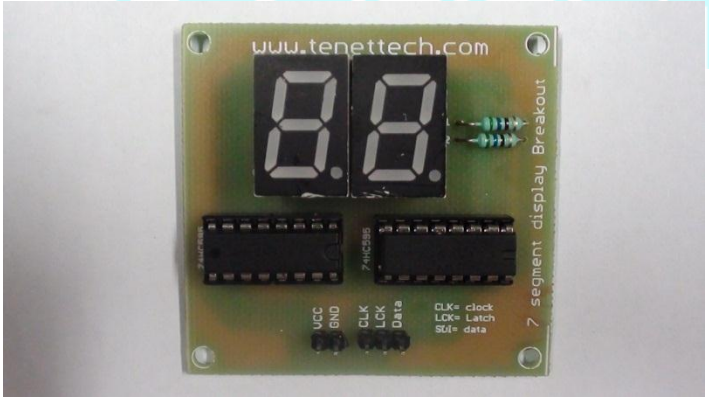
TENET TECHNETRONICS

2016

Application Note on Interfacing Arduino with Seven segment display breakout with 2 shift registers



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Version1.0

Interfacing Arduino UNO with Seven segment display breakout with 2 shift registers

Introduction

In this application note we will be discussing on interfacing seven segment display with shift register with Arduino UNO. Here 74HC595 based seven segment LED display module that will allow you to shift 8 digits of seven segment LED displays to your project using only 3 I/O pins, and provides full control of all the digit segments including decimal points.

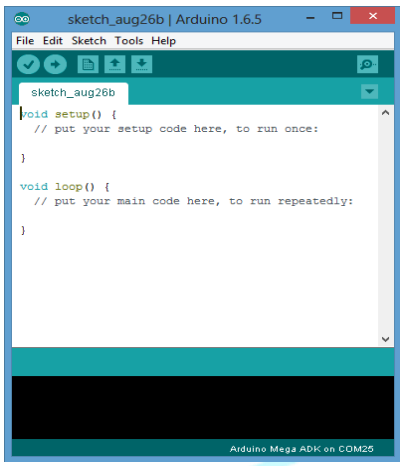
Arduino UNO: Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. All this is defined by a set of instructions programmed through the Arduino Software (IDE).

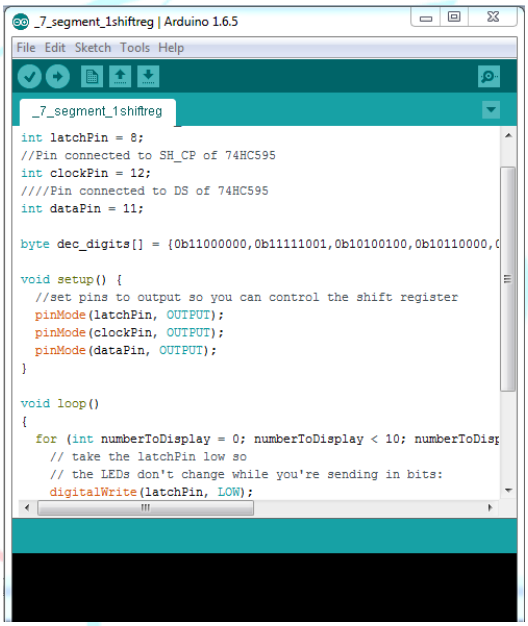
Shift register: The 'HC595 devices contain an 8-bit serial-in, parallel-out shift register that feeds an 8-bit D-type storage register. The storage register has parallel 3-state outputs. Separate clocks are provided for both the shift and storage register. The shift register has a direct overriding clear (SRCLR) input, serial (SER) input, and serial outputs for cascading. When the output-enable (OE) input is high, the outputs are in the high-impedance state.

Step1. The Materials required are:

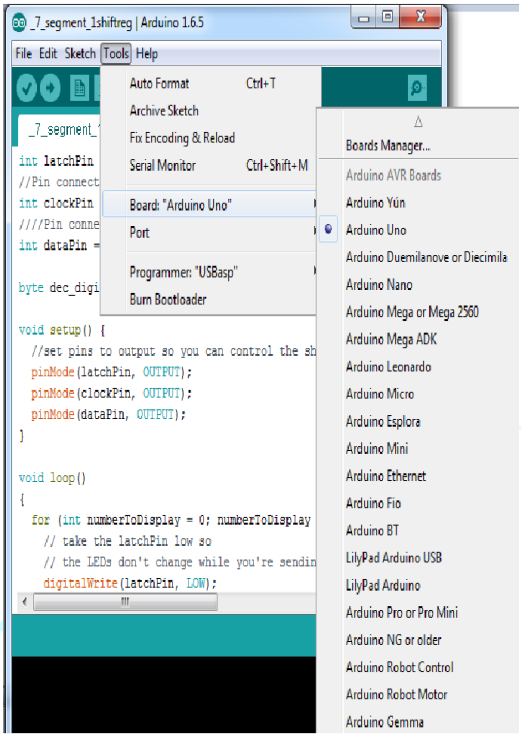
- Arduino UNO
- 7 segment display breakout with 2 shift registers
- Male to Female Jumpers

