ULTRASONIC ALARM SYSTEM

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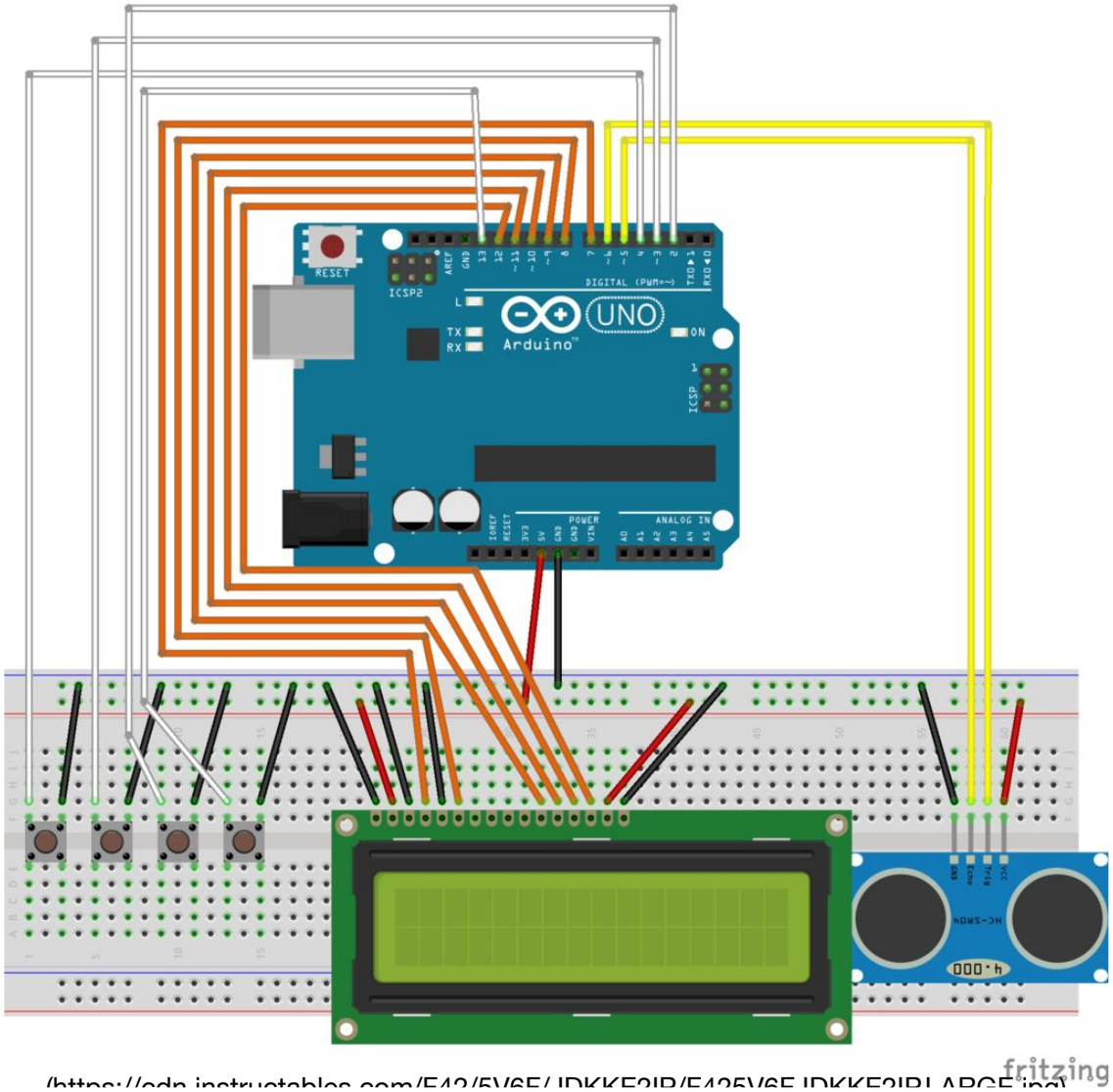

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Ready to build the Ultrasonic Alarm System?

