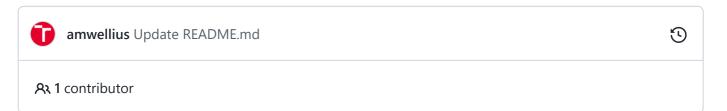


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Digital-electronics-2 / Labs / 03-gpio / README.md



Lab 3: Samuel Košík

Link to your Digital-electronics-2 GitHub repository:

GitHub Link

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	1 byt signed int
uint16_t	16	0 - 65535	2 byt unsigned int
int16_t	16	-32768 - 32767	2 byt signed int
float	32	-3.4e+38,, 3.4e+38	Single-precision floating- point
void	0	0	when type is not declarated

GPIO library

- 1. In your words, describe the difference between the declaration and the definition of the function in C.
 - Function declaration = Znamená prvé predstavenie v kóde, napr char a; , int a(char, float); , ... Kompilér postupuje po riadoch, preto musia byť premenné, funcie najprv predstavené a až potom definované.
 - Function definition = Znamená to, čo funcia robí, to, čo sa s premennou deje: x=a+b; Až počas definície sa alokuje potrebná pamäť.
- 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:

```
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_RED);
GPIO_write_low(&PORTC, LED_RED);
 // Configure Push button at port D and enable internal pull-up resistor
GPIO_config_input_pullup(&DDRD, BUTTON);
// Infinite loop
while (1)
     // Pause several milliseconds
     if(GPIO_read(&PIND, BUTTON) == 0)
         _delay_ms(BLINK_DELAY);
         GPIO toggle(&PORTB, LED GREEN);
         GPIO_toggle(&PORTC, LED_RED);
     }
}
```

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!

