LEROTHOLI POLYTECHNIC

SCHOOL OF ENGINEERING
AND
TECHNOLOGY

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Program:	**Diploma: Computer Systems Engineering**
Subject Name:	**Microcontroller Applications III**
Subject Code:	**MRC321**
Assignment Number:	**6**
Due Date:	**0 6 0 6 2 0 2 3**
Lecturer:	**Raliete**

Declaration of own work

I hereby declare that this assignment is my own work and that it has not been copied from any other person or document.

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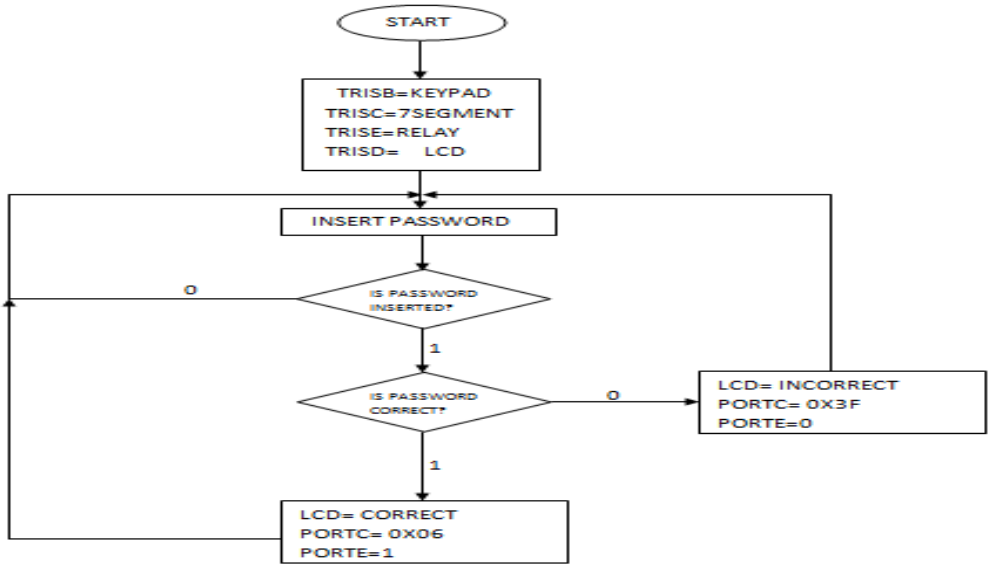
Signature Date

Question

Practical Assignment 6

Design a **Password operated door**, the door must only be open when the password is correct. Use a keypad at the input and LCD on the output together with the bulb to demonstrate access and denial processes. Generate a 4-digot unique password, however if the password is correct or not the LCD should always display a suitable message. The bulb should only switch-on when the password is correct as to demonstrate the door opening process**. Note: 230v should be tapped from the plug.**

