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CSE 2ND YEAR

DOCUMENTATION OF AIR ASSULT GAME USING PYGAME , TIME AND RANDOM MODULES OF PYTHON

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ABOUT AIR ASSULT GAME:

IT IS A TYPE OF ARCADE GAME IN WHICH A COPTER IS MOVING AS THE GAME STARTS. IT'S A CHALLENGING AND ADDICTIVE **GAME** IN WHICH YOU HAVE TO AVOID ALL OBSTACLES GETTING IN YOUR WAY. ... AS SOON AS THE **GAME** STARTS, YOUR **COPTER** AUTOMATICALLY MOVES FORWARD WHILE YOU ONLY HAVE TO BALANCE IT THROUGHOUT THE PASSAGE OF THE BLOCKS.

FOR IMPLEMENTATION OF AIR ASSULT GAME I HAVE PYTHON AS A STANDARD LANGUAGE.

ABOUT PYTHON

PYTHON IS A POPULAR PROGRAMMING LANGUAGE. IT WAS CREATED BY GUIDO VAN ROSSUM, AND RELEASED IN 1991.

IT IS USED FOR:

- WEB DEVELOPMENT
- SOFTWARE DEVELOPMENT,
- MATHEMATICS,
- SYSTEM SCRIPTING.
- GAME DEVELOPMENT

WHAT CAN PYTHON DO?

- PYTHON CAN BE USED ON A SERVER TO CREATE WEB APPLICATIONS.
- PYTHON CAN BE USED ALONGSIDE SOFTWARE TO CREATE WORKFLOWS.

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- PYTHON CAN CONNECT TO DATABASE SYSTEMS. IT CAN ALSO READ AND MODIFY FILES.
- PYTHON CAN BE USED TO HANDLE BIG DATA AND PERFORM COMPLEX MATHEMATICS.
- PYTHON CAN BE USED FOR RAPID PROTOTYPING, OR FOR PRODUCTION-READY SOFTWARE DEVELOPMENT.
- PYTHON IS LARGELY USED IN GAME DEVELOPMENT.

WHY PYTHON ?

- PYTHON WORKS ON DIFFERENT PLATFORMS (WINDOWS, MAC, LINUX, RASPBERRY PI, ETC).
- PYTHON HAS A SIMPLE SYNTAX SIMILAR TO THE ENGLISH LANGUAGE.
- PYTHON HAS SYNTAX THAT ALLOWS DEVELOPERS TO WRITE PROGRAMS WITH FEWER LINES THAN SOME OTHER PROGRAMMING LANGUAGES.
- PYTHON RUNS ON AN INTERPRETER SYSTEM, MEANING THAT CODE CAN BE EXECUTED AS SOON AS IT IS WRITTEN. THIS MEANS THAT PROTOTYPING CAN BE VERY QUICK.
- PYTHON CAN BE TREATED IN A PROCEDURAL WAY, AN OBJECT-ORIENTATED WAY OR A FUNCTIONAL WAY.
- PYTHON HAS A LARGE NUMBER OF INBUILT MODULES LIKE MATH,PYGAME ETC AND WE ARE GOING TO USE PYGAME LIBRARY FOR OUR GAME.

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ABOUT PYGAME

PYGAME IS A CROSS-PLATFORM SET OF **PYTHON** MODULES DESIGNED FOR WRITING VIDEO GAMES. **IT** INCLUDES COMPUTER GRAPHICS AND SOUND LIBRARIES DESIGNED TO BE **USED** WITH THE **PYTHON** PROGRAMMING LANGUAGE.

INSTALLING OF PYGAME IN PYTHON

THE COMMAND THAT IS USED FOR INSTALLING PYGAME IN OUR PYTHON IS:

pip install python

AFTER THIS COMMAND THE PYGAME IS INSTALLED IN OUR PYTHON EDITIOR.

IMPLEMENTATION OF AIR ASSULT GAME:

STEP: I – IMPORT ALL THE IMPORTANT LIBRARIES LIKE PYGAME , TIME AND RANDOM.

```
import pygame
import time
from random import randint,randrange
```

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STEP:2 = SET THE WINDOW WITH THE HEIGHT AND WIDTH DIMENSIONS AND NAME OF THE WINDOW AND IMAGE OF THE COPTER THAT WE ARE GOING TO USE FOR THIS GAME.

```
black = (0,0,0)
white = (255,255,255)
sunset = (253,72,47)
greenyellow = (184,255,0)
brightblue = (47,228,253)
orange = (255,113,0)
yellow = (255,236,0)
purple = (252,67,255)

colorChoices = [greenyellow,brightblue,orange,yellow,purple]

pygame.init()

surfaceWidth = 800
surfaceHeight = 500

imageHeight = 43
imageWidth = 100

surface = pygame.display.set_mode((surfaceWidth,surfaceHeight))
pygame.display.set_caption('Air Assult')
clock = pygame.time.Clock()

img = pygame.image.load('images.png')
```

HERE I HAVE USED MY WINDOW NAME AS AIR ASSULT AND THE IMAGE NAME AS IMAGE .PNG.

