SPACE SHOOTER GAME

A Course Based Project Report Submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF TECHNOLOGY IN CSE (CYBERSECURITY)

Submitted by

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Under the guidance of
Dr.Lalitha
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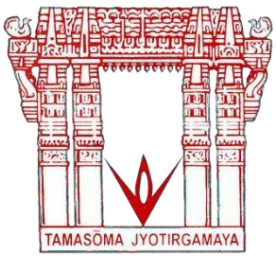

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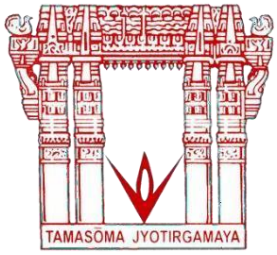

CERTIFICATE

This is to certify that the project report entitled "**Space Shooter Game"** is a bonafide work done under our supervision and is being submitted by **S.MANIRAM (22075A6205)** in partial fulfillment for the award of the degree of Bachelor of Technology in CSE (CYBERSECURITY), of the VNRVJIET, Hyderabad during the academic year 2022- 2023. Certified further that to the best of our knowledge the work presented in this thesis has not been submitted to any other University or Institute for the award of any Degree or Diploma.

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DECLARATION

We declare that the major project work entitled "**Space shooter game**" submitted in the department of CSE-CYS, Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology, Hyderabad, in partial fulfillment of the requirement for the award of the degree of **Bachelor of Technology** in **CSE-CYS** is a bonafide record of our own work carried out under the supervision of Mrs. **Lalitha ,Assistant Professor**. Also, we declare that the matter embodied in this thesis has not been submitted by us in full or in any part thereof for the award of any degree/diploma of any other institution or university previously.

Place: Hyderabad

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We express our thanks to all those who contributed to the successful completion of our project work.

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ABSTRACT

Space Shooter is a game developed using the PYGAME module. This game comes with a single player mode. The graphics of the gameplay system are good and smooth to control for the users. The game is controlled through a keyboard (left and right arrow keys for spaceship movement and space bar for shooting the bullets). Finally, this game is worth spending little time for entertainment purposes. It can still be improved a lot by adding new features.

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1.INTRODUCTION

In a life which is full of busy schedules and restless work we all humans need a bit of entertainment which builds our mood and makes it cheerful. This game is designed in such a way that even kids can also play this game without any hassle.

We have even added background music to it just to make it even better and to increase the playing nature of the game. Games can also be a great source to develop early learning skills for younger children and enhance memory, brain speed and concentration which is very important for the career of the younger generations.

2.LIBRARIES

PyGame :

Pygame is a Python wrapper for the SDL library, which stands for Simple DirectMedia Layer. SDL provides cross-platform access to your system's underlying multimedia hardware components, such as sound, video, mouse, keyboard, and joystick. pygame started life as a replacement for the stalled PySDL project.

Math:

Math is a built-in module in the Python 3 standard library that provides standard mathematical constants and functions. You can use the math module to perform various mathematical calculations, such as numeric, trigonometric, logarithmic, and exponential calculations.

Random:

The Python Random module is a built-in module for generating random integers in Python. These are sort of fake random numbers which do not possess true randomness. We can therefore use this module to generate random numbers, display a random item for a list or string, and so on.

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3.CODE AND IMPLEMENTATION

```
import pygame
import random
import math

from pygame import mixer

# initialize the pygame
pygame.init()

# create the screen
screen = pygame.display.set_mode((800, 600))
# Background
background = pygame.image.load('backGround.png').convert_alpha()

# Background sound
mixer.music.load('background.wav')
mixer.music.play()

# clock
FPS = 5000
clock = pygame.time.Clock()
# Title and icon
pygame.display.set_caption("Alien hunters")
icon = pygame.image.load('spaceship.png')
pygame.display.set_icon(icon)

# Player
```


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```
playerImg = pygame.image.load('player.png').convert_alpha()
playerX = 370
playerY = 480
playerX_change = 0

