

3. Programming control

The desired animations can now be realized with almost any microcontroller platform.

microcontroller programming

Create a program to create attractive animations of your LED-Signs for the selected microcontroller platform.

... information

If you're using the Arduino related platforms for the first time, the [Arduino Applications tutorial](#) will help you get started.

The [code](#) below shows the control of the LED sign using the interface board. To create your own animations, all you have to do now is adjust the loop area according to your own wishes.

```
#include <ESP8266WiFi.h>

class WEMOSLEDCtrl {
  const int ENABLEOUTPUT = D0;
  const int SHIFTRGCLR = D5;
  const int SERIN = D6;
  const int SHIFTRGCLK = D4;
  const int REGCLK = D3;
  const int BUTTON = D7;
  const int LDR = A0;

  unsigned int value;

public:

  void init() {
    pinMode(ENABLEOUTPUT, OUTPUT);
    pinMode(SHIFTRGCLR, OUTPUT);
    pinMode(SERIN, OUTPUT);
```

```

pinMode(SHIFTREGCLK, OUTPUT);
pinMode(REGCLK, OUTPUT);
pinMode(BUTTON, INPUT);

digitalWrite(ENABLEOUTPUT, HIGH); // active low!
digitalWrite(SHIFTREGCLR, HIGH); // active low!
}

void unsetAll() {
    this->value = 0;
}

void setAll() {
    this->value=0xFF;
}

void set(int index) {
    if(index>=0 && index<8)
        this->value |= 1 << index;
}

void unset(int index) {
    if(index>=0 && index<8)
        this->value &= !(1 << index);
}

void commit() {
    for(int i=0; i<8; i++) {
        digitalWrite(SERIN, (this->value>>i) & 0x01); // Lege Pegel des
        // aktiviere Schiebeaktion
        digitalWrite(SHIFTREGCLK, HIGH);
        delay(100);
        digitalWrite(SHIFTREGCLK, LOW);
        delay(100);
    }
    // schalte Ausgang aus
    digitalWrite(ENABLEOUTPUT, HIGH); // active low!
    // Übertrage Schieberegisterinhalt an Ausgangsregister
    digitalWrite(REGCLK, HIGH);
    delay(100);
    digitalWrite(REGCLK, LOW);
    // schalte Ausgang ein
    delay(100);
}

```

```
    digitalWrite(ENABLEOUTPUT, LOW); // active low!
  }
};

WEMOSLEDCtrl ledsign;

void setup() {
  ledsign.init();
}

void loop() {
  // change your desired behaviour

  // switch on all LEDs
  ledsign.setAll();
  ledsign.commit();

  delay(1000);

  // switch off all LEDs
  ledsign.unsetAll();
  ledsign.commit();
  delay(1000);

  // switch on LED1 and LED3
  ledsign.set(0);
  ledsign.set(2);
  ledsign.commit();
  delay(1000);
}
```



..... information ...