

EXPERIMENT II



Fall - 2022/2023

MKT3811 - Microprocessors and Programming

Lab 2 Report

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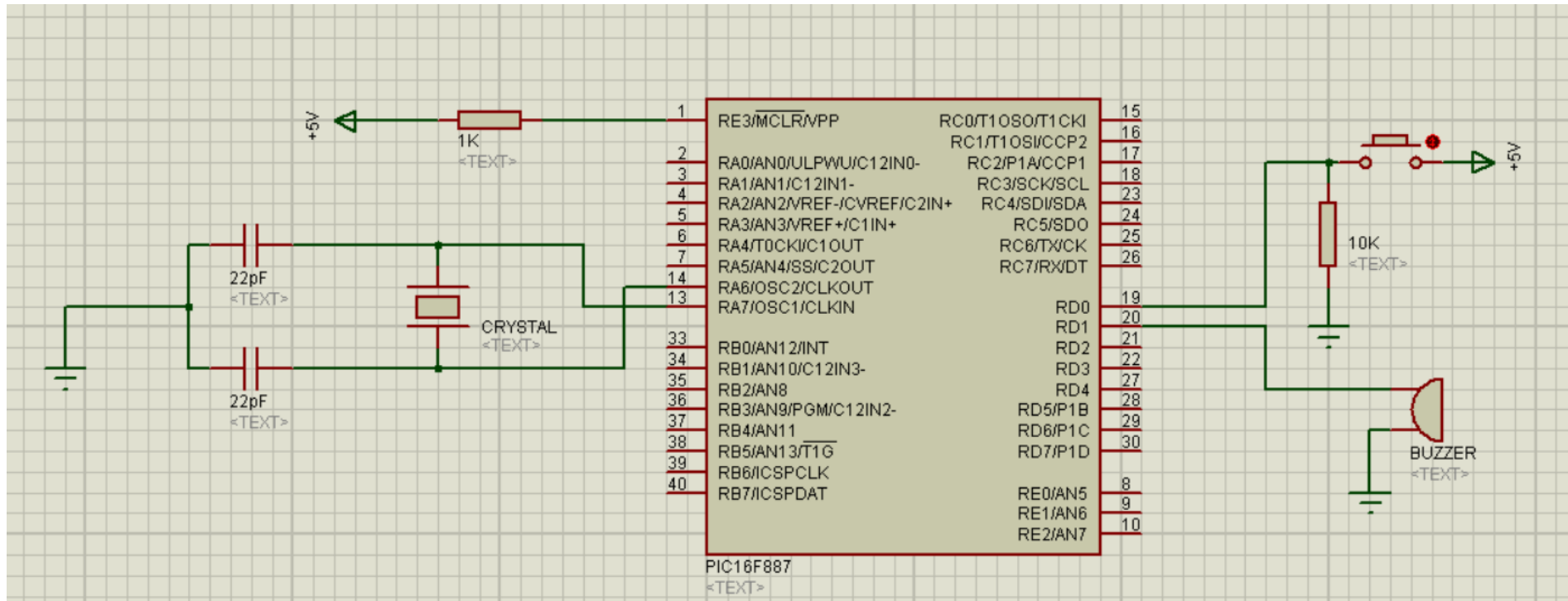
Group Number: 12

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Date: 29.10.2022

Descriptions:

The purpose of the experiment is to create delay loops with assembly instructions. In the experiment, when a button connected to the D0 pin is pressed, the buzzer connected to the D1 pin is requested to turn on and off at 3 second intervals.



Proteus Schematic Design

As you can see, I used PIC16F887 microcontroller. I supplied +5V power to the Vpp terminal. Since I want to use an external oscillator, I connected my oscillator to the 13th and 14th inputs via capacitors. I used 1 button. Pull-down command will be undertaken. At the same time, I connected 1 buzzer to my RD1 terminal.

```

LIST    P=16F887

;I introduced the controller model.
    #INCLUDE    <p16f887.inc>
;I introduced the MCU library.
    __config    _CONFIG1,b'1110000011100001'
    __config    _CONFIG2,b'1111100011111111'
    ORG    0x00

;Reset.
    SAYAC    EQU    H'20'
    SAYAC1    EQU    H'21'
    SAYAC2    EQU    H'22'
;I assigned 3 SAYAC values on microcontroller.
    BSF        STATUS,5
;I switched to BANK 1.
    MOVLW    0x01
;I'm moving it to the accumulator to input RD0.
    MOVWF    TRISD
;Now I threw in TRISD.
    BCF        STATUS,5
;I switched to BANK 0.
    CLRF    PORTD

MAIN
    BTFSS    PORTD,0
;Pull-Down button --> I used the BTFSS command.
;If the button connected to RD0 is 0, the code goes back to the
beginning and continues to check.
    GOTO    MAIN

