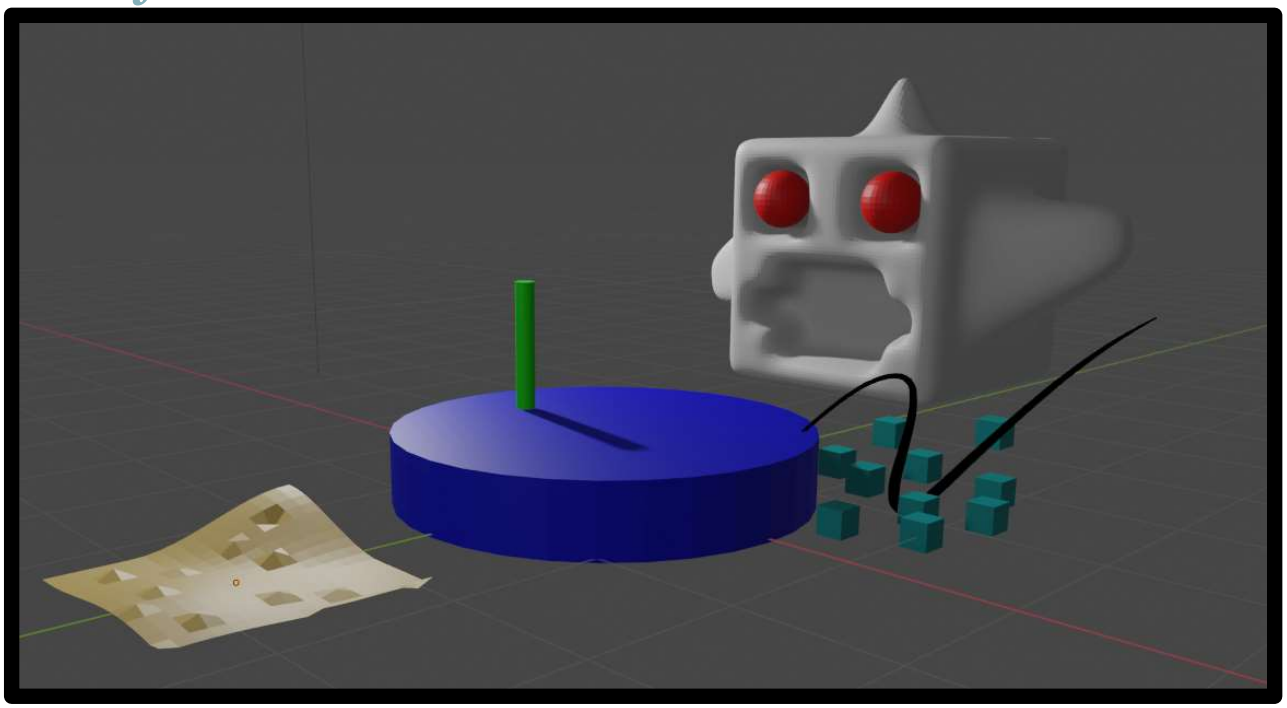
Colton Cilento

Spirit Cleaners Inc.,
Project Documentation



Executive Summary

The project is an arcade style video game called “Spirit Cleaners, Inc”. The intended design is to get progressively harder and have randomly generated enemy arrangements in levels to keep it interesting and challenging. The premise is that the player works for a company that specializes in cleaning abandoned haunted properties before new tenants move in. The player takes control of a remote-controlled vacuum cleaner and must pick up all the trash on the floor of a level. While picking up trash the player must avoid ghosts and other environmental dangers. Once all trash has been collected the level moves on to a harder board. Like any good arcade game, it will feature a leader board that displays the initials and high score of the top 10 scores of all time. Score will be based on the number of pieces of debris picked up.

Title Screen | Program Usage Description

The title screen greets the user. It is an infinite loop that will run until the user presses the space bar to continue or esc key to exit.

