Project Title:- LED Sequence V3.0

Developer name:-Moustafa Abdelrahim

Project Describtion:-it's a Led Sequence program that follows the next sequence:-

1. nitially (OFF, OFF, OFF, OFF)
2. Press 1 (BLINK_1, OFF, OFF, OFF)
3. Press 2 (BLINK_1, BLINK_1, OFF, OFF)
4. Press 3 (BLINK_1, BLINK_1, BLINK_1, OFF)
5. Press 4 (BLINK_1, BLINK_1, BLINK_1, BLINK_1)
6. Press 5 (OFF, BLINK_1, BLINK_1, BLINK_1)
7. Press 6 (OFF, OFF, BLINK_1, BLINK_1)
8. Press 7 (OFF, OFF, OFF, BLINK_1)
9. Press 8 (OFF, OFF, OFF, OFF)
10. Press 9 (BLINK_1, OFF, OFF, OFF)

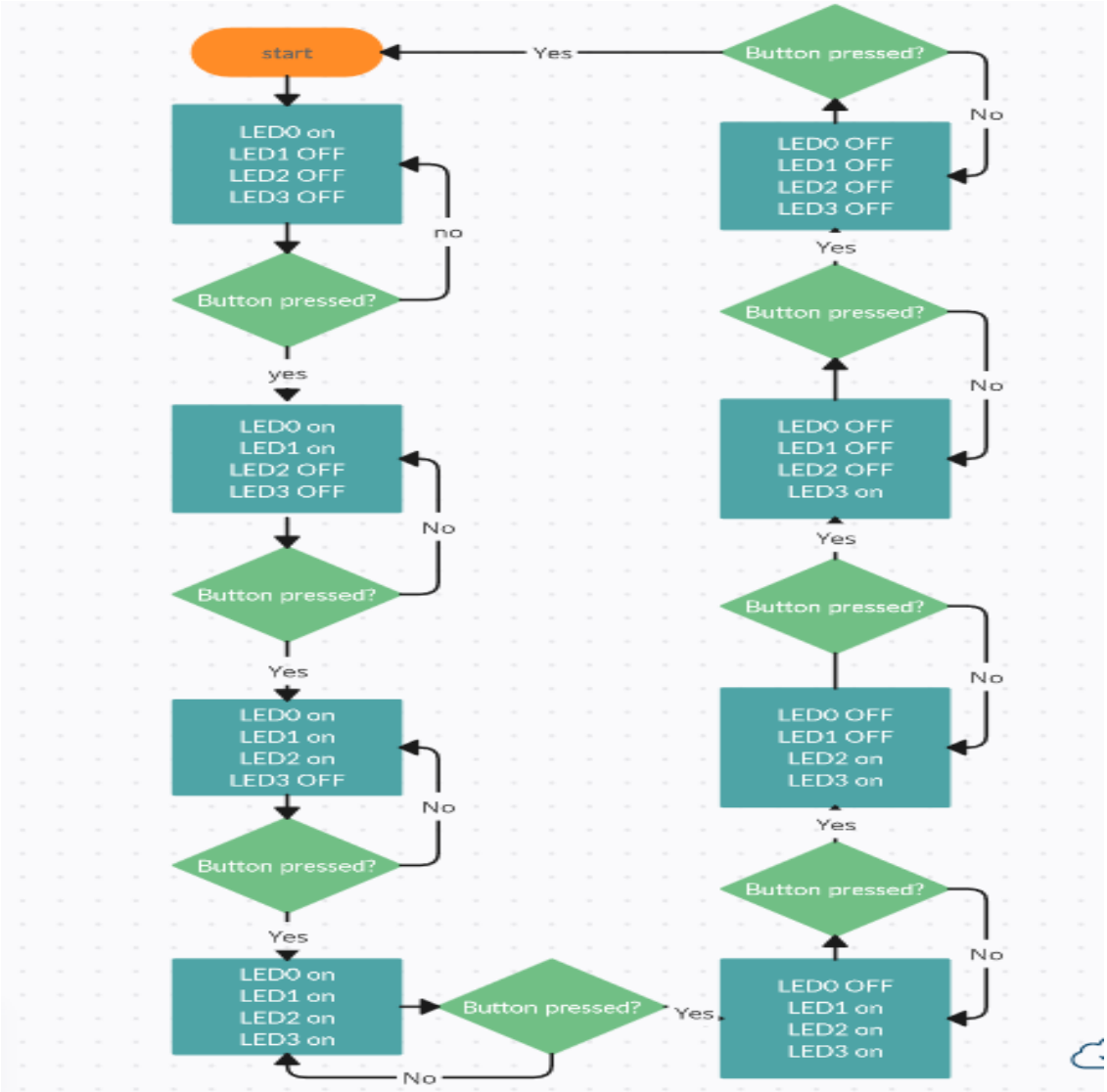
- When BUTTON1 has pressed the blinking on and off durations will be changed

