1   Content of the electronics kit

You borrow your kit personally from FlexLab and it must be handed back to FlexLab at the end of the course.

When handing out, please check the contents with this list and let us know if anything is missing. When handing in the kit, we also ask you to check the contents and make us aware if you have lost something or something is defective.

- ☐ ESP32 Development Board

- ☐ 2 Breadboards (830 Point Solderless and Transparent)

- ☐ 2 Joysticks

- ☐ Potentiometer with cap

- ☐ GY-521 Accelerometer

- ☐ Character LCD /w IIC/I2C Serial Interface Adapter

- ☐ 0.91inch OLED LCD Display Module 128x32 I2C

- ☐ Micro USB Cable

- ☐ 3 push buttons

- ☐ Piezo Electronic Buzzer Alarm 95DB

- ☐ Small Toggle Switch Interruptor

- ☐ Cable Bundle

- ☐ various colored LEDs

2 Code Examples

2.1 Digital Input

In these first examples, we try to keep things simple and concentrate on controlling a single pin (LED) in the first example and then reading a pin (button) in the next example. In these examples we use digital input / output. Either there is power on the stick or there is not. Later in the next section we try with analog inputs and outputs, such as reading the resistance in a potentiometer or being able to control the brightness of an LED.

2.1.1 Blink example

The Blink example can be described as the "hello world"-script for microprocessors. Pay attention to the first line where we include arduino, this line of code is only necessary because we use platoformIO as our editor. If you search the net for blink or other arduino examples you will often find examples where this line is missing. That is because the arduino IDE add that by itself.

```
1  #include <Arduino.h>
2
3  const int LEDPIN = 15;
4
5  void setup() { pinMode(LEDPIN, OUTPUT); }
6
7  void loop() {
8    digitalWrite(LEDPIN, HIGH);
9    delay(1000);
10   digitalWrite(LEDPIN, LOW);
11   delay(1000);
12 }
```

2.1.2 Button Example using 'Pullup'

This example demonstration the use og a built in pullup resistor. The reason we use it the pullup resistor is to avoid that the voltage is fluctiating when the button isn't connected to the ground(gnd)

```
1  #include <Arduino.h>
2
3  const int LEDPIN = 15;
4  const int BUTTON_PIN = 22;
5  int buttonState = 0;
```

```
6
7  void setup() {
8    pinMode(LEDPIN, OUTPUT);
9    pinMode(BUTTON_PIN, INPUT_PULLUP);
10
11   // Init serial
12   Serial.begin(9600);
13 }
14
15 void loop() {
16   buttonState = digitalRead(BUTTON_PIN);
17   Serial.println(buttonState);
18
19   if(buttonState == 1){
20     // LED OFF
21   }else{
22     // LED ON
23   }
24 }
```