Smart Parking System

Components Needed:

1. Ultrasonic sensors (for detecting car presence)

2. Arduino board (to control the system)

3. LED lights (to indicate parking spot status)

4. Wi-Fi module (to enable IoT connectivity)

5. Tinkercad for simulation

Steps to Implement:

1. **Sensor Setup:** Connect ultrasonic sensors to the Arduino board to detect car presence in parking spots.

2. **LED Indicators:** Attach LED lights to each parking spot. Green indicates an available spot, while red indicates an occupied spot.

3. **Arduino Programming:** Write code to read sensor data and control the LEDs accordingly. Use conditional statements to change LED colors based on sensor inputs.

4. **Wi-Fi Integration:** Add a Wi-Fi module (e.g., ESP8266) to the Arduino to enable IoT connectivity.

5. **IoT Platform:** Create an account on an IoT platform like ThingSpeak or Adafruit IO. Configure the Wi-Fi module to send parking spot status (available or occupied) to the cloud.

6. **User Interface:** Design a simple web interface or mobile app (you can use Tinkercad's simulation capabilities) to display parking spot status in real-time.

7. **IoT Integration:** Connect the IoT platform to your web/mobile interface to fetch and display parking spot data.

8. **Testing:** Simulate car arrivals and departures in Tinkercad to see how the system reacts and updates the status.

9. **Documentation:** Prepare documentation explaining the project, components used, code, and how it works.

10. **Presentation:** Create a presentation to showcase your project's features, benefits, and the technology used.

