LED Sequence V2.0

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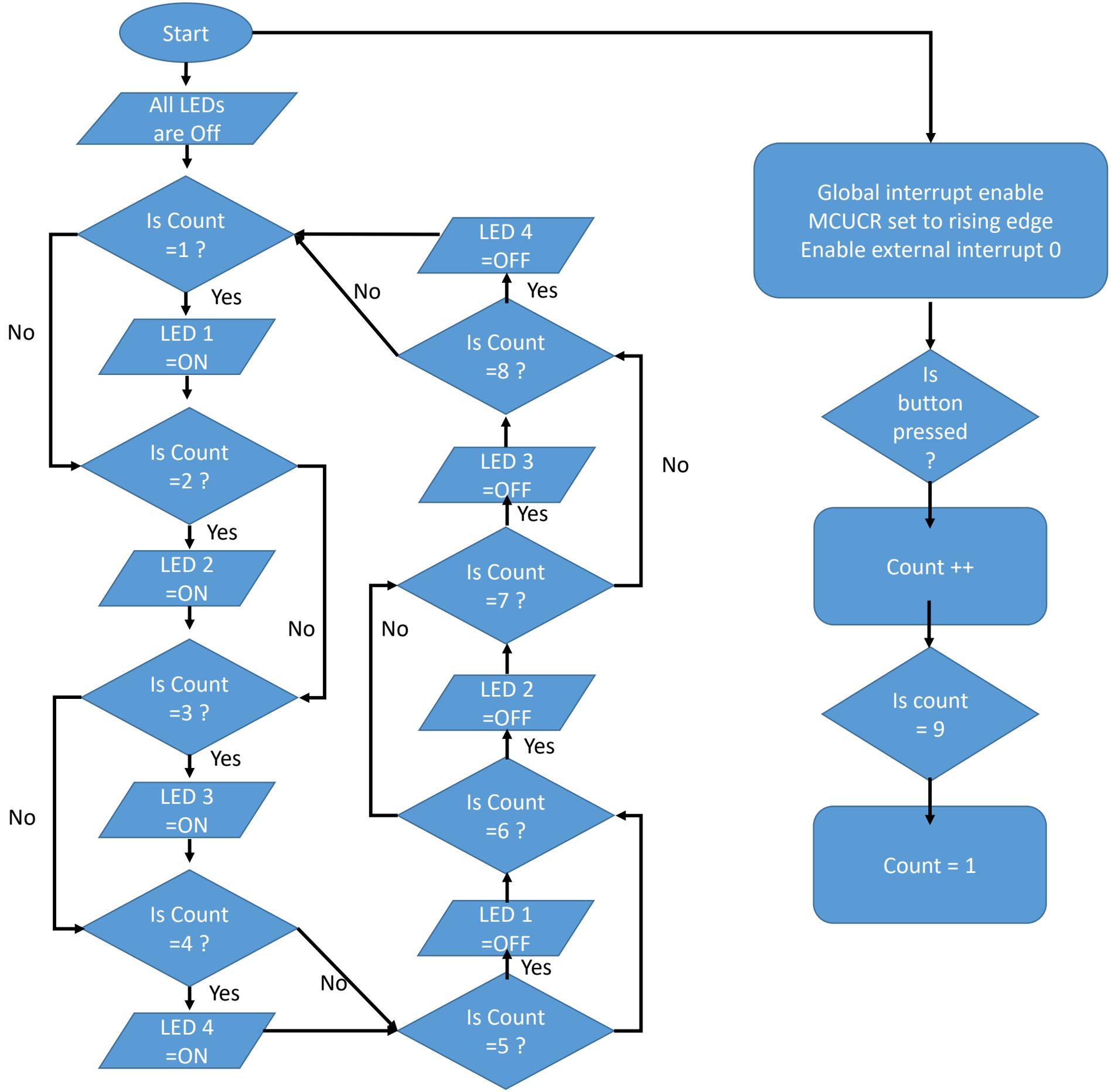
LED Sequence V2.0

