REVERSE PARKING SYSTEM

MOTIVATION OF THE PROJECT

The evolution of sensing technology and communication network contribute to the realization of an Autonomous driving society and its growth. Ultrasonic parking assistant is a key sensor for automated driving and parking functions. The Autonomous Driving society is coming to the reality in order to reduce the number of casualties caused by traffic accidents and improve the level of convenience of mobility services.

OBJECTIVES OF REVERSE PARKING CONTROL

- To park a vehicle safely and precisely.
- To assist the driver and help the driver to gain confidence while parking a vehicle.
- To reduced the manual efforts to judge the distance.
- To display distance measurement with obstacle and also a buzzer to alert or notify the driver.

COMPONENTS REQUIRED

- Arduino
- Ultarsonic Sensor
- Buzzer
- LED
- Breadboard
- Battery
- Wires

ULTRASONIC SENSOR

Ultrasonic Sensor HC-SR04 is a sensor that can measure distance. It emits an ultrasound at 40kHz which travels through the air and if there is an object or obstacle on its path It will bounce back to the module.

BUZZER

Buzzers are electric sounding devices that generate sounds. Typically powered by DC voltage, they can be categorised as Piezo buzzer and magnetic buzzer. They come in different designs and uses as well, and based on that, they can produce different sounds!

ARDUINO

Arduino Uno is a microcontroller board based on the ATmega328P. This board includes digital I/O pins-14, a power jack, analog i/ps-6, ceramic resonator-A16 MHz, a USB connection, an RST button, and an ICSP (In- Circuit Serial Programming) header. The power supply of this board can be done with the help of an AC to DC adapter, a USB cable, otherwise a battery.

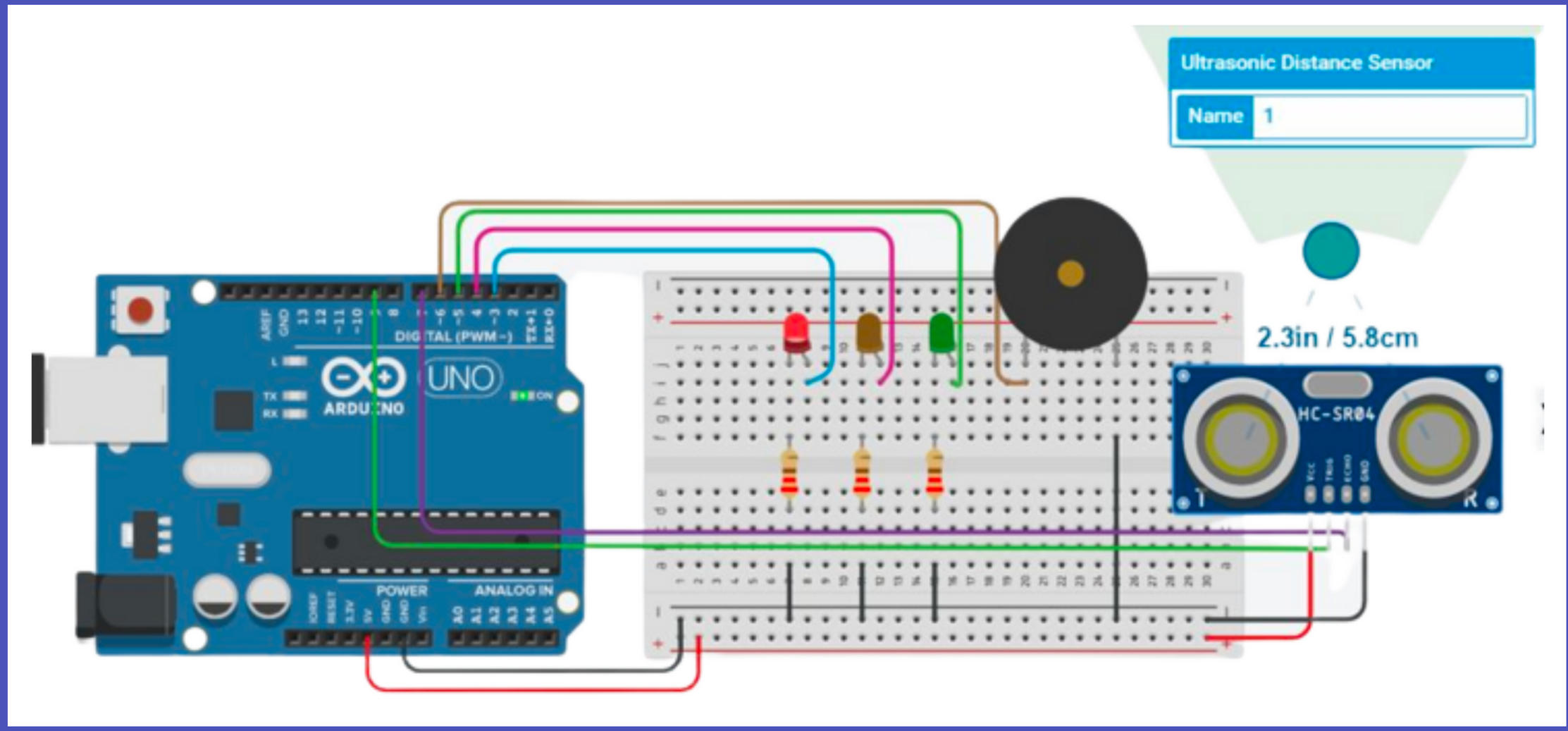
LED

A light-emitting diode (LED) is a semiconductor device that emits light when an electric current flows through it. When current passes through an LED, the electrons recombine with holes emitting light in the process. LEDs allow the current to flow in the forward direction and blocks the current in the reverse direction.

Principle of the circuit is as follow

- The Ultrasonic sensor sends acoustic pulses and the Arduino measures the interval of each reflected signal.
- Based on this time interval, Arduino then calculates the distance of the object.
- Arduino then activates the Buzzer and LED if the distance between the sensor and object is less than a certain range.
- Buzzer and LED are used as actuators through which output is observed.

Reverse Parking System



CONCLUSION

The reverse parking system is a valuable safety and convenience feature for vehicles. It helps drivers park in tight spaces or crowded areas, reducing the risk of accidents and making parking easier. By combining ultrasonic distance sensing with visual and auditory feedback, the system provides comprehensive assistance to the driver.