Flappy Bird Project Report (Manny Bird)

Title: Manny Bird – A Flappy Bird Clone

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Course: [CSE]

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1. introduction

This project is a remake of the popular mobile game Flappy Bird using Python and the Pygame library. The main idea of the game is very simple: the player controls a bird that must fly between pipes without hitting them. Even though the gameplay looks easy, it is actually very challenging and addictive.

2. problem statement

make a simple bird game where player avoids pipes, scores points, and game ends on collison.

3. functional requirements

- **bird moves with keyboard**
- **pipes spawn with random gaps**
- **collison detection**
- **score tracking**
- **reset after game over**

4. non-functional requirements

- smooth fps (~60)
- responsive controls
- simple code structure
- lightweight assets

5. System architecture

- main loop: events + rendering
- bird class: position + image
- pipe class: position + scoring
- event system: key presses + timers

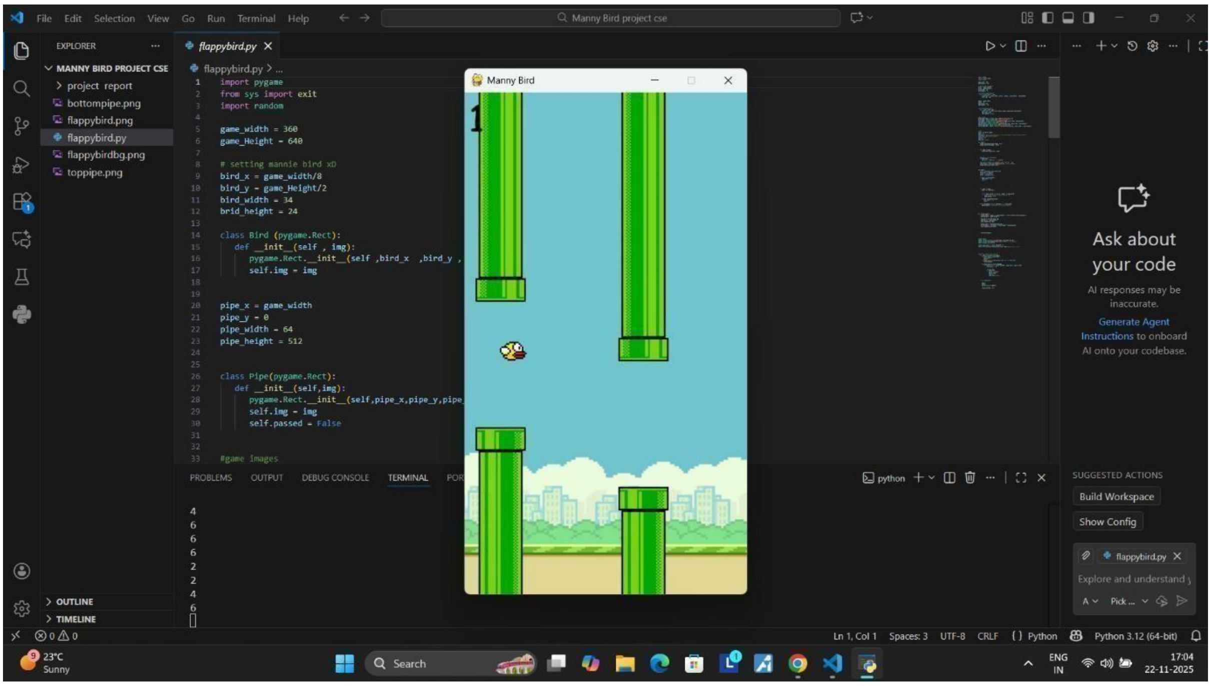
6. design decisions

- scaled images manually
- pipe timer with pygame.USEREVENT
- score increments by 0.5 per pipe and there are two pipes per
- used random package for pipe spawn randomly

7. implementation details

- window: 360x640
- gravity: 0.4, jump: -5
- pipe spawn: every 1.5s
- pipe: 64x512
- bird: 34x24

9. screenshots & results



```python
import pygame
from sys import exit
import random

game_width = 360
game_Height = 640

# setting mannie bird xD
bird_x = game_width/8
bird_y = game_Height/2
bird_width = 34
brid_height = 24

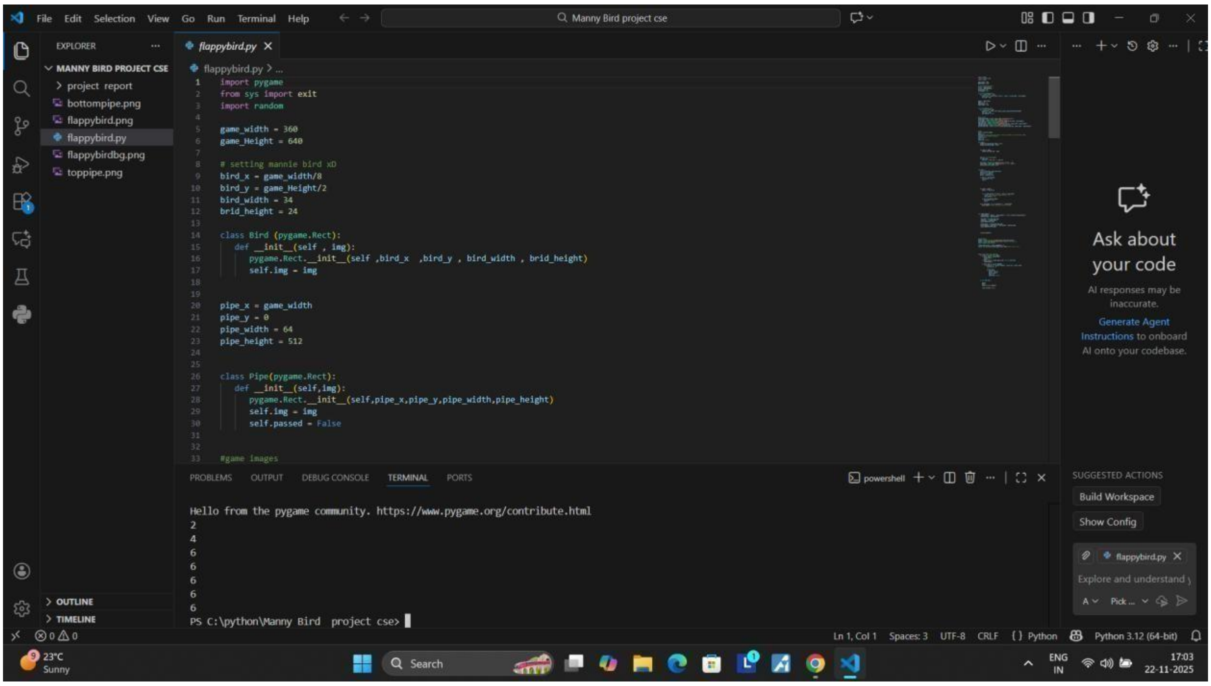
class Bird (pygame.Rect):
   def __init__(self , img):
      pygame.Rect.__init__(self ,bird_x  ,bird_y ,
      self.img = img


pipe_x = game_width
pipe_y = 0
pipe_width = 64
pipe_height = 512


class Pipe(pygame.Rect):
   def __init__(self,img):
      pygame.Rect.__init__(self,pipe_x,pipe_y,pipe_
      self.img = img
      self.passed = False


#game images
```

```
4
6
6
6
2
2
4
6
```