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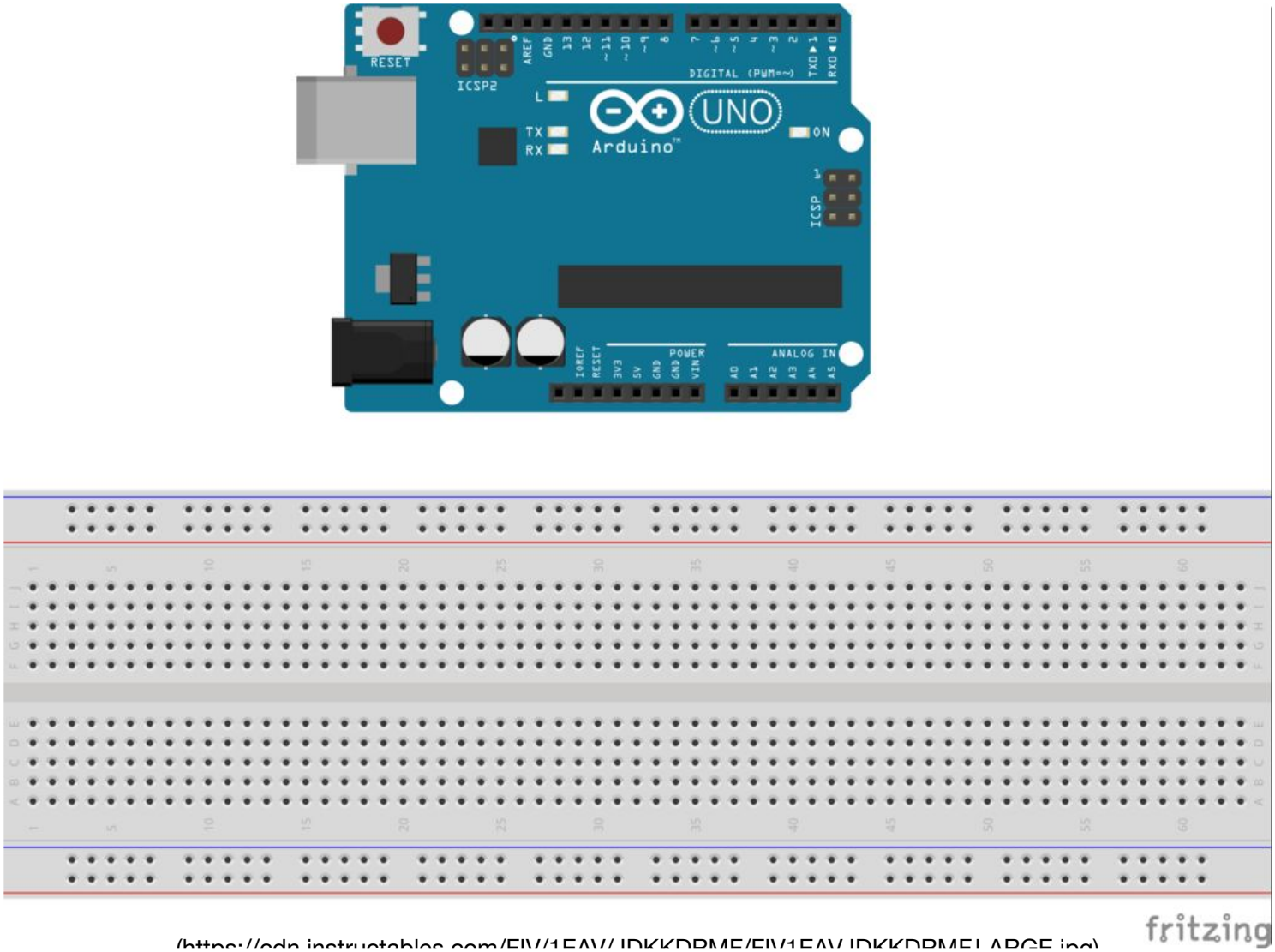
Step 1: Add Basic Components