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STEP3:= CREATE A FUNCTION FOR SCORE WHICH GIVES US THE SCORE OF A PLAYER.

```
def score(count):
    font = pygame.font.Font('freesansbold.ttf', 20)
    text = font.render("Score: "+str(count), True, white)
    surface.blit(text, [0,0])
```

STEP 4 : CREATE A FUNCTION FOR BLOCKS IN WHICH COPTER GET COLLIDE AND GET CRASHED AND THE GAME GONE OVER.

```
def blocks(x_block, y_block, block_width, block_height, gap, colorChoice):

    pygame.draw.rect(surface, colorChoice, [x_block,y_block,block_width,block_height])
    pygame.draw.rect(surface, colorChoice, [x_block,y_block+block_height+gap,block_width, surfaceHeight])
```

STEP 5: AGAIN CREATE A FUNCTION FOR REPLAY/ QUIT OF THE GAME WHENEVER COPTER GET'S CRASHED OR COLLIDE WITH THE BLOCK THEN WE CALL THIS FUNCTION FOR QUITTING AND REPLAY IT AGAIN.

```
def replay_or_quit():
    for event in pygame.event.get([pygame.KEYDOWN, pygame.KEYUP, pygame.QUIT]):
        if event.type == pygame.QUIT:
            pygame.quit()
            quit()

        elif event.type == pygame.KEYDOWN:
            continue

        return event.key
```

STEP 6: CREATE A FUNCTION FOR MASSGAES LIKE WHEN A COPTER GET CRASHED THEN IT WILL GIVE ME A MASSAGE AS CRASHED.

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```
def makeTextObjs(text, font):
    textSurface = font.render(text, True, sunset)
    return textSurface, textSurface.get_rect()

def msgSurface(text):
    smallText = pygame.font.Font('freesansbold.ttf', 20)
    largeText = pygame.font.Font('freesansbold.ttf', 150)

    titleTextSurf, titleTextRect = makeTextObjs(text, largeText)
    titleTextRect.center = surfaceWidth / 2, surfaceHeight / 2
    surface.blit(titleTextSurf, titleTextRect)

    typTextSurf, typTextRect = makeTextObjs('Press any key to continue', smallText)
    typTextRect.center =  surfaceWidth / 2, ((surfaceHeight / 2) + 100)
    surface.blit(typTextSurf, typTextRect)

    pygame.display.update()
    time.sleep(1)

    while replay_or_quit() == None:
        clock.tick()

    main()
```

```
def gameOver():
    msgSurface('crashed!')

def helicopter(x, y, image):
    surface.blit(img, (x,y))
```

STEP 7: AGAIN CREATE A FUNCTION MAIN IN WHICH WE ARE GOING TO DEFINE ALL THE WORKING OF THE GAME LIKE COPTER MOVING AND HOW LONG WILL THAT COPTER MOVE WITOUT COLLISION AND ON THIS BASIS THE SCORES GET'S INCREAES AND WHEN PLAYER GOT COLLIDE WITH ANY BLOCKS THEN THE GAME GOT OVER.

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```
def main():
    x = 150
    y = 200
    y_move = 0

    x_block = surfaceWidth
    y_block = 0

    block_width = 75
    block_height = randint(0,(surfaceHeight/2))
    gap = imageHeight * 3
    block_move = 4
    current_score = 0


    blockColor = colorChoices[randrange(0,len(colorChoices))]

    game_over = False

    while not game_over:

        for event in pygame.event.get():
            if event.type == pygame.QUIT:
                game_over = True
```

```
            if event.type == pygame.KEYDOWN:
                if event.key == pygame.K_UP:
                    y_move = -5

            if event.type == pygame.KEYUP:
                if event.key == pygame.K_UP:
                    y_move = 5

        y += y_move

        surface.fill(black)
        helicopter(x ,y, img)


        blocks(x_block, y_block, block_width, block_height, gap, blockColor)
        score(current_score)
        x_block -= block_move

        if y > surfaceHeight-40 or y < 0:
            gameOver()

        if x_block < (-1*block_width):
            x_block = surfaceWidth
            block_height = randint(0, (surfaceHeight / 2))
```

```
            blockColor = colorChoices[randrange(0,len(colorChoices))]
            current_score+=1

        if x + imageWidth > x_block:
            if x < x_block + block_width:
                if y < block_height:
                    if x - imageWidth < block_width + x_block:
                        gameOver()

        if x + imageWidth > x_block:
            if y + imageHeight > block_height+gap:
                if x < block_width + x_block:
                    gameOver()

        if 3 <= current_score < 5:
            block_move = 5
            gap = imageHeight * 2.9
        if 5 <= current_score < 8:
            block_move = 6
            gap = imageHeight *2.8
        if 8 <= current_score < 14:
            block_move = 7
            gap = imageHeight *2.7
```

```
        pygame.display.update()
        clock.tick(60)
```

