**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.

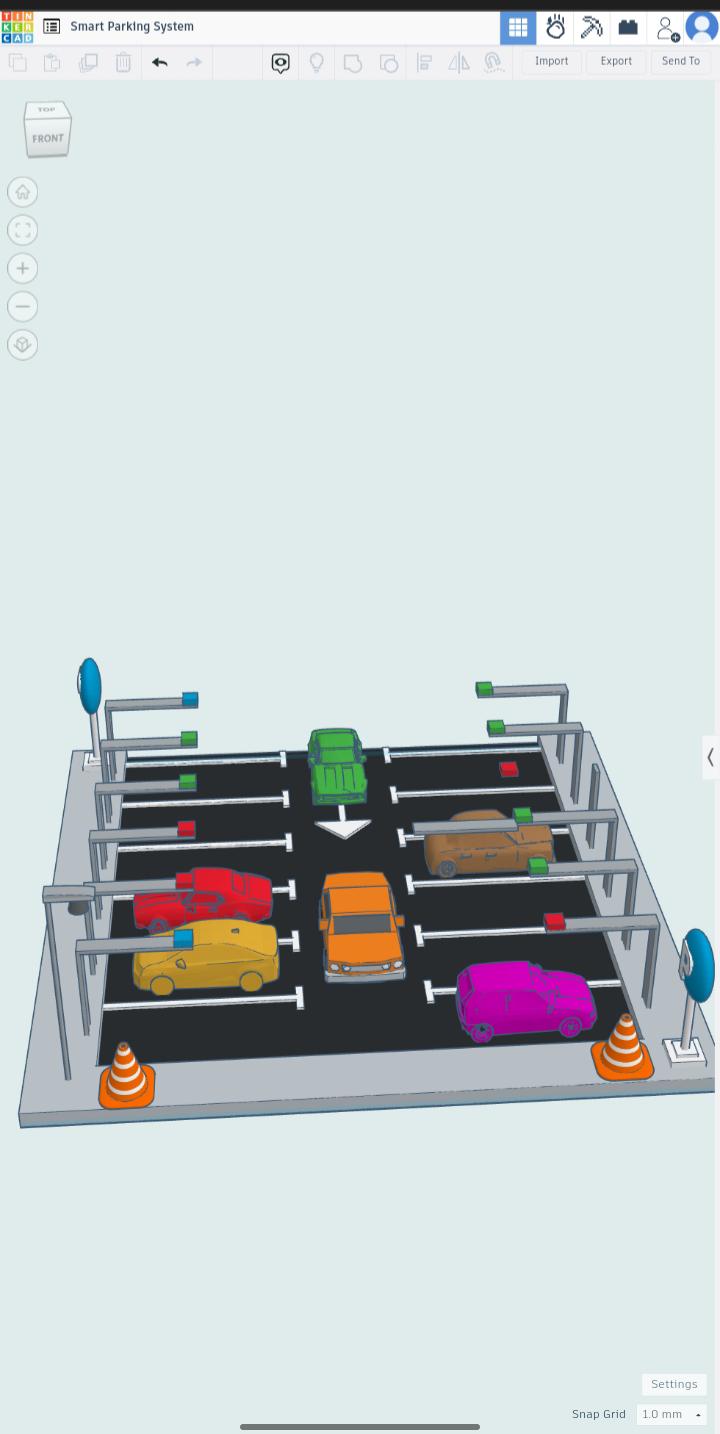


Fig: Smart Parking System Design

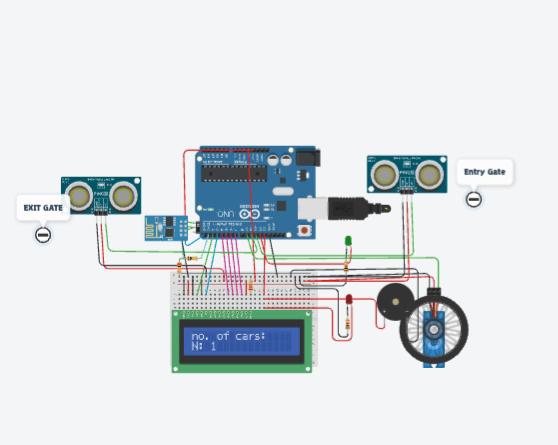
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Fig: Smart Parking System Sensors with circuit