# Enemy
enemyImg = []
enemyX = []
enemyY = []
enemyX_change = []
enemyY_change = []
no_of_enemies = 6

for i in range(no_of_enemies):
    enemyImg.append(pygame.image.load('enemy.png').convert_alpha())
    enemyX.append(random.randint(0, 735))
    enemyY.append(random.randint(50, 150))
    enemyX_change.append(2)
    enemyY_change.append(30)

# Bullet
# Ready - You can't see the bullet on the screen
# Fire - The bullet is currently moving
bulletImg = pygame.image.load('bullet.png').convert_alpha()
bulletX = 0
bulletY = 480
bulletX_change = 0
bulletY_change = 2
bullet_state = "ready"

# Score
score_value = 0
font = pygame.font.Font('freesansbold.ttf', 32)

textX = 10
textY = 10

over_font = pygame.font.Font('freesansbold.ttf', 64)
```


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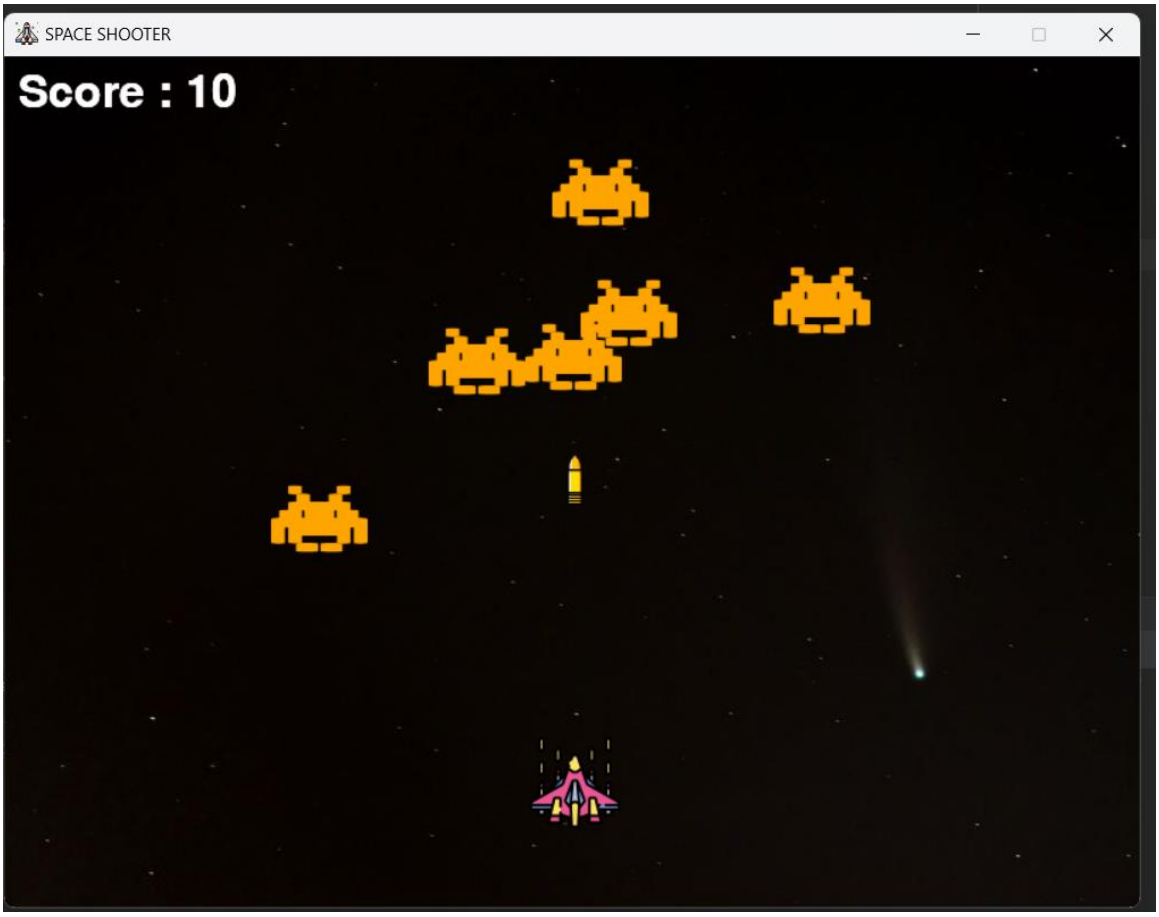
```
def show_score(x, y):
    score = font.render("Score : " + str(score_value), True, (255, 255, 255), )
    screen.blit(score, (x, y))