1. No press → **BLINK_1** mode (**ON**: 100ms, **OFF**: 900ms)
2. First press → **BLINK_2** mode (**ON**: 200ms, **OFF**: 800ms)
3. Second press → **BLINK_3** mode (**ON**: 300ms, **OFF**: 700ms)
4. Third press → **BLINK_4** mode (**ON**: 500ms, **OFF**: 500ms)
5. Fourth press → **BLINK_5** mode (**ON**: 800ms, **OFF**: 200ms)
6. Fifth press → **BLINK_1** mode

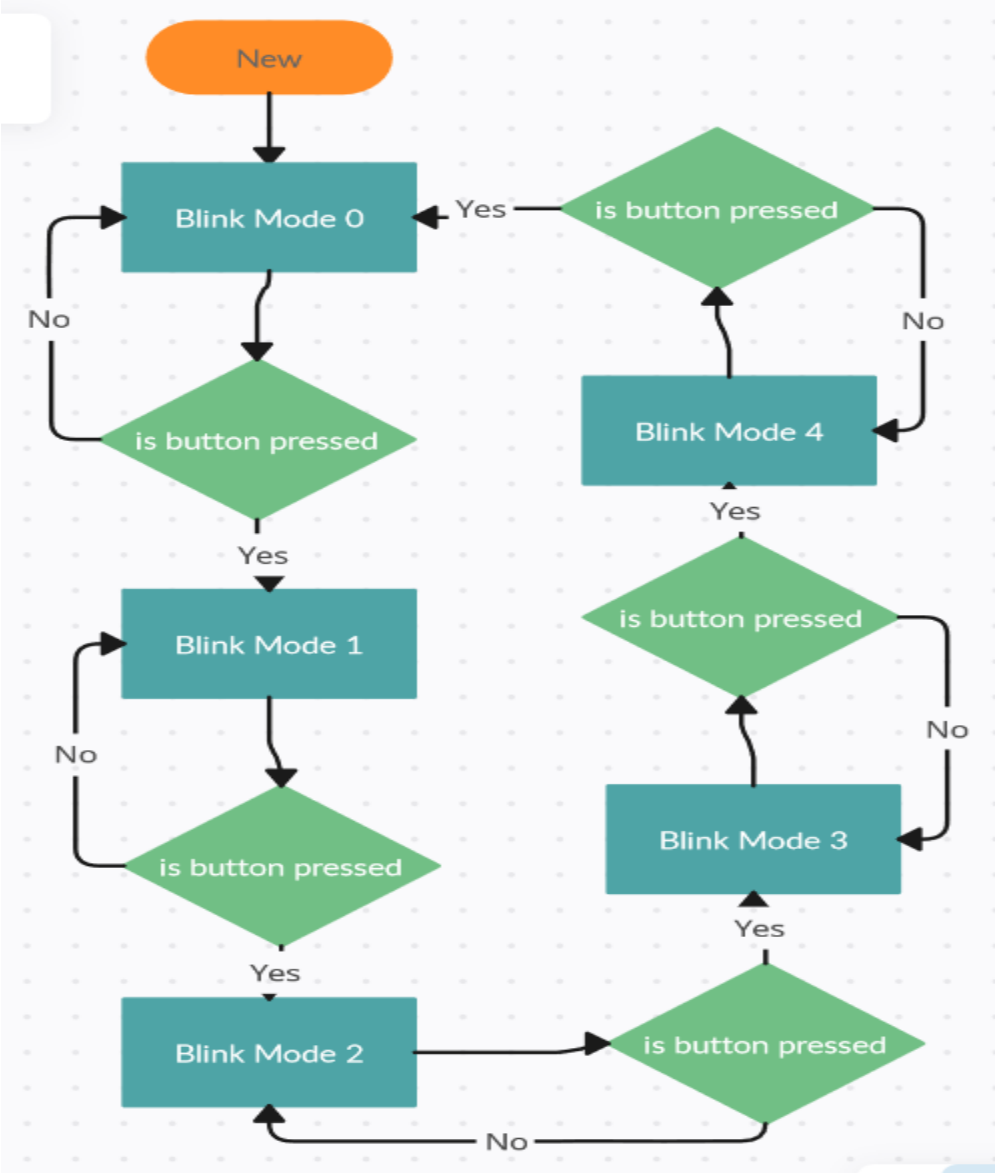
- **USE EXTERNAL INTERRUPTS**

Project Flow Chart:-

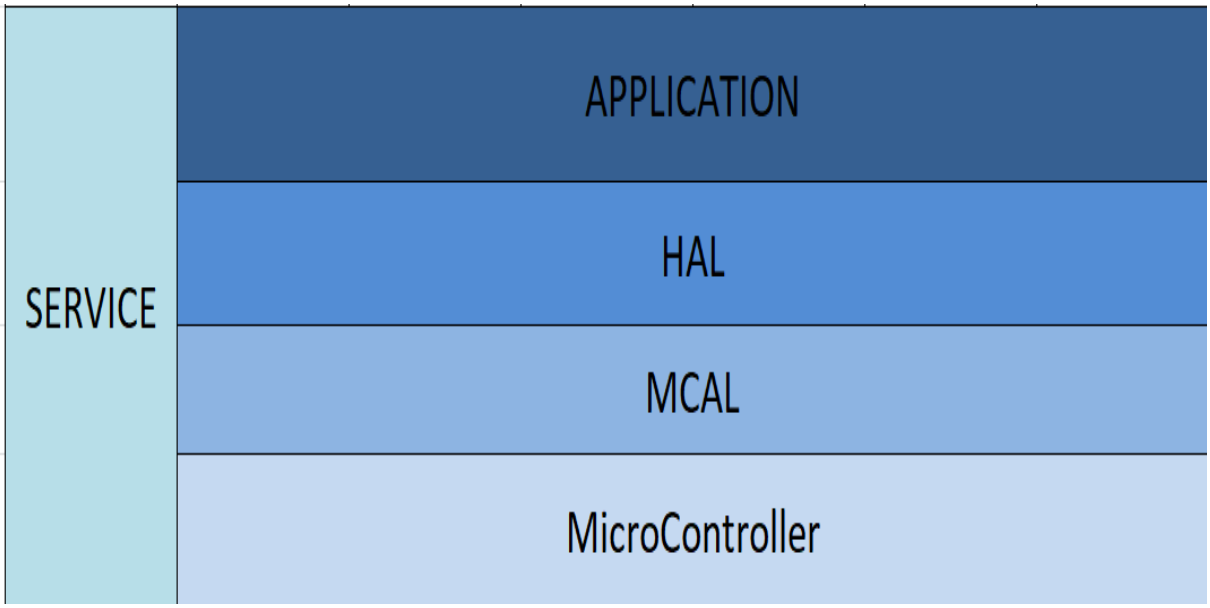
1.LED’S switching chart

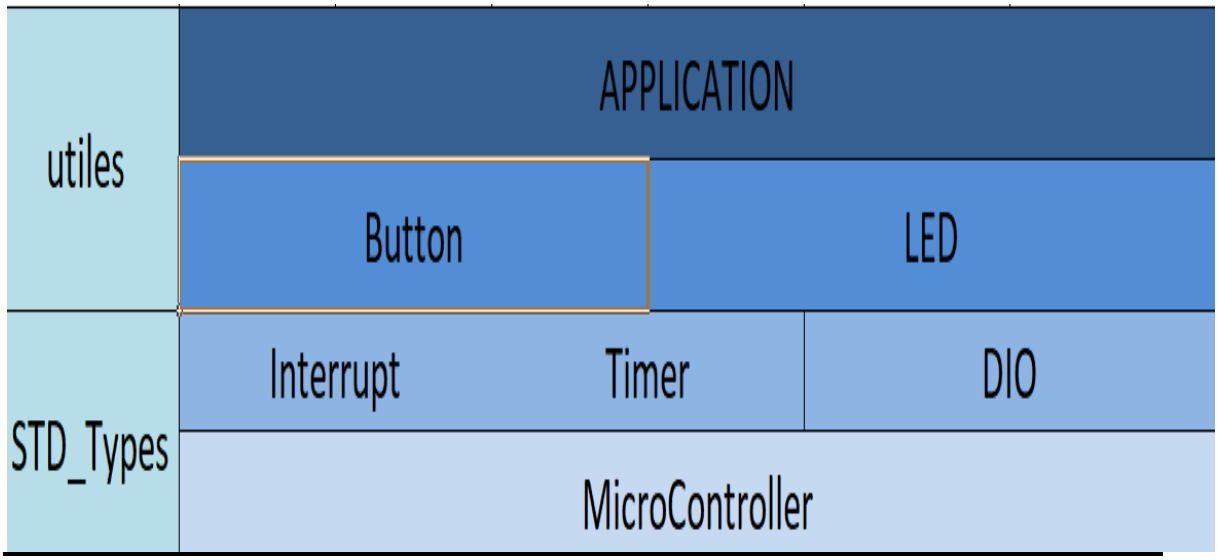


2.LED’S Blinking Chart



Layered architecture :-