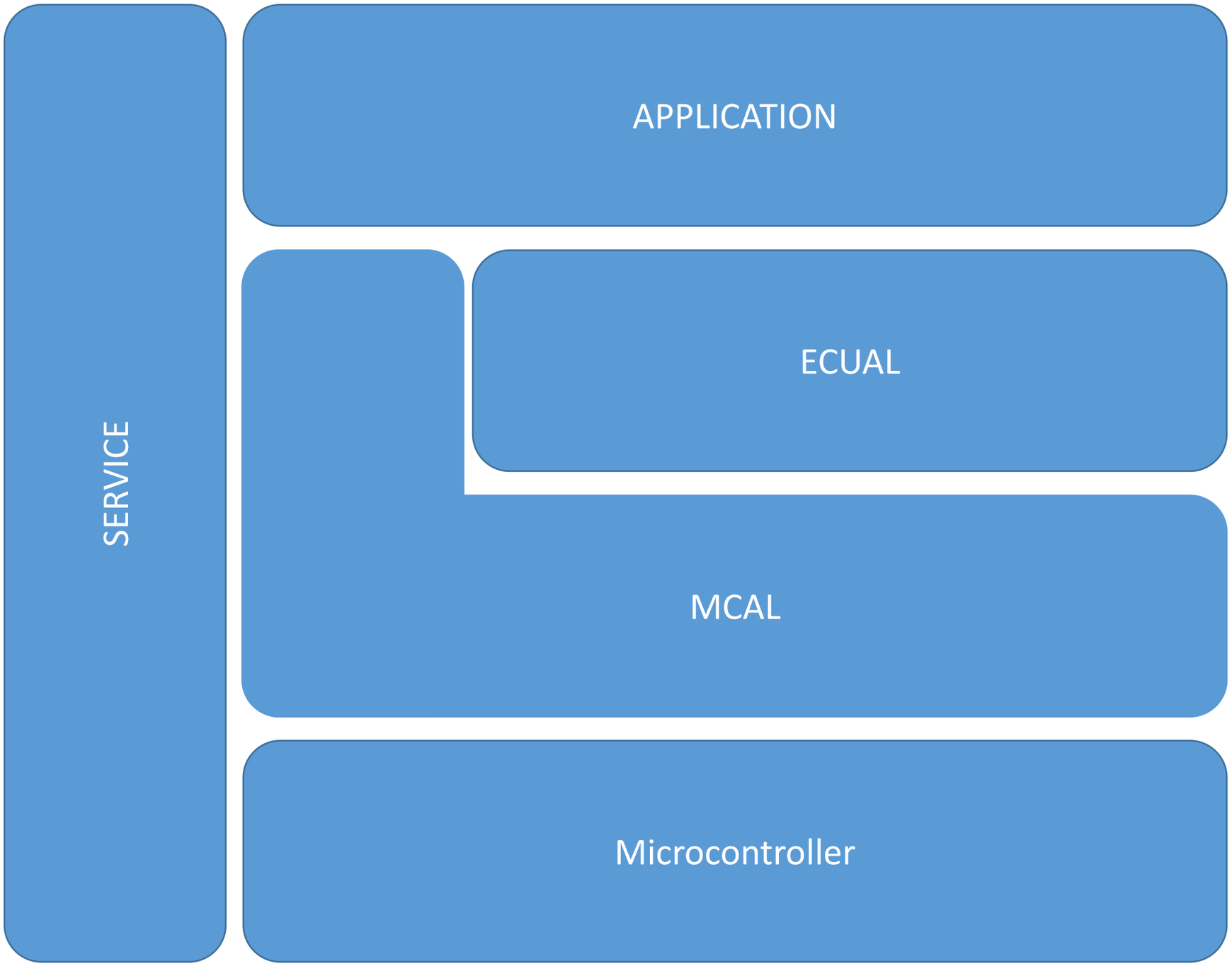
Description :

1. ***Hardware Requirements***
    1. *Four LEDs (LED0, LED1, LED2, LED3)*
    2. One button (BUTTON0)
2. ***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 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 INTERRUPTS

