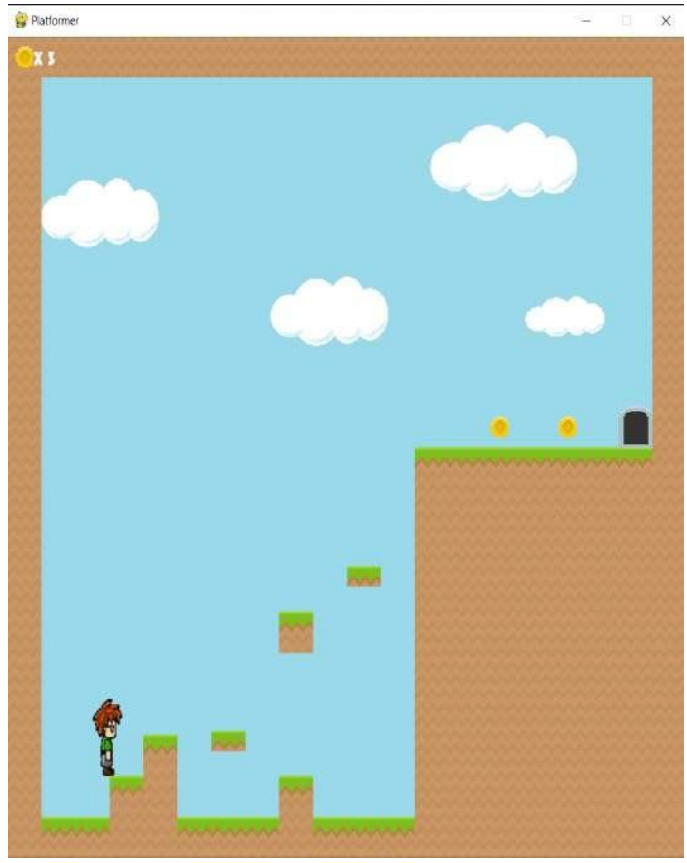
Use Case Diagram:

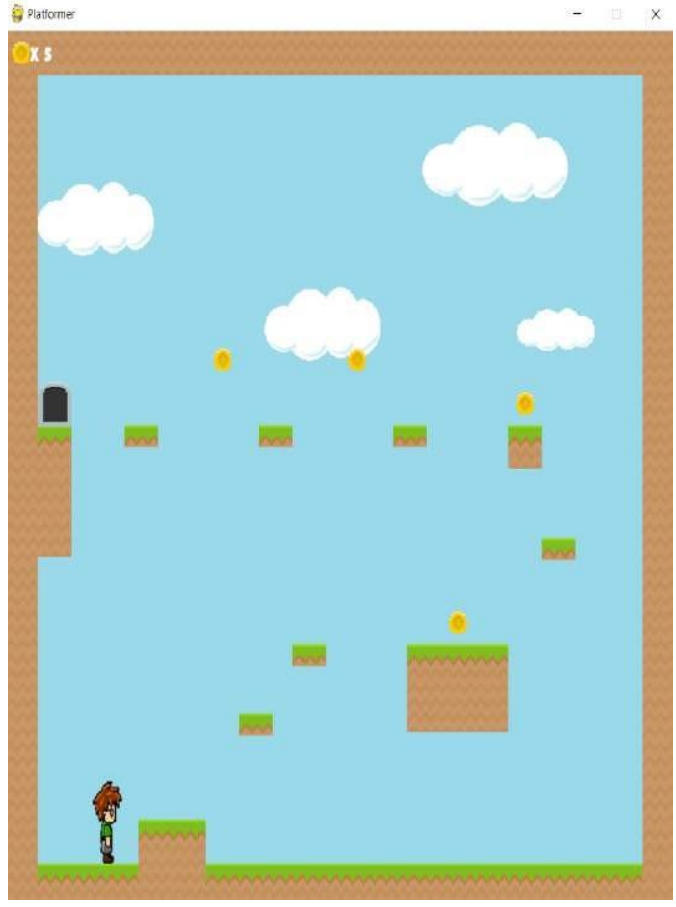


Implementation

Input Screens:




