C++ Code Snippets
PART III: Serial Communications via LCD for Arduino IDE/Teensy 3.2

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“The Knack”

https://www.youtube.com/watch?v=g8vHhgh6oM0

PowerTip PC1602Q B
16 x 2 LCD Display

BPI-216 LCD Driver Board

Baud Rate
Up= 9600bps
Down= 2400bps

Contrast
= Darker

NOTE: It’s not necessary to connect both +5 or both GND pins; they are duplicated for convenience (and to allow a reversible connector).

Backlight
Up= ON
Down= OFF

Pads for external BL switch

https://seetron.com/bpi216/bpi216hdw.html
Welcome to Teensy 3.2
32 Bit Arduino-Compatible Microcontroller
To begin using Teensy, please visit the website & click Getting Started.
www.pjrc.com/teensy
Sample Code for BPI-216

/*
This code was adapted from http://seetrontech.blogspot.com/2011/12/arduino-hello-world-for-bpi-216-serial.html
J. Wright, 2017
Note: To use this with an Arduino or Teensy, one must invert the TX Serial Output with an inverter gate

Inverter used: 7404 IC
Pin 14 = +5
Pin 7 = GND
Pin 1 = Input from Microcontroller TX
Pin 2 = Inverted Output to SER input of LCD Module (Seetron BPI-216 driving a PowerTip PC1602Q B)
*/
```cpp
#include <SoftwareSerial.h>  // Library already in your IDE

const int rxPin = 255       // Not used for LCD – set to invalid pin as we need
                          // something for command below
const int txPin = 5         // Connect BPI/BPK's SER input to this pin

const char clearScreen[ ] = {
254,1,254,128,0};          // https://www.seetron.com/bpi216/bpi216prog.html
const char message1[ ] = "Hello 467 World" ;
const char message2[ ] = "Code Hard" ;
const char message3[ ] = "Flowchart?" ;

SoftwareSerial mySerial = SoftwareSerial(rxPin, txPin);
```
void setup() {
  pinMode(txPin, OUTPUT); // Define pin mode for tx:
digitalWrite(txPin, LOW); // Stop bit state for inverted serial
mySerial.begin(9600); // Set the data rate
delay(1000); // Wait for 1000ms to establish communications
  mySerial.print(clearScreen);
  mySerial.print(message1);
}

void loop() {
  delay(1000);
  mySerial.print(clearScreen);
  delay(1000);
  mySerial.print(message2);
  delay(1000);
  mySerial.print(clearScreen);
  delay(1000);
  mySerial.print(message3);
}
Video of Teensy to BPI-216 LCD

https://youtu.be/rBc9dd79qe4
Parallax 27977-ND
2x16 LCD

Sample Code for the Parallax 27977-ND LCD

/* This code is for a Parallax 27977-ND 2x16 LCD. For more information/commands look up https://www.parallax.com/sites/default/files/downloads/27979-Parallax-Serial-LCDs-Product-Guide-v3.1.pdf

This LCD does not require an inverter IC. This LCD does allow for tones/sound to be generated.

Sample code below developed/tested by Ethan Bressler (2019) & Edited by J. Wright (2019)*/

#include <SoftwareSerial.h> //Library already in your IDE
const int rxPin= 7; // Not used, but needed for command below
const int txPin= 8; // 255 produces a “/” character on first pass so we use 7
const char message1[] = "Hello 467 World";
const char message2[] = "Code Really Hard";

SoftwareSerial mySerial = SoftwareSerial(rxPin, txPin);
```cpp
void setup() {
  pinMode(txPin, OUTPUT); // Define pin mode for tx:
  digitalWrite(txPin, LOW); // Stop bit state for inverted serial
  mySerial.begin(9600); // Set the data rate
  delay(1000); // Wait for 1000ms to establish com
}

void loop() {
  mySerial.write(220); //220 represents Note A (sound) -- Use Parallax PDF
  mySerial.print(message1); //Prints “Hello 467 World”
  delay(5000);
  mySerial.write(12); //Cleans screen and set to position 0,0
  delay(1000); //Need a minimum of 5ms after a clear command
  mySerial.write(220);
  mySerial.print(message2); //Prints “Code Really Hard”
  delay(1000);
  mySerial.write(12);
  delay(1000);
}
```
Which One Do I have?

Seetron BPI-216

Parallax 27977

NOTE: It's not necessary to connect both +5 or both GND pins; they are duplicated for convenience (and to allow a reversible connector).

Backlight
Up = ON
Down = OFF

Baud Rate
Up = 9600bps
Down = 2400bps

Contrast
– = Darker

Serial In
GND
+4.8-5.3V

Pads for external BL switch
Any Questions?

https://camdenkelly.com/common-job-interview-questions-and-answers/