1. Open Arduino sketch on your PC or Laptop to start the programming.

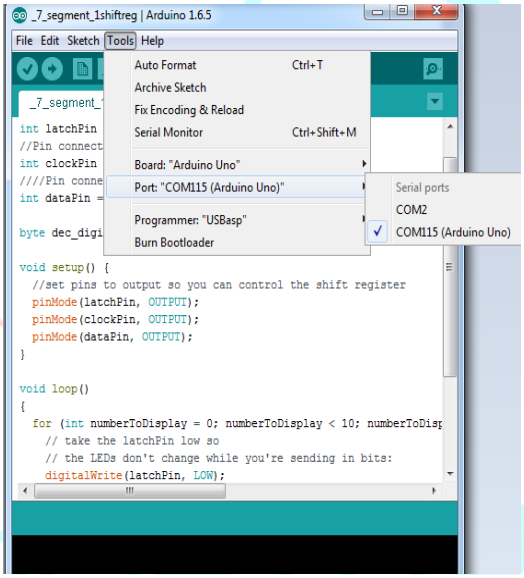




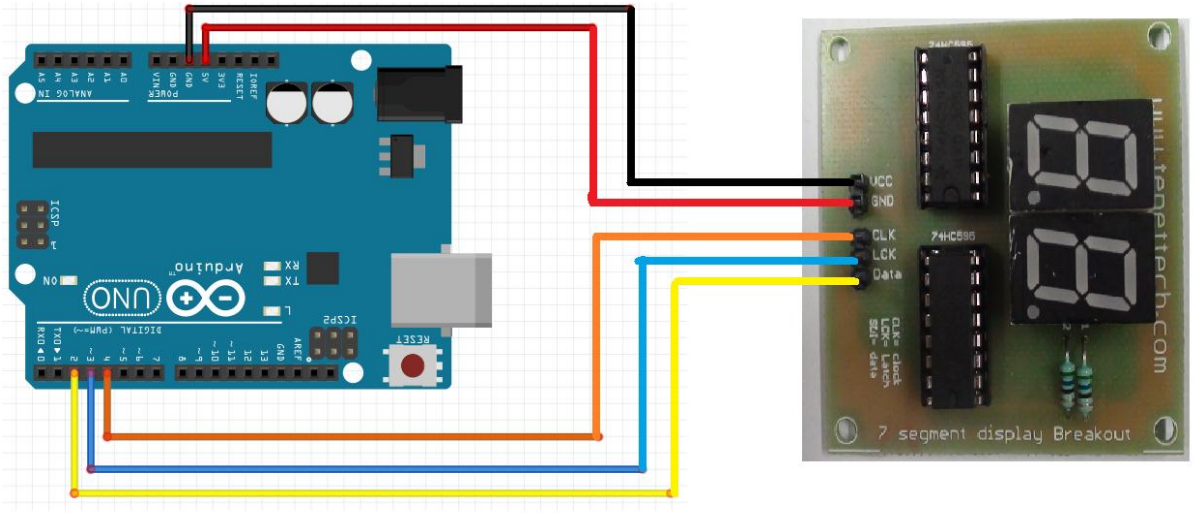
- Here we are displaying a count of numbers from 0 to 9 using shift register.
- Click on verify and check for any errors in the program. If no errors are present select the Arduino UNO in IDE. Go to tools> Board> Select Arduino UNO.



