

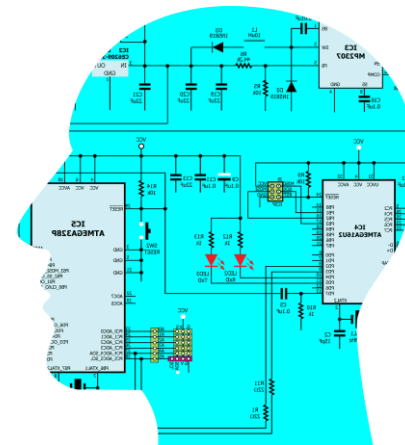
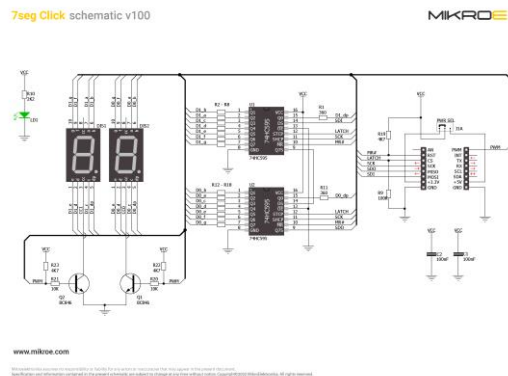
Serial Ports

Embedded Software

Wolfgang Neff

Assignment 1

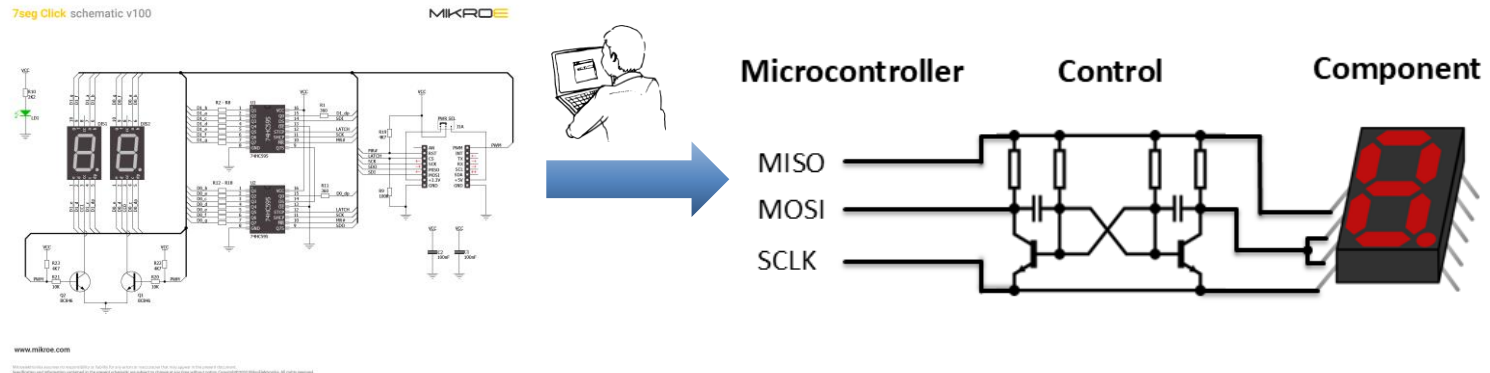
- Analysis of the Schematic
 - Please analyze the schematic of the 7seg Click. The central component is the 74HC595. Consult the datasheet to find out how it works.



Reference: <https://www.mikroe.com/7seg-click>

Assignment 2

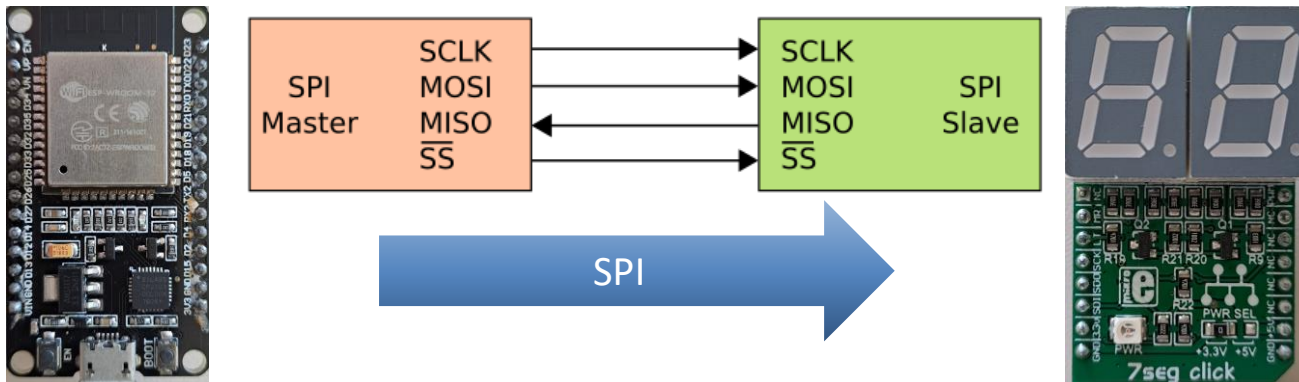
- Creating a Programmer's View
 - Please transform the electrician's view of the schematic into a programmer's view.



