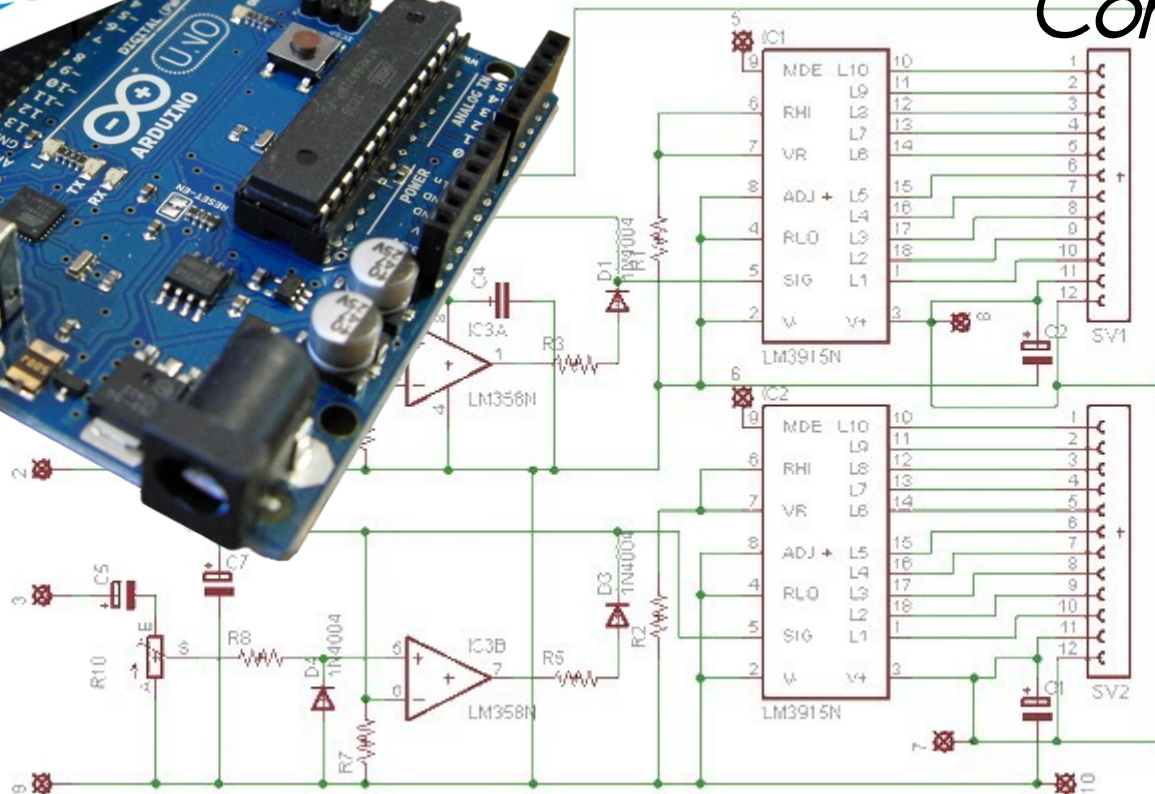
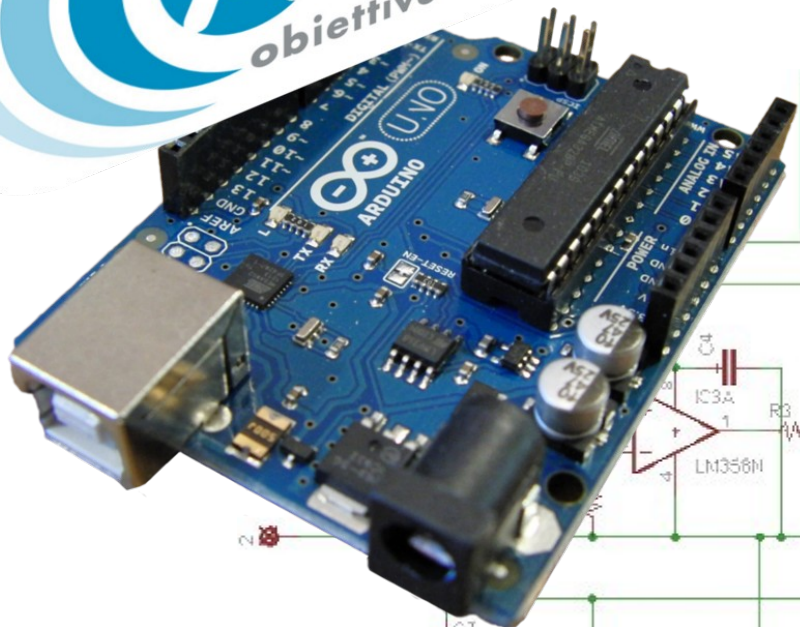


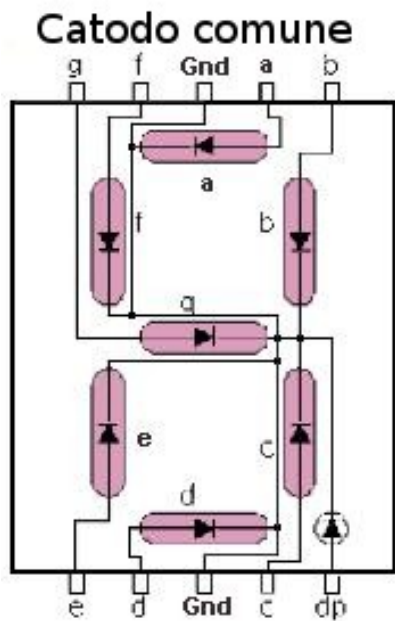
CORSO ARDUINO



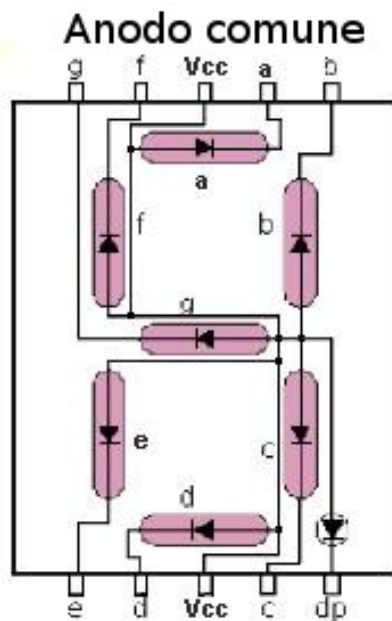
Giulio Fieramosca
Stefano Panichi
Corso ASEV 2015



