



# Arduino Programming
# L2C LCD

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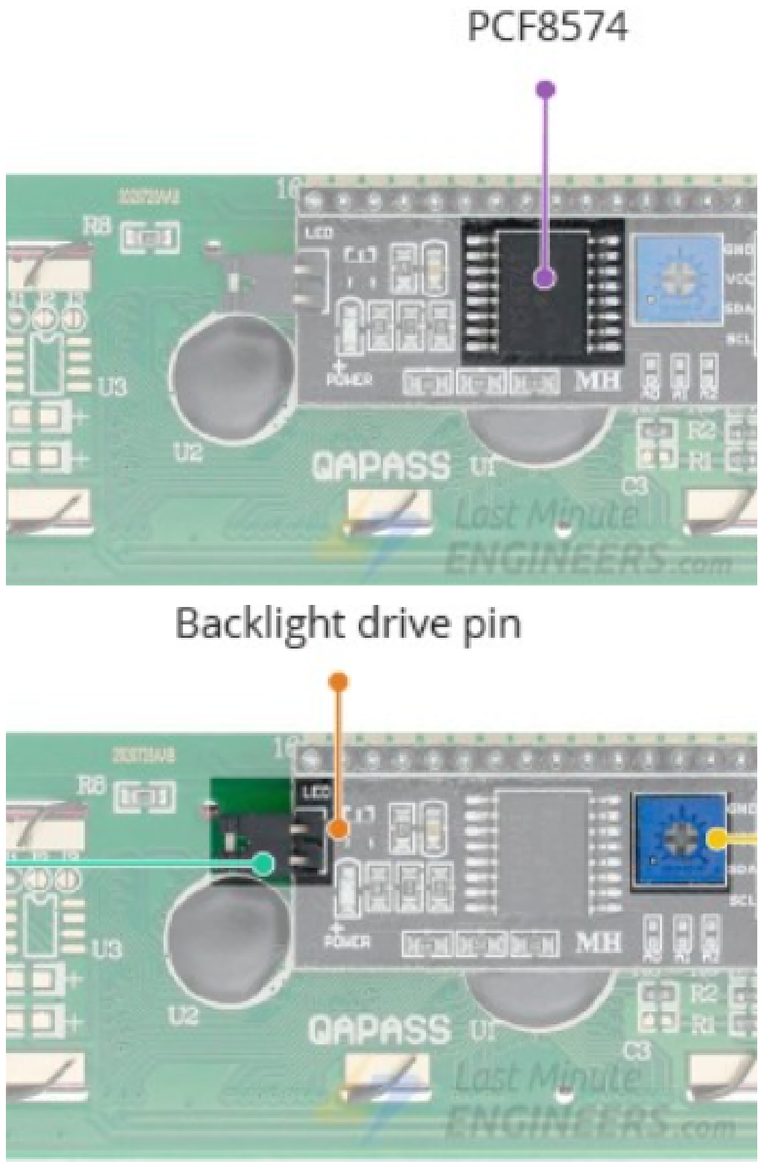
# Interface an I2C LCD with Arduino