Platformer
X 5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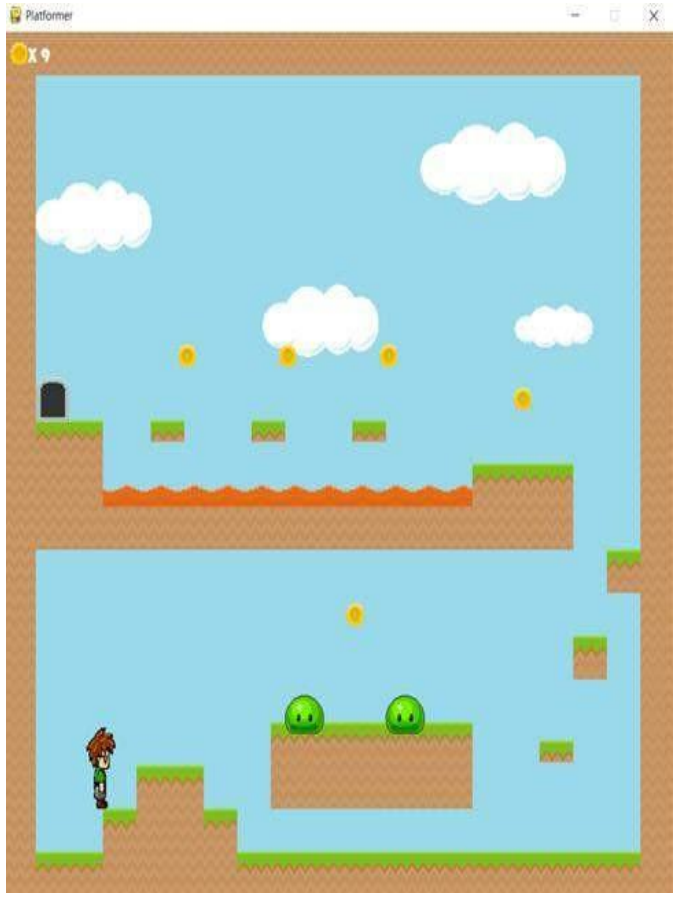