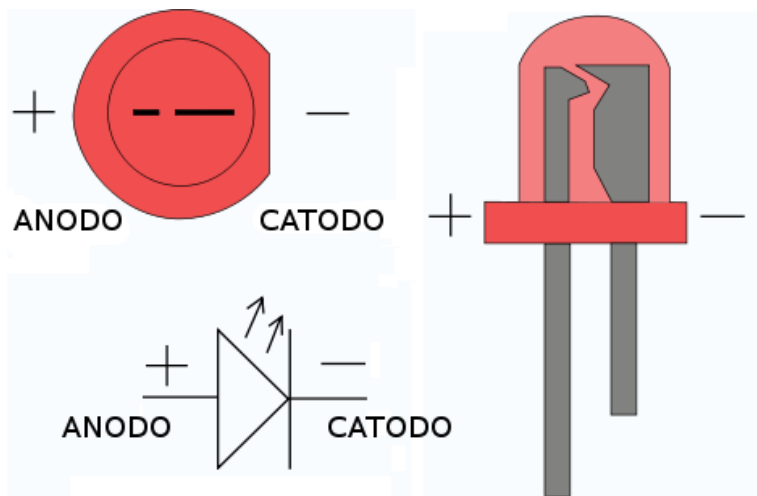
Display 7 segmenti



FJ5161AB

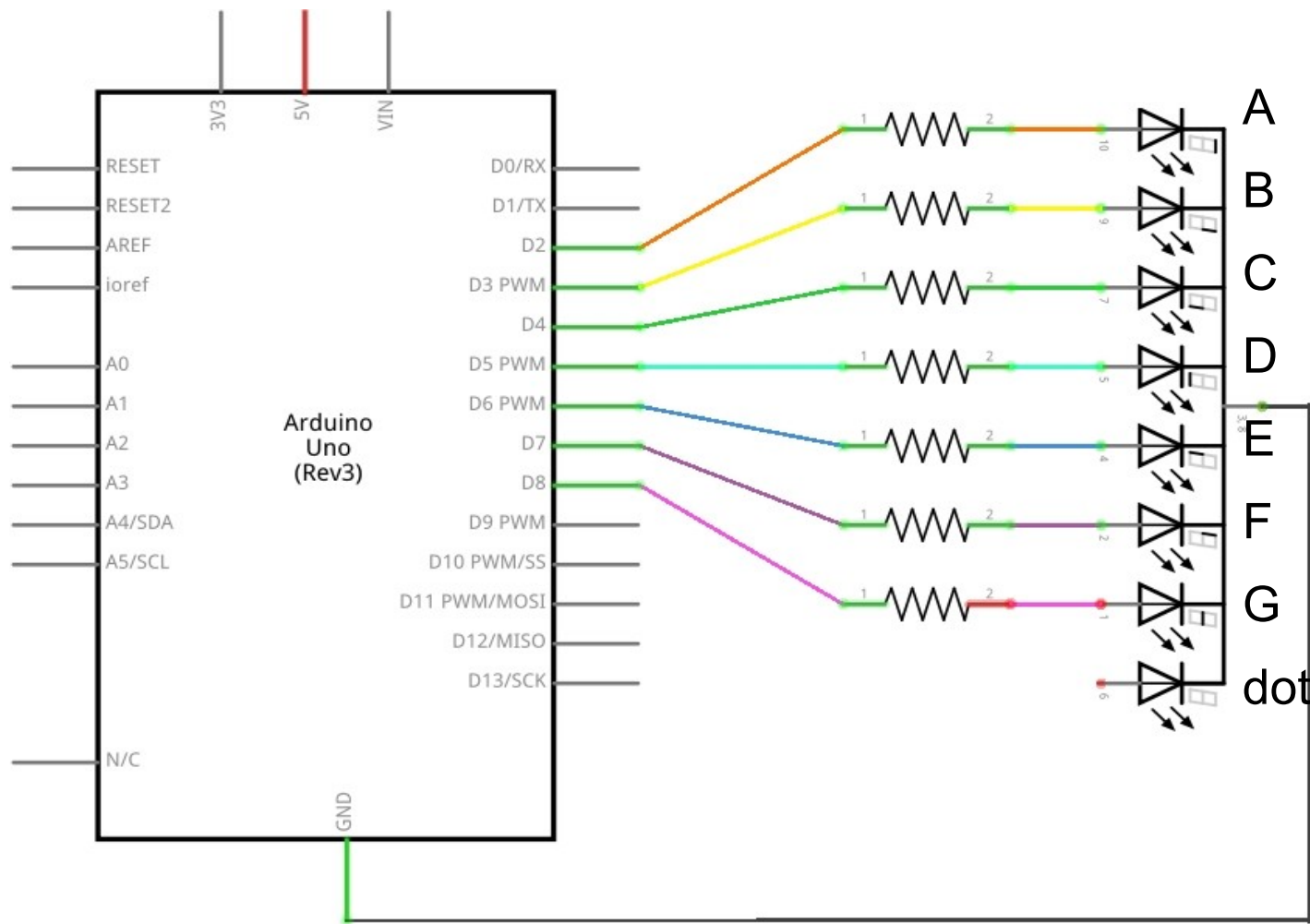


FJ5161BH



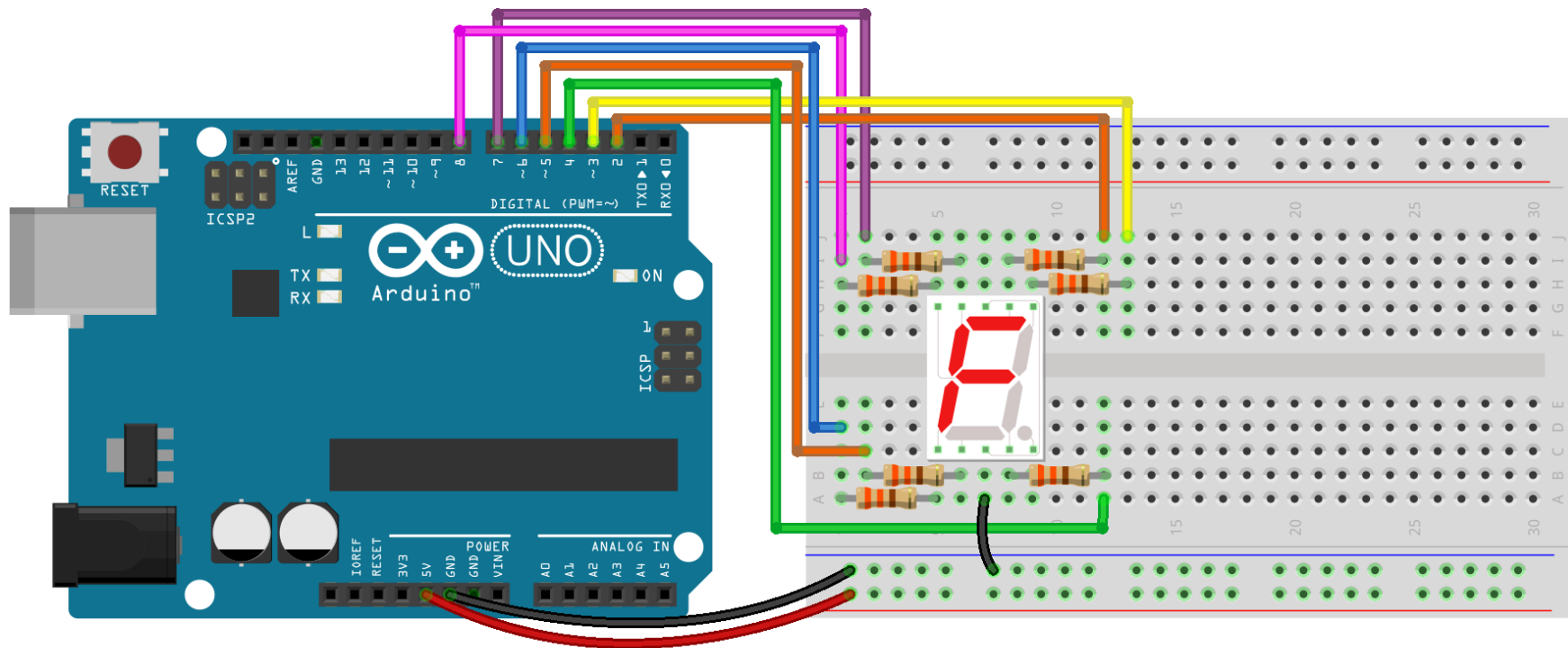
- Sono formati da 8 led disposti in 7 linee e un punto;
- Il circuito interno può avere i catodi dei led collegati insieme (*catodo comune*), o con gli anodi (*anodo comune*);
- Il pinout è differente per ogni modello: va consultato il relativo **datasheet**.

