

# Lab 3: Paul Tissedre

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Link to your Digital-electronics-2 GitHub repository:

<https://github.com/paul-tiss/Digital-electronics-2>

## Data types in C

1. Complete table.

Data type	Number of bits	Range	Description
uint8_t	8	0, 1, ..., 255	Unsigned 8-bit integer
int8_t	8	-128 to 127	signed 8-bit integer
uint16_t	16	0 to 65 535	Unsigned 16-bit integer
int16_t	16	-32 768 to 32 767	signed 16-bit integer
float	32	-3.4e+38, ..., 3.4e+38	Single-precision floating-point
void	0	none	none

## GPIO library

1. In your words, describe the difference between the declaration and the definition of the function in C.
  - Function declaration tells the compiler that the function exist (name, arguments,type of return)
  - Function definition tells the compiler what the function does.
2. Part of the C code listing with syntax highlighting, which toggles LEDs only if push button is pressed. Otherwise, the value of the LEDs does not change. Use function from your GPIO library. Let the push button is connected to port D:

```
// WRITE YOUR CODE HERE

// Infinite Loop
// Configure green LED as output
GPIO_config_output(&DDRB, LED_GREEN);
GPIO_write_low(&PORTB, LED_GREEN);

// Configure Push button at port D and enable internal pull-up resistor
GPIO_config_input_pullup(&DDRD, BTN);

// Infinite Loop
while (1)
{
    if(!(GPIO_read(&PIND, BTN) == 1))
    {
```

```

        GPIO_toggle(&PORTB, LED_GREEN);
        _delay_ms(1000);
    }
}

```

## Traffic light

1. Scheme of traffic light application with one red/yellow/green light for cars and one red/green light for pedestrians. Connect AVR device, LEDs, resistors, one push button (for pedestrians), and supply voltage. The image can be drawn on a computer or by hand. Always name all components and their values!