High Score Screen | Program Usage Description

The High Score Screen displays the high score banner. It runs until the high scores have all been displayed or until the space bar or esc keys have been pressed

Main Game Screen | Program Usage Description

The main game loop begins with a countdown for each level. The player controls the robot vacuum and avoids ghosts while picking up debris using the arrow keys. If a players battery reaches 0 or they fall in a hole the game ends. If a player collides with a ghost the vacuum is possessed for a short time making controlling it more difficult and unpredictable. A ghost collision will cause a player to lose 25% of their battery. Each piece of debris adds to the score. Holy water can be picked up to make the player immune to ghosts but not holes. If a player collects all debris the level progresses to the next board which increases in speed and the difficulty with the addition of new ghost types with different movement characteristics.

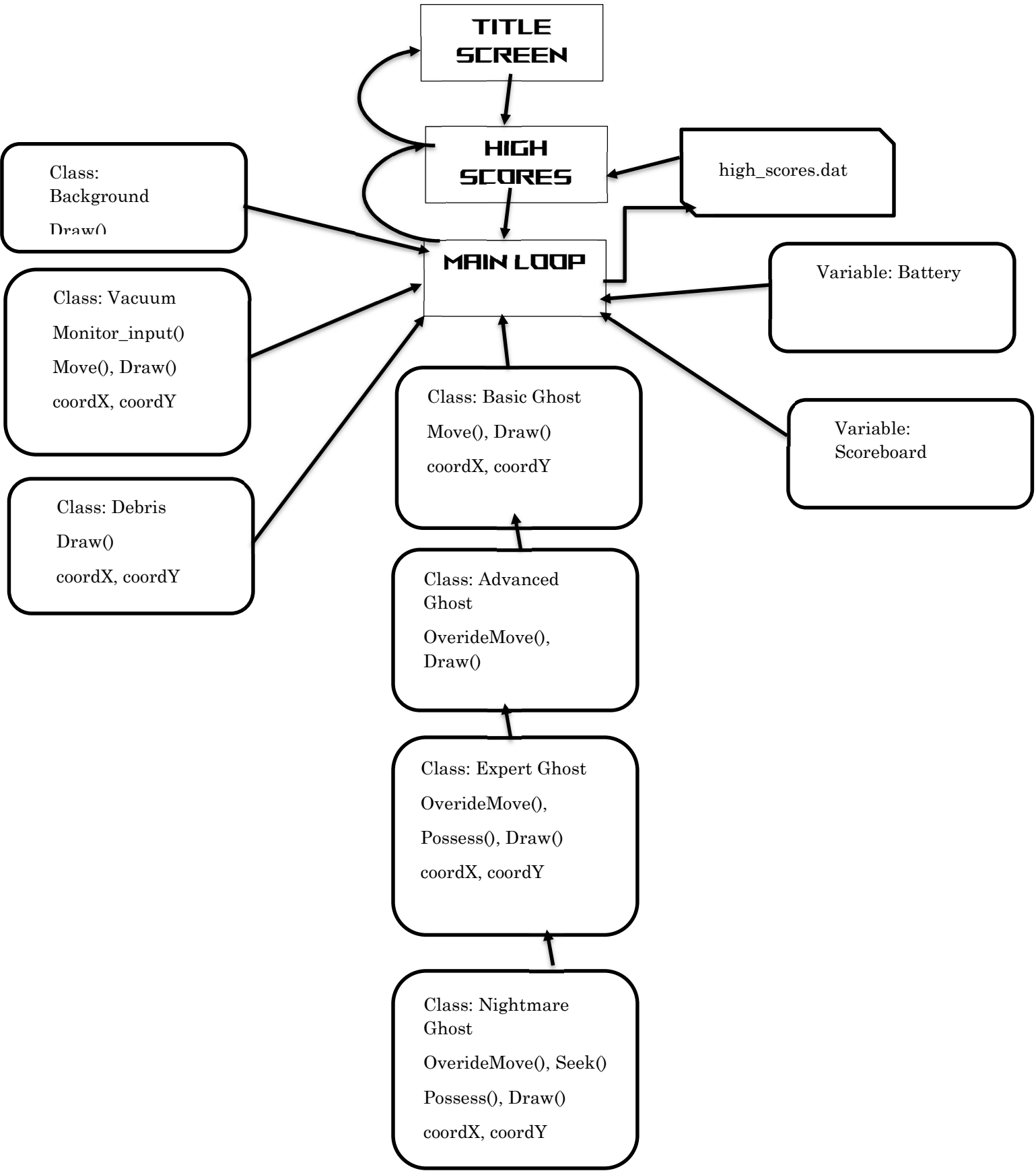
Enter Initials Screen | Program Usage Description

The arrow keys are used to enter initials. Once initials are entered the space bar advances the game to the new high scores screen.