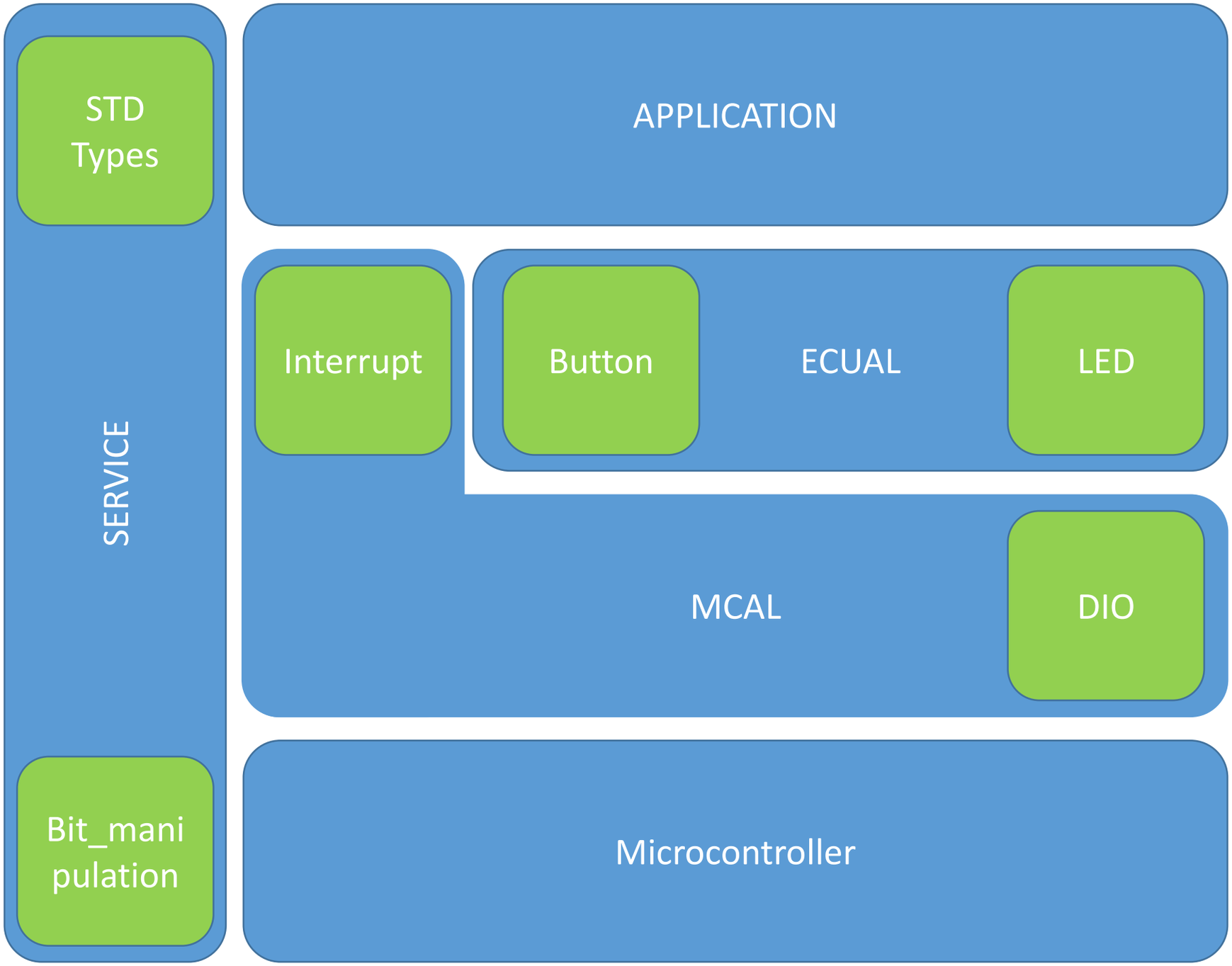
Project flowchart:



Layered Architecture:



Modules/Drivers:



APIs:

Button Driver:

- err_state BUTTON_init(uint8_t pinNumber, uint8_t portNumber);
- err_state BUTTON_read(uint8_t pinNumber, uint8_t portNumber, uint8_t *value);

LED Driver:

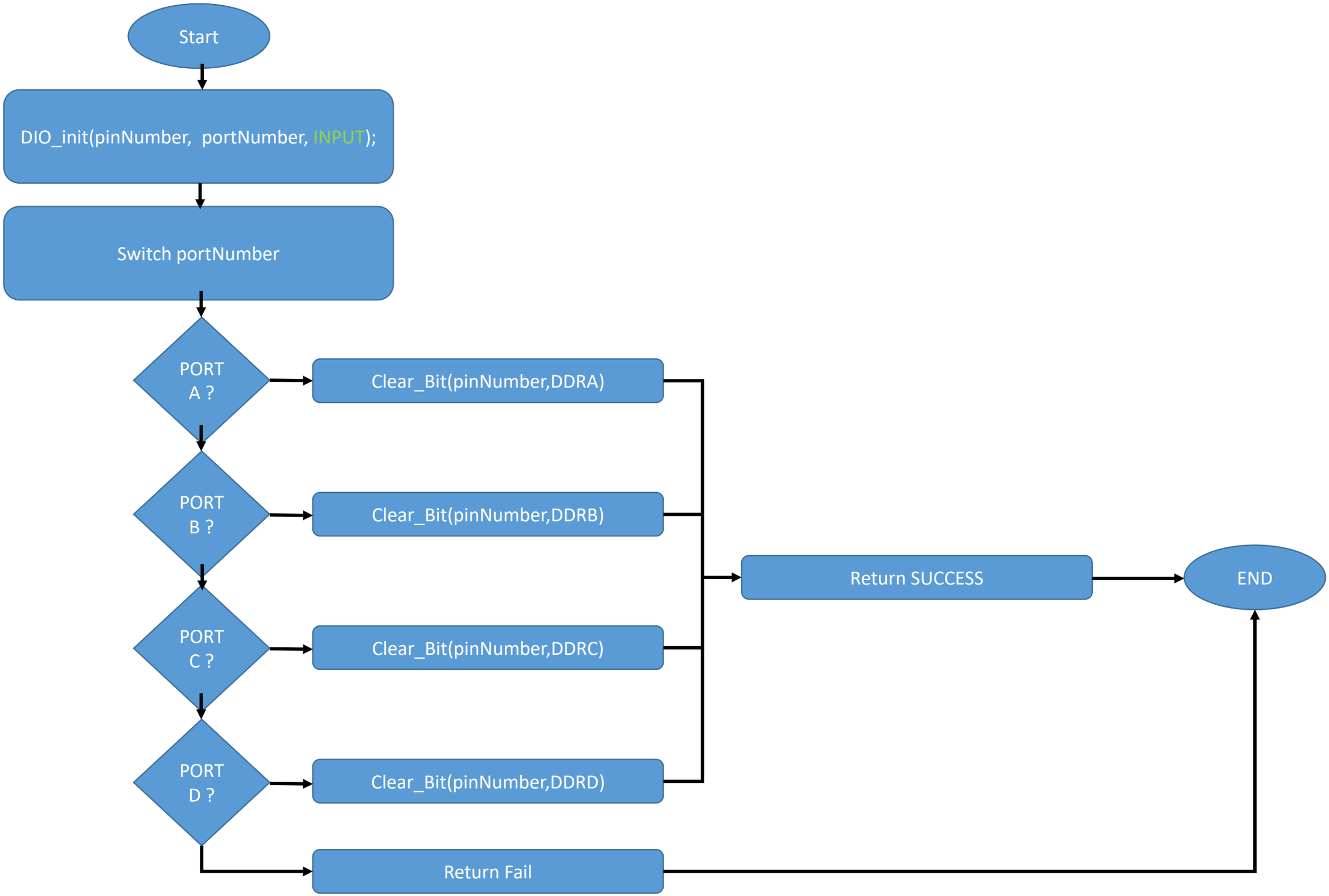
- err_state LED_init(uint8_t ledPin, uint8_t ledPort);
- err_state LED_on(uint8_t ledPin, uint8_t ledPort);
- err_state LED_off(uint8_t ledPin, uint8_t ledPort);
- err_state LED_toggle(uint8_t ledPin, uint8_t ledPort);

DIO Driver:

