YTP - Module YTP01

Arduino & Micro-Controllers

Teachers Handbook
LESSON 7
Ultrasonics

Goals & Success Factors

Lesson Goal

- To understand how ultrasonics and ultrasonic sensors work
- To complete at least 2 circuits utilising ultrasonic sensors

Lesson Success Factor(s)

- Build and code a circuit with a working ultrasonic sensor which activates an LED when the ultrasonic distance threshold is breached
- Build a multi-level security system which has LEDS and a buzzer that are triggered depending on the different ultrasonic distance thresholds breached.

Runsheet (Guideline)

PART 1
00:00 Introduction
00:05 Goals & Success Factors
00:10 Recap of last week
00:15 Introduction to ultrasound
00:20 Introduction to ultrasonic sensors
00:30 Build an ultrasonic sensor circuit
00:45 Code/Test/Run the circuit
01:00 BREAK

PART 2
01:15 The security system circuit intro
01:25 Build security system circuit
01:40 Code/Test/Run the circuit
02:00 FINISH

Extension(s)

Add buttons to test your LEDs
Add an alarm sound using your buzzer

Students Pre-work

Watch the following video:
Arduino Ultrasonics Tutorial: https://youtu.be/ZejQOX69K5M

Teachers Pre-work

Read the following tutorial about Ultrasonic sensors:
https://randomnerdtutorials.com/complete-guide-for-ultrasonic-sensor-hc-sr04/

Watch the following video:
Arduino Ultrasonics Tutorial https://youtu.be/ZejQOX69K5M

Student Homework

More ultrasonic videos: https://youtu.be/6F1B_N6LuKw

Handouts (optional)

n/a

Materials Needed

Arduino IDE

Arduino UNOs
Breadboards
Jumper wires
LEDs
220 Ohm resistors
Ultrasonic sensors
Buzzers

Handbook

Handouts

n/a

Resources

n/a