Reports

The game does not feature any formal reports. The high score screen would be the only thing like a report which reads the SQL database to display the scores and player initials.

System Architecture



Source Code Structure

All the source code is included in the "main" directory. The images and sounds are in sub directories. The following is a summary of the source code directories and their contents:

Code Directory	
Directory	**Usage**
Spirit_Cleaners_Inc	This is where the source code, Database, font files, and exe are stored.
Spirit_Cleaners_Inc/sounds	This is where all sound files are stored for music and fx.
Spirit_Cleaners_Inc/images	This is where all images are stored for graphics

Highlighted rows indicate directories containing source code.

External Files & Data

Beyond the source code the game utilizes .png images for graphics and animations, an SQL database in the for of a .db file, a font file .ttf to house the font, .ogg sound files, and Python .dll libraries in the exe packaged version.

images\Adv_Ghost_DR.png
images\Adv_Ghost_UL.png
images\Adv_Ghost_UR.png
images\Basic_Ghost_D.png
images\Basic_Ghost_L.png
images\Basic_Ghost_R.png
images\Basic_Ghost_U.png
images\Debris_1.png
images\Debris_2.png
images\Debris_3.png
images\Debris_4.png
images\Exp_Ghost_DL.png
images\Exp_Ghost_DR.png
images\Exp_Ghost_UL.png
images\Exp_Ghost_UR.png
images\Grid.png
images\Hole_1.png
images\Hole_2.png
images\Hole_3.png
images\Hole_4.png
images\Hole_5.png
images\Holy_Water_1.png
images\Holy_Water_2.png
images\Holy_Water_3.png
images\Holy_Water_4.png
images\Holy_Water_5.png
images\Level_1.png
images\NMG_L_1.png
images\NMG_L_2.png
images\NMG_L_3.png
images\NMG_L_4.png
images\NMG_L_5.png
images\NMG_L_6.png
images\NMG_L_7.png
images\NMG_L_8.png
images\NMG_L_9.png
images\NMG_L_10.png
images\Title_Screen.png
images\Vacuum_D.png
images\Vacuum_I_D.png
images\Vacuum_I_L.png
images\Vacuum_I_R.png
images\Vacuum_I_U.png
images\Vacuum_L.png
images\Vacuum_R.png
images\Vacuum_U.png
images\Adv_Ghost_DL.png

sounds\Holy_Water.ogg
sounds\Level_Funk.ogg
sounds\Title_Theme.ogg
sounds\Count_Beep.ogg
sounds\Count_Chord.ogg
sounds\Game_Over.ogg
sounds\Ghost_Collide.ogg
sounds\High_Scores.ogg

python39.dll
Top_10_Scores.db
fighting-spirit-turbo.bold-italic.ttf
python3.dll

Programming Language | Python

The program was written entirely in Python. Version 3.

https://www.python.org/downloads/

It uses the PyGame Library.

https://www.pygame.org/news

It uses the SQLite3 Library.

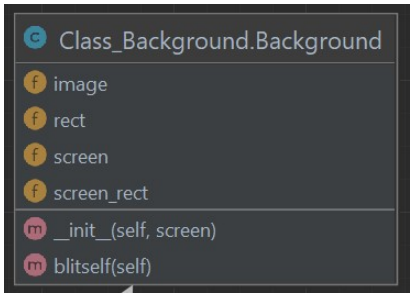
https://docs.python.org/3/library/sqlite3.html

Project Classes

In the project I used classes for any of the objects that would occupy the physical world that were in the main game loop. The player's vacuum, debris, holes, the room, ghosts, and holy water bottles:

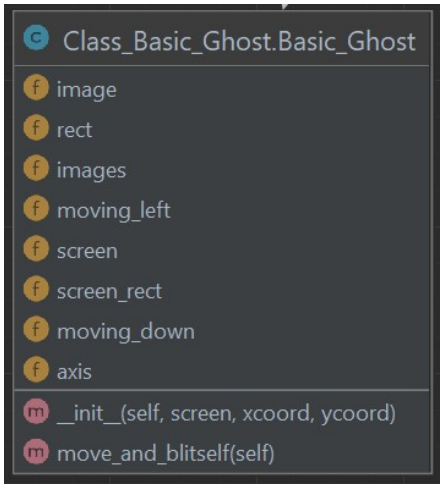
Background | Class_Background.py

This class represents the room that the game is played in.



