**#include<reg51.h>**

**#define msec 50**

**#define lcd\_data\_str\_pin P2**

**sbit rs = P3^0; //Register select (RS) pin rs=0 command mode, rs=1 datamode**

**sbit rw = P3^1; //Read write(RW) pin rw=0 write mode, rw=1 read mode**

**sbit en = P3^6; //Enable(EN) pin**

**sbit ini\_pin = P1^0; // Start voting pin**

**sbit stop\_pin = P1^5; // Stop voting pin**

**sbit candidate\_1=P1^1; //Candidate1**

**sbit candidate\_2=P1^2; //Candidate2**

**sbit candidate\_3=P1^3; //Candidate3**

**sbit candidate\_4=P1^4; //Candidate4**

**int max = 0;**

**int carry = 0;**

**int arr[4]; //arry ofsize 4**

**int vote\_amt[3],j;**

**unsigned int vote\_1,vote\_2,vote\_3,vote\_4;**

**void delay(int delay\_time) // Time delay function**

**{**

**int j,k;**

**for(j=0;j<=delay\_time;j++)**

**for(k=0;k<=1275;k++);**

**}**

**void lcd\_cmd(unsigned char cmd\_addr) //Function to send command to LCD**

**{**

**lcd\_data\_str\_pin = cmd\_addr;**

**en = 1;**

**rs = 0;**

**rw = 0;**

**delay(1);**

**en = 0;**

**return;**

**}**

**void lcd\_data\_str(char str[50]) //Function to send string**

**{**

**int p;**

**for (p=0;str[p]!='\0';p++)**

**{**

**lcd\_data\_str\_pin = str[p];**

**rw = 0;**

**rs = 1;**

**en = 1;**

**delay(1);**

**en = 0;**

**}**

**return;**

**}**

**void lcd\_data\_int(unsigned int vote) //Function to send 0-9 character values**

**{**

**char dig\_ctrl\_var;**

**int p;**

**for (j=2;j>=0;j--)**

**{**

**vote\_amt[j]=vote%10;**

**vote=vote/10;**

**}**

**for (p=0;p<=2;p++)**

**{**

**dig\_ctrl\_var = vote\_amt[p]+48;**

**lcd\_data\_str\_pin = dig\_ctrl\_var;**

**rw = 0;**

**rs = 1;**

**en = 1;**

**delay(1);**

**en = 0;**

**}**

**return;**

**}**

**void vote\_count() // Function to count votes**

**{**

**while (candidate\_1==0 && candidate\_2==0 && candidate\_3==0 && candidate\_4==0);**

**if (candidate\_1==1)**

**{**

**while (candidate\_1 == 1);**

**{**

**vote\_1 = vote\_1 + 1;**

**}**

**}**

**if (candidate\_2==1)**

**{**

**while (candidate\_2 == 1);**

**{**

**vote\_2 = vote\_2 + 1;**

**}**

**}**

**if (candidate\_3==1)**

**{**

**while (candidate\_3 == 1);**

**{**

**vote\_3 = vote\_3 + 1;**

**}**

**}**

**if (candidate\_4==1)**

**{**

**while (candidate\_4 == 1);**

**{**

**vote\_4 = vote\_4 + 1;**

**}**

**}**

**}**

**void lcd\_ini()**

**{**

**lcd\_cmd(0x38); //5x7 matrix 2 lines**

**delay(msec);**

**lcd\_cmd(0x0E); //cursor on**

**delay(msec);**

**lcd\_cmd(0x01); //clear screen**

**delay(msec);**

**lcd\_cmd(0x81); //cursor position to 1st**

**delay(msec);**

**lcd\_data\_str("welcome here");**

**delay(100);**

**lcd\_cmd(0x01); //clear**

**delay(msec);**

**lcd\_cmd(0x80); //cursor position to 0 of line 1**

**delay(msec);**

**lcd\_data\_str( "you" );**

**delay(msec);**

**lcd\_cmd(0x14); //space between**

**delay(msec);**

**lcd\_data\_str("can now");**

**delay(msec);**

**delay(msec);**

**lcd\_cmd(0xC0); // second line**

**delay(msec);**