- err_state DIO_init(uint8_t pinNumber, uint8_t portNumber, pin_dir direction);
- err_state DIO_write(uint8_t pinNumber, uint8_t portNumber, pin_state value);
- err_state DIO_toggle(uint8_t pinNumber, uint8_t portNumber);
- err_state DIO_read(uint8_t pinNumber, uint8_t portNumber, uint8_t *value);

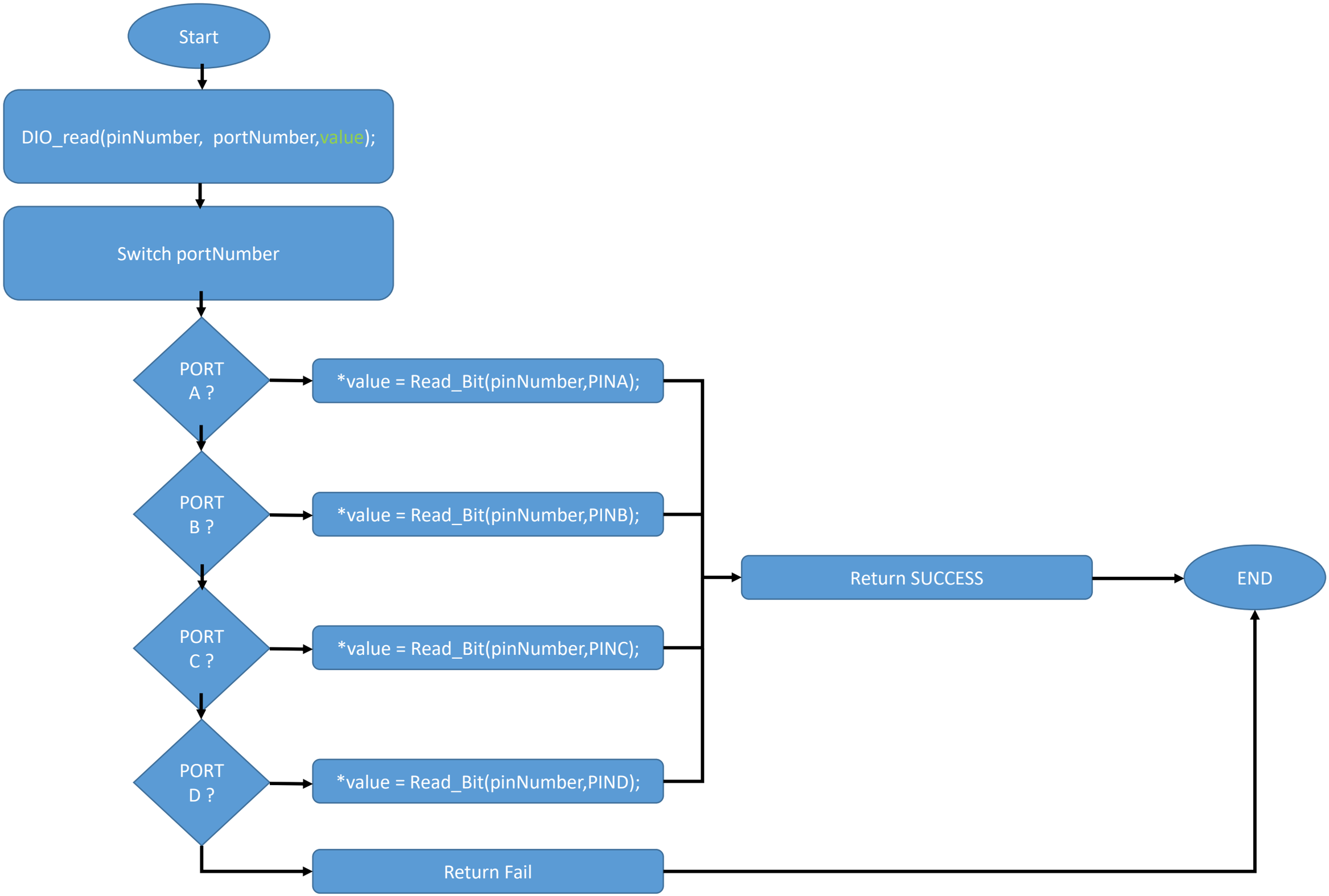
APIs flowchart:

err_state BUTTON_init(uint8_t pinNumber, uint8_t portNumber);