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1. Add Arduino UNO R3

2. Add a full sized breadboard

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Step 2: Add Ultrasonic Sensor

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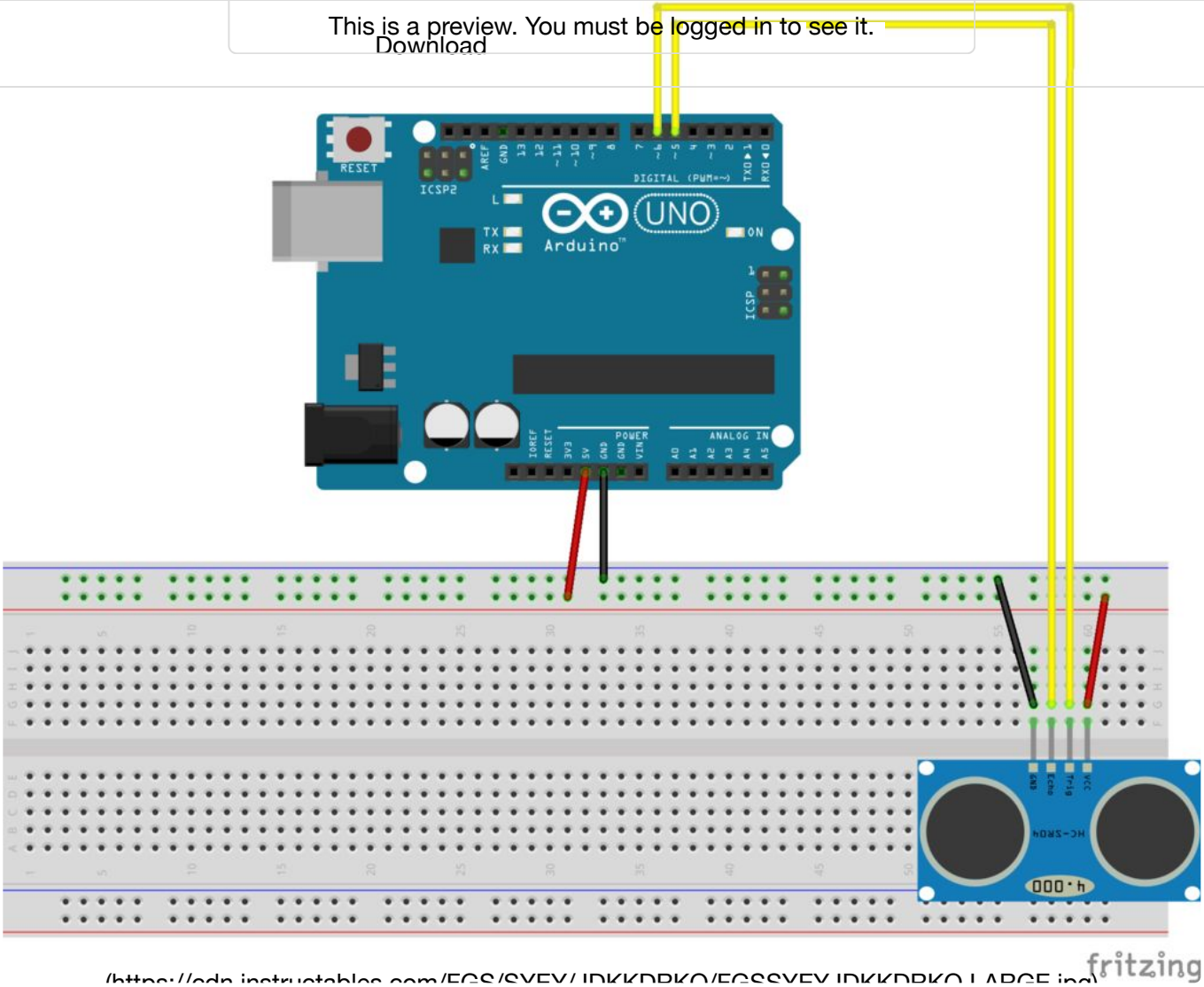


