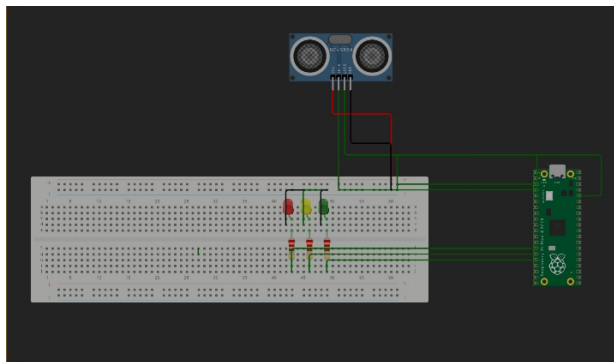


Project Design Phase-4

Date	26 October 2023
Team ID	454
Project Name	4123-Traffic Management
Team Name	Proj_227233_Team_2
Team Members	5

Advance Traffic Management Block Diagram:



Program code for Traffic Management:

```
import machine
import utime

# GPIO pins for the HC-SR04 sensor
trigger_pin = machine.Pin(2, machine.Pin.OUT) # Connect to the sensor's trigger pin
echo_pin = machine.Pin(3, machine.Pin.IN)      # Connect to the sensor's echo pin

# Traffic light control pins (simulated)
red_light = machine.Pin(10, machine.Pin.OUT)
yellow_light = machine.Pin(11, machine.Pin.OUT)
green_light = machine.Pin(12, machine.Pin.OUT)

# Function to measure distance using the HC-SR04 sensor
def measure_distance():
    trigger_pin.value(0)
    utime.sleep_us(2)
```



```

trigger_pin.value(1)
utime.sleep_us(10)
trigger_pin.value(0)

while echo_pin.value() == 0:
    pulse_start = utime.ticks_us()

while echo_pin.value() == 1:
    pulse_end = utime.ticks_us()

pulse_duration = utime.ticks_diff(pulse_end, pulse_start)
distance = (pulse_duration * 0.0343) / 2 # Speed of sound is approximately 343