```

;If the button connected to RD0 is 1 (+5V), the code continues instead of going back to the beginning.

```
GOTO    BUZZER

BUZZER

    BSF        PORTD,1
;I set the RD1 pin. (1)
    CALL      DELAY_3_SECONDS
;It waits for 3 seconds.
    BCF        PORTD,1
;I clear the RD1 pin. (0)
    CALL      DELAY_3_SECONDS
;It waits for 3 seconds.
    BTFSC     PORTD,0
    GOTO      BUZZER
    GOTO      MAIN

DELAY_1_MS
    MOVLW     D'250'
;250-->W
    MOVWF     SAYAC
;250-->F
LOOP_1_MS
    NOP
    DECFSZ    SAYAC,F
    GOTO      LOOP_1_MS
    RETURN

DELAY_250_MS
    MOVLW     D'250'
    MOVWF     SAYAC1

LOOP_250_MS
```

```
CALL    DELAY_1_MS
DECFSZ  SAYAC1,F
GOTO    LOOP_250_MS
RETURN
```

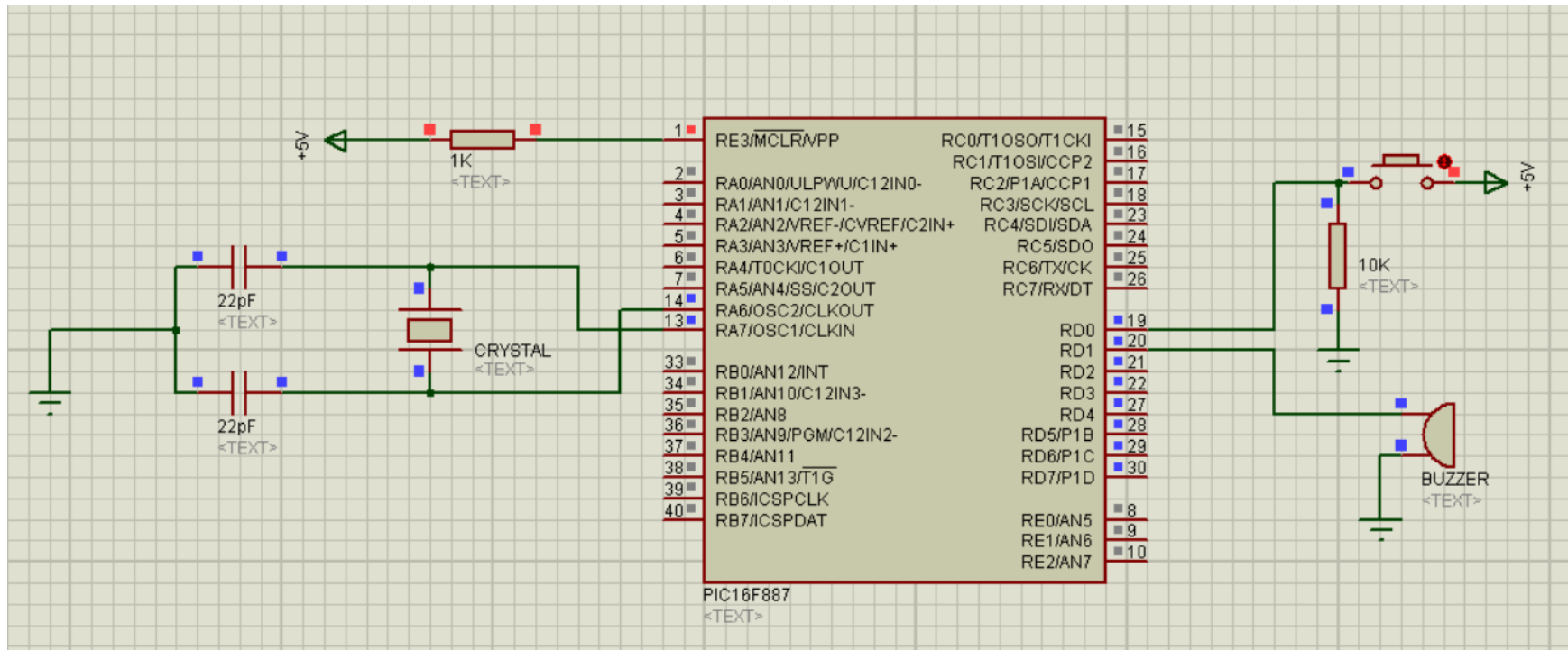
```
DELAY_3_SECONDS
```

```
MOVLW  D'12'
MOVWF  SAYAC2
```

```
LOOP_3_SECONDS
```