Reference: <https://www.mikroe.com/7seg-click>

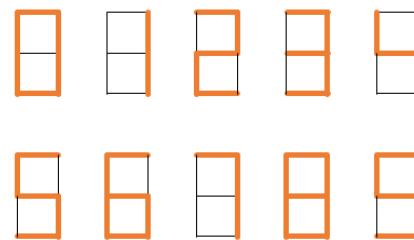
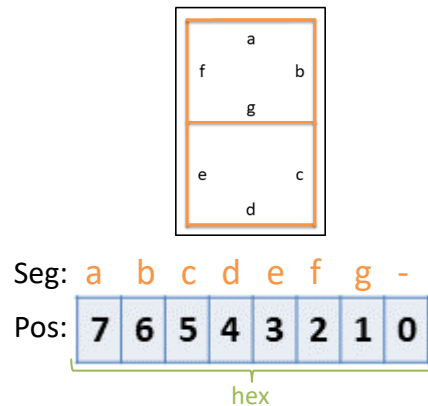
Assignment 3

- Creating some Output
 - Please let some segments glow by sending some data to the 7seg Click via SPI.



Assignment 4

- Mapping Segments to Bit Positions
 - Please map the seven segments of the display to the bit positions of the SPI data byte. Create a table with the hex representation of all digits.



Number Representation

Number	Hex Representation
0	0x...
1	0x...
...	...
8	0x...
9	0x...

Assignment 5

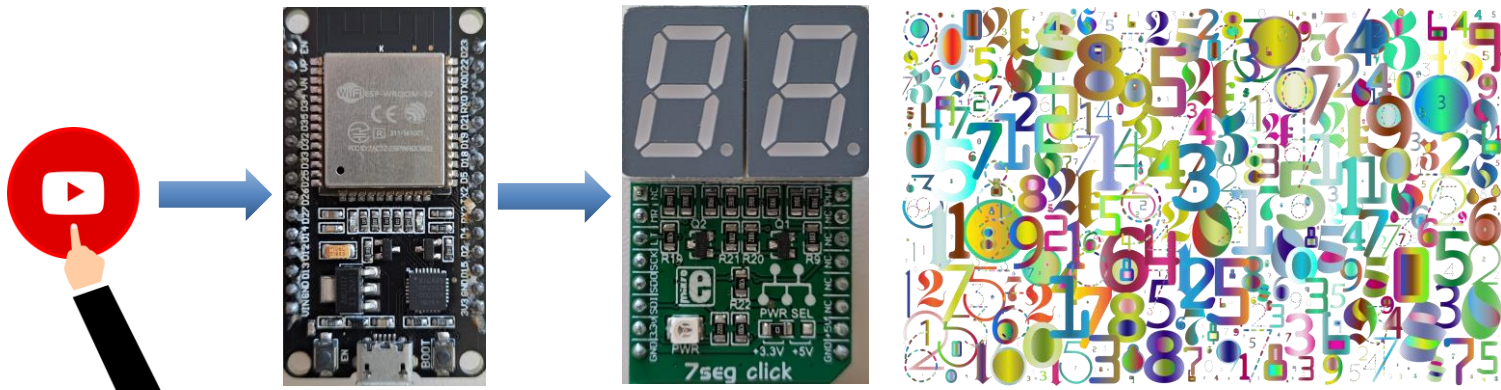
- Displaying Numbers on the Display
 - Please write a program which displays a double figure. Define a number in your program and compute the figures for the two positions.

```
#define n 42  
const int n = 42;
```



Assignment 6

- Bring more Action into your 7seg Click
 - Bring more action into your 7seg Click by means of push-buttons or a trim-pot. How about a count-down or the like?



Assignment 7

- A Programming Library for the 7seg Click
 - Please create an Arduino library for the 7seg Click so that other programmers can easily use this module on Arduino.

```
#include <disp.h>

void setup()
{
  disp.begin();
}

void loop()
{
  disp.on();
  disp.show(42);
  disp.off();
}
```