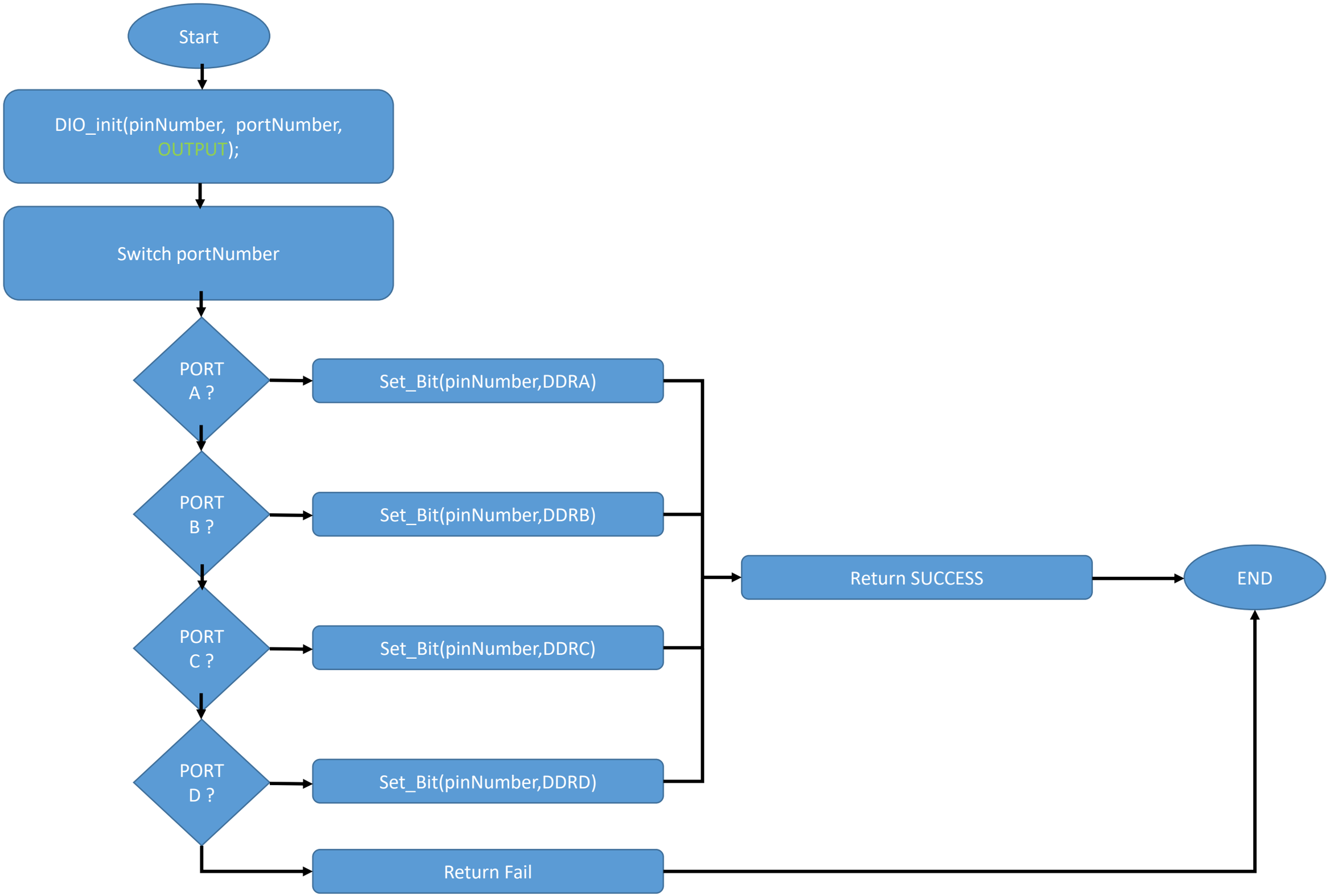
APIs flowchart:

err_state BUTTON_read(uint8_t pinNumber, uint8_t portNumber, uint8_t *value);



