

Academy Task 2

ARM

Low Voltage

Debouncing and Button Control Logic

Mechanical pushbuttons do not produce a clean signal when pressed or released. Instead, the contacts bounce creating very fast on/off transitions within a few milliseconds. Without handling this, the microcontroller may interpret a single press as multiple presses.

To address this, debouncing is applied. After detecting a button press, the software introduces a short delay (e.g., 20 ms) before rechecking the button state. This ensures the bouncing has settled and prevents false triggers.

The button was configured using the internal pull-up resistor, so the input pin remains at a stable HIGH level when the button is not pressed. Pressing the button connects the pin to ground, producing a low signal.

The program logic monitors the input pin and looks for a transition from high to low (a button press). Each time this transition is detected and confirmed after debouncing, the LED output is toggled. This way, every valid press of the button changes the LED state from on to off or off to on.