Vypracovanie LAB_3 - Alexander Bekeč

Alexander Bekeč, 221096

Link to depository: https://github.com/alexander-bekec/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, -127, …, 127	Signed 8-bit integer
uint16_t	16	0, 1, …, 65535	Unsigned 16-bit integer
int16_t	16	-32768, -32767, …, 32767	Signed 16-bit integer
float	32	-3.4e+38, …, 3.4e+38	Single-precision floating-point
void	0	no value	Void type (empty, do not return the value)

GPIO library

1. In your words, describe the difference between the declaration and the definition of the function in C.

   - Function declaration - informovanie kompilátoru o existencii danej funkcie, jej názve, type a vstupných premenných
   - Function definition - samotný súbor príkazov pre vykonanie účelu danej funkcie, čo má daná funkcia vykonať za úlohu

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:

```c
int main(void)
{
    // Green LED at port B
    GPIO_config_output(&DDRB, LED_GREEN);
    GPIO_write_low(&PORTB, LED_GREEN);

    // Configure the second LED at port C
    GPIO_config_output(&DDRC, LED_SECOND);
    GPIO_write_low(&PORTC, LED_SECOND);

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

    // Infinite loop
```

```
    while (1)
    {
        if (bit_is_clear(PIND, 2))
        {
            // Pause several milliseconds
            _delay_ms(BLINK_DELAY);
            GPIO_toggle(&PORTB, LED_GREEN);
            GPIO_toggle(&PORTC, LED_SECOND);
        }
    }

    // Will never reach this
    return 0;
}
```

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!