Lab 4:Dogancan Gurbuz

https://github.com/DogancanG/Digital-electronics-2/tree/main/Labs/04-interrupts/timer

Overflow times

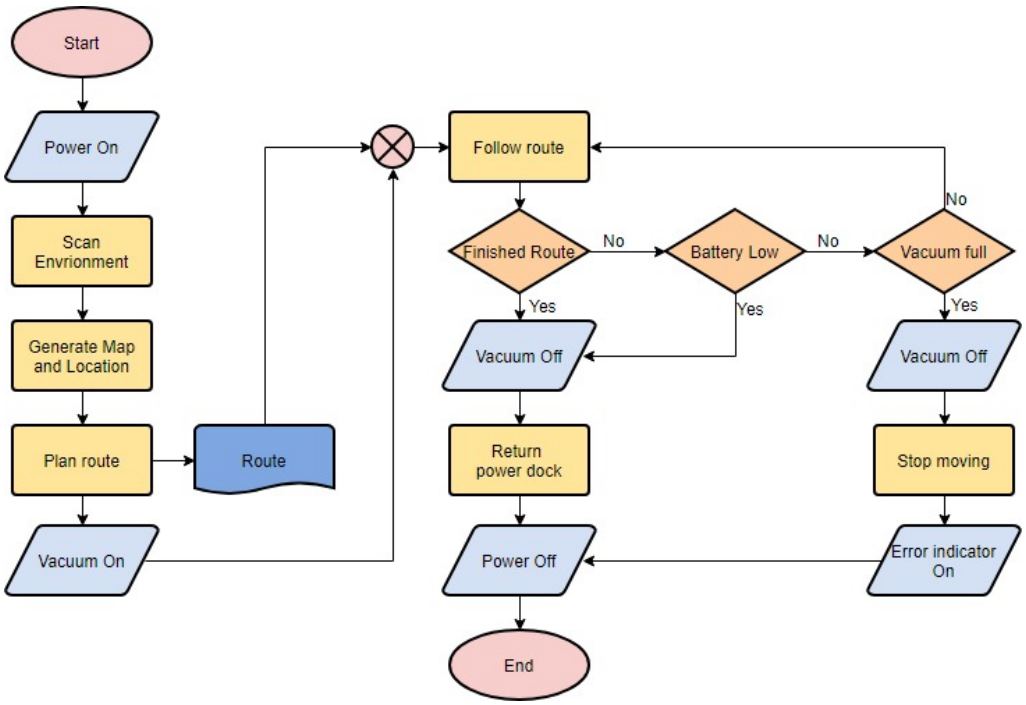
Module	Number of bits	1	8	32	64	128	256	1024
Timer/Counter0	8	16u	128u	--	1ms	--	4.1ms	16ms
Timer/Counter1	16	4.1ms	33ms	--	262ms	--	1.04s	4.2s
Timer/Counter2	8	16u	128u	512u	1ms	2ms	4.1ms	16ms

Timer library

1. An Interrupt is a feature of the processor hardware; eg, on an 8051, and interrupt can occur when the UART receives a character. A Function is a construct of the 'C' programming language - it represents a piece of executable code that can be "called" by other parts of the program. (other languages have similar constructs) A special case of a function is when it is used to service an interrupt - commonly known as an Interrupt Service Routine or "ISR"