Flow Chart



Code

```
unsigned char kp,kp2,kp3,kp4; //VARIABLES DEACLERATION
char keypadPort at PORTB; //CONNECTION THE KEYPAD A PORTB

sbit LCD_EN at RD5_bit;
sbit LCD_RS at RD4_bit;
sbit LCD_D4 at RD0_bit;
sbit LCD_D5 at RD1_bit;
sbit LCD_D6 at RD2_bit;
sbit LCD_D7 at RD3_bit;

sbit LCD_RS_Direction at TRISD4_bit;
sbit LCD_EN_Direction at TRISD5_bit;
sbit LCD_D4_Direction at TRISD0_bit;
```

```
sbit LCD_D5_Direction at TRISD1_bit;
sbit LCD_D6_Direction at TRISD2_bit;
sbit LCD_D7_Direction at TRISD3_bit;

void delay(){delay_ms(500);}

void initialization() //FUNTION DEACLERATION
{
 ANSEL=ANSELH=0X00; //CONFIGURING ALL THE OI'S AS DIGITAL PINS
 TRISB=0XFF; //KEYPAD
 TRISD=0X00; //LCD
 TRISC=0X00; //MAKING PORTC AN OUTPUT
 PORTC=0X00;   //TURNING PORTC OFF
 LCD_INIT();  //LCD DEACLERATION
 LCD_CMD(_LCD_CURSOR_OFF); //TURNING THE LCD CURSOR OFF
 LCD_OUT(1,2,"ENTER PASSWORD"); //DISPLAYING A TEXT ON THE LCD
 KEYPAD_INIT();  //KEYPAD DEACLERATION
 }

//void delay(){delay_ms(50);}

void keyPadInput ()//FUNCTION DEACLERATION
{
 kp = 0;
 do {
    kp = keypad_key_click (); //ASSIGNING THE kp VALUE TO KEYPAD KEY
   }

 while( kp == 0); //WAITIONG FOR A KEYPAD KEY TO BE PRESSED
}

 void keyPadInput2 () //FUNCTION DEACLERATION
{
 kp2 = 0;
 do {
    kp2 = keypad_key_click (); //ASSIGNING THE kp VALUE TO KEYPAD KEY
   }

 while( kp2 == 0); //WAITIONG FOR A KEYPAD KEY TO BE PRESSED
}

 void keyPadInput3 () //FUNCTION DEACLERATION
{
 kp3 = 0;
 do {
    kp3 = keypad_key_click (); //ASSIGNING THE kp VALUE TO KEYPAD KEY
   }

 while( kp3 == 0); //WAITIONG FOR A KEYPAD KEY TO BE PRESSED
}
```

```
void keyPadInput4 () //FUNCTION DEACLERATION
{
 kp4 = 0;
 do {
    kp4 = keypad_key_click (); //ASSIGNING THE kp VALUE TO KEYPAD KEY
   }
 while( kp4 == 0); //WAITIONG FOR A KEYPAD KEY TO BE PRESSED
}

void main() //STATE OF THE MAIN FUNCTION
{
   initialization(); //FUNCTION CALL
 while (1) // STATE OF THE WHILE LOOP
 {

    keyPadInput();  //FUNCTION CALL
    keyPadInput2(); //FUNCTION CALL
    keyPadInput3(); //FUNCTION CALL
    keyPadInput4(); //FUNCTION CALL

    switch (kp) //CHECKING THE STATE OF THE INPUT
    {
    case 2:  kp = 50;break;  //2
    }

    switch (kp2) //CHECKING THE STATE OF THE INPUT
    {
    case 6:  kp2  = 53;break; //5
    }

    switch (kp3) //CHECKING THE STATE OF THE INPUT
    {
    case 7:  kp3  = 54;break;  //6
    }

    switch (kp4)  //CHECKING THE STATE OF THE INPUT
    {
    case 9:  kp4  = 55;break; //7
    }
                  //PASSWORD = 2567
    if(kp==50 && kp2==53 && kp3==54 && kp4==55  ) //CHECKING THE STATE OF THE INPUT
    {
      lcd_cmd(_lcd_clear); //CLEARING THE LCD
      Lcd_Out(1,1,"CORRECT PASSWORD"); //WRITING A TEXT ON THE LCD
      Lcd_Out(2,4,"DOOR OPEN"); //WRITING A TEXT ON THE LCD
      PORTC.RC5=1;  //TURNING PIN RC5 ONN
    }
    else
    {
      lcd_cmd(_lcd_clear); //CLEARING THE LCD
      Lcd_Out(1,2,"WRONG PASSWORD"); //WRITING A TEXT ON THE LCD
```

```
    Lcd_Cmd(_Lcd_Clear); //CLEARING THE LCD
    Lcd_Out(1,1,"ENTER CORRECT"); //WRITING A TEXT ON THE LCD
    Lcd_Out(2,5,"PASSWORD"); //WRITING A TEXT ON THE LCD
    PORTC.RC5=0;    //TURNING PIN RC5 OFF
  }


} //END OF THE WHILE LOOP
 } //END OF THE MAIN FUNCTION
```

Circuit Diagram