1. Add ultrasonic HC-SR04 sensor

2. Connect 5V to power rail of breadboard

3. Connect GRN (ground) to the grounded rail of the breadboard

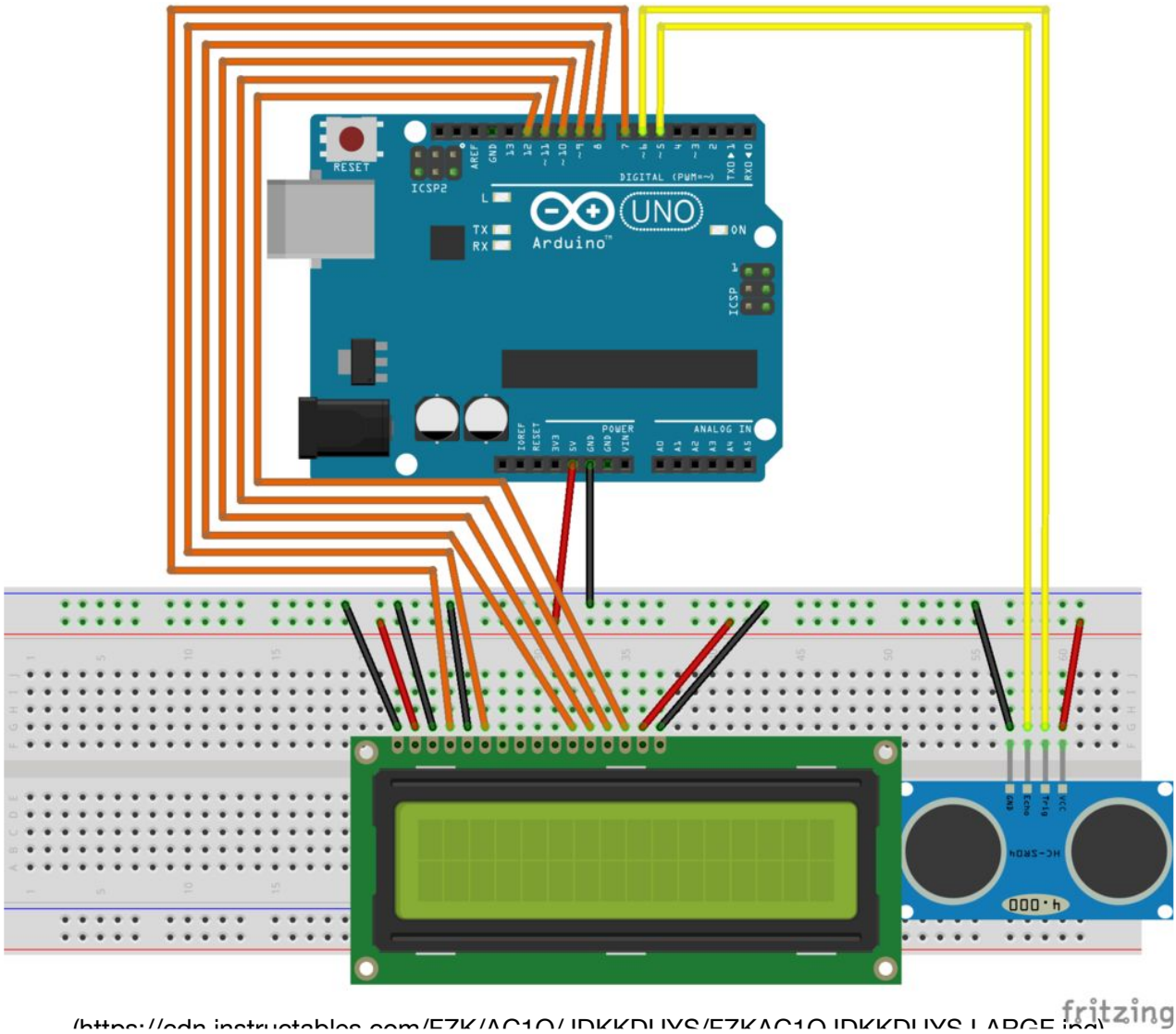
4. Connect GRN on the ultrasonic sensor to the grounded rail of the breadboard