# I2C LCD Adapter

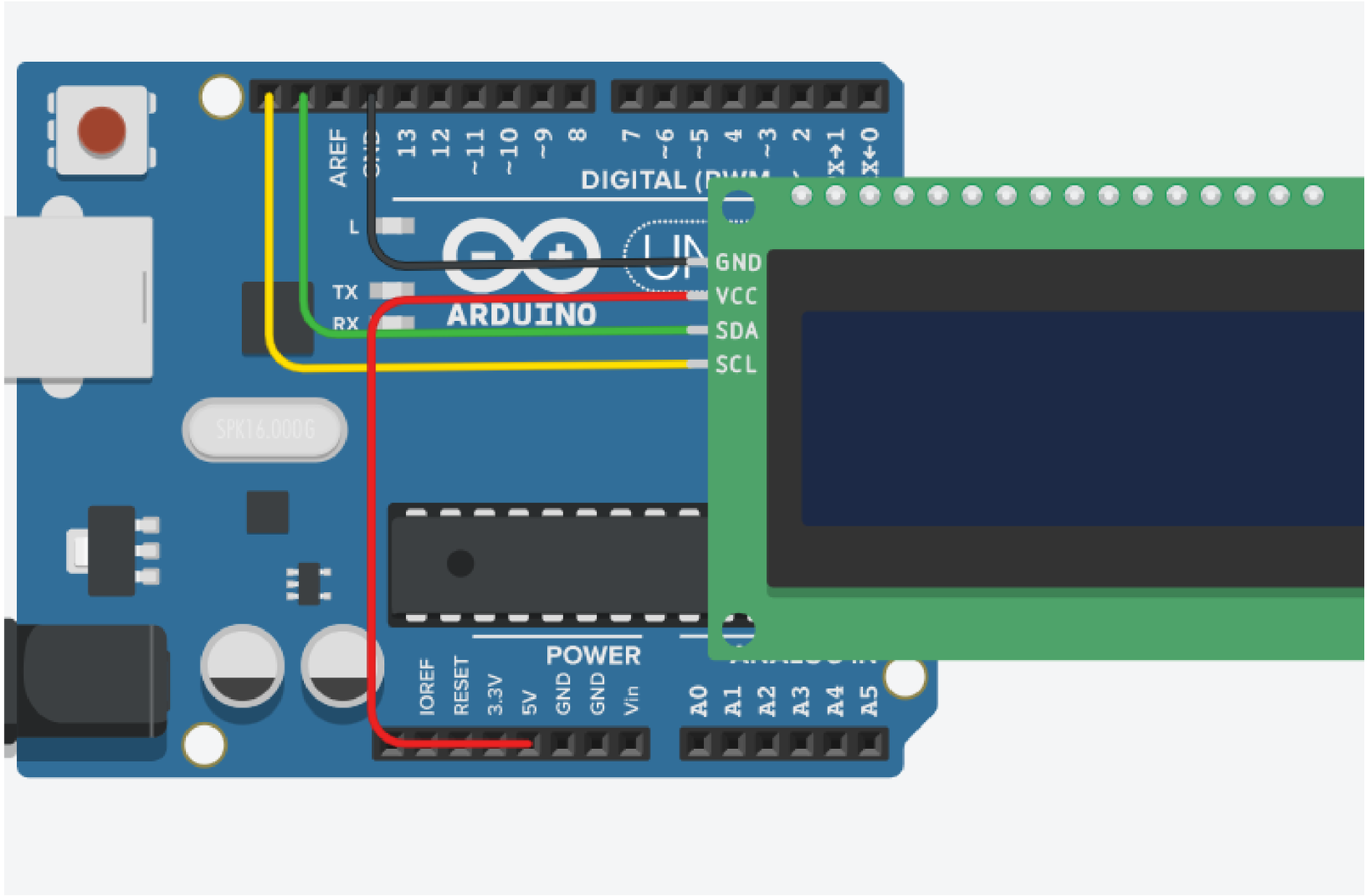
**This chip converts the I2C data from an Arduino into the parallel data required for an LCD display.**

**To control the intensity of the backlight : you can remove the jumper and apply external voltage to the header pin labeled ‘LED**

# Connection

| I2C LCD | | Arduino |
|---|---|---|
| VCC |  | 5V |
| GND | | GND |
| SCL | | SCL or A5 |
| SDA | | SDA or A4 |

# Wiring


AREF
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL
L
TX
RX
ARDUINO
GND
VCC
SDA
SCL
POWER
IOREF
RESET
3.3V
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5

# Coding

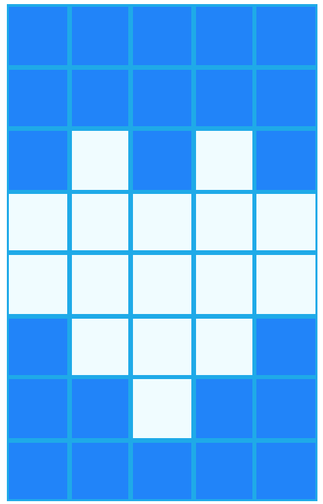
```
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 16, 2); // Format

void setup()
{
  lcd.init();
  lcd.backlight();
}

void loop()
{
  // Set cursor (Column, Row)
  lcd.setCursor(0, 0);
  // print "Hello" at (0, 0)
  lcd.print("Hello");
  // Set cursor (Column, Row)
  lcd.setCursor(0,1);
  // print "Geek" at (0, 1)
  lcd.print("GANADY");
  delay(100);
}
```

# Functions of the LiquidCrystal_I2C Library

- **lcd.blink() :** function displays a blinking block of 5×8 pixels at the position to which the next character will be written**.**
- **lcd.cursor() :** function displays an underscore (line) at the position to which the next character will be written.
- **lcd.scrollDisplayLeft() :** function scrolls the contents of the display one space to the left. Similar to the above function, use this inside a for loop for continuous scrolling.