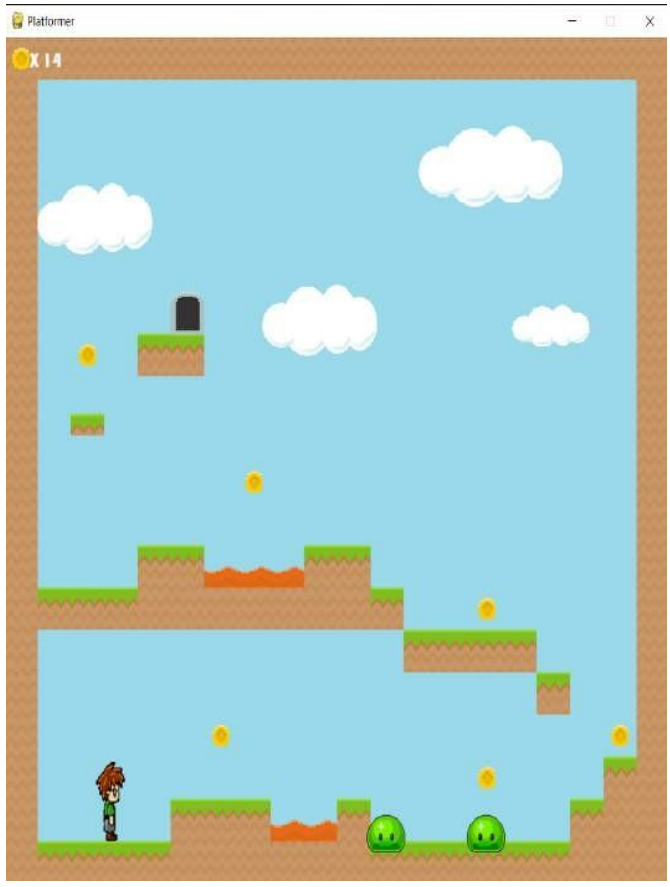
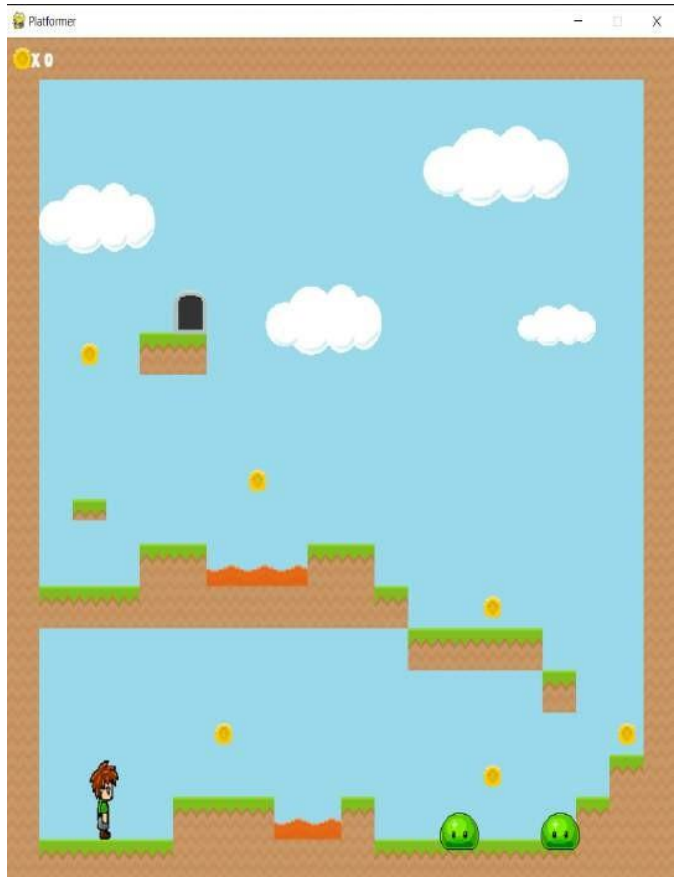
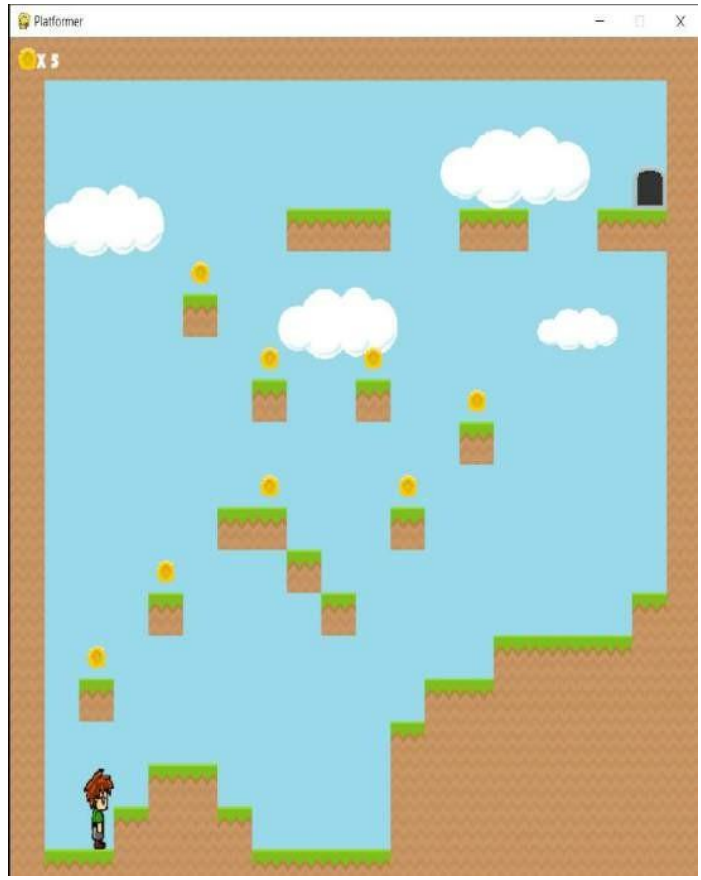
X 5