meters per second

return distance

# Traffic light control function
def control_traffic_lights(distance):
    if distance < 20: # If a vehicle is very close
        red_light.value(0)
        yellow_light.value(1)
        green_light.value(0)
    elif 30 <= distance < 40: # If a vehicle is moderately close
        red_light.value(1)
        yellow_light.value(0)
        green_light.value(0)
    else: # If no vehicle is detected
        red_light.value(0)
        yellow_light.value(0)
        green_light.value(1)

while True:
    distance = measure_distance()

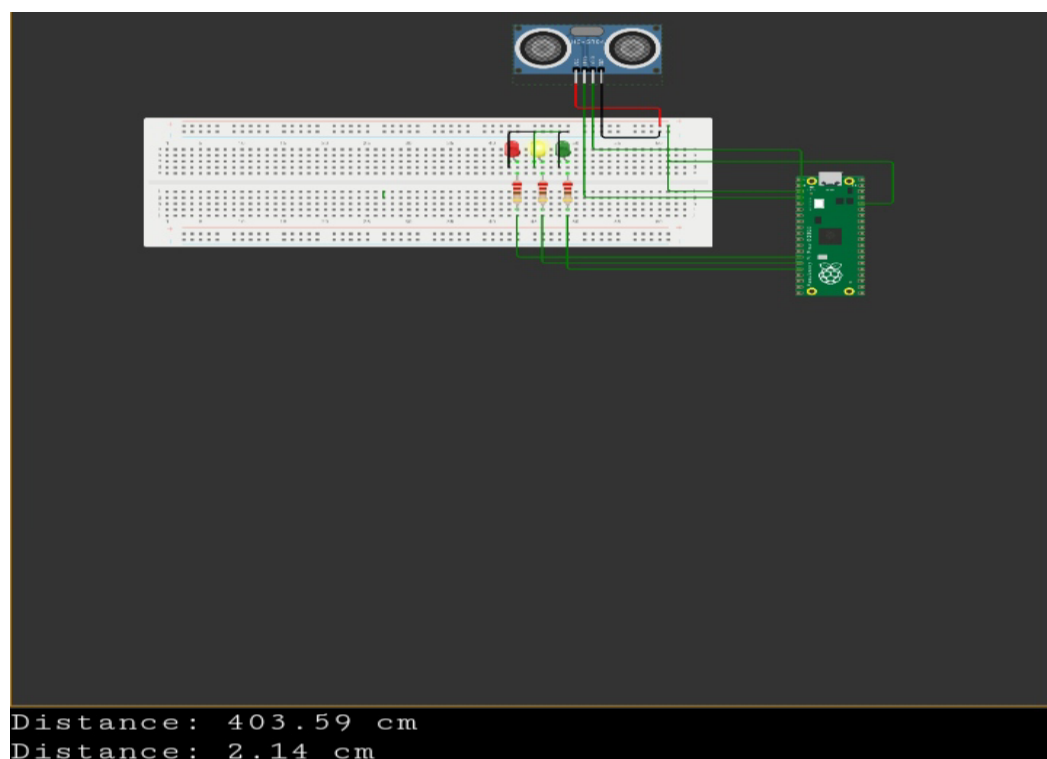
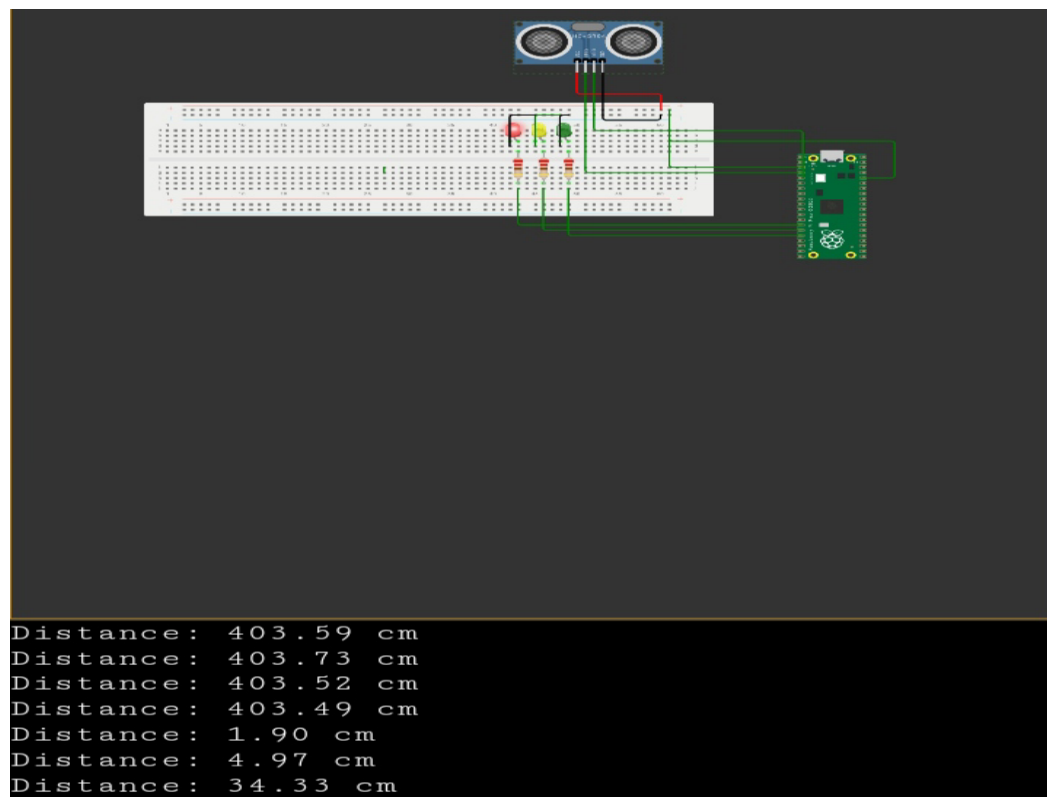
    # Control traffic lights based on the distance measurements
    control_traffic_lights(distance)

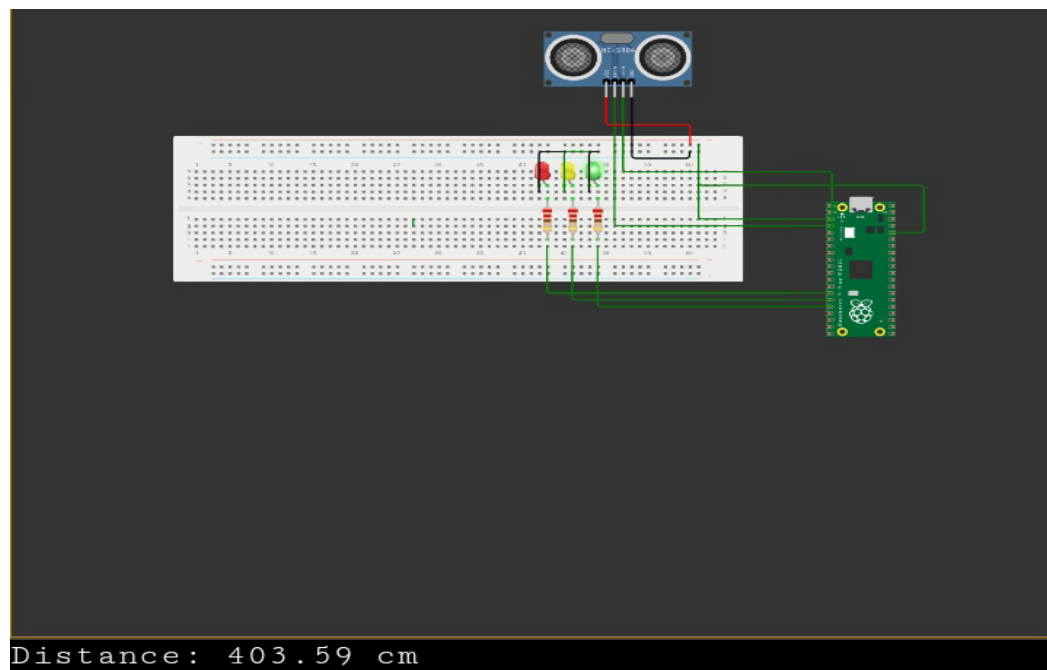
    # For simulation purposes, print the distance and the traffic light state
    print("Distance: {:.2f} cm".format(distance))
    utime.sleep(2) # Wait for a few seconds before taking the next measurement

```

OUTPUT:







Reference: <http://wokwi.com/projects/379623461907998721>

