Switch Bounce Problem

A mechanical push button or switch does not produce a clean transition from **LOW to HIGH** or **HIGH to LOW** when pressed or released.
Instead, the internal metal contacts **vibrate (bounce)** for a few milliseconds, causing the signal to **rapidly fluctuate between 0 and 1** multiple times.

This can result in:

- **False triggers** (button counted multiple times for a single press)
- **Unstable or unreliable readings** in digital circuits

Solutions:

Software Debouncing:

- **Ignore input changes** for a small delay (e.g., 20–50ms) after a press is detected.
- Or use a **state machine with millis()** for non-blocking debounce.