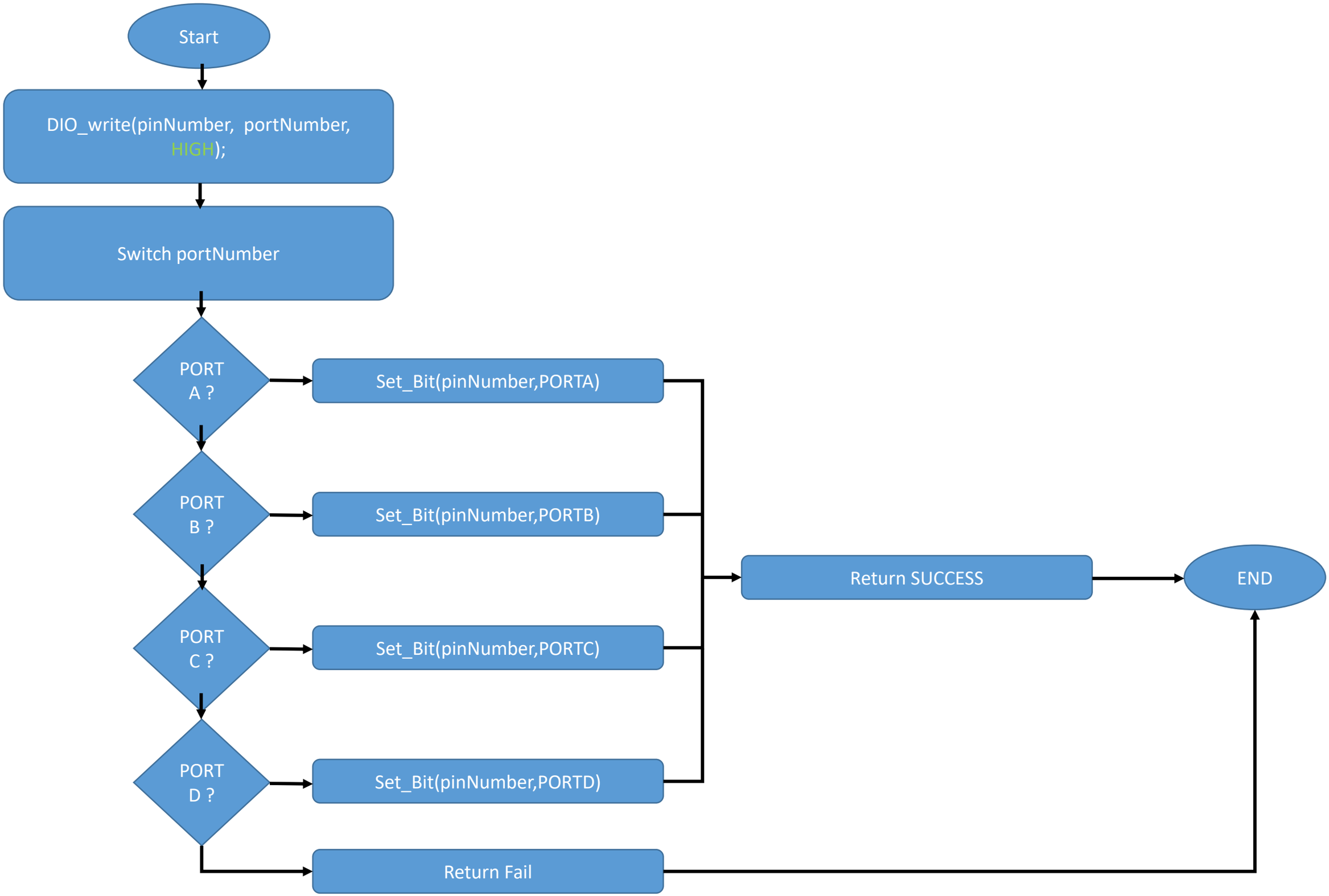
APIs flowchart:

err_state LED_init(uint8_t ledPin, uint8_t ledPort);