- Select port of programming by Tools> Port> Select the port for programming



- Now Upload the program to the arduino

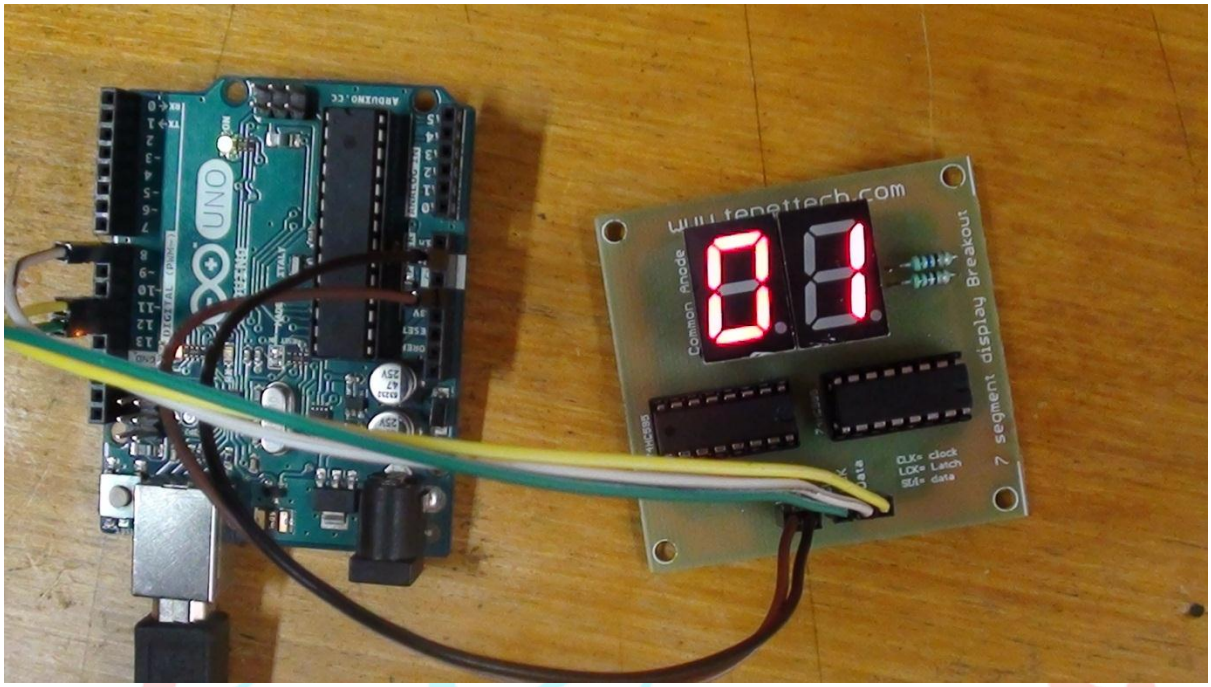


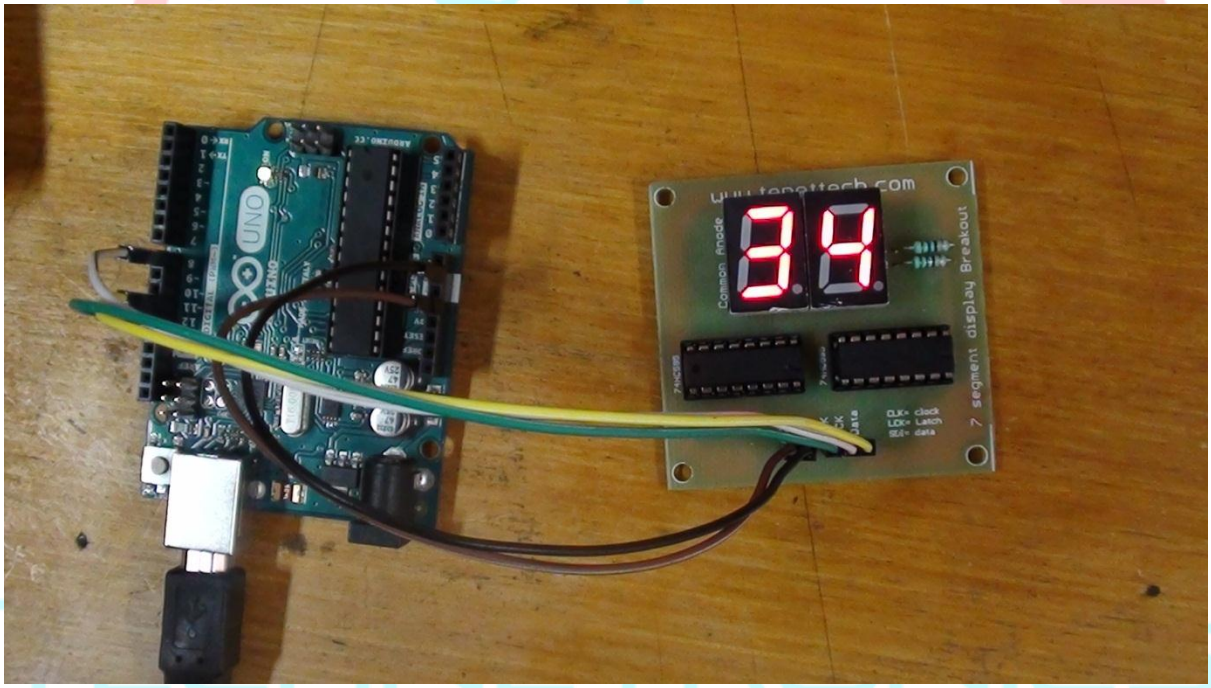
CODE:

```
//Pin connected to ST_CP of 74HC595
int latchPin = 8;
//Pin connected to SH_CP of 74HC595
int clockPin = 12;
////Pin connected to DS of 74HC595
int dataPin = 11;

byte dec_digits[] =
{0b11000000,0b11111001,0b10100100,0b10110000,0b10011001,0b10010010,0b10000011
,0b11111000,0b10000000,0b10011000 };

void setup() {
  //set pins to output so you can control the shift register
  pinMode(latchPin, OUTPUT);
  pinMode(clockPin, OUTPUT);
  pinMode(dataPin, OUTPUT);
```

```
}


void loop()
{
  for (int numberToDisplay = 0; numberToDisplay < 10; numberToDisplay++) {
    // take the latchPin low so
    // the LEDs don't change while you're sending in bits:
    digitalWrite(latchPin, LOW);
    // shift out the bits:
    shiftOut(dataPin, clockPin, MSBFIRST, dec_digits[numberToDisplay]);
    //take the latch pin high so the LEDs will light up:
    digitalWrite(latchPin, HIGH);
    // pause before next value:
    delay(1000);
  }
}
```