STEP 8: CALL THE MAIN FUNCTION AND QUIT THE GAME AFTER CALLING THE MAIN FUNCTION.

```
main()
pygame.quit()
quit()
```

STEP9: THAT'S THE END OF THE GAME.

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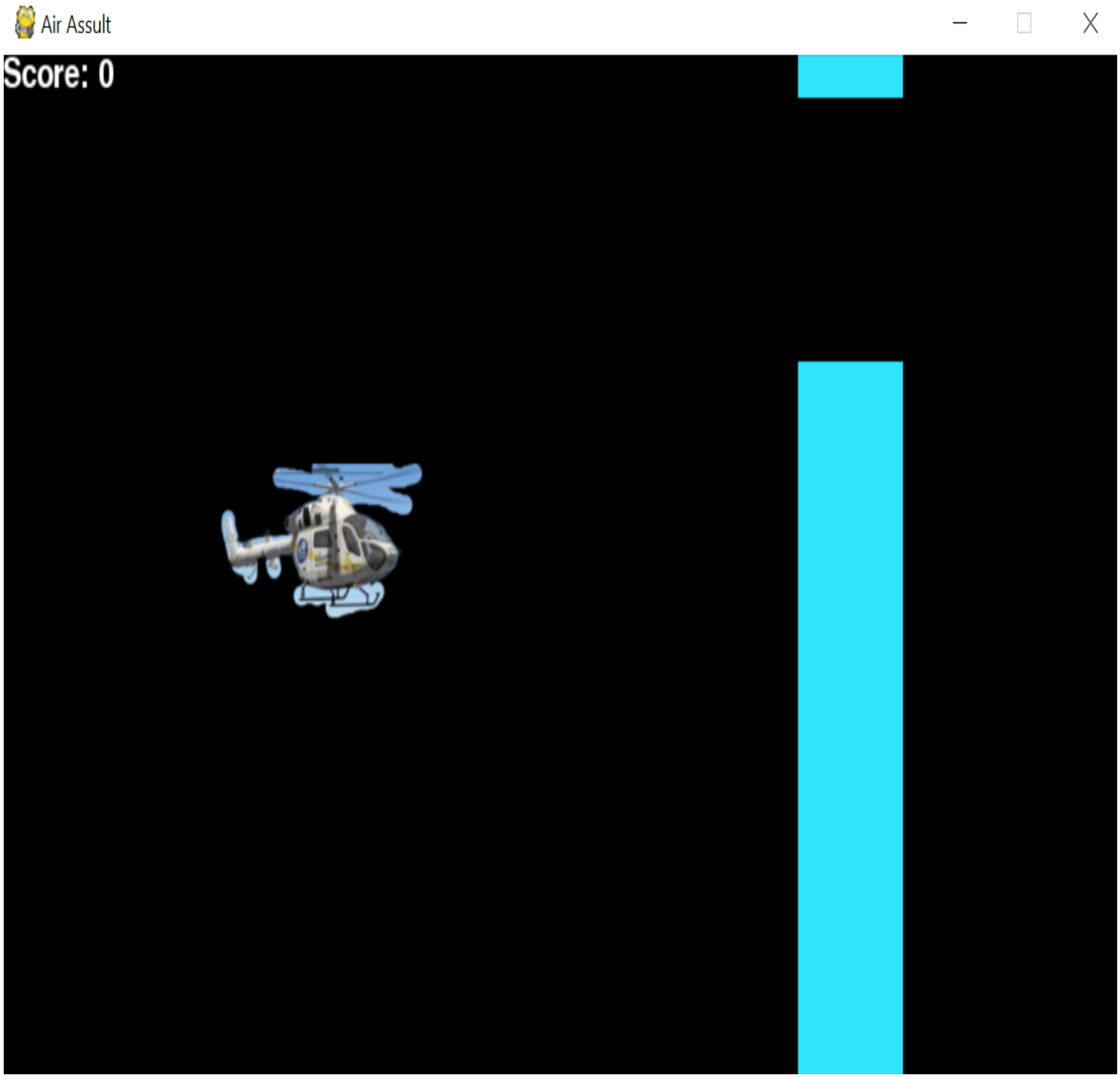
OUTPUT AND EXECUTION OF THE ABOVE CODE:

➢WHEN GAME GETS STARTED:



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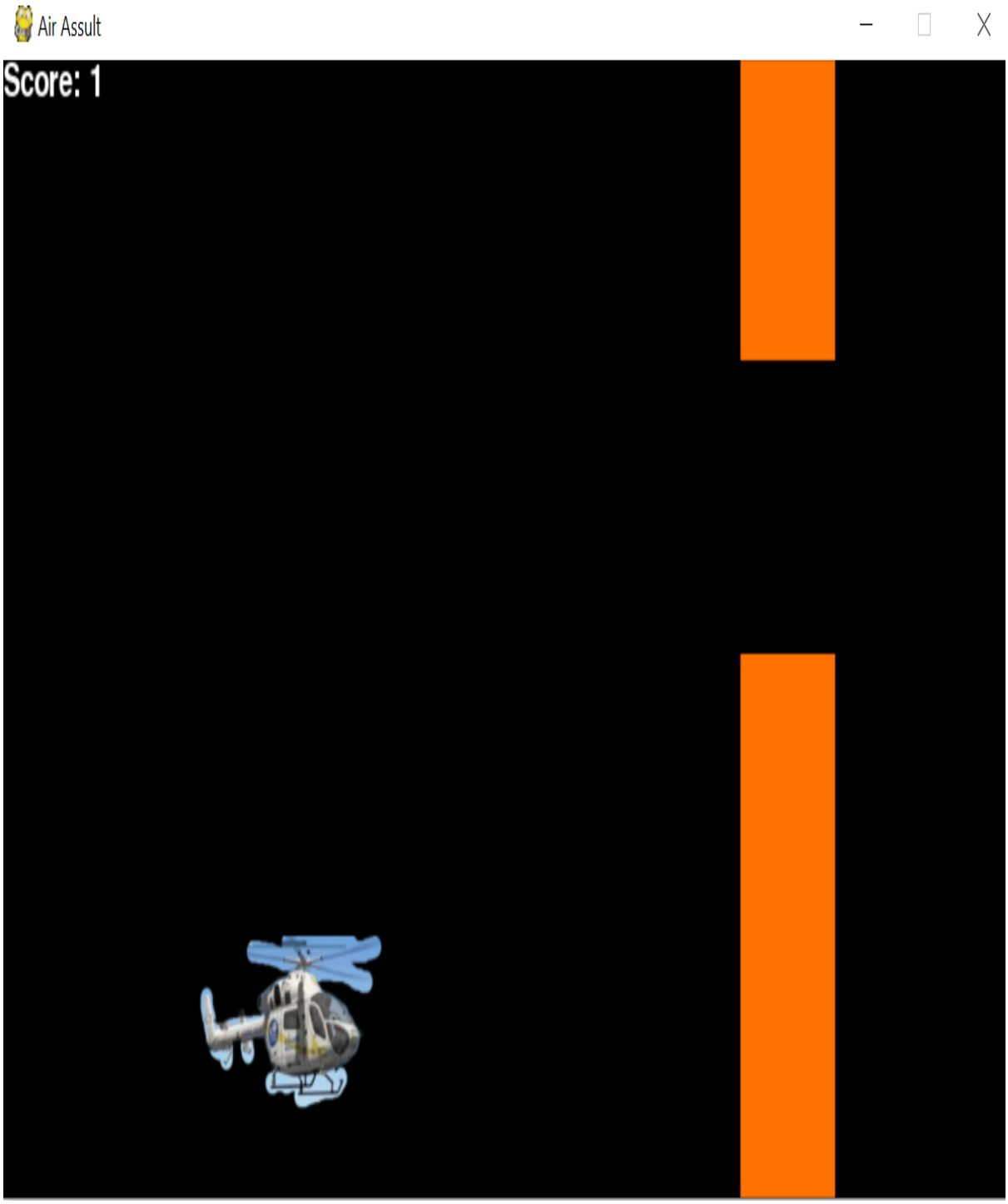
- WHEN PLAYER CROSSED ONE BLOCK WITHOUT ANY COLLISION WITH BLOCK THEN SCORE AS INCREASED AS :