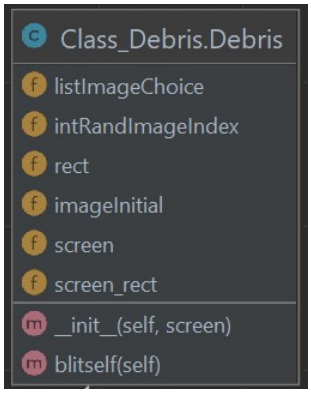
Basic Ghost | Class_Basic_Ghost.py

This class represents the basic enemy type.



Debris | Class_Debris.py

This class represents the debris that is to be collected by the players vacuum pawn.



Expert Ghost | Class_Expert_Ghost.py

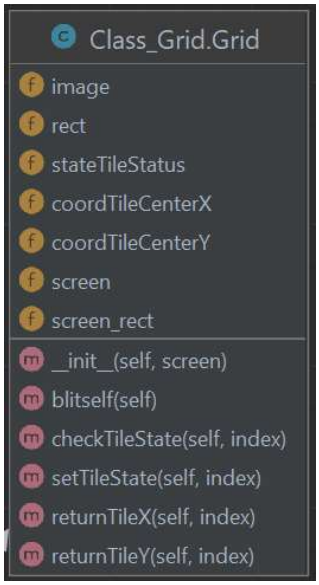
This class represents the expert enemy type.

Floor Hole | Class_Floor_Hole.py

This class represents the holes in the floor that must be avoided.

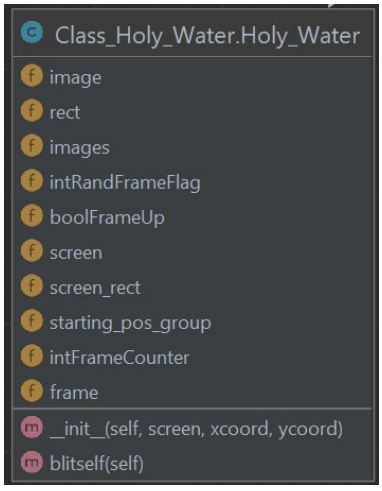
Grid | Class_Grid.py

This class holds information for the grid system to place game objects so they don't overlap.



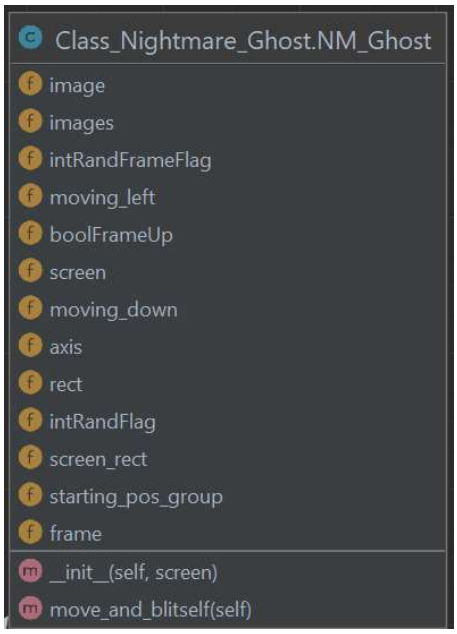
Holy Water | Class_Holy_Water.py

This class represents the pickup that makes the vacuum immune to ghosts.



