

SMART PARKING SYSTEM

INTRODUCTION

IoT extends the internet connectivity beyond standard devices, such as desktops, laptops, smartphones, and tablets, to any range of traditionally dumb or non-internet-enabled physical devices and everyday objects.

Embedded with technology, these devices can communicate and interact over the internet, and they can be remotely monitored and controlled.

The features of this project is given by:

Finding a parking place is not easier in shopping malls and public places.

A smart parking system allows the public to find information about the parking slot.

By Integrating Ultrasonic Sensors with the Parking Slots we can help the user in finding the empty slots.

At the entrance, we can keep two LEDs for every slot and if the parking slot is filled it will indicate with Red Led and if it is empty it will indicate with green Led.

Whenever the user want to visit any malls or other places he will see the info regarding Parking Slots at the entrance itself.

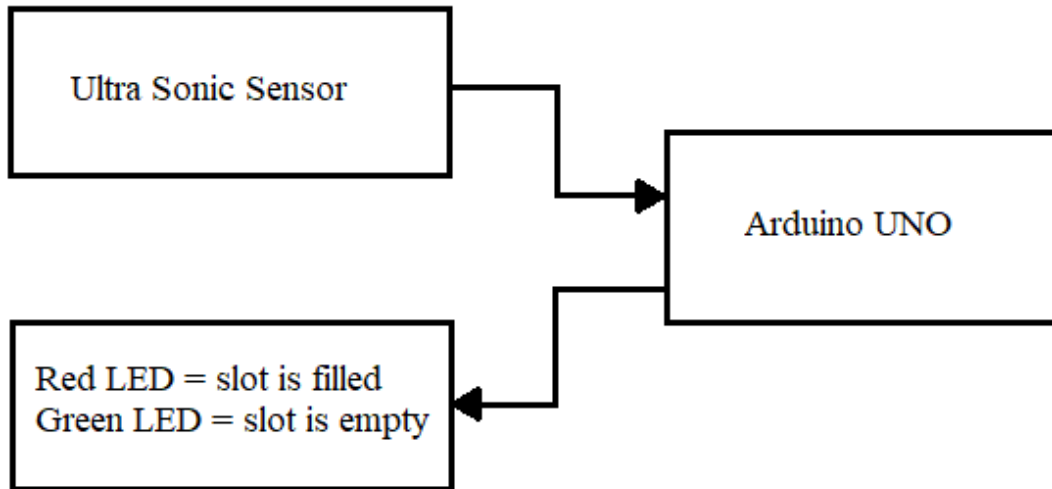
COMPONENTS REQUIRED

The components required for this project is given by:

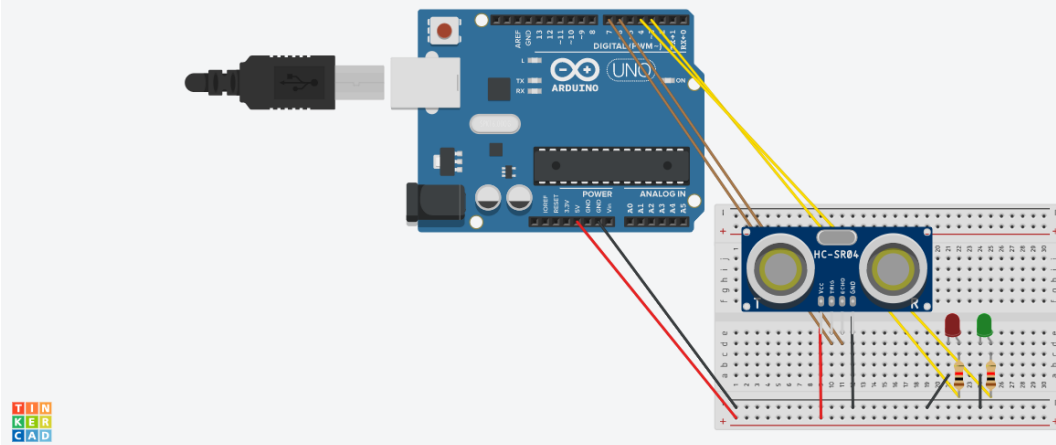
NAME	QUANTITY	COMPONENT
U1	1	ARDUINO UNO R3
D2	1	RED LED
D3	1	GREEN LED
R1, R2	1,1	1 KILO OHM RESISTOR
DIST2	1	ULTRASONIC SENSOR

BLOCK DIAGRAM

The block diagram is given by



CIRCUIT DIAGRAM USING TINKERCAD



CODE FOR ARDUINO

The code is given below:

```
int trigPin = 7; // Trigger
int echoPin = 6 ;// Echo
int led1 = 3;
int led2 = 4;
```

```

long duration, cm, inches;
void setup() {
  //Serial Port begin
  Serial.begin (9600);
  //Define inputs and outputs
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  pinMode(led1, OUTPUT);
  pinMode(led2, OUTPUT);
}
void loop() {
  // The sensor is triggered by a HIGH pulse of 10 or more microseconds.
  // Give a short LOW pulse beforehand to ensure a clean HIGH pulse:
  digitalWrite(trigPin, LOW);
  delayMicroseconds(5);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  // Read the signal from the sensor: a HIGH pulse whose
  // duration is the time (in microseconds) from the sending
  // of the ping to the reception of its echo off of an object.
  pinMode(echoPin, INPUT);
  duration = pulseIn(echoPin, HIGH);
  // Convert the time into a distance
  cm = (duration/2) / 29.1;  // Divide by 29.1 or multiply by 0.0343
  inches = (duration/2) / 74;  // Divide by 74 or multiply by 0.0135
  Serial.print(inches);
  Serial.print("in, ");
  Serial.print(cm);
  Serial.print("cm");
  Serial.println();
  delay(250);
  {
    if (cm < 335) {
      digitalWrite(led1, HIGH);
    }
    else {