**lcd\_data\_str("cast your");**

**delay(msec);**

**lcd\_cmd(0x14); // space**

**delay(msec);**

**lcd\_data\_str("vote");**

**delay(100);**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x80); //cursor position to 0 of line 1**

**delay(msec);**

**lcd\_data\_str("A");**

**delay(msec);**

**lcd\_cmd(0x84); // 4th col**

**delay(msec);**

**lcd\_data\_str("B");**

**delay(msec);**

**lcd\_cmd(0x88); // 8th col**

**delay(msec);**

**lcd\_data\_str("C");**

**delay(msec);**

**lcd\_cmd(0x8C); // 12 col**

**delay(msec);**

**lcd\_data\_str("D");**

**delay(msec);**

**vote\_count();**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x83); //ist line 3rd col**

**delay(msec);**

**lcd\_data\_str("thank");**

**delay(msec);**

**lcd\_cmd(0x14); //space**

**delay(msec);**

**lcd\_data\_str("you");**

**delay(100);**

**}**

**void results() // Function to show results**

**{**

**int i;**

**carry = 0;**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x80); //cursor position to 0 of line 1**

**delay(msec);**

**lcd\_data\_str("results");**

**delay(msec);**

**lcd\_cmd(0x14); //space**

**delay(msec);**

**lcd\_data\_str("are");**

**delay(msec);**

**lcd\_cmd(0x14); //space**

**delay(msec);**

**lcd\_data\_str("out");**

**delay(msec);**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x80); //cursor position to 0 of line 1**

**delay(msec);**

**lcd\_data\_str("A");**

**delay(msec);**

**lcd\_cmd(0x84); //4th col**

**delay(msec);**

**lcd\_data\_str("B");**

**delay(msec);**

**lcd\_cmd(0x88); // 8th col**

**delay(msec);**

**lcd\_data\_str("C");**

**delay(msec);**

**lcd\_cmd(0x8C); // 12th col**

**delay(msec);**

**lcd\_data\_str("D");**

**delay(msec);**

**lcd\_cmd(0xC0); //second line**

**delay(100);**

**lcd\_data\_int(vote\_1);**

**delay(msec);**

**lcd\_cmd(0xC4); //jump to 2nd line 4th row**

**delay(msec);**

**lcd\_data\_int(vote\_2);**

**delay(msec);**

**lcd\_cmd(0xC8); // 2nd line 8th row**

**delay(msec);**

**lcd\_data\_int(vote\_3);**

**delay(msec);**

**lcd\_cmd(0xCC); // 2nd line 12th row**

**delay(msec);**

**lcd\_data\_int(vote\_4);**

**delay(300);**

**arr[0] = vote\_1; //arry ofsize 4**

**arr[1] = vote\_2;**

**arr[2] = vote\_3;**

**arr[3] = vote\_4;**

**for( i=0; i<4; i++)**

**{**

**if(arr[i]>=max)**

**max = arr[i];**

**}**

**if ( (vote\_1 == max) && ( vote\_2 != max) && (vote\_3 != max)&& (vote\_4 != max) )**

**{**

**carry = 1;**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x80); //cursor position to 0 of line 1**

**delay(msec);**

**lcd\_data\_str("congratulations");**

**delay(50);**

**lcd\_cmd(0xC4); //jump to 2nd line 4th col**

**delay(msec);**

**lcd\_data\_str("A");**

**delay(msec);**

**lcd\_cmd(0x14); //space**

**delay(msec);**

**lcd\_data\_str("wins");**

**delay(msec);**

**}**

**if ( (vote\_2 == max) && ( vote\_1 != max) && (vote\_3 != max)&& (vote\_4 != max) )**

**{**

**carry = 