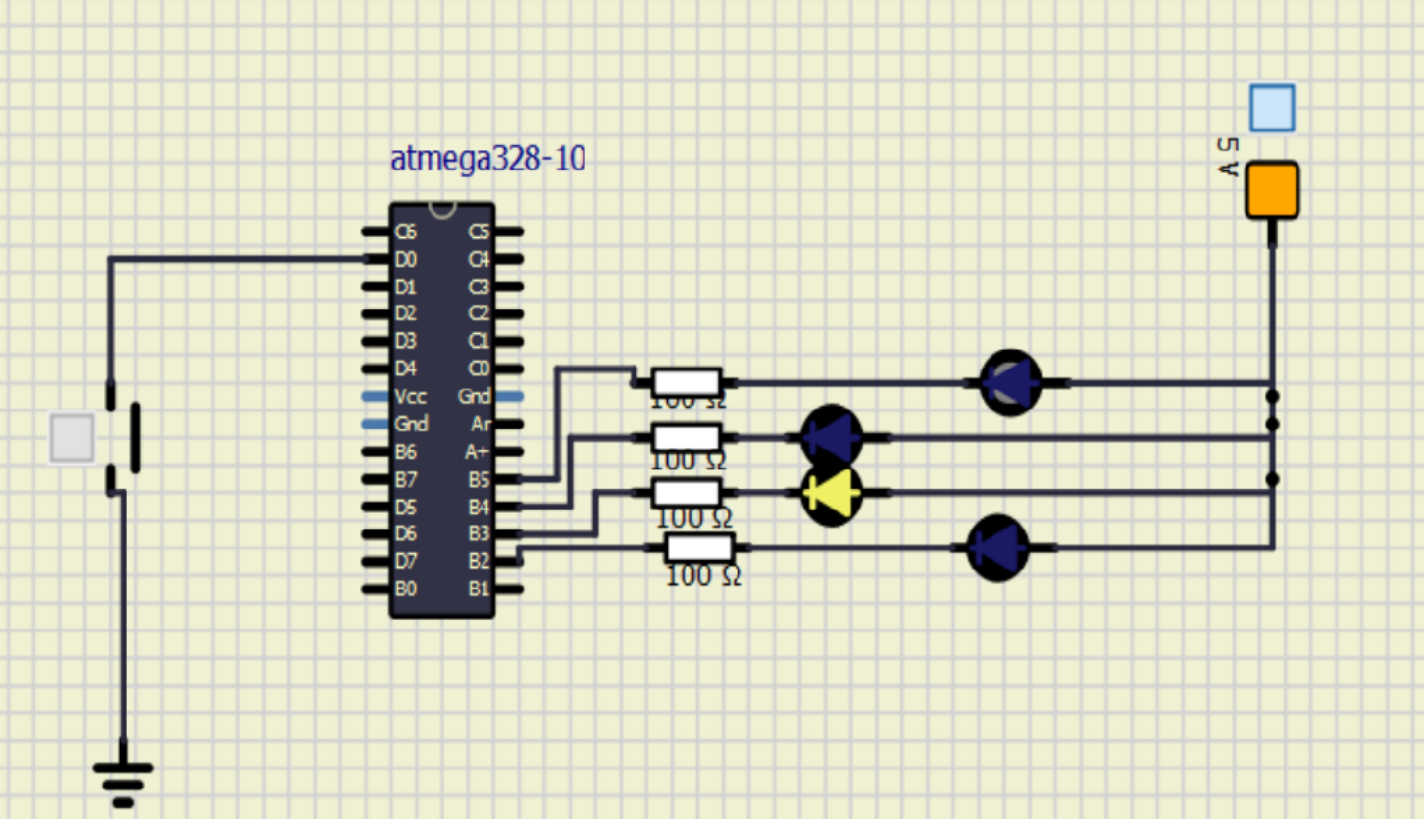
2.

```
/**
 * @name  Definitions of Timer/Counter0
 * @note  F_CPU = 16 MHz
 */
// WRITE YOUR CODE HERE
#define TIM0_stop()           TCCR0B &= ~((1<<CS02) | (1<<CS01) | (1<<CS00));
/** @brief Set overflow 16us, prescaler 001 --> 1 */
#define TIM0_overflow_16us()   TCCR0B &= ~((1<<CS02) | (1<<CS01)); TCCR0B |= (1<<CS00);
/** @brief Set overflow 128us, prescaler 010 --> 8 */
#define TIM0_overflow_128us()  TCCR0B &= ~((1<<CS02) | (1<<CS00)); TCCR0B |= (1<<CS01);
/** @brief Set overflow 1ms, prescaler 011 --> 64 */
#define TIM0_overflow_1ms() TCCR0B &= ~(1<<CS02); TCCR0B |= (1<<CS01) | (1<<CS00);
/** @brief Set overflow 4ms, prescaler 100 --> 256 */
#define TIM0_overflow_4ms()    TCCR0B &= ~((1<<CS01) | (1<<CS00)); TCCR0B |= (1<<CS02);
/** @brief Set overflow 16ms, prescaler // 101 --> 1024 */
#define TIM0_overflow_16ms()    TCCR0B &= ~(1<<CS01); TCCR0B |= (1<<CS02) | (1<<CS00);
/** @brief Enable overflow interrupt, 1 --> enable */
#define TIM0_overflow_interrupt_enable()  TIMSK0 |= (1<<TOIE0);
/** @brief Disable overflow interrupt, 0 --> disable */
#define TIM0_overflow_interrupt_disable() TIMSK0 &= ~(1<<TOIE0);
```



3.

Knight Rider


atmega328-10
5 V
100 Ω
100 Ω
100 Ω