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Experiment No: 07

BECS 31421

**IMPLEMENTING A PIC MICROCONTROLLER-BASED QUIZ BUZZER**

**DISCUSSION**

In this lab, we implemented a buzzer game using the PIC16F628A microcontroller. The goal was to detect the first button press among players and activate a buzzer and LED to indicate the winner. Once triggered, the system locked further inputs until a reset button was pressed.

We used transistors (BC547) to drive the buzzers since the microcontroller cannot source enough current directly. The PORTB pins were configured with buttons on RB0, RB1 (players), and RB6 (reset), and outputs for buzzers and LEDs on the remaining pins.

The main challenge faced during the practical was ensuring that only the first button press was recognized, as both players could press almost simultaneously. We had to ensure proper logic in the code and clean wiring on the breadboard to avoid false triggering. Debouncing the buttons was also essential for stable input detection. Additionally, using transistors correctly to isolate the microcontroller from the buzzers require precise connection and understanding of transistor switching.

**SOURCE CODE**

void main() {

    int i = 0;

    TRISB = 0b11000011;

    PORTB = 0b00000000;

    while(1) {

        if(PORTB == 0b00000001) {

            PORTB = 0b00010100;

            while(i == 0) {

                if(PORTB.RB6 == 1) {

                    PORTB = 0b00000000;

                    i = 1;

                }

            }

            i = 0;

        }

        else if(PORTB == 0b00000010) {

            PORTB = 0b00101000;

            while(i == 0) {

                if(PORTB.RB6 == 1) {

                    PORTB = 0b00000000;

                    i = 1;

                }

            }

            i = 0;

        }

    }

}

**SIMULATION SCREENSHOTS**

**A computer circuit board with wires and a light bulb

AI-generated content may be incorrect.**

**A computer diagram of a circuit board

AI-generated content may be incorrect.**

**A computer diagram of a circuit board

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**A computer diagram of a circuit board

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