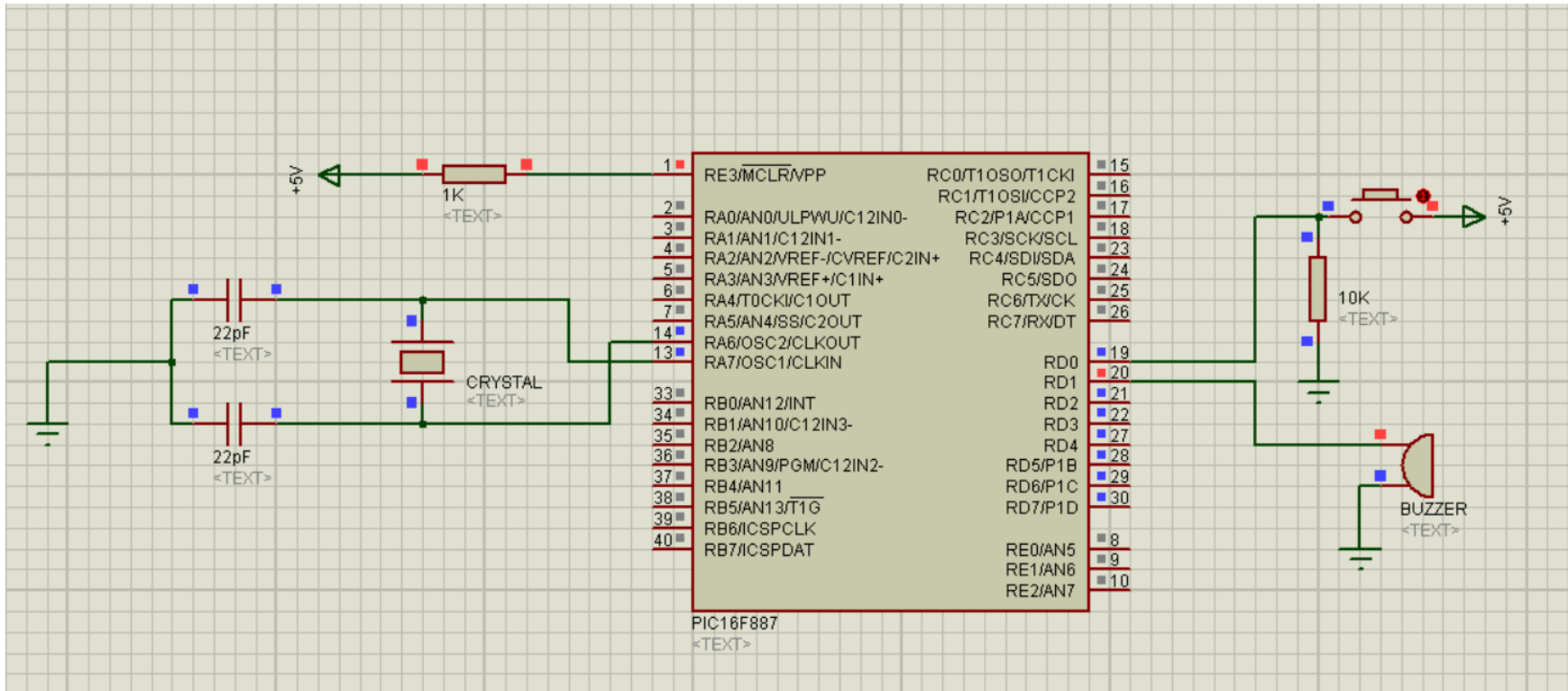
```
CALL    DELAY_250_MS
DECFSZ  SAYAC2,F
GOTO    LOOP_3_SECONDS
RETURN
```

```
END
```



Proteus Simulation Part 1

After inputting RD0, we see that the buzzer starts making sound and 3 seconds after it stops. One pushing cycle ends.



Proteus Simulation Part 2

After inputting RD0, we see that the buzzer starts making sound and 3 seconds after it stops. One pushing cycle ends.

