

## Practical Sheet — Push Buttons & LEDs

ATmega32 | CodeVisionAVR (CVAVR) | Embedded Systems

Score

Student Name: \_\_\_\_\_

### Task 1: 8 Push Buttons and 8 LEDs — Toggle Control

#### Description

Design and implement a circuit using the ATmega32 microcontroller that interfaces **eight (8) push buttons** with **eight (8) LEDs**. Each button is paired with one LED. Every press toggles that LED — OFF becomes ON, ON becomes OFF. Each button works independently.

#### Hardware Requirements

- ATmega32 microcontroller development board
- 8 x Push buttons (momentary tactile switches)
- 8 x LEDs (any colour)
- 8 x Current-limiting resistors (330 ohm to 470 ohm) — one per LED
- 8 x Pull-down resistors (10 kOhm) for buttons — OR use internal pull-ups in CVAVR
- Breadboard and connecting wires
- 5 V regulated power supply

#### CodeVisionAVR Setup — CodeWizardAVR

1. Open CodeVisionAVR and launch CodeWizardAVR (File → New → Project).
2. Select chip: ATmega32 — Clock: 8.000000 MHz (or match your crystal).
3. Ports tab → PORTA: set all pins to Input, enable Pull-Up for each pin.
4. Ports tab → PORTB: set all pins to Output, initial value = 0.
5. Click File → Generate, Save and Exit to produce the project skeleton.

#### Circuit Diagram

[ Draw / attach your circuit diagram here ]

*Label all resistor values, pin numbers, VCC, and GND connections on your diagram.*