OUTPUT:





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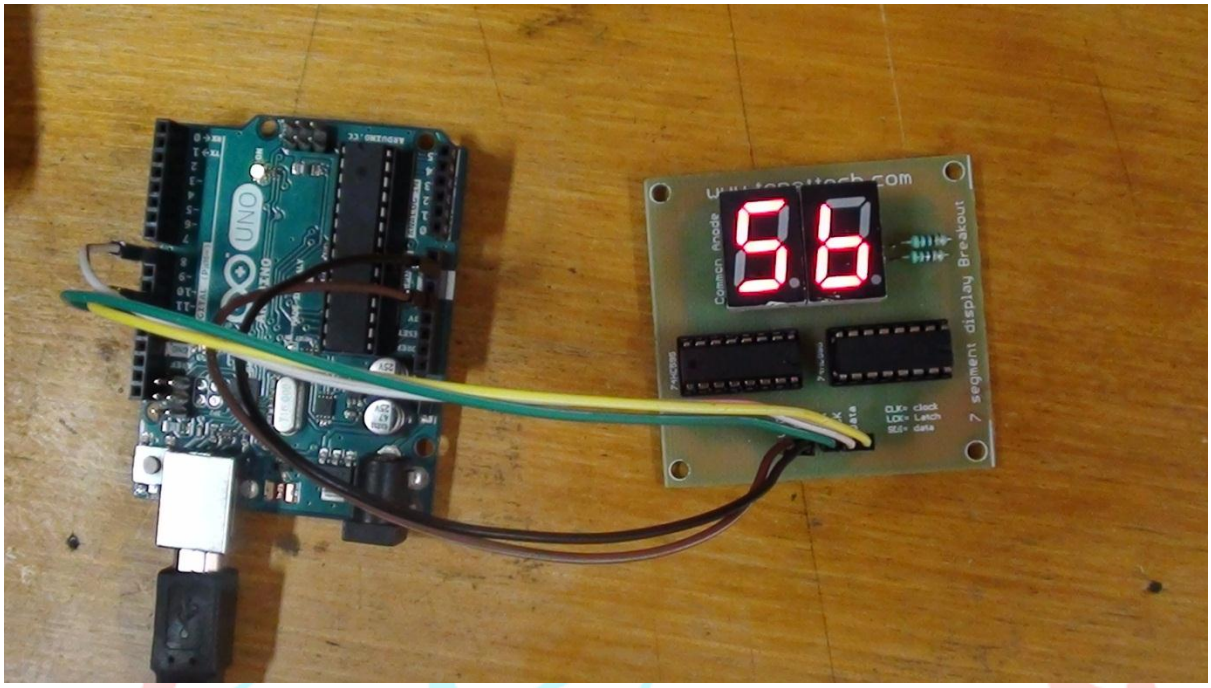

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