

Experiment No: 04

BECS 31421

# **INTERRUPT HANDLING WITH A PIC MICROCONTROLLER EXERCISE**

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## SOURCE CODE

```
// STEP 1: DECLARE THE MAIN FUNCTION

INT A = 50;

INT B = 200;

INT TEMP;

VOID MAIN()
{
    // STEP 2: INITIALIZE CONFIGURATION SETTINGS

    TRISB = 0X01; // HINT: SET RB0 AS INPUT, OTHERS AS OUTPUT

    TRISA = 0X00; // HINT: SET ALL PORT A PINS AS OUTPUT

    CMCON = 0X07; // HINT: DISABLE COMPARATORS

    OPTION_REG = 0X00; // HINT: CONFIGURE OPTION REGISTER

    // STEP 3: ENABLE INTERRUPTS

    INTOCONGIE = 1; // HINT: ENABLE GLOBAL INTERRUPTS

    INTOCONPEIE = 1; // HINT: ENABLE PERIPHERAL INTERRUPTS

    INTOCONINTE = 1; // HINT: ENABLE RB0/INT INTERRUPT


    // STEP 4: DEFINE THE INFINITE LOOP

    WHILE (1){ // HINT: ENTER AN APPROPRIATE CONDITION FOR THE LOOP

        // STEP 5: SET INITIAL PORT VALUES

        PORTB_RB2 = 0; // HINT: SET RB2 TO LOW

        PORTA_RA0 = 1; // HINT: SET RA0 TO HIGH

        PORTA_RA1 = 0; // HINT: SET RA1 TO LOW

        IF (A == 50) DELAY_MS(50);

        ELSE IF (A == 200) DELAY_MS(200);


        // STEP 6: TOGGLE PORT VALUES

        PORTA_RA0 = 0; // HINT: SET RA0 TO LOW

        PORTA_RA1 = 1; // HINT: SET RA1 TO HIGH

        IF (A == 50) DELAY_MS(50);
```

```

        ELSE IF (A == 200) DELAY_MS(200);

        INTCON.INTF = 0; // HINT: CLEAR THE EXTERNAL INTERRUPT FLAG
    }
}

// STEP 7: INTERRUPT SERVICE ROUTINE
VOID INTERRUPT() {
    IF (INTCON.INTF) { // HINT: CHECK THE EXTERNAL INTERRUPT FLAG (INTCON.INTF)

        // STEP 8: SET PORT VALUES UPON INTERRUPT
        PORTB.RB1 = 1; // HINT: SET RB1 TO HIGH
        PORTB.RB2 = 0; // HINT: SET RB2 TO LOW

        IF (B == 50) DELAY_MS(50);
        ELSE IF (B == 200) DELAY_MS(200);

        // STEP 9: TOGGLE PORT VALUES
        PORTB.RB1 = 0; // HINT: SET RB1 TO LOW
        PORTB.RB2 = 1; // HINT: SET RB2 TO HIGH

        IF (B == 50) DELAY_MS(50);
        ELSE IF (B == 200) DELAY_MS(200);

        TEMP = A;
        A = B;
        B = TEMP;

        INTCON.INTF = 0; // HINT: CLEAR THE EXTERNAL INTERRUPT FLAG
    }
}

```

## SIMULATION SCREENSHOTS