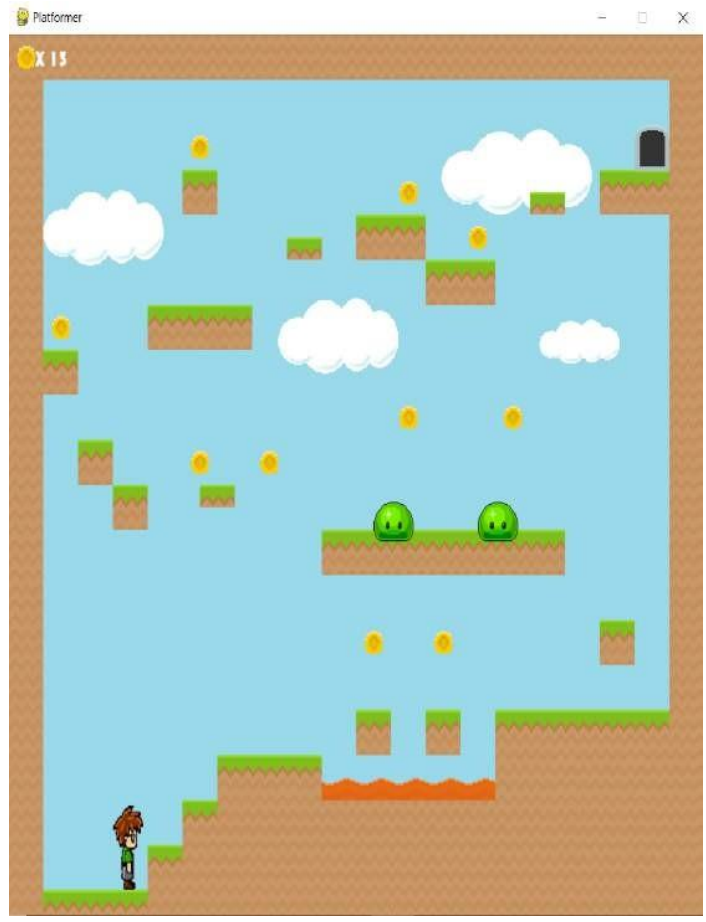

Platformer
X 9

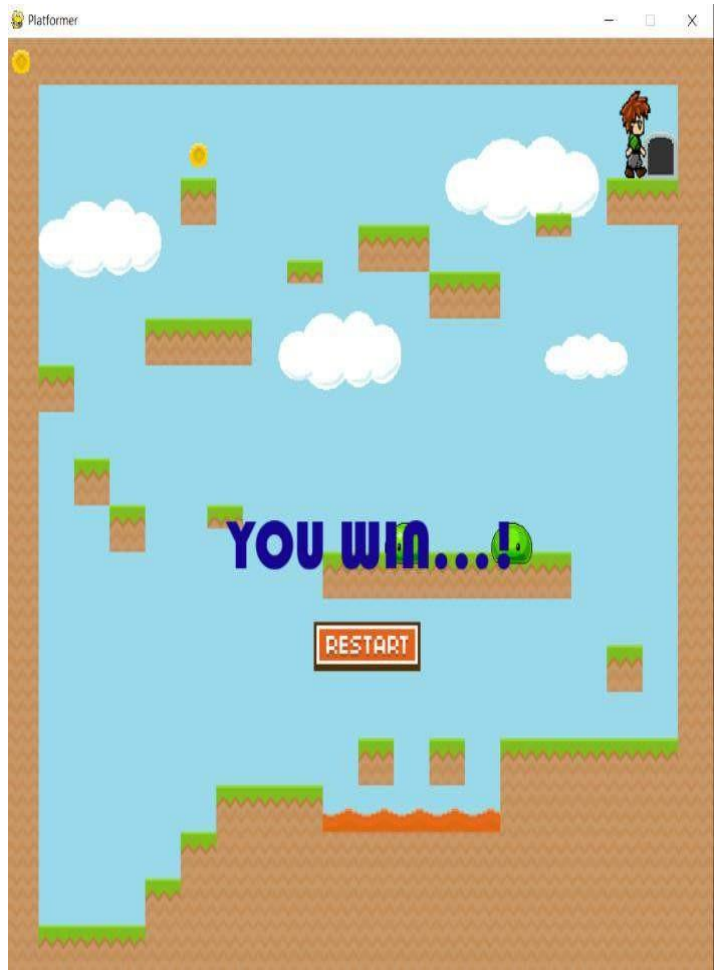

Platformer
X 14


Platformer
GAME OVER...!
RESTART


Platformer
X 0


Platformer
X 5


Platformer
X 15


Platformer
YOU WIN...!
RESTART

Testing

Importance of Testing:

- Testing is the process of evaluating a system or its component(s) with the intent to find whether it satisfies the specified requirements or not.
- Testing is executing a system in order to identify any gaps, errors, or missing requirements in contrary to the actual requirements.

Types of Testing:

- Black-Box Testing : The technique of testing without having any knowledge of the interior workings of the application is called black-box testing.
- White-Box Testing : The tester needs to have a look inside the source code and find out which unit/chunk of the code is behaving inappropriately.
- Integration Testing : This test is the first stage of testing and will be performed amongst the teams (developer and QA teams). Unit testing, integration testing and system testing when combined together is known as alpha testing.
- Integration Testing : Integration testing is defined as the testing of combined parts of an application to determine if they function correctly.
- Unit Testing : is a level of software testing where individual units/components of the software are tested. The purpose is to validate that each unit of the software performs as designed. The cost of fixing a defect detected during unit testing is lesser in comparison to that of defects detected at higher levels.

Test Cases:

Sr. No.	Test Case Name	Test Done	Output of the test
1	Jumping of player on the tile.	Player must jump properly on the tile otherwise it will fall down.	When player jumps towards the tile, it properly lands on it.
