LED sequence V2.0

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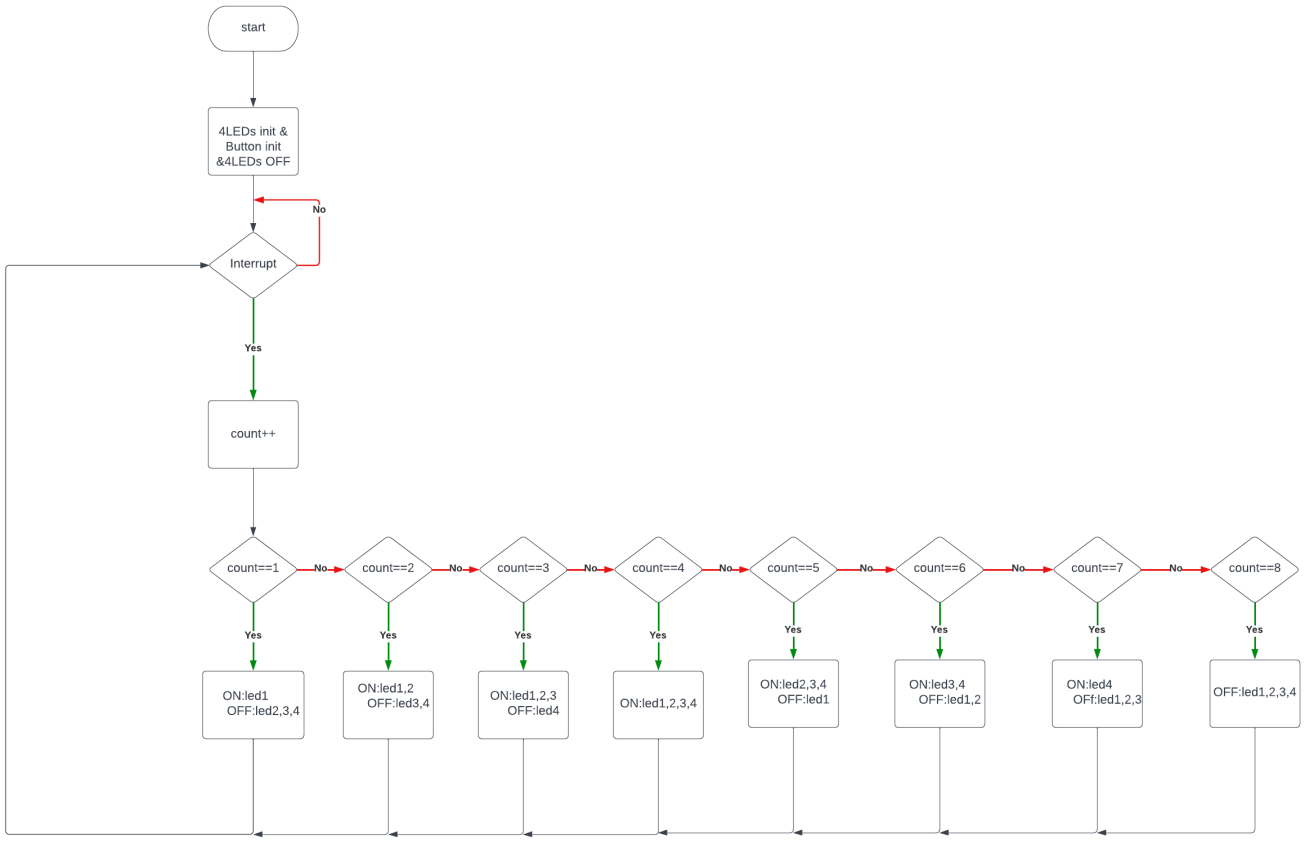
1. Project Description

It's an embedded system consist of microcontroller (ATMEGA 32a), 4 LEDs & one button.

