

BECS 31421

Experiment NO:10

Implementing Relay Control with PIC Microcontroller

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Discussion

This experiment shows how to use a PIC16F628A microcontroller to control a high-power device like a 12V lamp using a relay. Since the microcontroller cannot directly power the relay, a transistor is used to help by acting as a switch driver. When a button is pressed and released, the microcontroller turns the relay ON or OFF, which then controls the lamp. The relay used is a JQC-3F(T73), which changes its connection based on the signal from the microcontroller. A diode (1N4007) is added to protect the circuit from sudden voltage spikes when the relay turns off. The button is used to give input, and resistors are used to control the current. The C program controls the logic so that the lamp only turns on or off when the button is pressed and released properly. This setup is useful in real-life applications like home automation and electrical device control.

Source Code

```
sbit sw1 at RB0_bit;

int state = 0;

int last_state = 0;

void main() {

    TRISB = 0x01;

    PORTB = 0x00;

    while (1) {

        if (sw1 == 1 && last_state == 0) {

            last_state = 1;

            state = !state;

            RB1_bit = state;

            Delay_ms(200);

        }
```

```

else if (sw1 == 0) {

    last_state = 0;

}

}

}

```

Simulation

