SPACE INVADER

ITEC 5010F-Project Proposal

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Introduction:

In this game, a spaceship kills aliens which have invaded the spaceship's territory by traversing left to right in the window. Spaceship movement is controlled by the user through a keyboard's left and right arrow keys.

An infinite while loop is used for keeping the game window open and all the game components' functionality is added there. The game window will be kept updated continuously for the graphics of the game.

Scope of the project:

Activities in Scope	**Activities Out of Scope**
1. User can control the input only by using the keyboard space bar, left and right arrow keys	1. User cannot play the game using the mouse or the scroll pad or by touch screen monitors
2. This game is offline and cannot be accessed over the mobile or website.	2. Game is built as a python file and not be hosted on any website or play store. This game does not require an internet connectivity
3. Once the spaceship crashes with the aliens 'Game over' message is shown to the user.	3. There is no option to revive the spaceship and continue the game
4. Player will have the option to start a new game or quit the game when the spaceship dies.	4. Player will not have the option to pause, save the game and continue the game
5. The speed of the bullets from the spaceship, and the movement of the aliens can be controlled by the programmer	5. Player doesn't have the option to choose the speed of the bullets being fired from the spaceship.
6. Game can be played by one player at a time	6. Multiplayer mode is not available in this game

Objectives of the project

This game involves a spaceship killing inter terrestrial objects. Aliens are of different forms and their movement is bidirectional.

- Spaceships must move left and right within the window and shift down when they hit the game window wall.
- In this game, the spaceship can fire bullets when the user clicks the space bar on the keyboard.

- Initially score of the player is set to zero as the number of aliens gets killed the score increases by one which will be displayed on the screen.
- User has the option to start a new game after the collision of the spaceship and aliens
- Audio will a played when the user plays the game and when the bullets are fired and when the spaceship is crashed.

List of tasks related to the objectives

- The user will be able to fire the bullets and move the spaceship within the size of the window.
- When the bullet hits the alien, they should disappear from the game window. With every hit, the score of the user increases by one.
- Both the spaceship and alien should be retained in the window and bullets can flow from the spaceship to the alien. Bullets that do not hit the aliens can flow out of the window.
- The game window should be open until the user closes the window and the graphics of the game window should be updated continuously. so continuous while the loop is being used
- The position of aliens flowing the game window will be chosen from a random range of values using the randint ()
- The display messages in the game window are rendered using the font module in pygame and once the player's spaceship dies the game window will ask the user if the game should be restarted or closed.

Libraries and external resources

1. math- for detecting the collision by calculating the distance.

2. random- for choosing the start point of the aliens to flow down the game window

3. pygame- library for creating video games and has modules for drawing graphics, adding sounds, and handling mouse inputs.

Resources

1. https://www.pygame.org/docs/ref/font.html

2. https://www.flaticon.com/freeicon

Further Work:

The features below are not in the scope but can be implemented based on the time

1. Aliens can also fire bullets at a spaceship and if the bullet hits the spaceship, then it is considered game over and must restart again

2. Display the highest score from the previous player and update it if the score of the current player is higher