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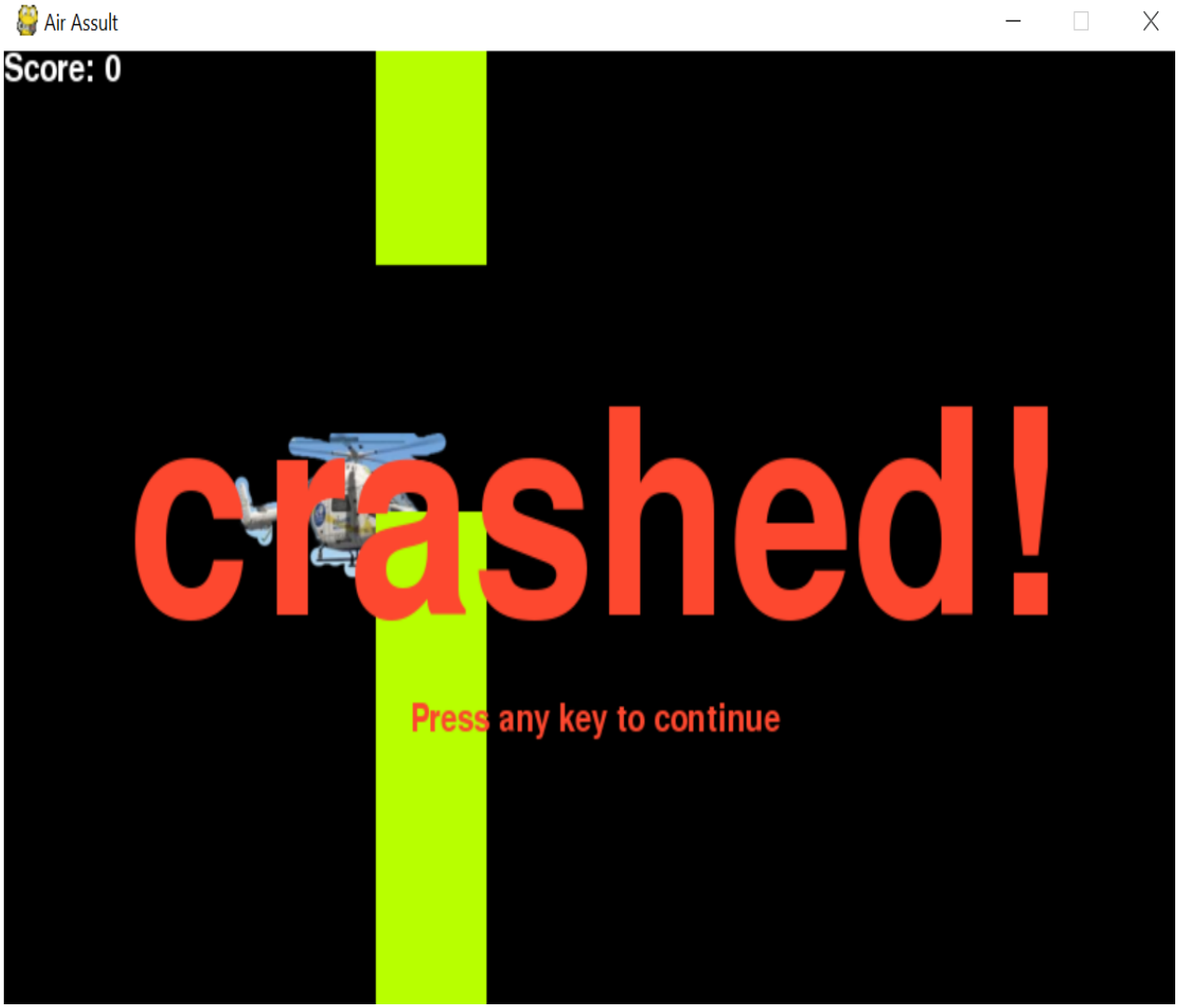
- WHEN COPTER COLLIDE WITH THE BLOCK THEN THE COPTER GET CRASHED AND GAME GET'S OVER AND IF SOMEONE WANTS TO PLAY IT AGAIN THEN HE/SHE HAS TO PRESS ANY KEY AFTER GAME OVER THE GAME WOULD BE RESTART AGAIN.



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CONCLUSION:

THE AIRASSULT GAME IS A TYPE OF ARCADE GAME IN WHICH PLAYER HAS TO CONTROL THE COPTER WITHOUT BEING CRASHED AND IT GAME HELP THE PLAYER TO DEVLOP CONTROLLING SKILL IN A COPTER WITHOUT BEING GETTING COLLIDE .

AS THE BLOCK CROSSED BY THE PLAYER THEN THE PLAYER GOT REWARD AS THE SCORECARD INCREAES WHEN THEY CROSS THE BLOCK WITHOUT BEING CRASHED.

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