5. Connect Echo on the ultrasonic sensor to pin 5 on the Arduino UNO

6. Connect Trig on the ultrasonic sensor to pin 6 on the Arduino UNO

7. Connect Vcc on the ultrasonic sensor to the power rail of the breadboard

Step 3: Add LCD Screen



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The LCD screen's pins must be connected to the breadboard and Arduino UNO R3 in the following order. From left to right with the left starting at pin 1 and ending at the right with pin 16:

1. Ground

2. Power

3. Ground

4. Pin 7

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5. Ground

6. Pin 8

7. Leave empty

8. Leave empty

9. Leave empty

10. Leave empty

11. Pin 9

12. Pin 10

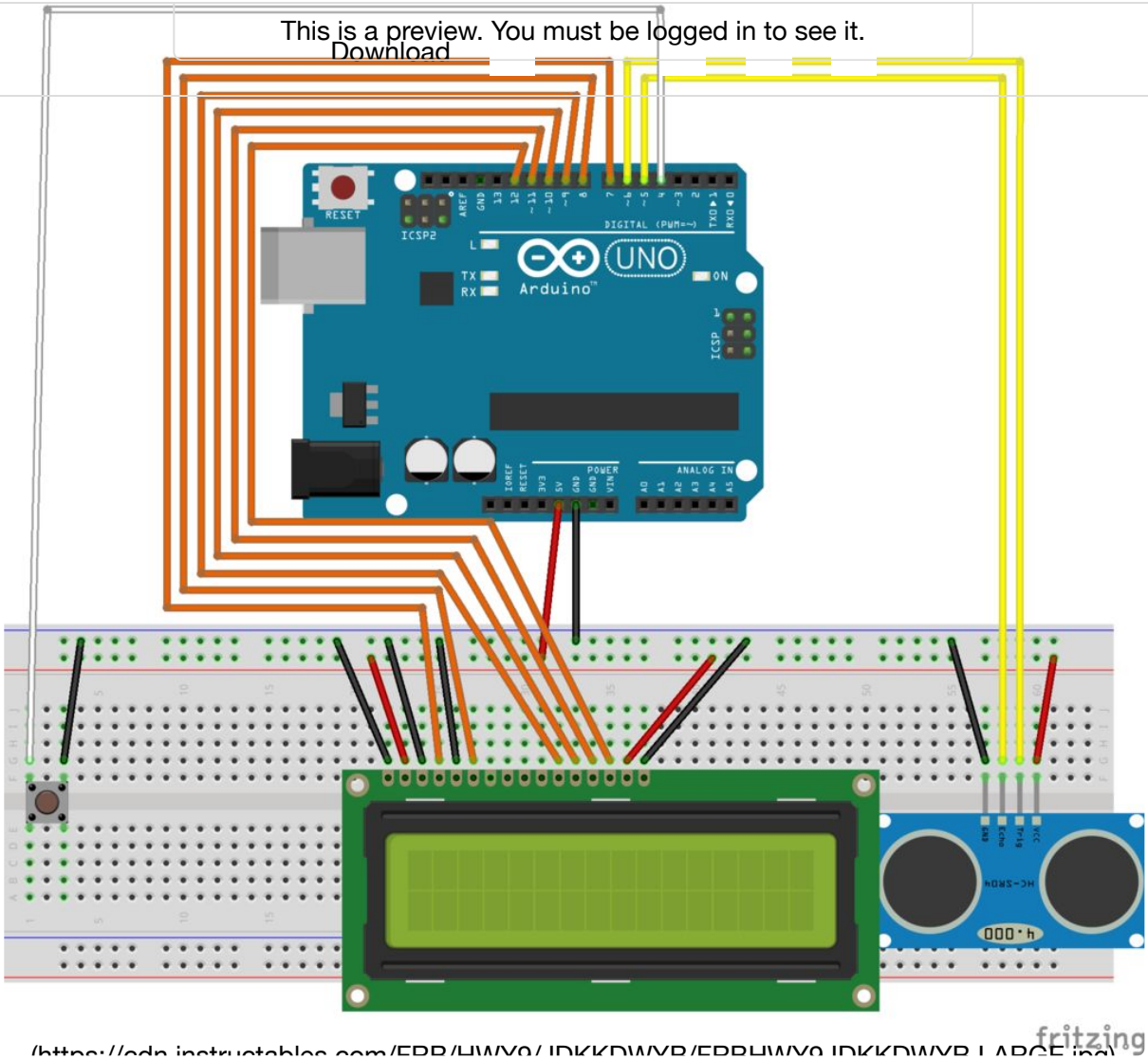
13. Pin 11

14. Pin 12

15. Power

16. Ground

Step 4: Add a Push Button



(https://cdn.instructables.com/FRR/HWY9/JDKKDWYB/FRRHWY9JDKKDWYB.LARGE.jpg)

