import pygame

import sys

# Initialize Pygame

pygame.init()

# Set up the display

WIDTH, HEIGHT = 800, 600

WINDOW = pygame.display.set\_mode((WIDTH, HEIGHT))

pygame.display.set\_caption("Pong Game")

# Colors

WHITE = (255, 255, 255)

BLACK = (0, 0, 0)

# Paddle settings

PADDLE\_WIDTH, PADDLE\_HEIGHT = 10, 100

PADDLE\_SPEED = 7

# Ball settings

BALL\_SIZE = 10

BALL\_SPEED\_X, BALL\_SPEED\_Y = 7, 7

# Font settings

FONT = pygame.font.Font(None, 74)

# Initialize scores

player\_score = 0

ai\_score = 0

WINNING\_SCORE = 3

# Paddle positions

player\_paddle = pygame.Rect(WIDTH - 20, HEIGHT // 2 - PADDLE\_HEIGHT // 2, PADDLE\_WIDTH, PADDLE\_HEIGHT)

ai\_paddle = pygame.Rect(10, HEIGHT // 2 - PADDLE\_HEIGHT // 2, PADDLE\_WIDTH, PADDLE\_HEIGHT)

# Ball position and speed

ball = pygame.Rect(WIDTH // 2 - BALL\_SIZE // 2, HEIGHT // 2 - BALL\_SIZE // 2, BALL\_SIZE, BALL\_SIZE)

ball\_speed\_x = BALL\_SPEED\_X

ball\_speed\_y = BALL\_SPEED\_Y

def reset\_ball():

global ball\_speed\_x, ball\_speed\_y

ball.x = WIDTH // 2 - BALL\_SIZE // 2

ball.y = HEIGHT // 2 - BALL\_SIZE // 2

ball\_speed\_x \*= -1

ball\_speed\_y \*= -1

def draw():

WINDOW.fill(BLACK)

pygame.draw.rect(WINDOW, WHITE, player\_paddle)

pygame.draw.rect(WINDOW, WHITE, ai\_paddle)

pygame.draw.ellipse(WINDOW, WHITE, ball)

pygame.draw.aaline(WINDOW, WHITE, (WIDTH // 2, 0), (WIDTH // 2, HEIGHT))

player\_text = FONT.render(str(player\_score), True, WHITE)

ai\_text = FONT.render(str(ai\_score), True, WHITE)

WINDOW.blit(player\_text, (WIDTH // 2 + 20, 10))

WINDOW.blit(ai\_text, (WIDTH // 2 - 40, 10))

pygame.display.flip()

def ai\_movement():

if ai\_paddle.centery < ball.centery:

ai\_paddle.y += PADDLE\_SPEED

elif ai\_paddle.centery > ball.centery:

ai\_paddle.y -= PADDLE\_SPEED

def main():

global player\_score, ai\_score, ball\_speed\_x, ball\_speed\_y

clock = pygame.time.Clock()

run\_game = True

while run\_game:

for event in pygame.event.get():

if event.type == pygame.QUIT:

pygame.quit()

sys.exit()

keys = pygame.key.get\_pressed()

if keys[pygame.K\_UP] and player\_paddle.top > 0:

player\_paddle.y -= PADDLE\_SPEED

if keys[pygame.K\_DOWN] and player\_paddle.bottom < HEIGHT:

player\_paddle.y += PADDLE\_SPEED

ai\_movement()

ball.x += ball\_speed\_x

ball.y += ball\_speed\_y

# Ball collision with top and bottom walls

if ball.top <= 0 or ball.bottom >= HEIGHT:

ball\_speed\_y \*= -1

# Ball collision with paddles

if ball.colliderect(player\_paddle) or ball.colliderect(ai\_paddle):

ball\_speed\_x \*= -1

# Ball goes out of bounds (left or right)

if ball.left <= 0:

player\_score += 1

reset\_ball()

if ball.right >= WIDTH:

ai\_score += 1

reset\_ball()

# Check for a winner

if player\_score >= WINNING\_SCORE or ai\_score >= WINNING\_SCORE:

run\_game = False

draw()

clock.tick(60)

# Display the winner

WINDOW.fill(BLACK)

if player\_score >= WINNING\_SCORE:

winner\_text = FONT.render("Player Wins!", True, WHITE)

else:

winner\_text = FONT.render("AI Wins!", True, WHITE)

WINDOW.blit(winner\_text, (WIDTH // 2 - winner\_text.get\_width() // 2, HEIGHT // 2 - winner\_text.get\_height() // 2))

pygame.display.flip()

pygame.time.wait(3000)

if \_\_name\_\_ == "\_\_main\_\_":

main()