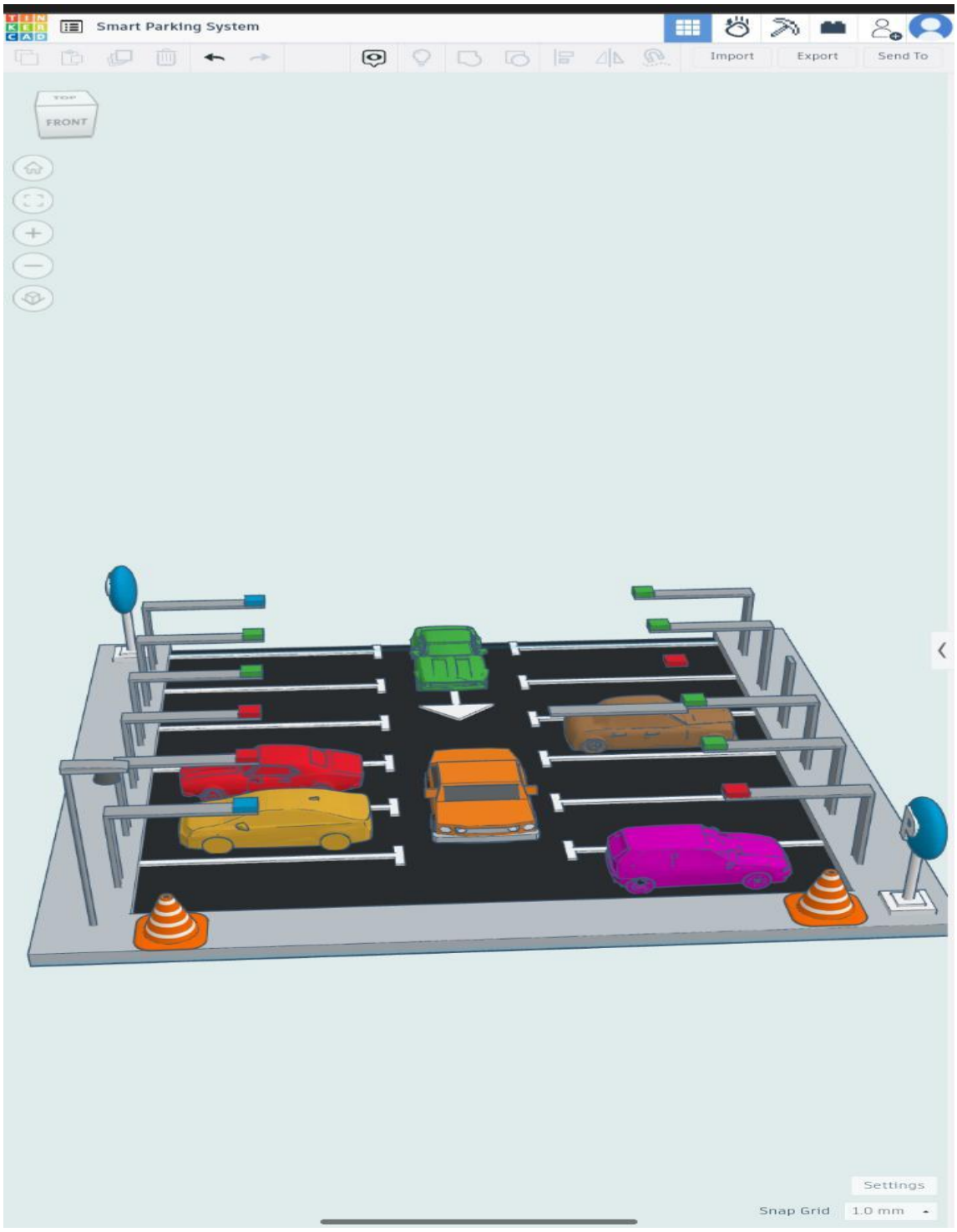

Fig: Smart Parking System Design

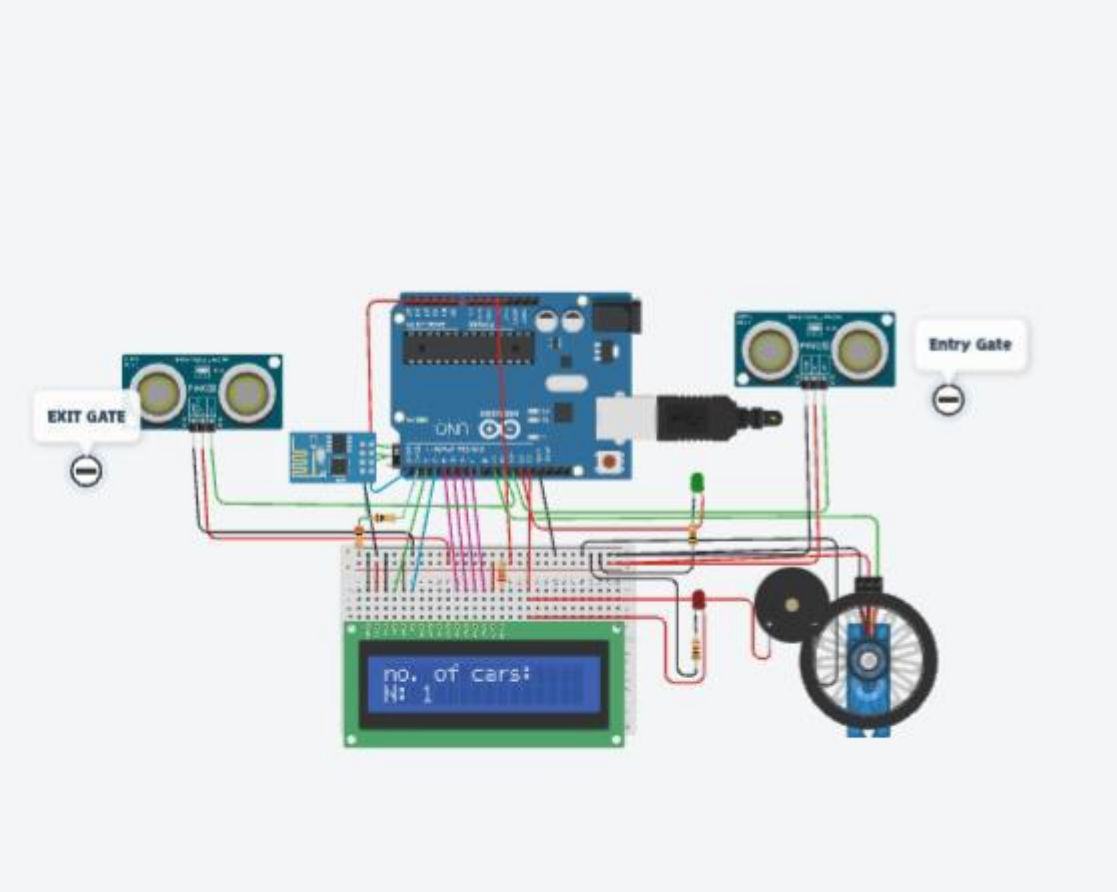

Fig: Smart Parking System Sensors with circuit