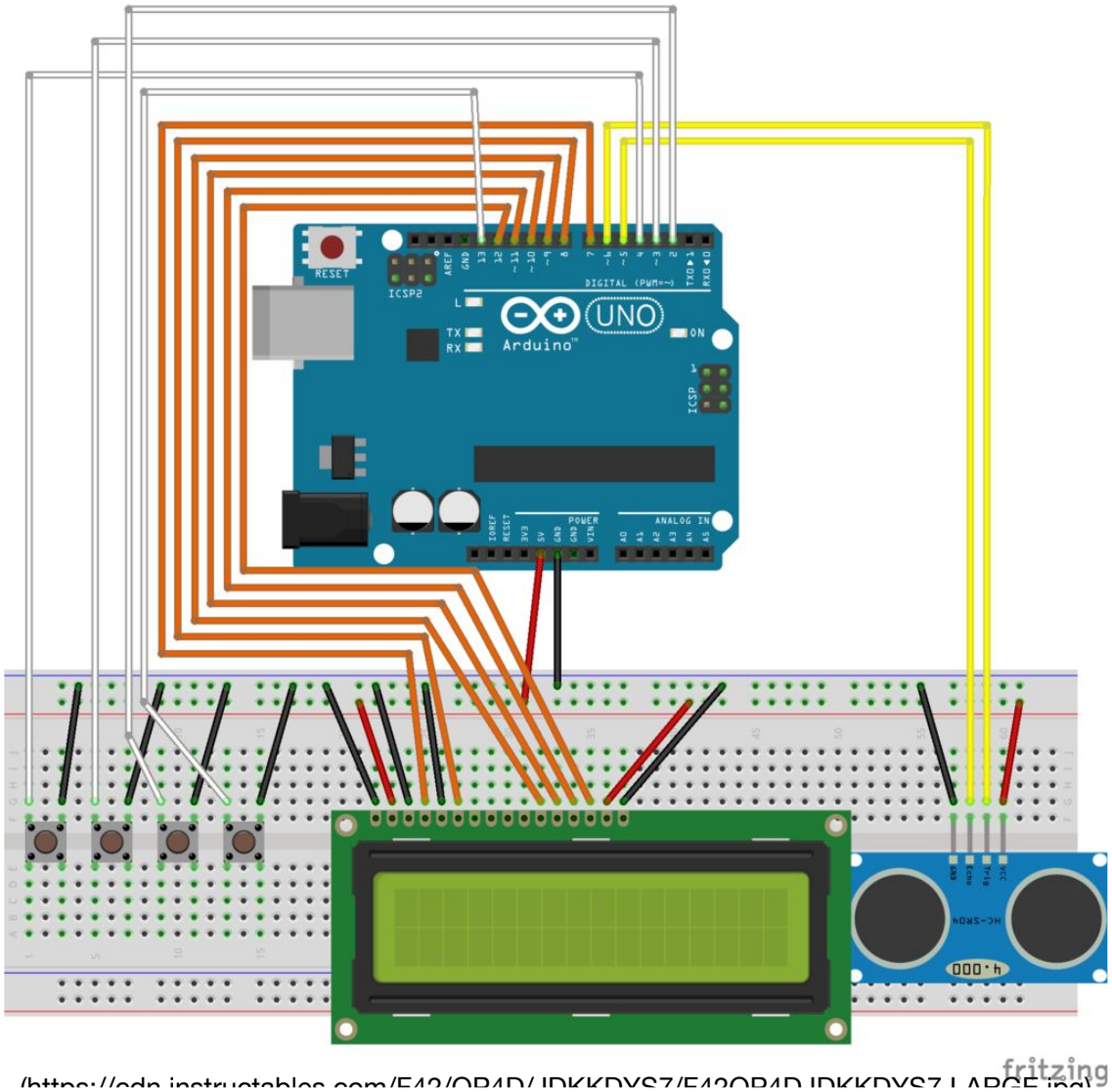
1. Add a push button

2. Connect the upper right corner to the ground breadboard rail

3. Connect the upper left corner to pin 4

Note: for all buttons, they will have a complete circuit until the button is pressed closing the circuit. This is required because we will add a total of 4 buttons and only 4 digital pins remaining, one of which is digital pin 13. Pin 13 is harder to use as an input because it has an LED and resistor attached. Thus, this weird trick is warranted.

Step 5: Add The Other 3 Buttons



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Button number 1 is on the left, to the right of it is considered button 2, to the right of button 2 is button 3, and at the far end is button 4. Adding the other 3 buttons is just like adding the first:

1. Add 3 push buttons

2. Ground the 3 push buttons

3. Connect button 2's output to pin 3

4. Connect button 3's output to pin 2

5. Connect button 4's output to pin 13

Note: Check the completed diagram carefully.

This is a file. You must be logged in to see it.

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Step 6: Add Code

1. Download the code

2. Open up the code

3. Connect Arduino UNO R3 to the computer

4. Upload the code to the Arduino UNO

aaron_barlow_ultraso...

Download (https://cdn.instructables.com/ORIG/FVC/9ET0/JDKKDZPL/FVC9ET0JDKKDZPL.ino)

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Step 7: Done

What did you design? An ultrasonic alarm system that has 3 levels of safety detection! The LCD and serial output monitor allow one to observe the 3 levels of safety as well as other useful information. You can also disarm the alarm at anytime by pressing button 1, 2, and 4 in that order and only that order. The alarm will be re-armed within 5 seconds or when the passcode is successfully re-entered.

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When one gets within 25 centimeters, the alarm is armed and will remain locked for 10 seconds unless the alarm is disarmed. Within 60 centimeters, the alarm will tell you it is the final warning. Otherwise, outside that distance, the alarm informs you to stay back with a safety level of 1.

You can also download the Fritzing Diagram if desired.

sonic.fzz Download (https://cdn.instructables.com/ORIG/FGO/979U/JDKKE21W/FGO979UJDKKE21W.fzz)

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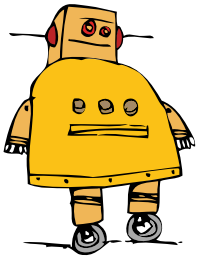

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