

🔑 main ▾

...

Digital-electronics-2 / Labs / 01 tools / Assignment.md



UTAN25 Update Assignment.md



👤 1 contributor

☰ 65 lines (46 sloc) | 1.82 KB

...

🔗 Lab 1: Unai Telletxea

Link to your Digital-electronics-2 GitHub repository:

<https://github.com/UTAN25/Digital-electronics-2/>

Blink example

1. What is the meaning of the following binary operators in C?

- | or
- & and
- ^ exor
- ~ compliment
- << left shift
- >> right shift

2. Complete truth table with operators: | , & , ^ , ~

b	a	b or a	b and a	b xor a	not b
0	0	0	0	0	1
0	1	1	0	1	1
1	0	1	0	1	0

b	a	b or a	b and a	b xor a	not b
1	1	1	1	0	0

Morse code

1. Listing of C code with syntax highlighting which repeats one "dot" and one "comma" (BTW, in Morse code it is letter A) on a LED:

```
int main(void)
{
    // Set pin as output in Data Direction Register
    // DDRB = DDRB or 0010 0000
    DDRB = DDRB | (1<<LED_GREEN);

    // Set pin LOW in Data Register (LED off)
    // PORTB = PORTB and 1101 1111
    PORTB = PORTB & ~(1<<LED_GREEN);

    // Infinite loop
    while (1)
    {
        for( a=0 ; a < 3 ; a++ )          //Turns it On - Off - On (3 time loop)
        {
            _delay_ms(SHORT_DELAY);        // Pause several milliseconds
            PORTB = PORTB ^ (1<<LED_GREEN);
        }

        _delay_ms(400); // Extra pause while it is On
        PORTB = PORTB ^ (1<<LED_GREEN);    //Turns it Off so at the end of the

    }

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

2. Scheme of Morse code application, i.e. connection of AVR device, LED, resistor, and supply voltage. The image can be drawn on a computer or by hand. Always name all components and their values!