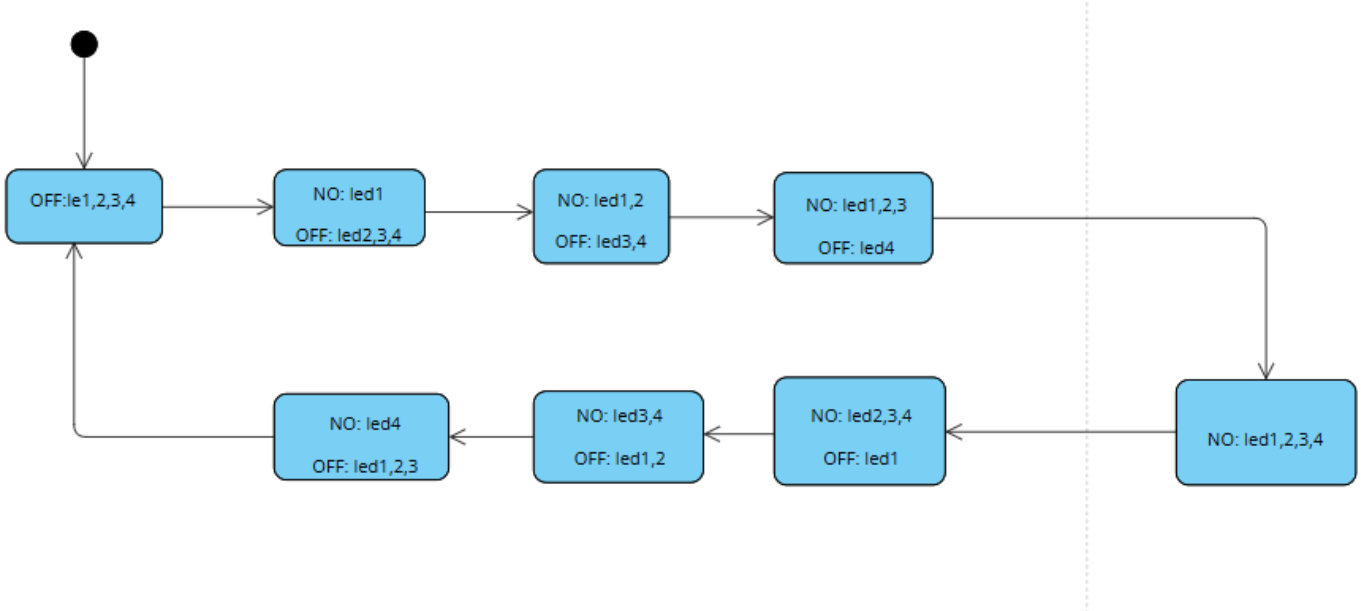
-Software *Requirements*

1. Initially, all LEDs are OFF.
2. Once BUTTON0 is pressed, LED0 will be ON.
3. Each press further will make another LED is ON
4. At the fifth press, LED0 will change to be OFF
5. Each press further will make only one LED is OFF
6. This will be repeated forever.
7. The sequence is described below.
    1. Initially (OFF, OFF, OFF, OFF)
    2. Press 1 (ON, OFF, OFF, OFF)
    3. Press 2 (ON, ON, OFF, OFF)
    4. Press 3 (ON, ON, ON, OFF)
    5. Press 4 (ON, ON, ON, ON)
    6. Press 5 (OFF, ON, ON, ON)
    7. Press 6 (OFF, OFF, ON, ON)
    8. Press 7 (OFF, OFF, OFF, ON)
    9. Press 8 (OFF, OFF, OFF, OFF)
    10. Press 9 (ON, OFF, OFF, OFF)
8. External Interrupt

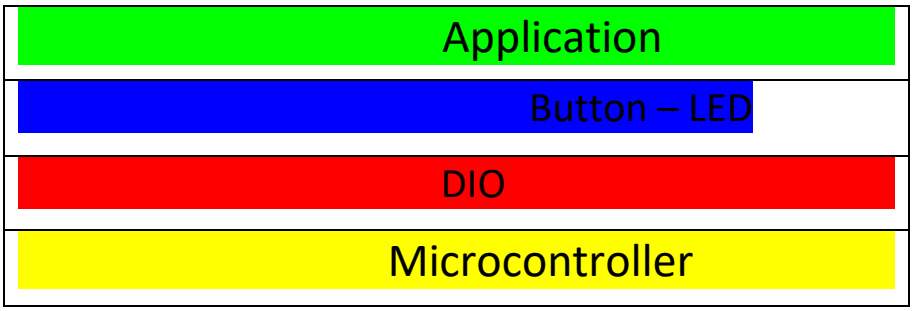
2.Project Flowchart



4.Project state Machine



5. Layered Architecture



5. API's

5.1 DIO

```
void DIO_init(uint8_t portNumber ,uint8_t pintNumber , uint8_t direction);

void DIO_write(uint8_t portNumber ,uint8_t pintNumber , uint8_t value);

void DIO_toggle(uint8_t portNumber ,uint8_t pintNumber);

void DIO_read(uint8_t portNumber ,uint8_t pintNumber , uint8_t* value);
```

5.2 LEDs

```
void LED_init(uint8_t LedPort, uint8_t LedPin );

void LED_on(uint8_t LedPort, uint8_t LedPin );

void LED_off(uint8_t LedPort, uint8_t LedPin );

void LED_toggle(uint8_t LedPort, uint8_t LedPin );
```

5.3 Button

```
void BUTTON_init(uint8_t buttonPort, uint8_t buttonPin );

void BUTTON_read(uint8_t buttonPort, uint8_t buttonPin, uint8_t *value );
```

5.4 Interrupt

```
void Interrupt_Enable(uint8_t ID, uint8_t Mode);
```

5.5 Application

```
void appInit();

void appStart(void);
```