// \*\*\**PROGRAM STEP MOTOR*\*\*\*

#include <Keypad.h> // *Arduino library*

#include <Wire.h> // *Arduino library*

#include <LiquidCrystal\_I2C.h>

#include <math.h>

LiquidCrystal\_I2C lcd(0x27, 2, 1, 0, 4, 5, 6, 7, 3, POSITIVE); // *set the LCD I2C address*

 #define LED1 8 // *digital pin 8*

 #define LED2 9 // *digital pin 9*

 #define LED3 10 // *digital pin 10*

 #define LED4 11 // *digital pin 11*

 #define pin2 12 // *digital pin 12 to activate the camera focus*

 #define pin3 13 // *digital pin 13 to activate the shoot*

 int ritardo = 60;

 long first = 0; // *STEPS of the four coils*

 long second = 0;

 char customKey;

 int shoot1 = 0; // *number shoots max*

 int shoot2 = 0; // *shoots performed*

 int I;

 const byte ROWS = 4;

 const byte COLS = 4;

 char keys[ROWS][COLS] = {

 {'1','2','3','+'},

 {'4','5','6','-'},

 {'7','8','9','\*'},

 {'C','0','=','/'}

 };

byte rowPins[ROWS] = {3,2,1,0}; // *pin set up numerical keyboard rows*

byte colPins[COLS] = {4,5,6,7}; // *pin set up numerical keyboard columns*

//initializza Keypad

Keypad customKeypad = Keypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS);

void setup() {

 lcd.begin(16,2);

 lcd.clear ();

 pinMode(pin2, OUTPUT); // *focus*

 pinMode(pin3, OUTPUT); // *shoot*

 pinMode(LED1, OUTPUT); // *declare in or out functionality of LED1 variable (out in this case)*

 pinMode(LED2, OUTPUT); // *declare in or out functionality of LED2 variable (out in this case)*

 pinMode(LED3, OUTPUT); // *declare in or out functionality of LED3 variable (out in this case)*

 pinMode(LED4, OUTPUT); // *declare in or out functionality of LED4 variable (out in this case)*

 // pinMode(13, OUTPUT); // *beep signaling the end of the session*

}

void loop() {

 lcd.clear ();

 digitalWrite(LED1, HIGH); // *set in sleep mode LED1 (0 signal)*

 digitalWrite(LED2, HIGH); // *set in sleep mode LED2 (0 signal)*

 digitalWrite(LED3, HIGH); // *set in sleep mode LED3 (0 signal)*

 digitalWrite(LED4, HIGH); // *set in sleep mode LED4 (0 signal)*

 digitalWrite(pin2, HIGH); //

 digitalWrite(pin3, HIGH); //

// \*\*\**INPUT START PARAMETERS*\*\*\*

 customKey = customKeypad.getKey();

 switch(customKey)

 {

 case '0' ... '9': // \*\*\*\* *input t1*

 first = first \* 10 + (customKey - '0');

 lcd.setCursor(0,0);

 lcd.print("STEPS=");

 lcd.setCursor(6,0);

 lcd.print(first); // \*\*\* *steps 4 coils*

 break;

 case '+': // \*\*\*\* *input shoots*

 second = SecondNumber();

 shoot1 = second;

 lcd.setCursor(0,1);

 lcd.print("SHOOTS=");

 lcd.setCursor(7,1);

 lcd.print(shoot1);

 break;

 case 'C': // *reset data*

 lcd.clear();

 first = 0; second = 0; shoot1=0; shoot2=0 ;// *reset values back to zero for next*

 *break;*

 }

 lcd.setCursor(0,0);

 lcd.print("STEPS:");

 lcd.setCursor(6,0);

 lcd.print(first);

 lcd.setCursor(0,1);

 lcd.print("STEPS=");

 lcd.setCursor(7,1);

 lcd.print(shoot1);

 if (second == 0)

 {

 goto poi;

 }

 lcd.clear (); // *data acquired start rotation*

 lcd.setCursor(0,1);

 lcd.print ("START");

 delay();

 // \*\*\* *START SEQUENCE REPEATED MOVEMENTS* \*\*\*

 lcd.clear();

 lcd.setCursor(0,0);

 lcd.print("shoots:");

 lcd.setCursor(7,0);

 lcd.print(shoot2);

 lcd.setCursor(10,0);

 lcd.print("su:");

 lcd.setCursor(13,0);

 lcd.print(shoot1);

 for (I=0;I<first;I=I+1) {

 digitalWrite(LED1, LOW); // *step 1 Set in signaling mode LED1 (1 signal motor step on)*

 delay();

 digitalWrite(LED1,HIGH); // *step 1* *Set in sleep mode LED1 (0 signal motor step off)*

 digitalWrite(LED2, LOW); // *step 2* *Set in signaling mode LED2 (1 signal motor step on)*

 delay();

 digitalWrite(LED2,HIGH); // *step 2* *Set in sleep mode LED2 (0 signal motor step off)*

 digitalWrite(LED3, LOW); // *step 3 Set in signaling mode LED3 (1 signal motor step on)*

 delay();

 digitalWrite(LED3,HIGH); // *step 3 Set in sleep mode LED3 (0 signal motor step off)*

 digitalWrite(LED4, LOW); // *step 4 Set in signaling mode LED4 (1 signal motor step on)*

 delay();

 digitalWrite(LED4,HIGH); // *step 4 Set in sleep mode LED4 (0 signal motor step off)*

 lcd.setCursor(0,1);

 lcd.print("Steps: ");

 lcd.setCursor(6,1);

 lcd.print(I+1);

 lcd.setCursor(10,1);

 lcd.print("su:");

 lcd.setCursor(13,1);

 lcd.print(first);

 delay();

 } // *end sequence single movement shoots*

 lcd.clear();

 delay (1000);

 digitalWrite (pin2, LOW);

 lcd.setCursor(0,1);

 lcd.print ("Focus ");

 delay (2000);

 digitalWrite (pin3, LOW);

 lcd.setCursor(0,1);

 lcd.print ("Shoot ");

 delay (1000);

 digitalWrite (pin3, HIGH);

 shoot2= shoot2 + 1;

 lcd.setCursor(13,1);

 lcd.print (shoot2);

 digitalWrite (pin2,HIGH);

 delay (1000);

 lcd.setCursor(13,1);

 lcd.print (shoot2);

 if (shoot2 > shoot1){

 first=0 ; second=0 ; shoot1 =0 ; shoot2=0 ; // *reset parameters*

 lcd.clear ();

 goto ;

 }

}

// \*\*\* *ROUTINE INPUT Shoots*\*\*\*

long SecondNumber()

{

 while( 1 )

 {

 customKey = customKeypad.getKey();

 if(customKey >= '0' && customKey <= '9')

 {

 second = second \* 10 + (customKey - '0');

 lcd.setCursor(7,1);

 lcd.print(second);

 }

 if(customKey == '=') break; //\*\*\* start program \*\*\*;

 }

 return second;

}