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Flappy Bird Project Report (Manny Bird)

Title: Manny Bird – A Flappy Bird Clone

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1. introduction

this project recreates Flappy Bird in Python using Pygame. aim was to learn game loops, collision detection, and event handling.

2. problem statement

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

3. functional requirements

- bird moves with keyboard
- pipes spawn with random gaps
- collision 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

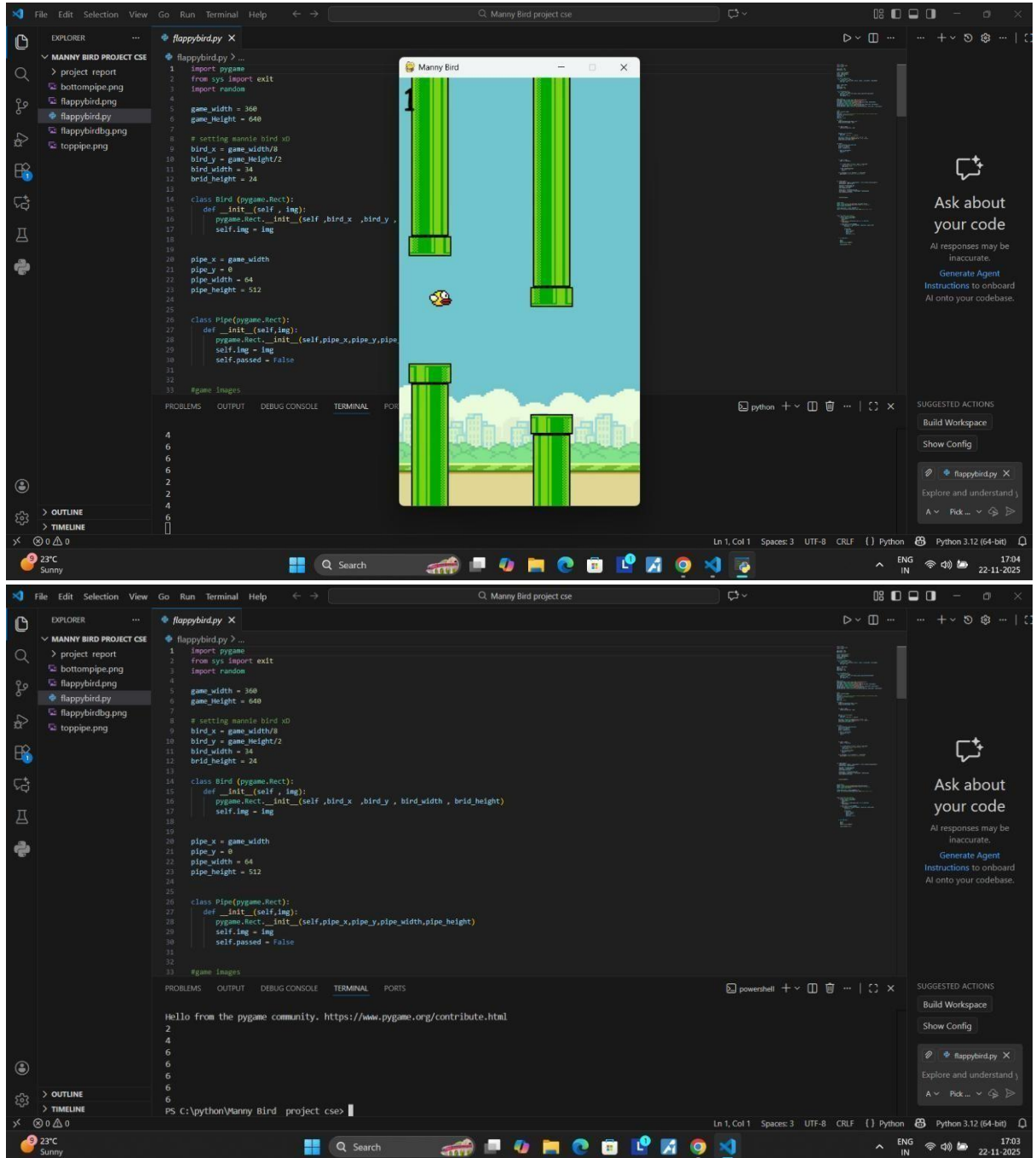
- scaled images manually
- pipe timer with `pygame.USEREVENT`
- score increments by 0.5 per pipe and there are two pipes per
- used random package for pipe spawn randomly

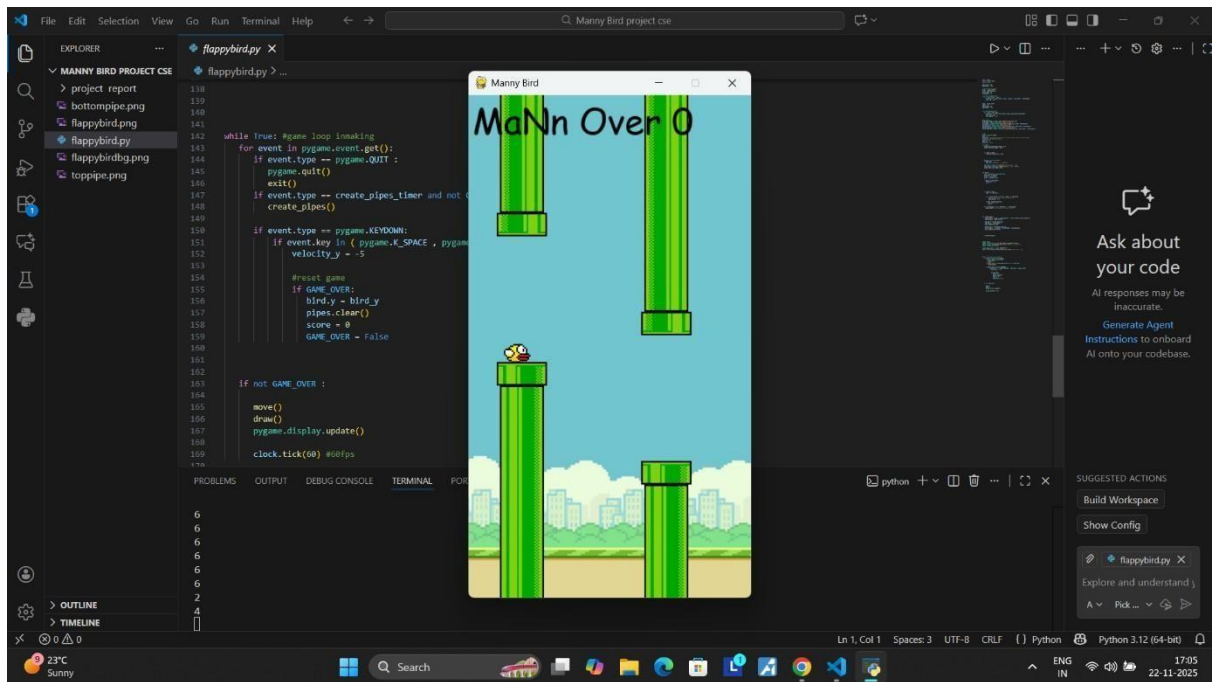
7. implementation details

- window: 360x640

- gravity: 0.4, jump: -5
- pipe spawn: every 1.5s

9. screenshots & results





10. testing approach

Manually played it for some time tested every possible way and yeah initially 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 use a bit of youtube . It was quite challenging it took me like 2 days to understand how 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.