1;**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x80); //cursor position to 0 of line 1**

**delay(msec);**

**lcd\_data\_str("congratulations");**

**delay(50);**

**lcd\_cmd(0xC4); //jump to 2nd line 4th col**

**delay(msec);**

**lcd\_data\_str("B");**

**delay(msec);**

**lcd\_cmd(0x14); //space**

**delay(msec);**

**lcd\_data\_str("wins");**

**delay(msec);**

**}**

**if ( (vote\_3 == max) && ( vote\_2 != max) && (vote\_1 != max)&& (vote\_4 != max) )**

**{**

**carry = 1;**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x80); //cursor position to 0 of line 1**

**delay(msec);**

**lcd\_data\_str("congratulations");**

**delay(50);**

**lcd\_cmd(0xC4); ////jump to 2nd line 4th col**

**delay(msec);**

**lcd\_data\_str("C");**

**delay(msec);**

**lcd\_cmd(0x14); //space**

**delay(msec);**

**lcd\_data\_str("wins");**

**delay(msec);**

**}**

**if ( (vote\_4 == max) && ( vote\_2 != max) && (vote\_3 != max)&& (vote\_1 != max) )**

**{**

**carry = 1;**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x80); //cursor position to 0 of line 1**

**delay(msec);**

**lcd\_data\_str("congratulations");**

**delay(50);**

**lcd\_cmd(0xC4); //jump to 2nd line 4th col**

**delay(msec);**

**lcd\_data\_str("D");**

**delay(msec);**

**lcd\_cmd(0x14); //space**

**delay(msec);**

**lcd\_data\_str("wins");**

**delay(msec);**

**}**

**if (carry==0)**

**{**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x82); //ist line 2nd col**

**delay(msec);**

**lcd\_data\_str("clash");**

**delay(50);**

**lcd\_cmd(0x14); //space**

**delay(msec);**

**lcd\_data\_str("between");**

**delay(50);**

**if(vote\_1 == max)**

**{**

**lcd\_cmd(0xC2); //2nd line 2nd col**

**lcd\_data\_str("A");**

**delay(50);**

**}**

**if(vote\_2 == max)**

**{**

**lcd\_cmd(0xC5); //2nd line 5th col**

**lcd\_data\_str("B");**

**delay(50);**

**}**

**if(vote\_3 == max)**

**{**

**lcd\_cmd(0xC9); //2nd line 9th col**

**lcd\_data\_str("C");**

**delay(50);**

**}**

**if(vote\_4 == max)**

**{**

**lcd\_cmd(0xCD); //2nd line 12th col**

**lcd\_data\_str("D");**

**delay(50);**

**}**

**}**

**}**

**void main()**

**{**

**ini\_pin = stop\_pin = 1;**

**vote\_1 = vote\_2 = vote\_3 = vote\_4 = 0;**

**candidate\_1 = candidate\_2 = candidate\_3 = candidate\_4 = 0;**

**lcd\_cmd(0x38); //5x7 matrix 2 lines**

**delay(msec);**

**lcd\_cmd(0x0E); //cursor on**

**delay(msec);**

**lcd\_cmd(0x01); //clear lcd**

**delay(msec);**

**lcd\_cmd(0x80); //cursor to fisrt pos**

**delay(msec);**

**lcd\_data\_str( "press b1" );**

**delay(msec);**

**lcd\_cmd(0x14); //sapce**

**delay(msec);**

**lcd\_data\_str("to");**

**delay(msec);**

**lcd\_cmd(0xC0); // second line**

**delay(msec);**

**lcd\_data\_str("start");**

**delay(100);**

**while(1)**

**{**

**while(ini\_pin != 0)**

**{**

**if (stop\_pin == 0)**

**break;**

**}**

**if (stop\_pin == 0) //result pin**

**{**

**break;**

**}**

**lcd\_ini();**

**}**

**while(1)**

**{**

**results();**

**}**

**}**