```

```

    digitalWrite(led1, LOW);
}
if(cm >= 335) {
    digitalWrite(led2,HIGH);
}
    else {
        digitalWrite(led2, LOW);
    }
}
}
}

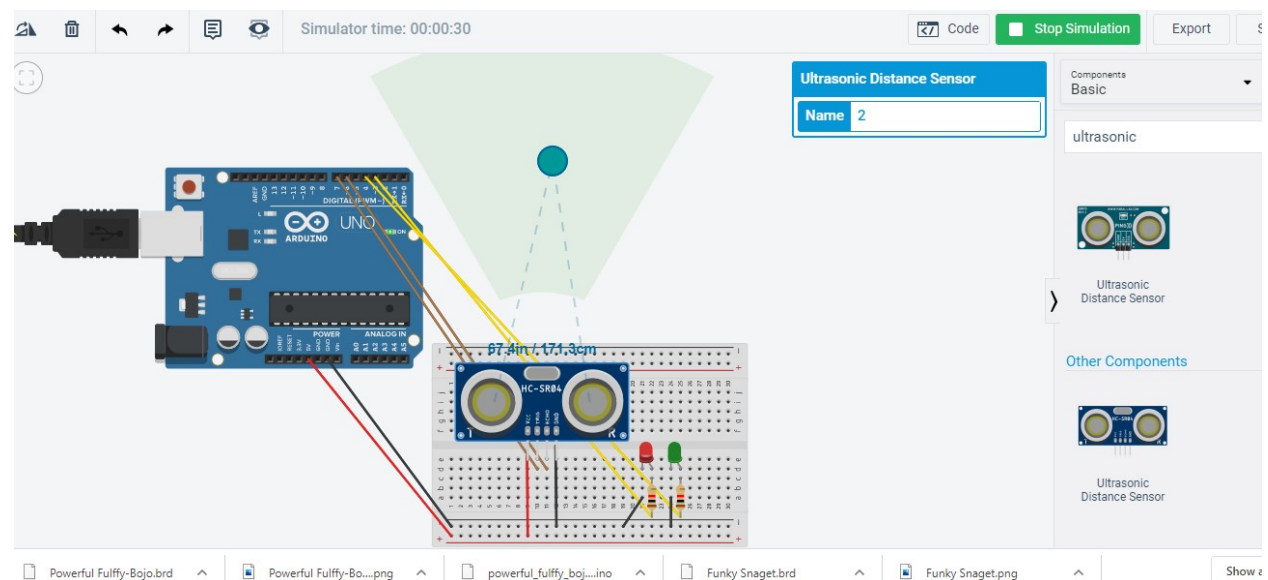
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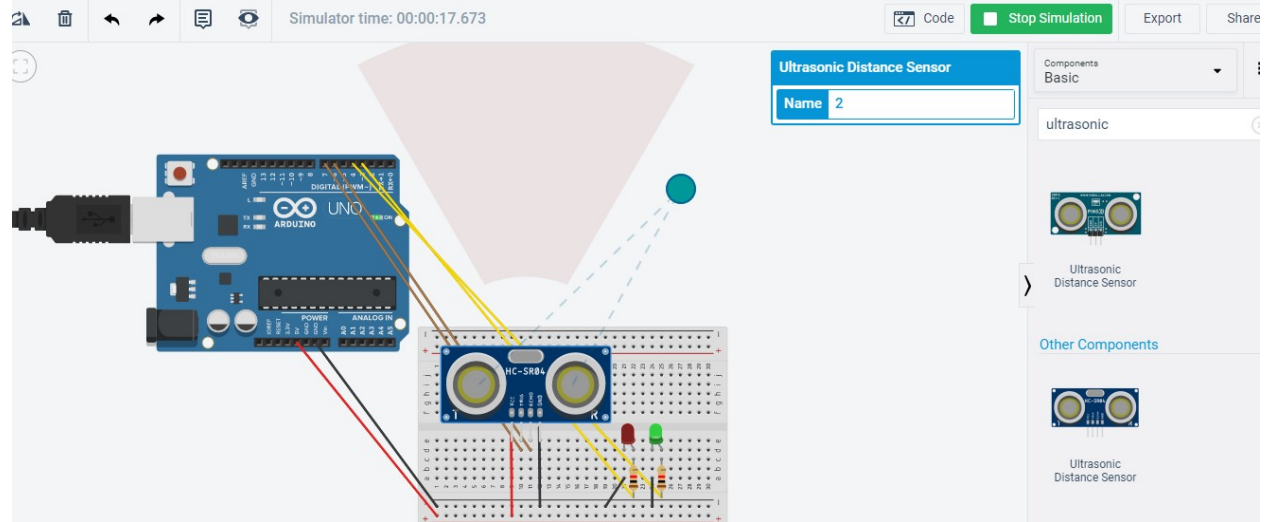
RESULTS

The results are taken as screenshots:

RED LED = SLOT IS FILLED

GREEN LED = SLOT IS EMPTY





CONCLUSION

The conclusion of this project is given by:

Whenever the ultrasonic sensor detects object in its region, then it glows red light which indicates the slot is filled.

Whenever there is no object present in ultrasonic sensor region, then it glows green light which indicates the slot is empty so that parking is available.

FUTURE SCOPE

Future scope of this project can be developing an app and updating the slots in the app and making sure that they can go to other place and park it there , Because after coming to mall and there is no slot means it will make a traffic jam near mall. So if we update the free slots and book the slots before they come and the time shld be given for coming and parking.

REFERENCES

www.tinkercad.com