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LEROTHOLI POLYTECHNIC

SCHOOL OF ENGINEERING AND TECHNOLOGY

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Program:	**B.ENG.TECH COMPUTER ENGINEERING**
Subject Name:	**Microcontroller Systems 1**
Subject Code:	**MCSY22107**
Assignment Number:	**5**

Due Date:	**2**	**2**	**0**	**4**	**2**	**0**	**2**	**4**

Lecturer:	**Mr. T.P 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.

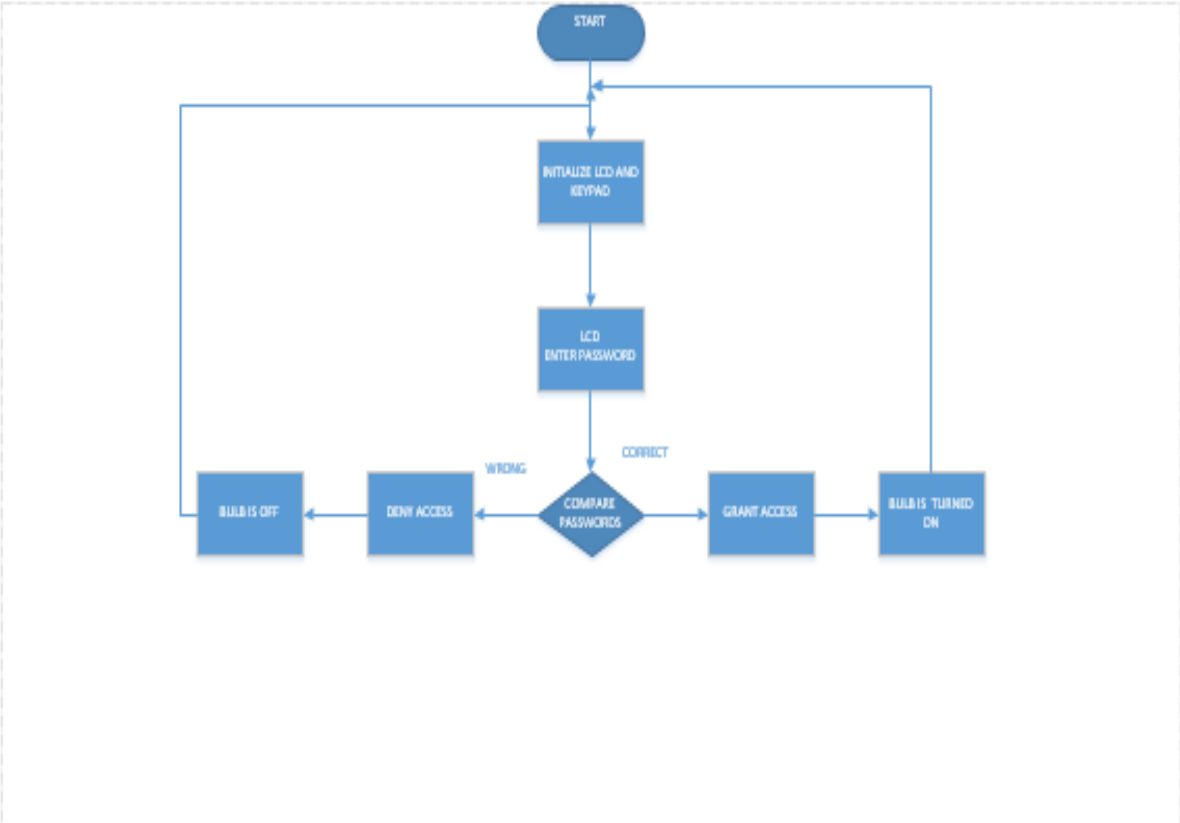
...T.Potloane..... ....15/04/24.....

signature date

TRUTH TABLE

Password	Action	Bulb
Correct Password	Access Granted	On
inorrect Password	Access Denied	off

FLOW CHART



THE CODE

```
char keypadPort at PORTD;

// LCD module connections
sbit LCD_RS at RB4_bit;
sbit LCD_EN at RB5_bit;
sbit LCD_D4 at RB0_bit;
sbit LCD_D5 at RB1_bit;
sbit LCD_D6 at RB2_bit;
sbit LCD_D7 at RB3_bit;

sbit LCD_RS_Direction at TRISB4_bit;
sbit LCD_EN_Direction at TRISB5_bit;
sbit LCD_D4_Direction at TRISB0_bit;
sbit LCD_D5_Direction at TRISB1_bit;
sbit LCD_D6_Direction at TRISB2_bit;
sbit LCD_D7_Direction at TRISB3_bit;

char input[6]; // Stores user input
char password[5] = "1234"; // Predefined password

char keypad() {
   unsigned short kp;
   // Wait for key to be pressed and released
   do {
      kp = Keypad_Key_Click(); // Store key code in kp variable
```

```
    } while (!kp);
    // Prepare value for output, transform key to its ASCII value
    switch (kp) {
        case 1: kp = '1'; break; // 1
        case 2: kp = '2'; break; // 2
        case 3: kp = '3'; break; // 3
        case 4: kp = 'A'; break; // A (/)
        case 5: kp = '4'; break; // 4
        case 6: kp = '5'; break; // 5
        case 7: kp = '6'; break; // 6
        case 8: kp = 'B'; break; // B (*)
        case 9: kp = '7'; break; // 7
        case 10: kp = '8'; break; // 8
        case 11: kp = '9'; break; // 9
        case 12: kp = 'C'; break; // C (-)
        case 13: kp = '*'; break; // *
        case 14: kp = '0'; break; // 0
        case 15: kp = '#'; break; // # (=)
        case 16: kp = 'D'; break; // D (+)
    }
    return kp;
}

void main() {
    int i = 0;
    Keypad_Init(); // Initialize Keypad
    ANSEL = 0; // Configure AN pins as digital I/O
```

```
  ANSELH = 0;
  TRISE = 0XFF;
  TRISA = 0X00;
  PORTA = 0X00;
  Lcd_Init(); // Initialize LCD
  Lcd_Cmd(_LCD_CLEAR); // Clear display
  Lcd_Cmd(_LCD_CURSOR_OFF); // Cursor off
  delay_ms(500);

  while (1) {
    LCD_OUT(1, 1, "Enter Password:");
    delay_ms(1000);
    Lcd_Cmd(_LCD_CLEAR);

    // Read user input from keypad
    while (i < 4) {
      input[i] = keypad();
      lcd_chr_cp('*');
      i++;
    }
    input[4] = '\0';

    // Display the entered password on the LCD
    //LCD_OUT(1, 1, input);

    // Check if the entered password matches the predefined password
    if (input[0] == password[0] && input[1] == password[1] && input[2] == password[2] &&
input[3] == password[3]) {
```

```
            LCD_OUT(2, 1, "Access Granted");
            PORTA.RA0 = 1;
            delay_ms(10000);
            PORTA.RA0 = 0;
        } else {
            LCD_OUT(2, 1, "Access Denied");
            PORTA.RA0 = 0;
        }

        delay_ms(2000);
        Lcd_Cmd(_LCD_CLEAR);
        i = 0; // Reset the index for the next iterat

    }
}
```

SIMULATION CIRCUIT