# Create and Display Custom Characters

art selecting pixels

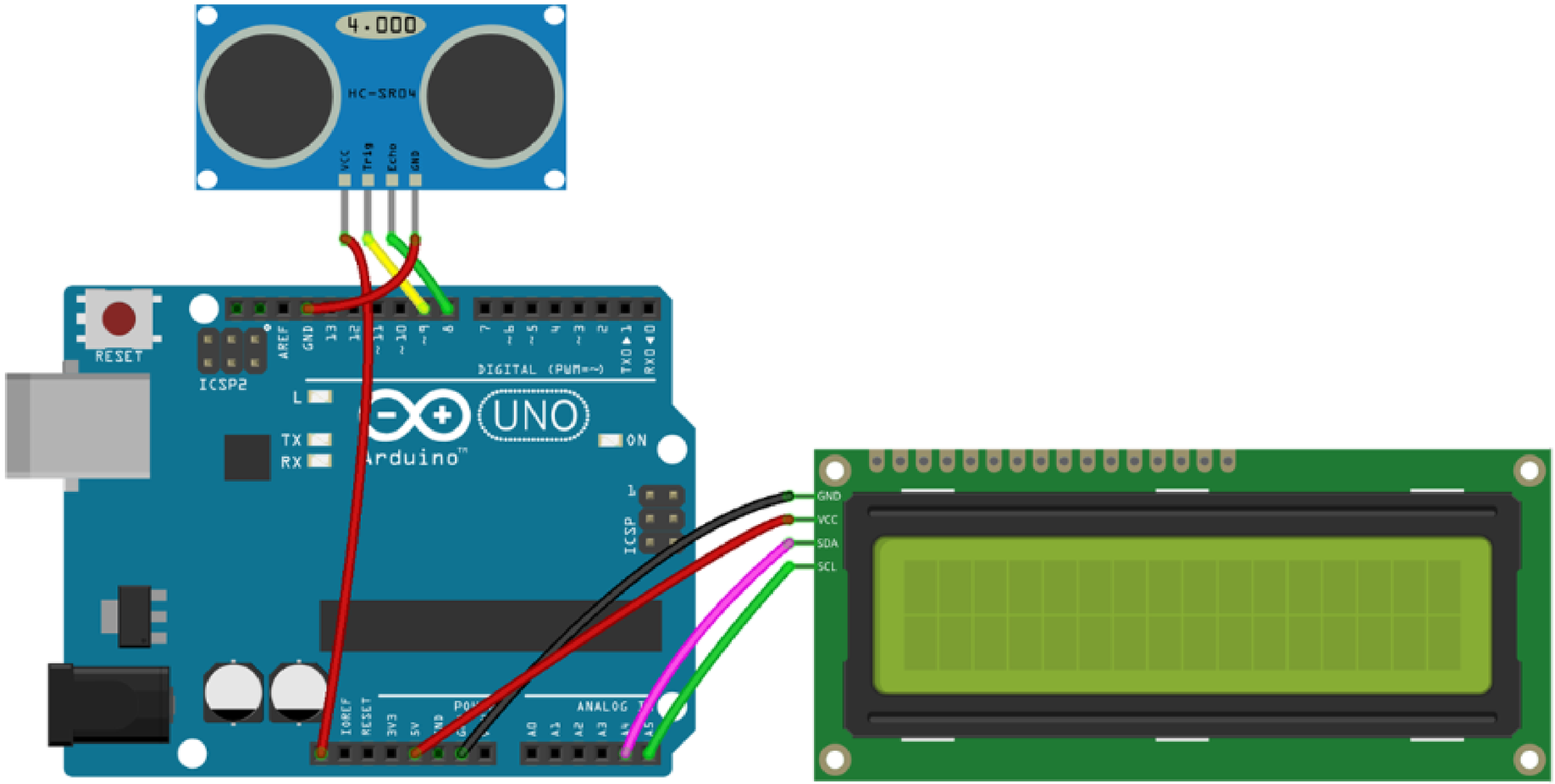


Clear all

```
byte
Character[8] =
{
  0b00000,
  0b00000,
  0b01010,
  0b11111,
  0b11111,
  0b01110,
  0b00100,
  0b00000
};
```

Copy this code to your sketch

# Ultrasonic Sensor with LCD



# Wiring / Connections

| Arduino | Ultrasonic Sensor | LCD |
|---|---|---|
| IOREF | VCC | |
| GND | GND | GND |
| D9 | TRIG | |
| D8 | ECHO | |
| 5V | | VCC |
| A4 | | SDA |
| A5 | | SCL |

# Code

```ino
#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27, 16, 2);

int trigPin = 9;    // TRIG pin
int echoPin = 8;    // ECHO pin

float duration_us, distance_cm;

void setup() {
  lcd.init();                     // initi
  lcd.backlight();                // open
  pinMode(trigPin, OUTPUT); // confi
  pinMode(echoPin, INPUT);  // confi
}
```

```ino
void loop() {
  // generate 10-microsecond pulse to TRIG pin
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  // measure duration of pulse from ECHO pin
  duration_us = pulseIn(echoPin, HIGH);

  // calculate the distance
  distance_cm = 0.017 * duration_us;

  lcd.clear();
  lcd.setCursor(0, 0); // start to print at the
  lcd.print("Distance: ");
  lcd.print(distance_cm);

  delay(500);
}
```