def game_over():
    over_text = over_font.render("GAME OVER", True, (255, 150, 255))
    screen.blit(over_text, (200, 250))


def fire_bullet(x, y):
    global bullet_state
    bullet_state = "fire"
    screen.blit(bulletImg, (x + 16, y + 10))


def isCollision(enemyX, enemyY, bulletX, bulletY):
    distance = math.sqrt(math.pow(enemyX - bulletX, 2) + (math.pow(enemyY - bulletY, 2)))
    if distance < 27:
        return True
    else:
        return False


def player(x, y):
    screen.blit(playerImg, (x, y))


def enemy(x, y, i):
    screen.blit(enemyImg[i], (x, y))


# Game loop
running = True
while running:
    clock.tick(FPS)
    for event in pygame.event.get():
        #  clock.tick()
        # screen background colour
        screen.fill((0, 0, 0))
```

```
    # background image
    screen.blit(background, (0, 0))
    if event.type == pygame.QUIT:
        running = False

    # check whether keystroke pressed is right or left
    if event.type == pygame.KEYDOWN:
        if event.key == pygame.K_LEFT:
            playerX_change = -1
        if event.key == pygame.K_RIGHT:
            playerX_change = 1
        if event.key == pygame.K_SPACE:
            bulletX = playerX
            if bullet_state == "ready":
                bullet_sound = mixer.Sound('laser.wav')
                bullet_sound.play()
                fire_bullet(bulletX, bulletY)
                bullet_state = "fire"
    if event.type == pygame.KEYUP:
        if event.key == pygame.K_LEFT or event.key == pygame.K_RIGHT:
            playerX_change = 0

# checking for boundary spaceship, so it doesn't go out of bounds
playerX += playerX_change
if playerX <= 0:
    playerX = 0
elif playerX >= 736:
    playerX = 736

# Enemy movement
for i in range(no_of_enemies):
    if enemyY[i] > 400:
        for j in range(no_of_enemies):
            enemyY[j] = 2000
        game_over()
        break
    enemyX[i] += enemyX_change[i]
    if enemyX[i] <= 0:
        enemyX_change[i] = 2
        enemyY[i] += enemyY_change[i]
```

```
    elif enemyX[i] >= 736:
        enemyX_change[i] = -2
        enemyY[i] += enemyY_change[i]
    if enemyY[i] >= 430:
        enemyY[i] = 0

    # collision
    collision = isCollision(enemyX[i], enemyY[i], bulletX, bulletY)
    if collision:
        explosion_sound = mixer.Sound('explosion.wav')
        explosion_sound.play()
        bulletY = 480
        bullet_state = "ready"
        score_value += 1
        enemyX[i] = random.randint(0, 735)
        enemyY[i] = random.randint(50, 150)

    enemy(enemyX[i], enemyY[i], i)

# Bullet movement
if bulletY <= 0:
    bulletY = 480
    bullet_state = "ready"
if bullet_state == "fire":
    fire_bullet(bulletX, bulletY)
    bulletY -= bulletY_change

player(playerX, playerY)
show_score(textX, textY)
pygame.display.update()
pygame.display.update()
```

4.OUTPUT:



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5.CONCLUSION AND FUTURE SCOPE

In conclusion, this game is considered to give a lot of fun to the user who plays it. There are additional features like background music and laser music when the bullet has been released and explosion sound when the laser hits the enemy.

We can add a few more features in the future. We can also add modes concept like (easy, medium and hard). It will be a lot more fun to play.

Finally, we can say that kids will love to play games like this which include adventure and thrill while eliminating the enemies and saving the earth from aliens.

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