

Design Document

LED SEQUENCE V2.0

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SPRINTS

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Task Description:-

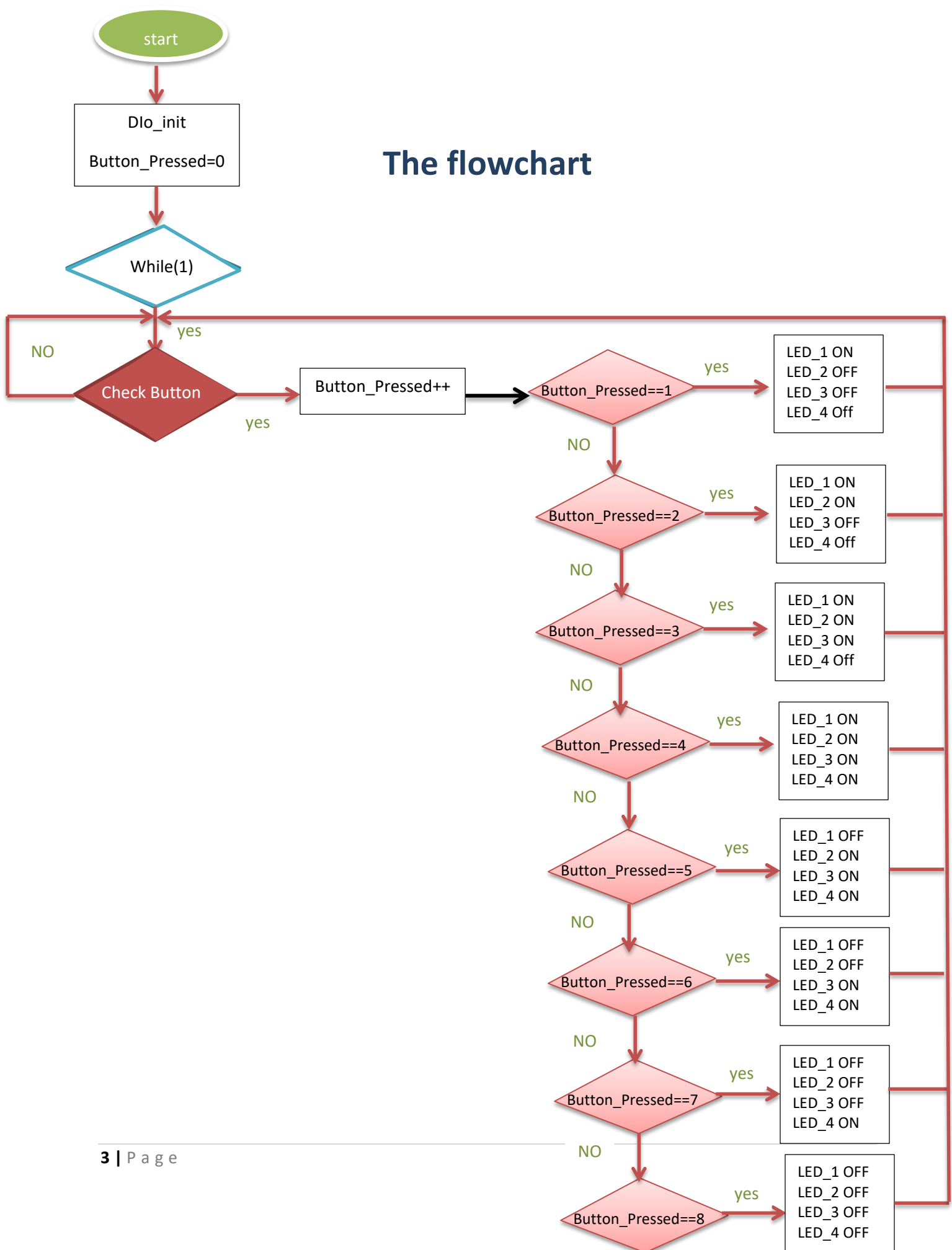
- **Hardware Requirements:**

- 1) Four LEDs (LED0, LED1, LED2, LED3)
- 2) One button (BUTTON1)