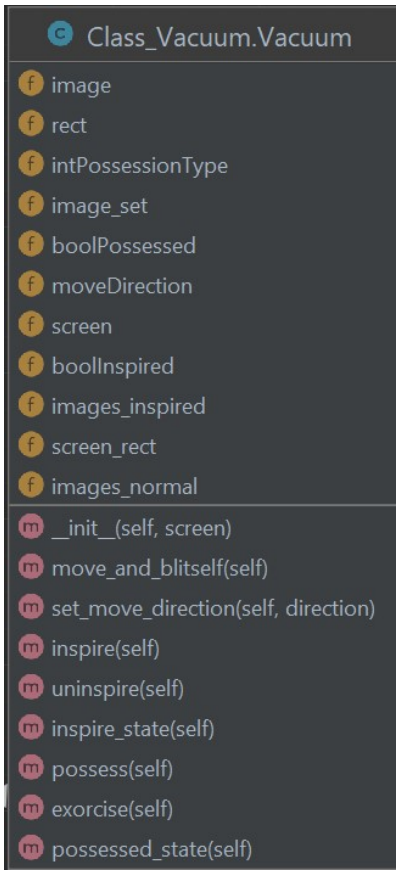
Nightmare Ghost | Class_Nightmare_Ghost.py

This class represents the nightmare enemy type.



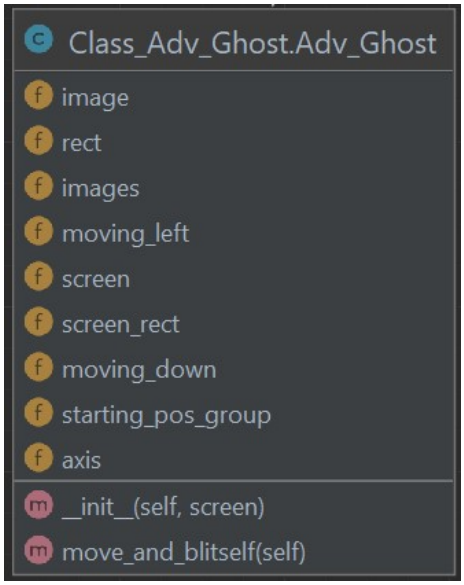
Vacuum | Class_Vacuum.py

This class represents the players pawn.



Advanced Ghost | Class_Adv_Ghost.py

This class represents the advanced enemy type.



Project Modules

The 5 main modules for the game are below.

Main Script | Main_Spirit_Cleaners_Inc.py

This module calls the 4 sub modules below and is the main "script:" for the game. It is also where the interaction with the SQL database takes place.

Title Screen | Func_Title_Screen.py

First screen of the game. Mostly images with text. Glow effect of text is handled at the bottom of module.

High Score Screen | Func_High_Score_Screen.py

Displays the high scores. Controls the background animation during high score screen

Levels | Func_Levels.py

This is where the game is played. Returns the players score to the Main Script once finished.

Initial Input Screen | Func_Get_Initials.py

Module to get player input of initials if a high score is achieved. Sets the character set allowed for initials. Returns the initials as a string to the Main Script.

Testing Plan

The current testing plan is to have the game on GitHub and have people I know test it out. If they encounter any bugs I will address them and fix what I can and release a new .exe folder zip.

APPENDIX B (BUILD AND RELEASE PROCESS)

Each release will be a complete zip folder of the current exe and all file dependencies. The current one is: Spirit_Cleaners_Inc_v1.1.zip. If any improvements are made a user would need to delete the previous game folder and extract the zip to run the game. Multiple versions of the game could live on a system in different folders without affecting one another.

APPENDIX C (CLIENT INSTALLATION INSTRUCTIONS)

Download and unzip the current version of the game, Spirit_Cleaners_Inc_v1.1.zip. It can be found here: https://github.com/Coltonc87/Spirit_Cleaners_Inc/blob/master/Spirit_Cleaners_Inc_v1.1.zip

Then in the main folder run the exe: Main_Spirit_Cleaners_Inc.exe. It should be that simple. The game runs from the exe with no installer and all file dependencies are included in the zip folder contents.

Arrow keys for movement, space bar to move to next screen, esc key to exit.

APPENDIX D (DEVELOPER SETUP INSTRUCTIONS)

Download all Python modules (.py) from here as well as the “images” and “sounds” folders and contents:
https://github.com/Coltonc87/Spirit_Cleaners_Inc

All .py files and the sub folders for the images and sounds should be saved in the same directory.

For testing run Main_Spirit_Cleaners_Inc.py.
System will need sqlite3 and pygame libraries, as well as Python 3.
Development IDE is JetBrains PyCharm, and is suggested for use.
File paths are formatted for Windows, Linux run would take modifying slashes.
Arrow keys for movement, space bar to move to next screen, esc key to exit.