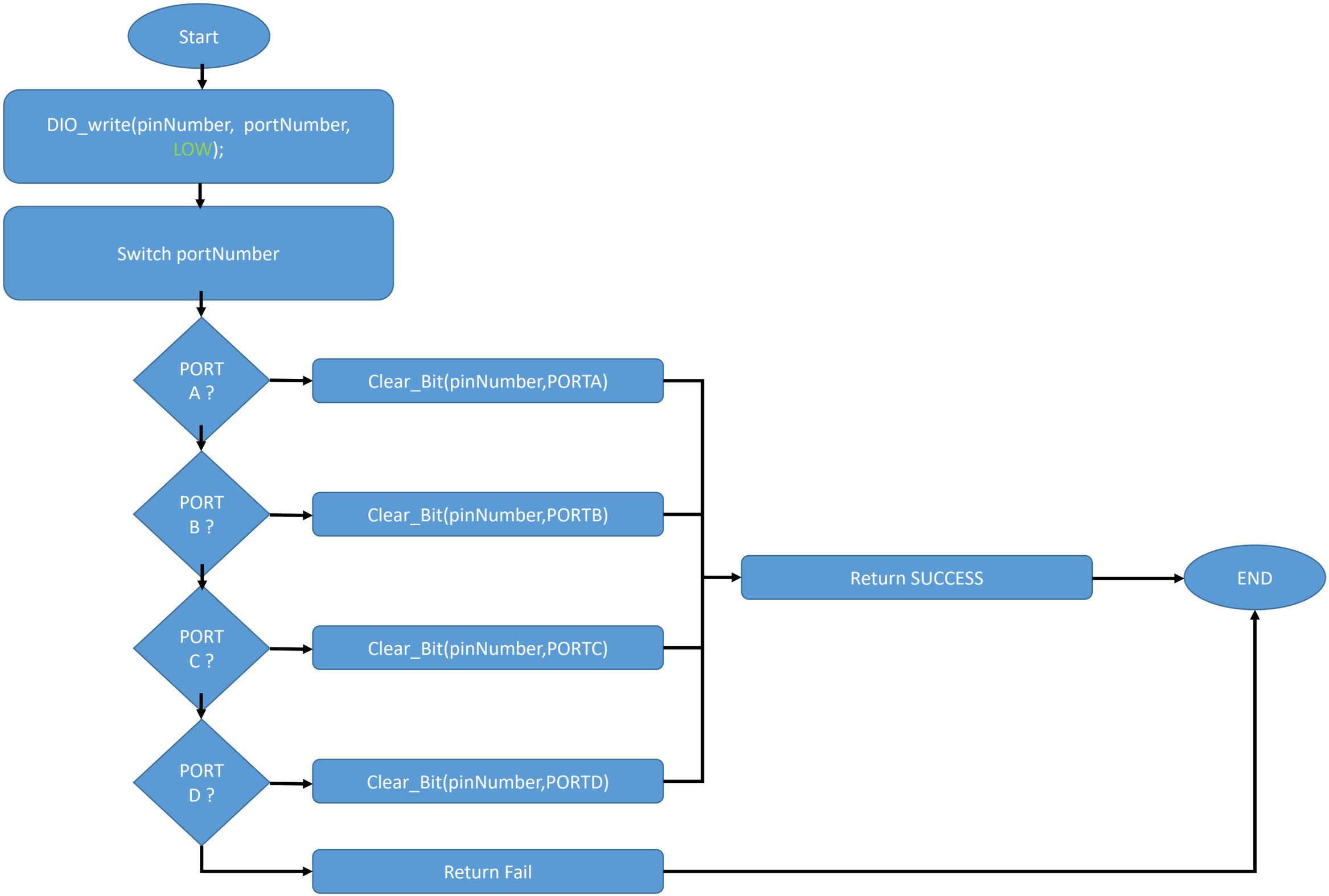
APIs flowchart:

err_state LED_on(uint8_t ledPin, uint8_t ledPort);



APIs flowchart:

err_state LED_off(uint8_t ledPin, uint8_t ledPort);



APIs flowchart:

err_state LED_toggle(uint8_t ledPin, uint8_t ledPort);