Program APIS:-

• DIO

1)DIO_ERROR_TYPE DIO_INITPIN

(DIO_PIN_TYPE PIN,DIO_PINSTATUS_TYPE STATUS);

2)DIO_ERROR_TYPE DIO_WRITEPIN

(DIO_PIN_TYPE PIN,DIO_VOLTAGE_TYPE VOLTAGE);

3)DIO_ERROR_TYPE DIO_READPIN
(DIO_PIN_TYPE PIN,DIO_VOLTAGE_TYPE* VOLT);

• Interrupt

1) INTERRUPT_ERROR_TYPE
EXI_Enable(EXInterruptSource_type interrupt);

2) INTERRUPT_ERROR_TYPE
EXI_Disable (EXInterruptSource_type interrupt);

3) INTERRUPT_ERROR_TYPE
EXI_TriggerEdge
(EXInterruptSource_type interrupt,
TriggerEdge_type edge);

4) INTERRUPT_ERROR_TYPE EXI_SetCallBack
(EXInterruptSource_type interrupt,
void (*pf_local)(void));

- **Timer**
  1) `TIMER_ERROR_TYPE Timer0_Init (Timer0Mode_type mode, Timer0SCALER_type scaler,OC0Mode_type oc_mode );`
  2) `TIMER_ERROR_TYPE timer0_SetCounter (uint8_t offset);`
  3) `TIMER_ERROR_TYPE Timer0_OVF_InterrupEnable(void);`
  4) `TIMER_ERROR_TYPE Timer0_OVF_InterrupDisable(void);`
  5) `TIMER_ERROR_TYPE Timer0_OVF_SetcallBack(void (*timer0_Fptr_ovf)(void));`
- **LED**

1)LED_ERROR_TYPE LED_INIT(DIO_PIN_TYPE PIN);

2)LED_ERROR_TYPE LED_ON(DIO_PIN_TYPE PIN);

3)LED_ERROR_TYPE LED_OFF(DIO_PIN_TYPE PIN);

- **BUTTON**

1)BUTTON_ERROR_TYPE Button_INIT(DIO_PIN_TYPE PIN);

2)BUTTON_ERROR_TYPE Button_read(DIO_PIN_TYPE PIN,DIO_VOLTAGE_TYPE*VOLT);