2	Fall into the lava	While taking the jump, if player unfortunately jumps into the lava, then the player must die.	When player jumps into the lava, player dies immediately.
3	Collision of Enemy and Player	Player must die after they collide with each other and restart window must be displayed to player	When player collides with any kind of enemy, player dies immediately and restart menu is displayed.
4	Player Wins	When player reaches level 5 , You Win screen must appear.	You Win! Coin Score of the player appears.
4	Game Over	When Player reaches level 5 , Game Over Screen must appear and Game Play should be stopped.	When Player reaches level 5 , GamePlay halts immediately and GameOver Screen appears on the Monitor.

Drawbacks and Limitations

- In this game only limited levels are there and also most challenging levels are not there.
- Player is not more powerful like he has no lifelines to protect from enemies.
- The graphics are not bad but they are not exactly appealing either.

Future Enhancement and Conclusion

Future Enhancement:

- ✓ Develop android app
- ✓ Make powerful Player
- ✓ Add more and most challenging levels
- ✓ Make appealing GUI

Conclusion:

The project Tile Master Game was successfully designed and is tested for accuracy and quality. During this project we have accomplished all the objectives and this project meets the needs of the course.

Bibliography

- https://www.crio.do/blog/mini-projects-for-computer-science-engineers/
- https://realpython.com/platformer-python-arcade/
- https://coderslegacy.com/python/pygame-platformer-game-development/
- https://www.pygame.org/tags/platformer
- https://youtu.be/ALIxdaFYWzk
- https://youtu.be/E1Ujuii9pLw