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Experiment no: 02

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Discussion

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In this experiment we learned fundamental concepts of configuring input output operation in PIC16F628A microcontroller programming. We clearly understand the TRIS register which determines whether a pin is set as an input or output. When bit of TRIS register is set to logic 1, the corresponding pin functions as an input. When it setting to logic 0 configures it as output. For this experiment, RA2 was assigned as an input (TRISA = 0b00000100), allowing it to read the state of a tactile switch, while PORTB was set as an output (TRISB = 0b00000000), controlling the state of LEDs.

A C program was written to monitor the state of the switch and control the LEDs. When the switch releases, it sends a high logic to RA2, triggering PORTB to output a high State by turning LEDs On. When the switch pressed RA2 sends low logic and PORTB trigger to output low state and all the LEDs off.

To validate the implementation, we first simulated the circuit in PROTEUS, where the HEX file of the compiled program was loaded onto the virtual PIC16F628A microcontroller. The simulation confirmed the expected LED behavior in response to switch actuation. Following this, the program was transferred to the physical microcontroller using Micro Pik Kit 3, and the circuit was assembled on a breadboard using the necessary components, including resistors, power supply, and an LM7805 voltage regulator.