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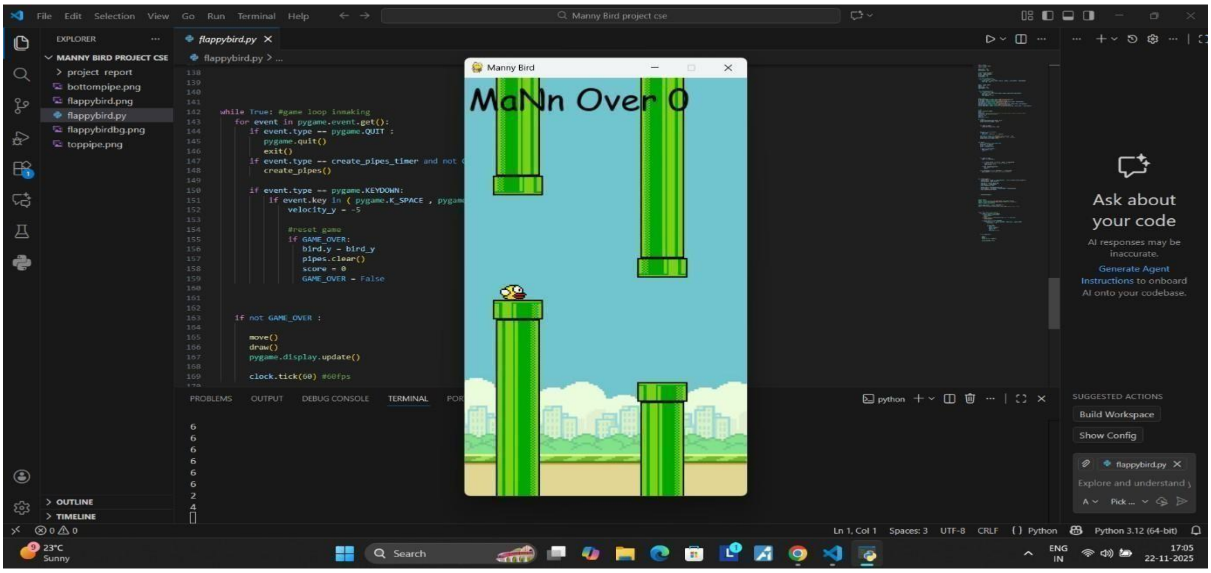
#game images
```

```
Hello from the pygame community. https://www.pygame.org/contribute.html
2
4
6
6
6
6
6
PS C:\python\Manny Bird  project cse>
```



```
while True: #game loop inmaking
    for event in pygame.event.get():
        if event.type == pygame.QUIT :
            pygame.quit()
            exit()
        if event.type == create_pipes_timer and not
            create_pipes()

        if event.type == pygame.KEYDOWN:
            if event.key in ( pygame.K_SPACE , pygame
                velocity_y = -5

                #reset game
                if GAME_OVER:
                    bird.y = bird_y
                    pipes.clear()
                    score = 0
                    GAME_OVER = False



    if not GAME_OVER :

        move()
        draw()
        pygame.display.update()

        clock.tick(60) #60fps
```

```
6
6
6
6
6
6
2
4
```

10. testing approach

Manually played it for some time tested every possible way and yeah initallly there were some bugs like the score wasn't increasing ,there was a time when it couldn't detect if the bird touched the ground or not but used a bit of youtube and google and fixed it .

11. challenges faced

Looping was very hard and settings pole were very hard to used a bit of youtube . It was quite challenging it took me like 2days to understand hpw pygame works but yeah with the help of yt and google I managed to get it done . Not gonna lie I used yt but I wrote every line of code by myself

12. learnings

Learned how newtons is applicable in coding lol like gravity.Also learned about how to use pygame , how to use random function ,how to use include external png’s , how to resize them etc etc.

13. future enhancements

add sounds, menu, high scores, bird animation, mobile controls.This was a basic game in future I might make it 3d using unreal engines maybe

14. references

Youtube tutorials and Github examples.