- **Software Requirements:**

- 1) Initially, all LEDs are OFF
- 2) Once BUTTON1 is pressed, LED0 will be ON
- 3) Each press further will make another LED is ON
- 4) At the fifth press, LED0 will changed 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) Use External Interrupt

The flowchart



High Level Design:-

Layered architecture

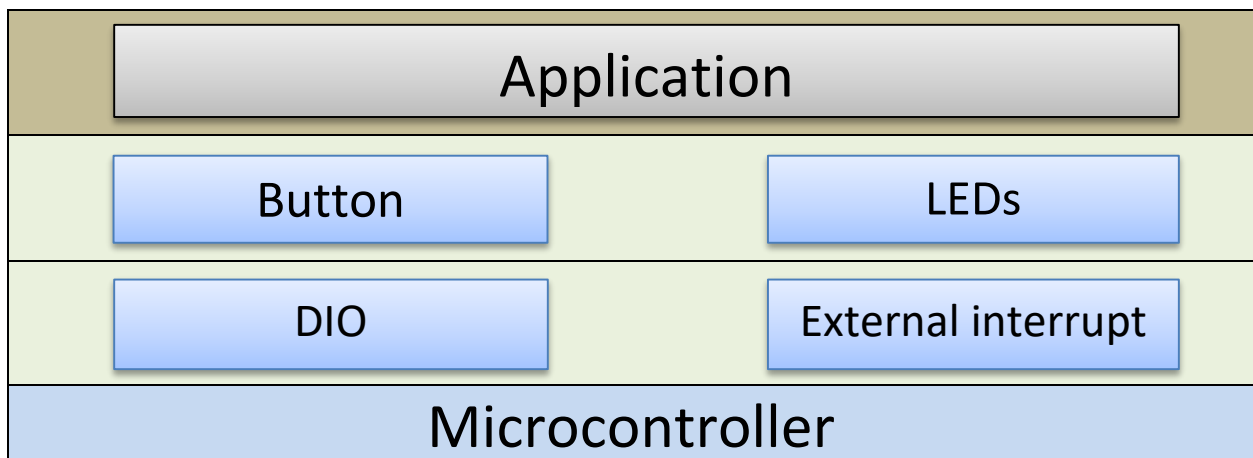
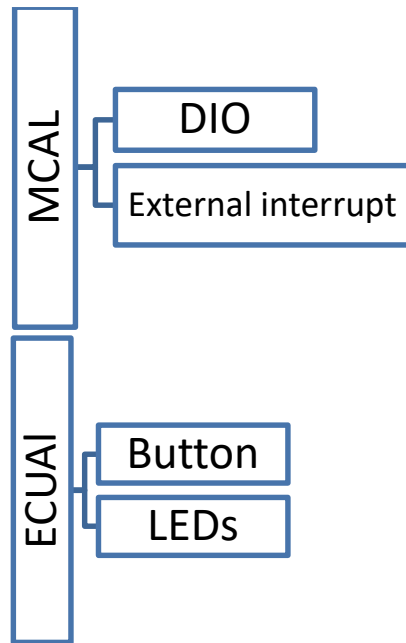
The system may be divided to 4 layers:-