Circuito 7 segmenti – catodo comune



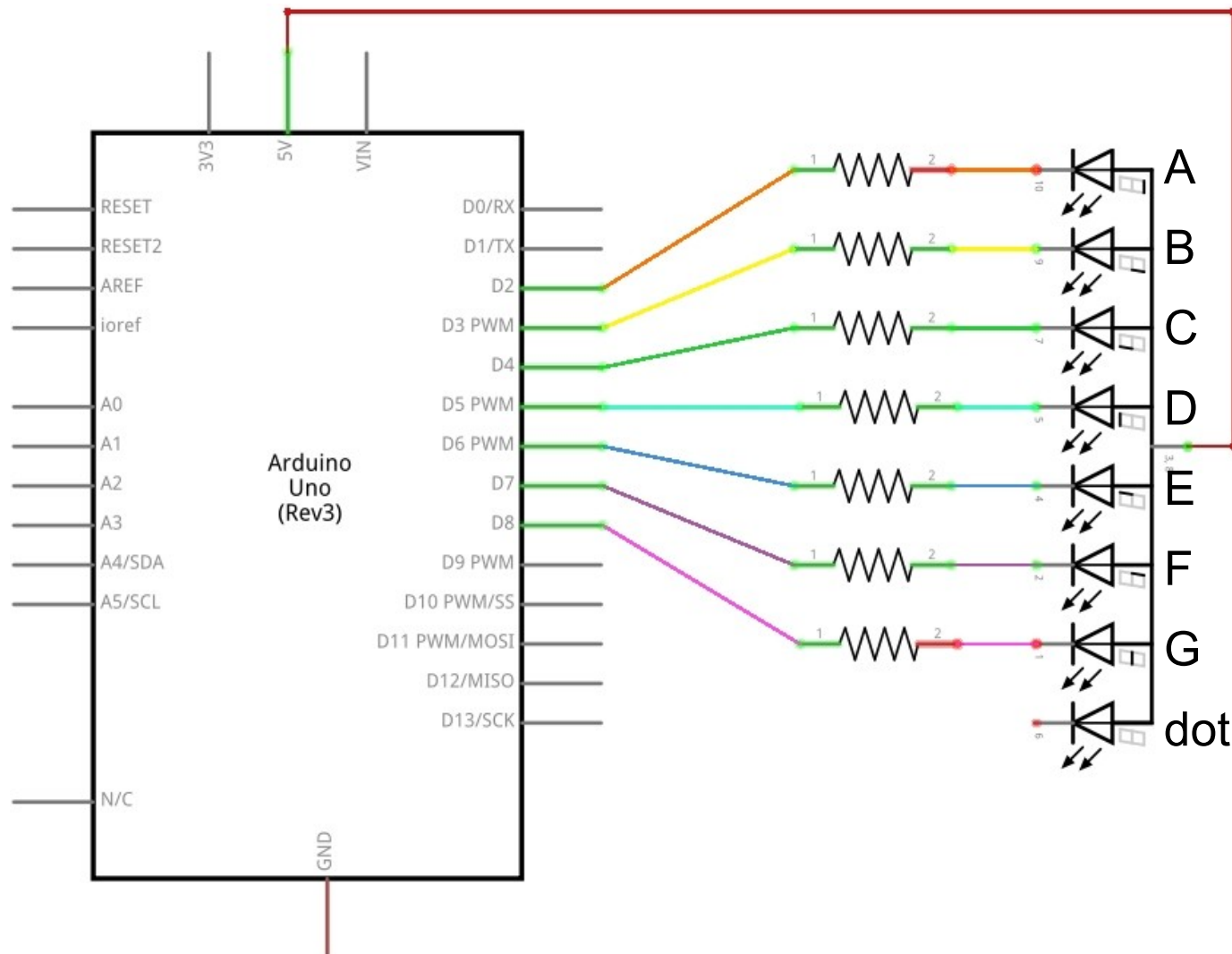
fritzing

Circuito 7 segmenti – catodo comune

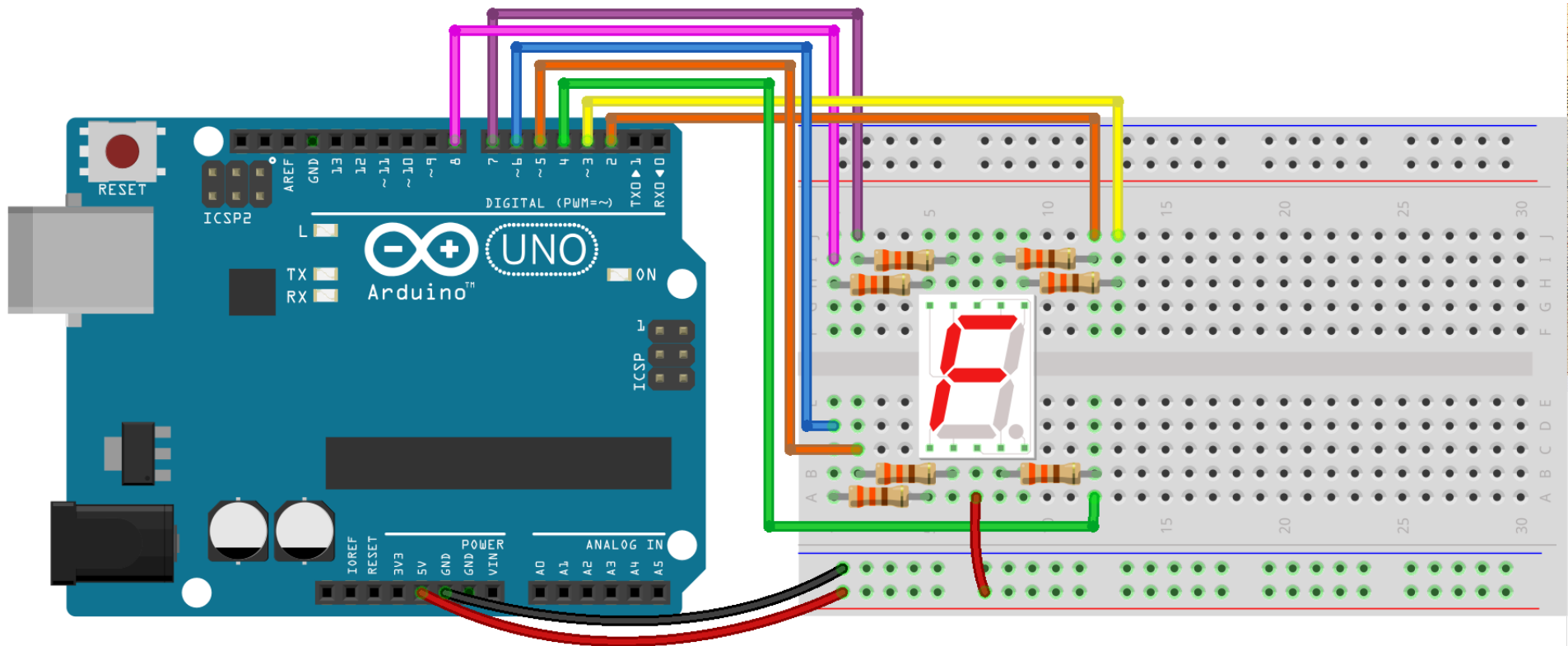


fritzing

Schema 7 segmenti – anodo comune



Schema 7 segmenti – anodo comune



fritzing

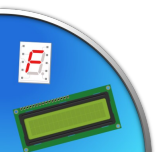
