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| Date : 18/04/2022 | | | | | | | |
|  | CSLR61 : EMBEDDED SYSTEMS  **LAB-8** | | | | | |  |
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1. Interface force sensor with Arduino board and display the amount of force given as input to sensor in LCD screen. Also, interface LED RGB and change colour of the LED based on the some threshold values.

Link

<https://www.tinkercad.com/things/5DcUnGz3VKH-106119100-lab8-q1/editel?sharecode=JHq59qpZhKhb5HB661qiAM9QHw7z_XDrp2QK9USTIS4>

// *106119100 Rajneesh Pandey*

#include <LiquidCrystal.h>

LiquidCrystal lcd(12, 11, 10, 9, 8, 7);

int force = 0;

int R = 4;

int B = 3;

int G = 2;

void setup()

{

    lcd.begin(16, 2);

    pinMode(A0, INPUT);

    pinMode(G, OUTPUT);

    pinMode(R, OUTPUT);

    pinMode(B, OUTPUT);

    Serial.begin(9600);

}

void loop()

{

    force = analogRead(A0);

    Serial.println(force);

    lcd.clear();

    lcd.print(force);

    if (force < 100)

    {

        digitalWrite(G, HIGH);

        digitalWrite(B, LOW);

        digitalWrite(R, LOW);

    }

    else if (force < 300)

    {

        digitalWrite(G, LOW);

        digitalWrite(B, HIGH);

        digitalWrite(R, LOW);

    }

    else

    {

        digitalWrite(R, HIGH);

        digitalWrite(G, LOW);

        digitalWrite(B, LOW);

    }

    delay(1000);

}

Graphical user interface, diagram

Description automatically generated

2. Interface the keypad and tilt sensor with Arduino board, if the sensor is being tilted, then take input from keypad and print it in the LCD.

Link

<https://www.tinkercad.com/things/8yT2Vd8ZaEb-106119100-lab8-q2/editel?sharecode=cTdYGK3DKBbGd5nclB7T03VDdGdG2jeujSZRl4OOThE>

// 106119100 Rajneesh Pandey

#include <LiquidCrystal.h>

#include <Keypad.h>

const byte numRows = 4;// *number of rows on the keypad*

const byte numCols = 4;// *number of columns on the keypad*

// *keymap defines the key pressed according to the row and columns just as appears on the keypad*

char keymap[numRows][numCols] =

    {

        {'1', '2', '3', 'A'},

        {'4', '5', '6', 'B'},

        {'7', '8', '9', 'C'},

        {'\*', '0', '#', 'D'}};

// *Code that shows the the keypad connections to the arduino terminals*

byte rowPins[numRows] = {10, 9, 8, 7};// *Rows 0 to 3*

byte colPins[numCols] = {A0, A1, A2, A3};// *Columns 0 to 3*

// *initializes an instance of the Keypad class*

Keypad myKeypad = Keypad(makeKeymap(keymap), rowPins, colPins, numRows, numCols);

LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

int tilt = A4;

char buf[16] = {0};

int cnt = 0;

void setup()

{

    Serial.begin(9600);

    lcd.begin(16, 2);

    pinMode(tilt, INPUT);

}

void loop()

{

    int reading = analogRead(tilt);

    char keypressed = myKeypad.getKey();

    Serial.println(reading);

    if (reading > 100)

    {

        buf[cnt] = keypressed;

        if (keypressed != 0)

            cnt++;

        cnt %= 16;

        buf[cnt] = 0;

        lcd.clear();

        lcd.print(buf);

    }

    else

    {

        lcd.clear();

        lcd.print("IDLE");

    }

    delay(50);

}

Graphical user interface, diagram

Description automatically generated with medium confidence