Lab 3: Alexandre TRUONG

Link to my `Digital-electronics-2` GitHub repository:

https://github.com/AkaiRyussei/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

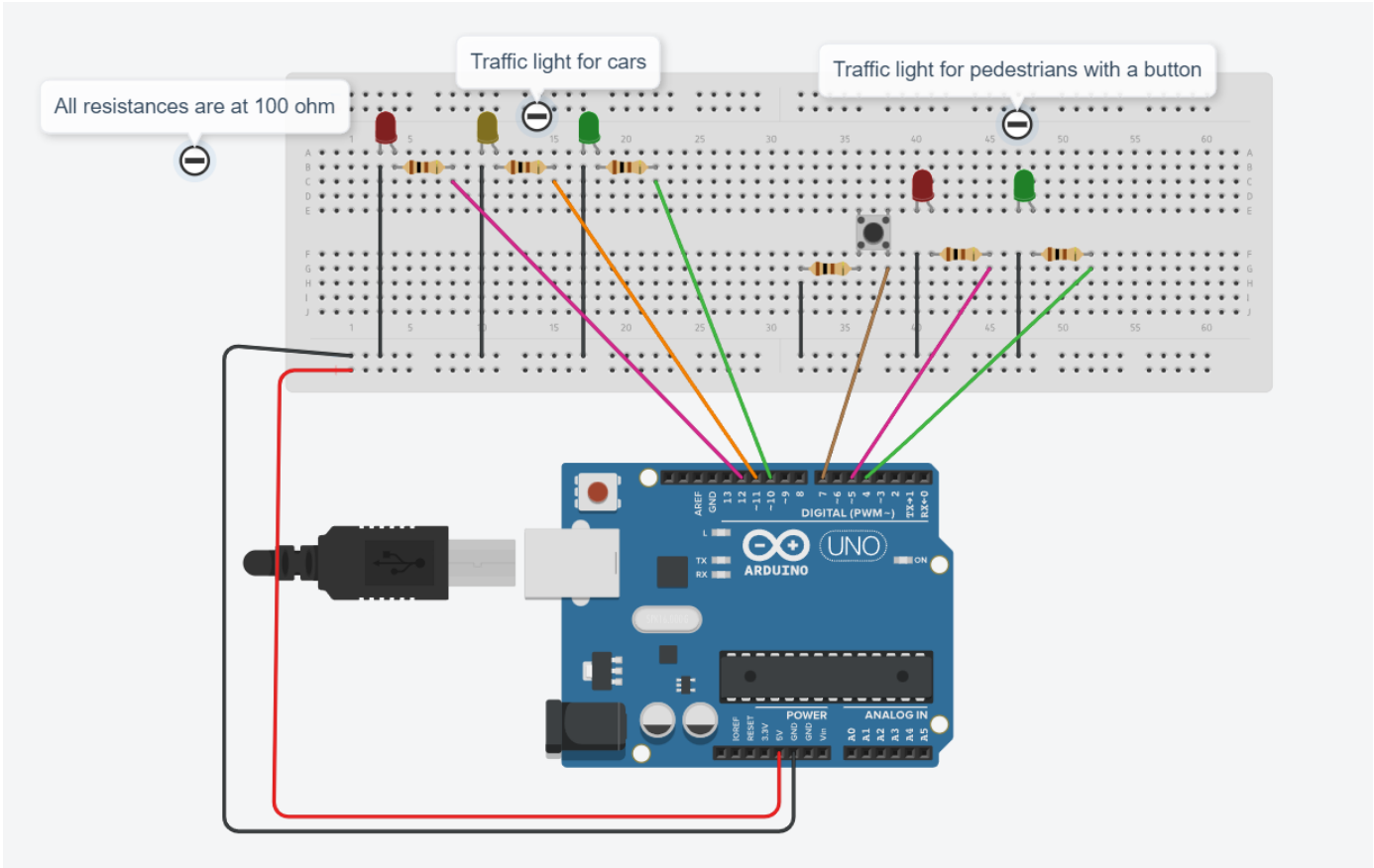
GPIO library

1. In your words, describe the difference between the declaration and the definition of the function in C.
    - Function declaration defines type of return value, function name, and number and types of all input parameters.
    - Function definition provides the actual body of the function inside the braces {}.
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:

```
    // Configure Push button at port D and enable internal pull-up resistor
    // WRITE YOUR CODE HERE

    GPIO_config_input_pullup(&DDRD, BTN);

    // Infinite loop
    while (1)
    {
        if (bit_is_clear(PIND,BTN))
    {
        GPIO_toggle(&PORTB, LED_GREEN);
        GPIO_toggle(&PORTC, LED_RED);
        // Pause several milliseconds
        _delay_ms(BLINK_DELAY);
    }

        // WRITE YOUR CODE HERE
    }
```

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!


All resistances are at 100 ohm
Traffic light for cars
Traffic light for pedestrians with a button
DIGITAL (PWM~)
UNO
ARDUINO
POWER
ANALOG IN