Listato 7 segmenti



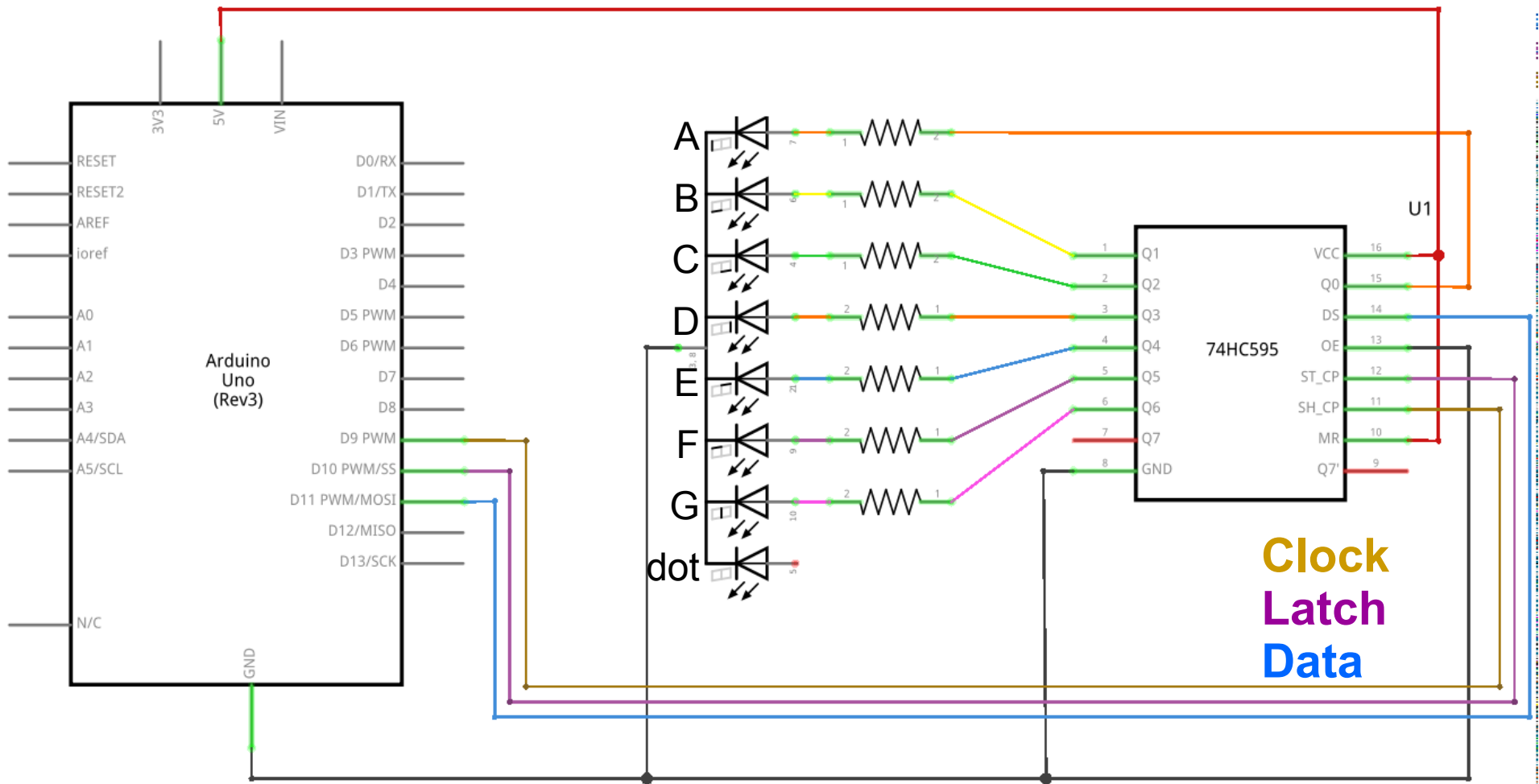
```
#include <SevSeg.h>
SevSeg display = SevSeg(2,3,4,5,6,7,8,COMMON_CATHODE);
COMMON_ANODE

void setup(){ /*vuoto*/ }

void loop()
{
  for (byte i=0; i<=9; i++){
    display.print(i); //illumina le cifre da 0 a 9
    delay(1000);
  }
}
```

