ES MICROPYTHON CODE :

```
import time
from machine import Pin, PWM

# IR Sensors
IR1 = Pin(2, Pin.IN) # Entry sensor
IR2 = Pin(3, Pin.IN) # Exit sensor

# Servo motor setup
servo = PWM(Pin(15))
servo.freq(50)

# RGB LED setup (Common Cathode)
RED = Pin(10, Pin.OUT)
GREEN = Pin(11, Pin.OUT)
BLUE = Pin(12, Pin.OUT)

# Buzzer setup
buzzer = Pin(14, Pin.OUT)

# Constants
TOTAL_SLOTS = 4
GATE_OPEN = 0 # Servo angle to open gate
GATE_CLOSED = 90 # Servo angle to close gate

# Variables
slots = TOTAL_SLOTS
car_entering = False
car_exiting = False

# Functions
def set_servo_position(angle):
    min_duty = 1638
    max_duty = 8192
    duty = int(min_duty + (angle / 180) * (max_duty - min_duty))
    servo.duty_u16(duty)

def rgb_led(r, g, b):
    RED.value(r)
    GREEN.value(g)
    BLUE.value(b)

def buzz(pattern="short"):
    if pattern == "short":
        buzzer.value(1)
        time.sleep(0.1)
        buzzer.value(0)
    elif pattern == "long":
        buzzer.value(1)
        time.sleep(0.5)
        buzzer.value(0)
    elif pattern == "double":
        for _ in range(2):
            buzzer.value(1)
            time.sleep(0.2)
            buzzer.value(0)
            time.sleep(0.1)

# Startup
print("RASPBERRY PI PICO - PARKING SYSTEM")
set_servo_position(GATE_CLOSED)
rgb_led(0, 0, 0)
time.sleep(2)

while True:
    # ---- Car Entering ----
    if IR1.value() == 0 and not car_entering:
        car_entering = True
        if slots > 0:
            print("Car Detected at Entry")
            rgb_led(0, 1, 0) # Green
            buzz("short")
            set_servo_position(GATE_OPEN)
            time.sleep(2)
            set_servo_position(GATE_CLOSED)
            slots -= 1
            print(f"Car Entered. Slots Left: {slots}")
        else:
            print("SORRY :( Parking Full")
            rgb_led(1, 0, 0) # Red
            buzz("double")
            time.sleep(2)

    if IR1.value() == 1:
        car_entering = False
        rgb_led(0, 0, 0)
```

```
# ---- Car Exiting ----
if IR2.value() == 0 and not car_exiting:
    car_exiting = True
    print("Car Detected at Exit")
    rgb_led(0, 0, 1) # Blue
    buzz("short")
    set_servo_position(GATE_OPEN)
    time.sleep(2)
    set_servo_position(GATE_CLOSED)
    if slots < TOTAL_SLOTS:
        slots += 1
    print(f"Car Exited. Slots Left: {slots}")

if IR2.value() == 1:
    car_exiting = False
    rgb_led(0, 0, 0)

time.sleep(0.1)
```