- Microcontroller
- MCAL
- ECUAI
- Application

Common	Application
	ECUAL
	MCAL
	Microcontroller

System modules

The system may be divided into drivers:-



LOW Level Design:-

MCAL

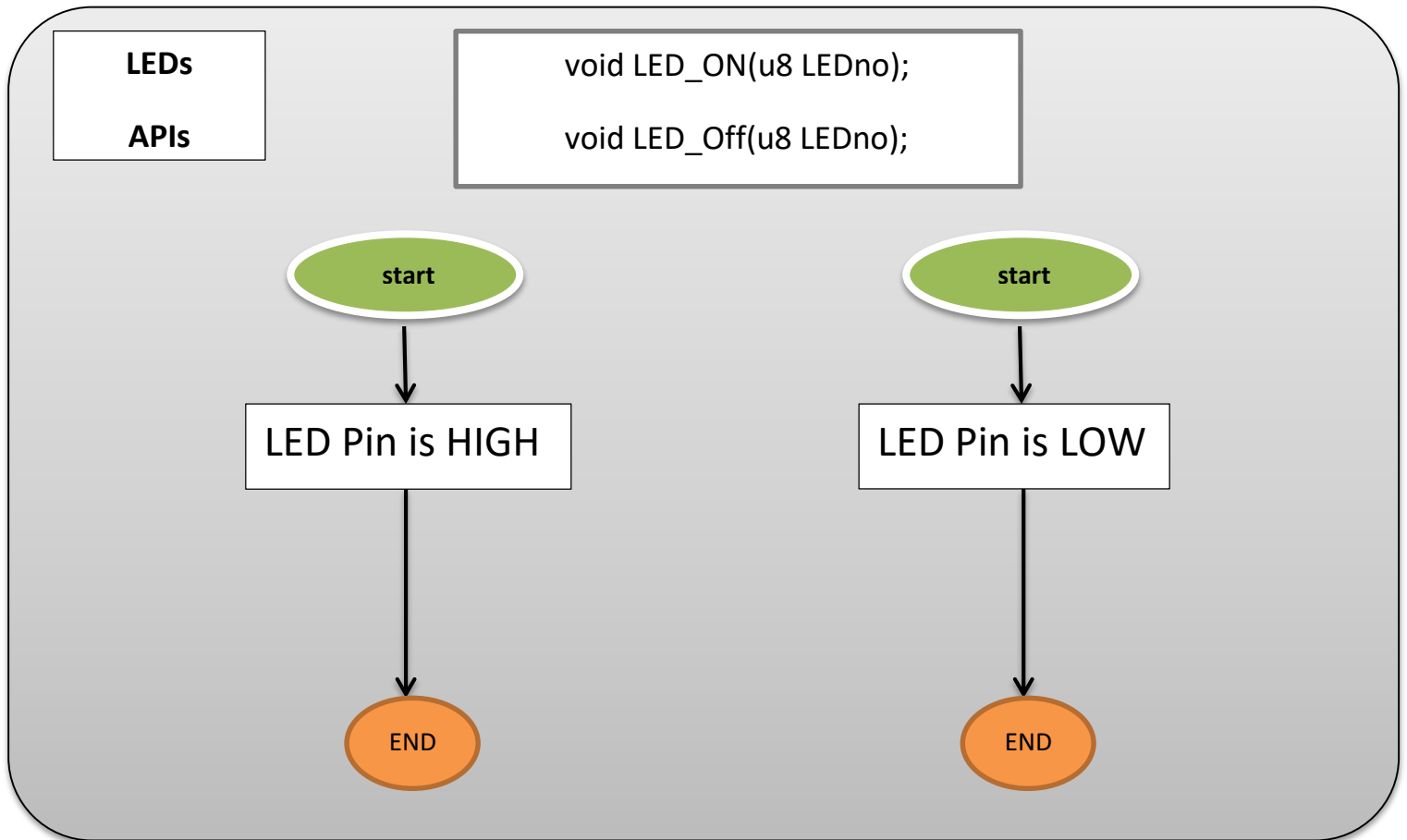
DIO APIs

```
void DIO_InitPin (PIn_name pin ,PIN_Status status );  
void DIO_init (void);  
void DIO_WRItePin (PIn_name pin ,Voltage_type s);  
Voltage_type DIO_ReadPin(PIn_name pin);  
void DIO_WritePort(PORT_Type Port,u8 data);
```

External interrupt APIs

```
void EXI_Enable (ExInterruptSource_type Interrupt);  
void EXI_Disable (ExInterruptSource_type Interrupt);  
void EXI_Trigger(ExInterruptSource_type Interrupt,TriggerEdge_type trigger);  
void EXI_SetCallBack(ExInterruptSource_type Interrupt,void(*pf)(void));
```

ECUAL



Application