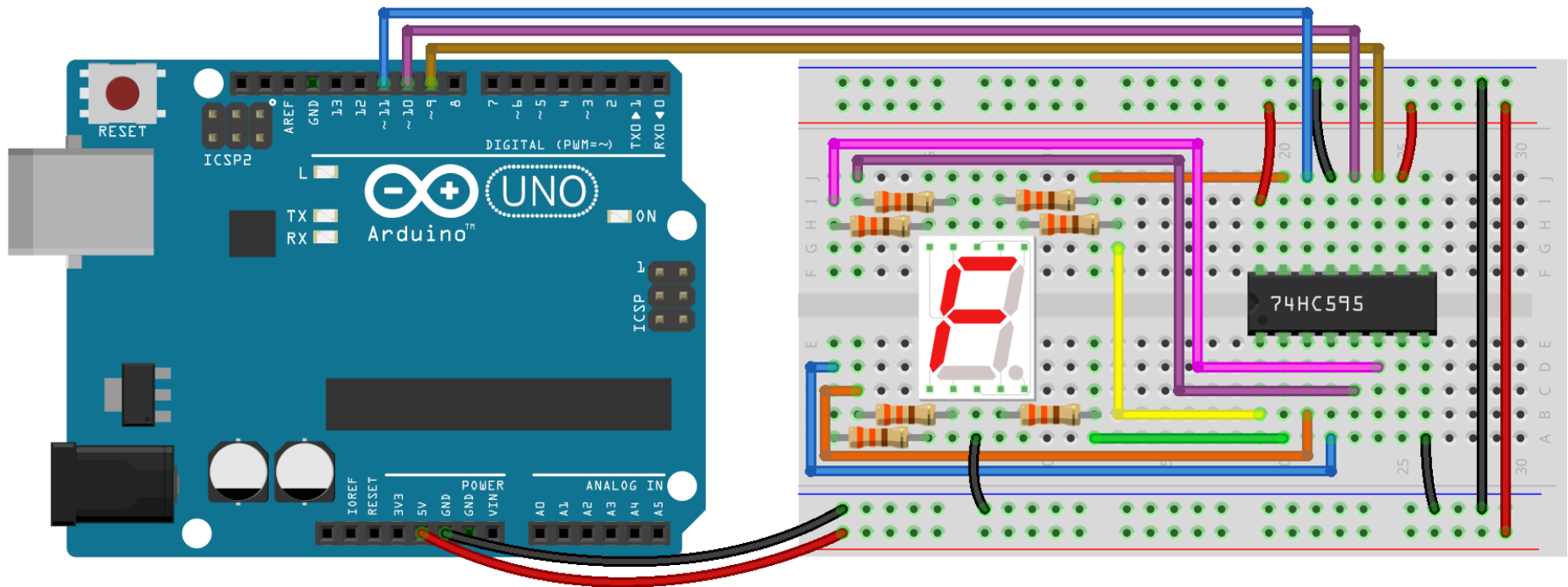


7 segmenti: con shift register catodo comune



fritzing

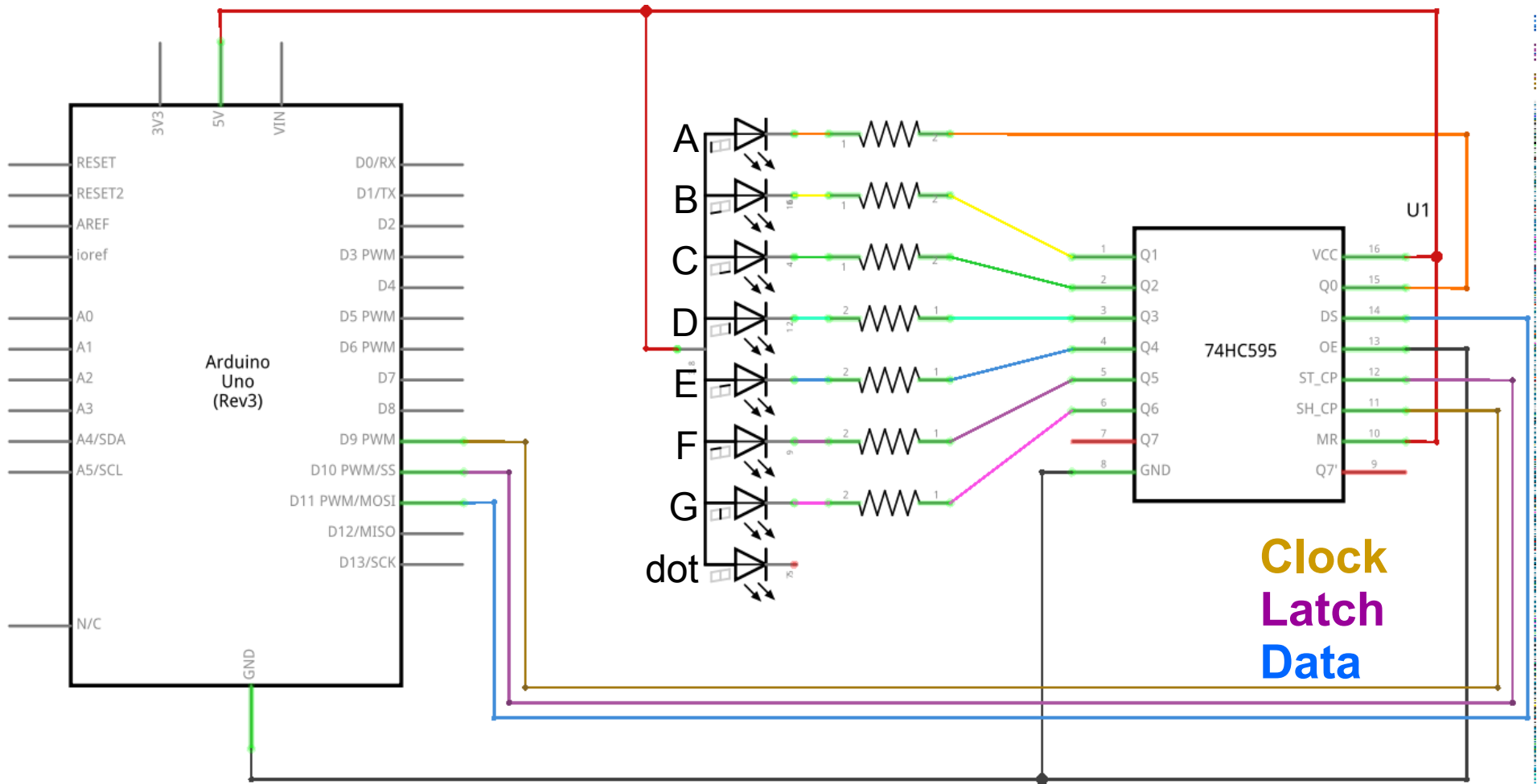
7 segmenti: con shift register catodo comune



