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import pygame
import sys
import time

# Initialize Pygame
pygame.init()

# Screen settings
WIDTH, HEIGHT = 800, 600
screen = pygame.display.set_mode((WIDTH, HEIGHT))
pygame.display.set_caption("Autonomous Parking Simulator - Phase 4")

# Colors
WHITE = (255, 255, 255)
GRAY = (100, 100, 100)
GREEN = (0, 255, 0)
BLACK = (0, 0, 0)

# Load car image
car_img = pygame.image.load("assets/car.png")
car_img = pygame.transform.scale(car_img, (50, 50))
car_rect = car_img.get_rect(topleft=(100, 500))

# Parking slot
parking_slot = pygame.Rect(500, 500, 70, 35)

# Car speed
speed = 1.5

# Font
font = pygame.font.SysFont("Arial", 30)

# Clock and Timer
clock = pygame.time.Clock()
start_time = time.time()
fps_counter = pygame.time.Clock()

# Status flags
parked = False
status_msg = "Parking..."

# Movement function
def move_car(car_rect, target):
    if car_rect.x < target.x:
        car_rect.x += speed
    elif car_rect.x > target.x:
        car_rect.x -= speed

    if car_rect.y < target.y:
        car_rect.y += speed
    elif car_rect.y > target.y:
        car_rect.y -= speed

    return car_rect.colliderect(target)

# Main loop
while True:
    screen.fill(WHITE)
    pygame.draw.rect(screen, GRAY, parking_slot)

    for event in pygame.event.get():
        if event.type == pygame.QUIT:
            pygame.quit()
            sys.exit()

        if not parked:
            parked = move_car(car_rect, parking_slot)
            if parked:
                status_msg = "Parked Successfully!"

    # Draw parking status
    screen.blit(car_img, car_rect)
    pygame.draw.rect(screen, GREEN if parked else GRAY, parking_slot, 2)

    # Timer and FPS
    elapsed_time = round(time.time() - start_time, 2)
    fps = round(clock.get_fps(), 1)

    timer_text = font.render(f"Time: {elapsed_time}s", True, BLACK)
    fps_text = font.render(f"FPS: {fps}", True, BLACK)
    status_text = font.render(f"Status: {status_msg}", True, BLACK)

    screen.blit(timer_text, (10, 10))
    screen.blit(fps_text, (10, 30))
    screen.blit(status_text, (10, 50))

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

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