fritzing

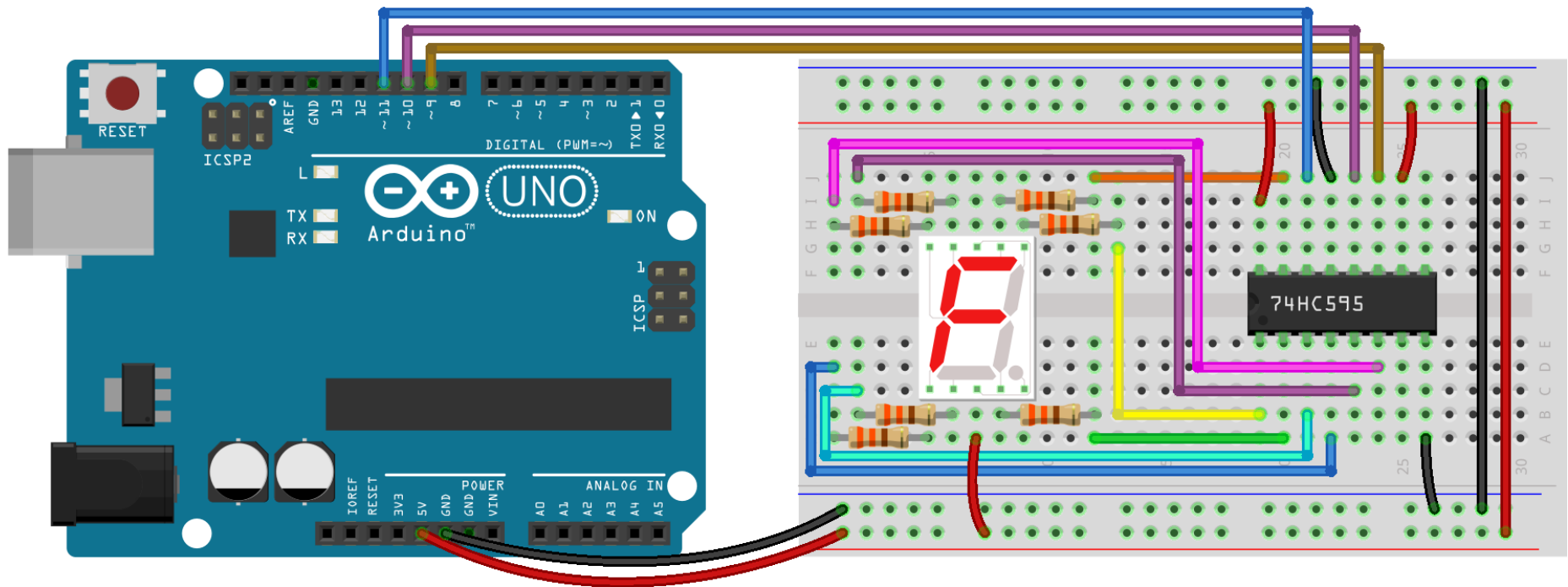
7 segmenti: con shift register

anodo comune



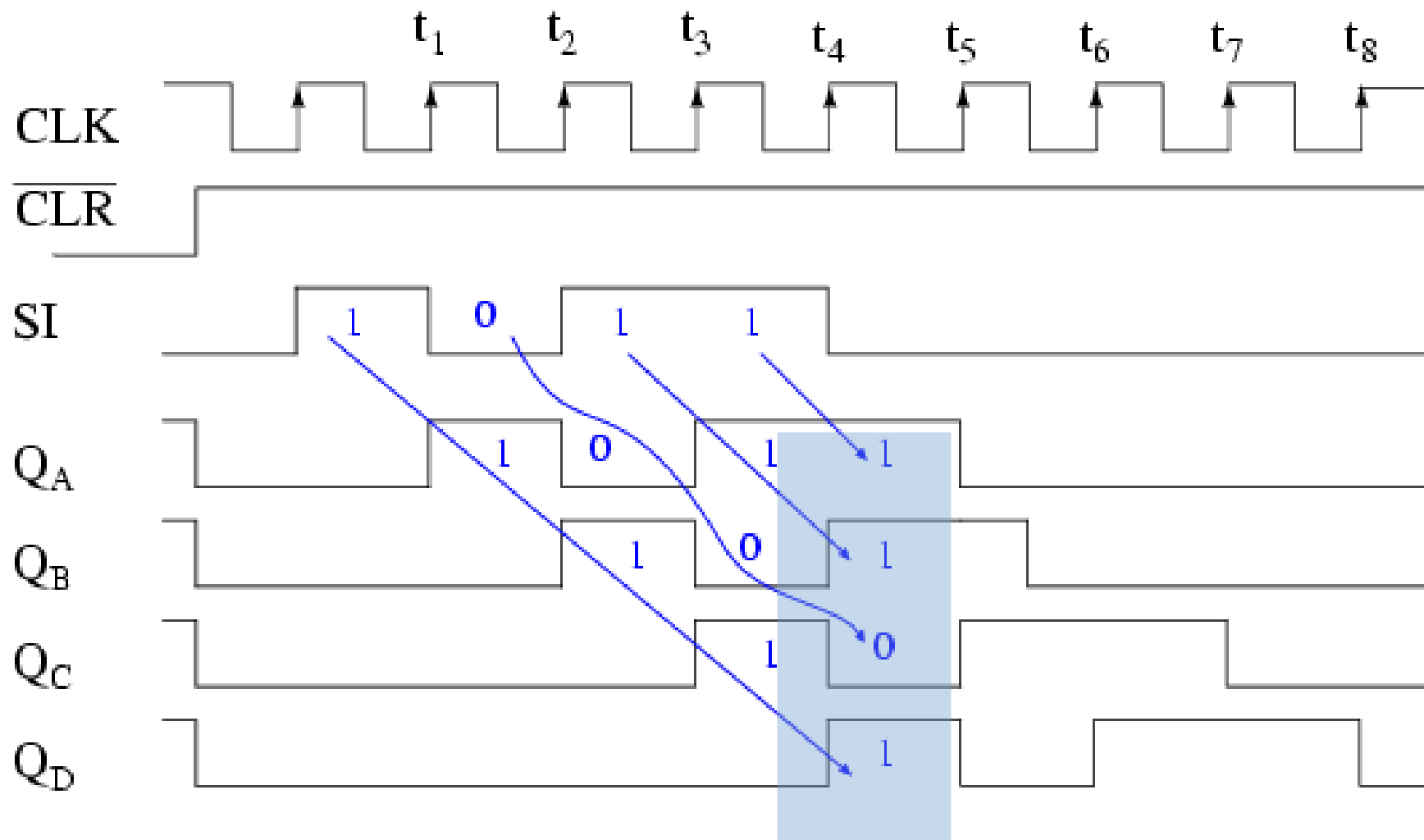
fritzing

7 segmenti: con shift register anodo comune



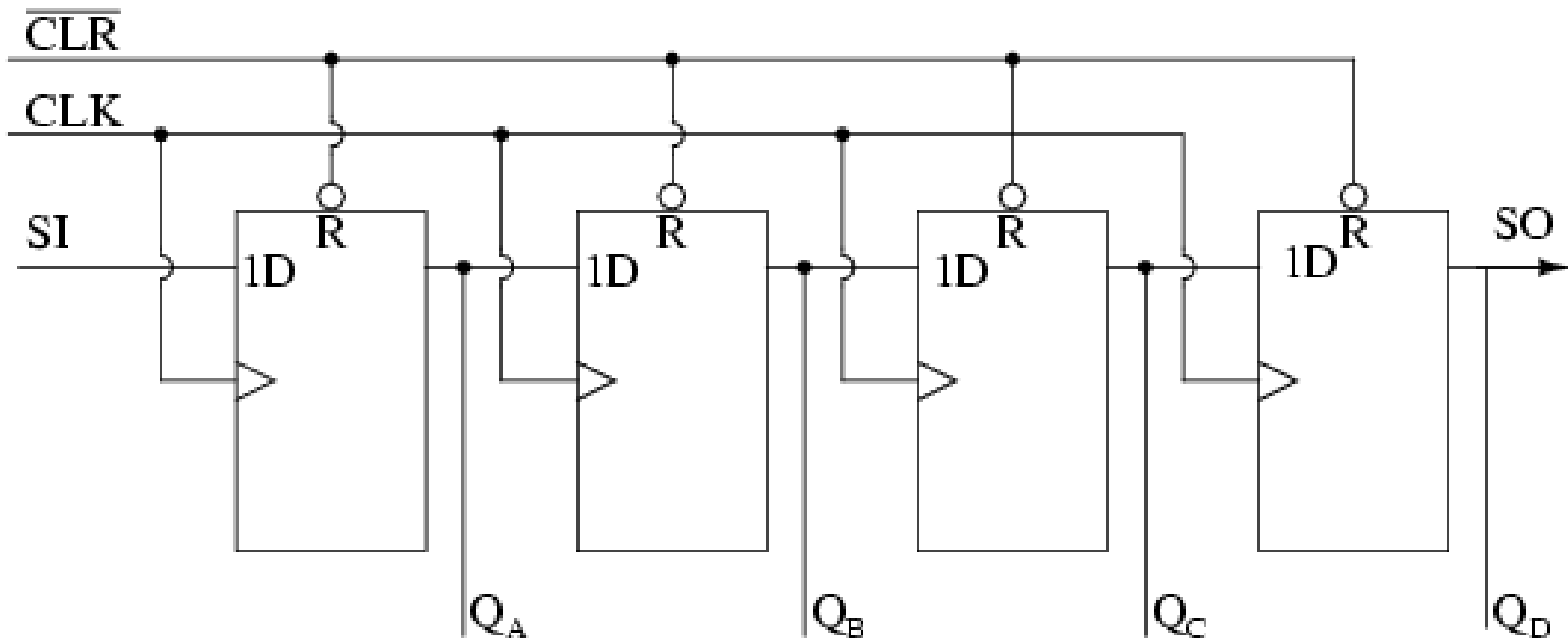
fritzing

Shift register nel dettaglio

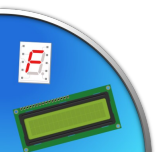


Serial-in/ parallel-out shift register waveforms

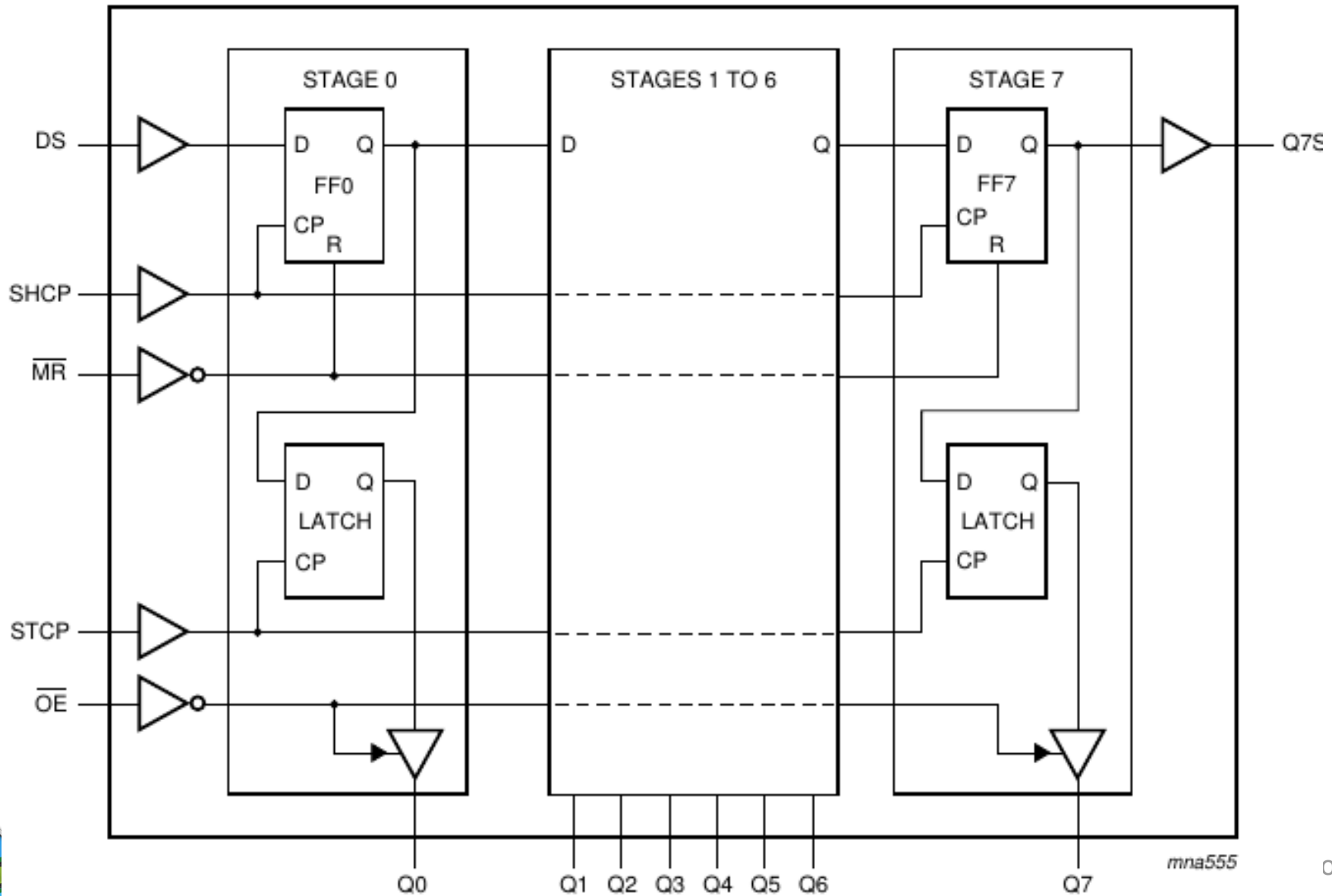
Shift register nel dettaglio



Serial-in/ Parallel out shift register details



Shift register nel dettaglio



Listato

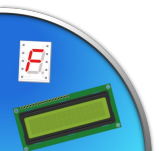
```
#include <SevSeg.h>
```



```
SevSeg display = SevSeg(9, 10, 11, COMMON_CATHODE);  
COMMON_ANODE
```

```
void setup(){  
    // non c'è niente qui...  
}
```

```
void loop()  
{  
    for (byte i=0; i <= 9; i++){  
        display.print(i); // illumina le cifre da 0 a 9  
        delay(1000);  
    }  
}
```

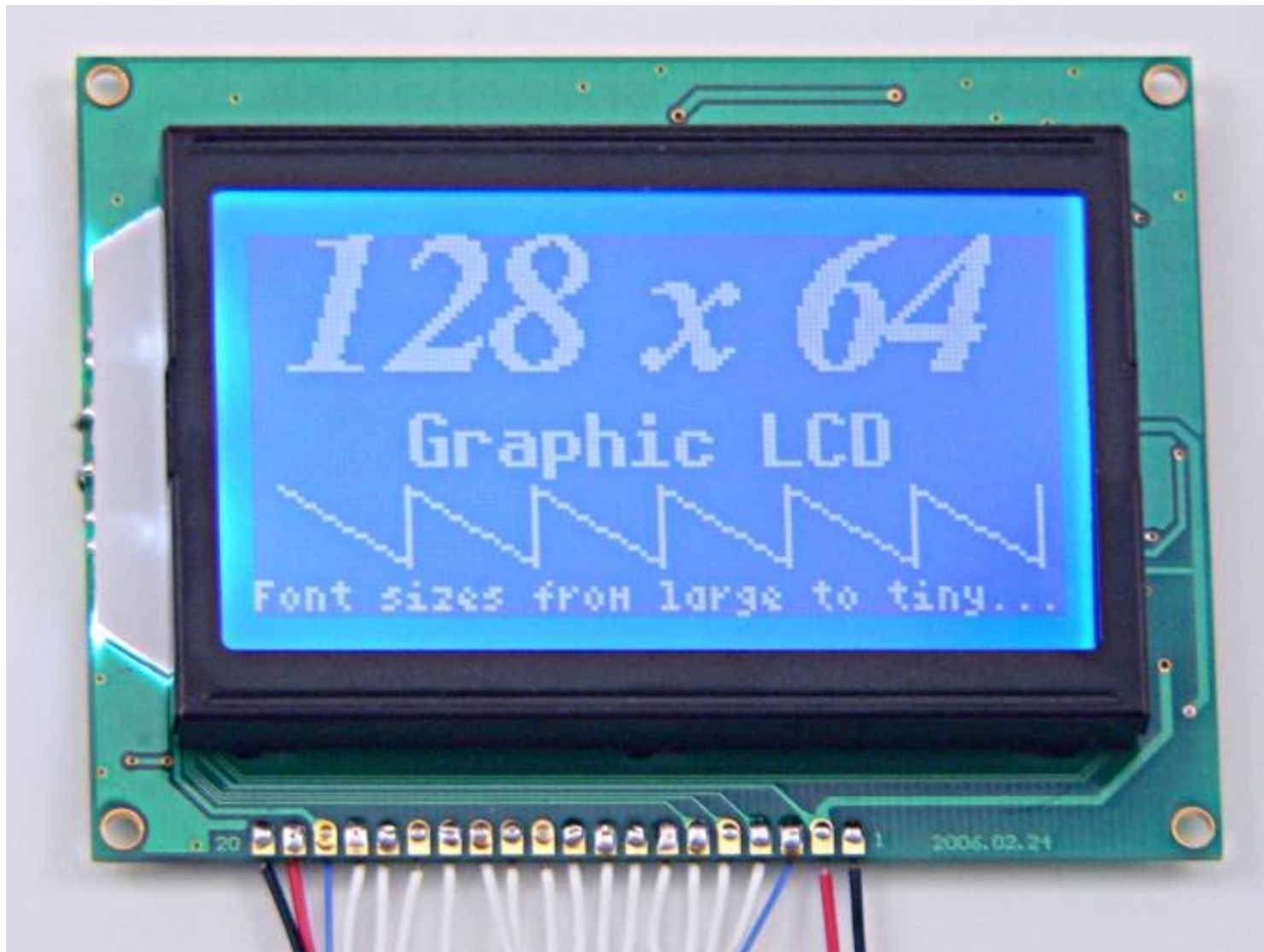


Display LCD

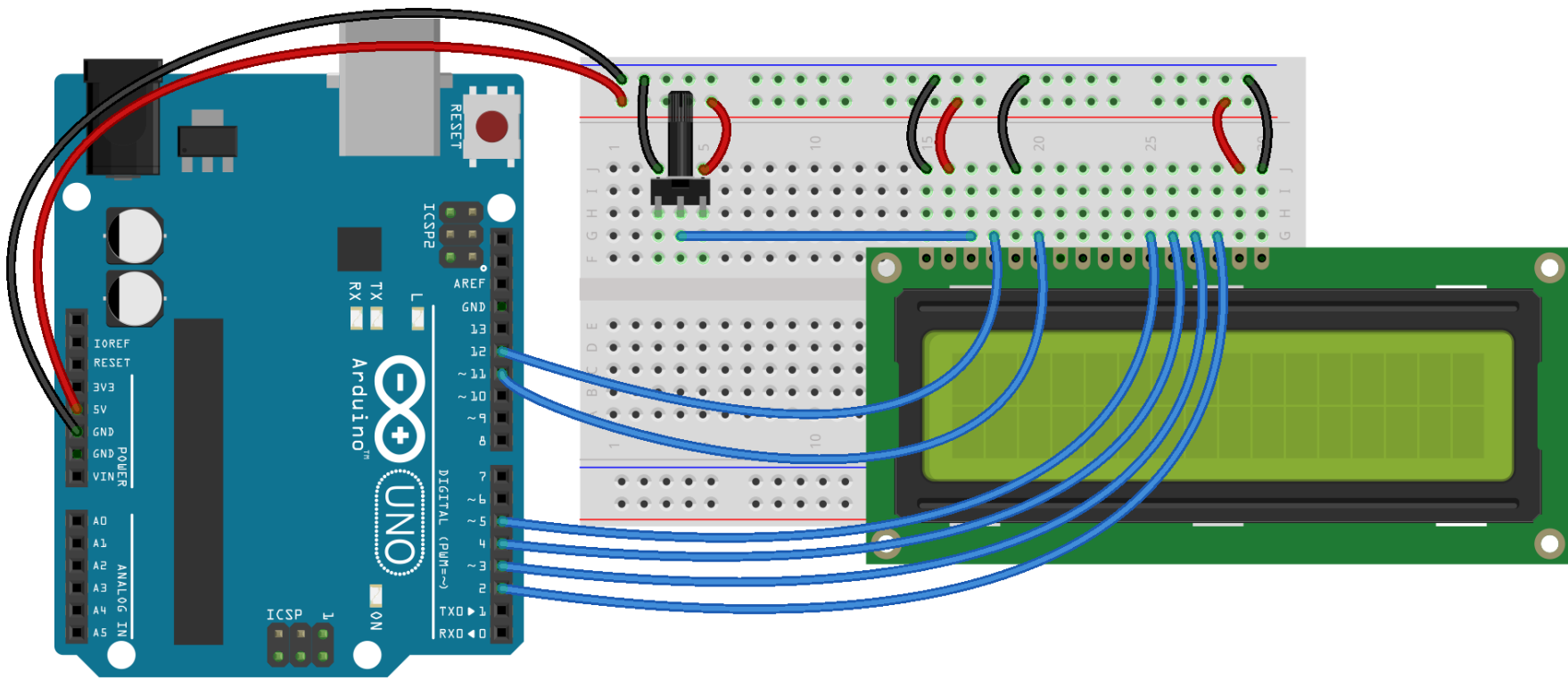


Display alfanumerico, in questo caso a
2 righe e 16 colonne

Display LCD grafico



Circuito LCD



fritzing

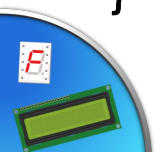
Listato display LCD

```
// inserisce la libreria
#include <LiquidCrystal.h>

// crea un oggetto lcd inizializzandolo con i pin relativi
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

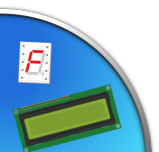
void setup() {
  // imposta righe e colonne del display
  lcd.begin(16, 2);
  // stampa un messaggio
  lcd.print("hello, world!");
}

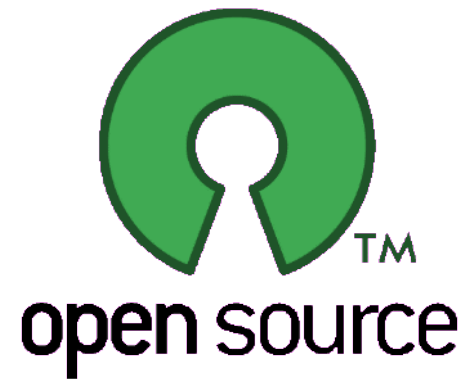
void loop() {
  // sposta il cursore alla linea 1, colonna 0
  lcd.setCursor(0, 1);
  // stampa il numero di secondi dall'accensione
  lcd.print(millis()/1000);
  delay(1000);
}
```



Esercizi per casa

- **dado elettronico:** fare un circuito che, premendo un pulsante, visualizzi su un display un numero random da 1 a 6
- **contapunti:** fare un circuito che, tramite tre pulsanti, consenta di incrementare, decrementare e azzerare il numero scritto su un display.
- **termometro:** fare un circuito che misura una temperatura e la visualizza sul display lcd





Presentazione realizzata con software open source
(LibreOffice Impress, Gimp, Arduino, Fritzing)

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e realizzata da *Stefano Panichi* e *Giulio Fieramosca*