

Experiment 14

Aim:

Write a program in C language to operate the
LCD
LEDs
7 Segment display
Stepper Motor

Tool Used: Keil uVision4

CODE: LCD

```
#include <LPC214x.h>
#define DATA_PORT_SET      IOSET1
#define DATA_PORT_CLR      IOCLR1
#define DATA_DIR           IODIR1
#define D7                  23
#define D6                  22
#define D5                  21
#define D4                  20
#define D3                  19
#define D2                  18
#define D1                  17
#define D0                  16
//Set data port pins
#define DATA_PORT (unsigned
long)((1<<D7)|(1<<D6)|(1<<D5)|(1<<D4))|((1<<D3)|(1<<D2)|(1<<D1)|(1<<D0))

#define CTRL_PORT_SET      IOSET1
#define CTRL_PORT_CLR      IOCLR1
#define CTRL_DIR           IODIR1
#define CTRL_RS            24
#define CTRL_EN            25

#include"delay.h"
#include"lcd.h"
int main()
{
    int i;
    init_lcd();

    while(1)
    {
        cmd_lcd(0x80);
        string_lcd("adhithan ");
        cmd_lcd(0xc0);
        string_lcd(" ** 602162021 ** ");

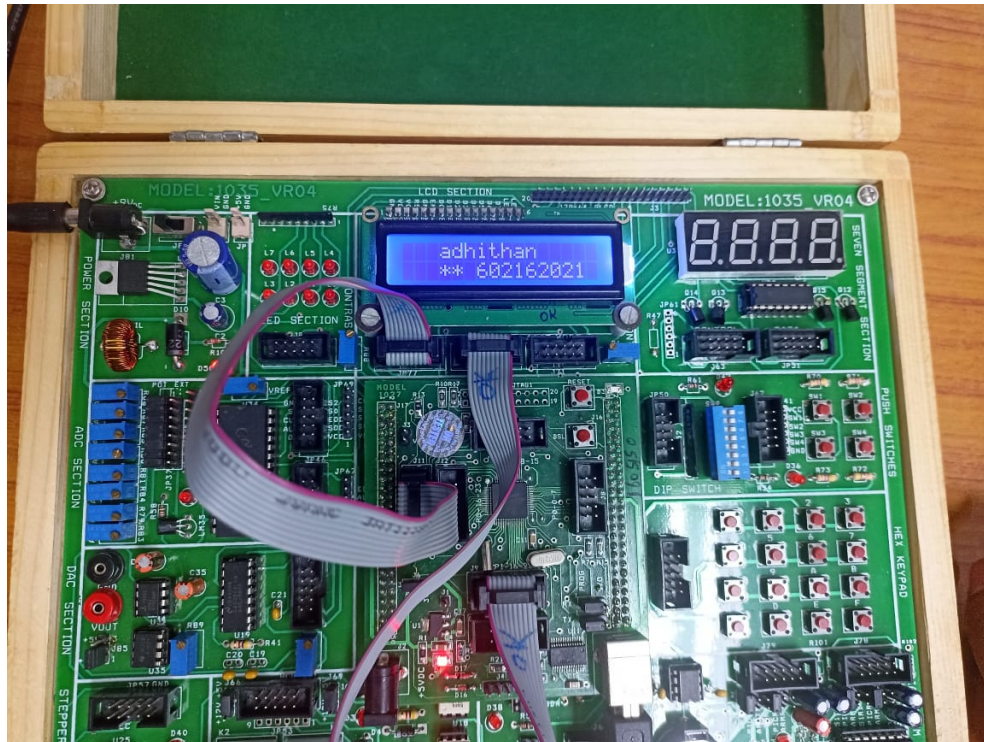
        for(i=0;i<5;i++)
        {
            cmd_lcd(0x1C);
            delay_ms(1000);
        }
    }
}
```

```

    for(i=0;i<5;i++)
    {
        cmd_lcd(0x18);
        delay_ms(1000);
    }
}

```

OBSERVATION:



CODE: LEDs

```

#include <LPC214x.h>
#include "delay.h"
#define LED_SET          IOSET1
#define LED_CLR          IOCLR1
#define LED_DIR          IODIR1
#define LED_PIN          IOPIN1

#define LED7             23
#define LED6             22
#define LED5             21
#define LED4             20
#define LED3             19
#define LED2             18
#define LED1             17
#define LED0             16
//Set data port pins
#define LED_PORT          (unsigned
long)((1<<LED7)|(1<<LED6)|(1<<LED5)|(1<<LED4))|((1<<LED3)|(1<<LED2)|(1<<LED1
)|(1<<LED0))

```

```

int i,a,b,x,y;

int main()
{
    LED_DIR |= (unsigned long)(LED_PORT);           //initialize D0:D7 pins as
    output                                         //initialize D0:D7 pins as
    LED_CLR |= (unsigned long)(LED_PORT);           //initialize D0:D7 pins as
    output

    while(1)
    {
        ////////// nibble on off
        LED_CLR |= (0xf0) << LED0;
        LED_SET |= (0x0f) << LED0;
        delay_ms(500);
        LED_CLR |= (0x0f) << LED0;
        LED_SET |= (0xf0) << LED0;
        delay_ms(500);
        /// odd even on off
        LED_CLR |= (0xff) << LED0;
        LED_SET |= (0xaa) << LED0;
        delay_ms(500);
        LED_CLR |= (0xff) << LED0;
        LED_SET |= (0x55) << LED0;
        delay_ms(500);
        ////////// left shift
        LED_PIN = (0x01) << LED0;
        delay_ms(500);
        for(i=0;i<7;i++)
        {
            LED_PIN = LED_PIN << 1;
            delay_ms(500);
        }
        ////////// rotate left
        LED_PIN = (0x01) << LED0;
        delay_ms(500);
        for(i=0;i<7;i++)
        {
            LED_PIN = LED_PIN << 1 | (0x01 << LED0);
            delay_ms(500);
        }
        ////////// right shift
        LED_PIN = (0x80) << LED0;
        delay_ms(500);

        for(i=0;i<7;i++)
        {
            LED_PIN = (LED_PIN >> 1) & (0x7F << LED0);
            delay_ms(500);
        }
        ////////// rotate right
        LED_PIN = (0x80) << LED0;
        delay_ms(500);

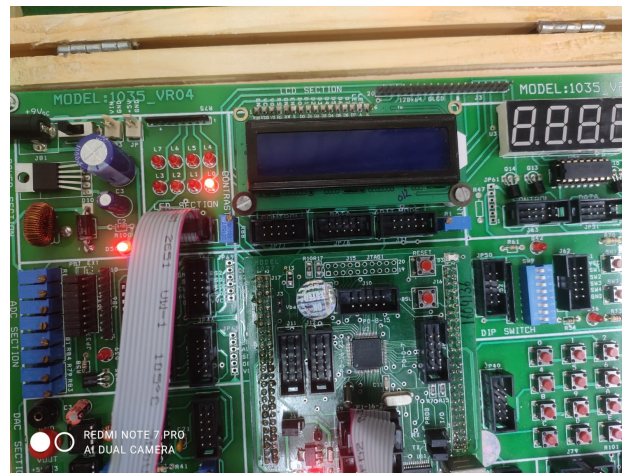
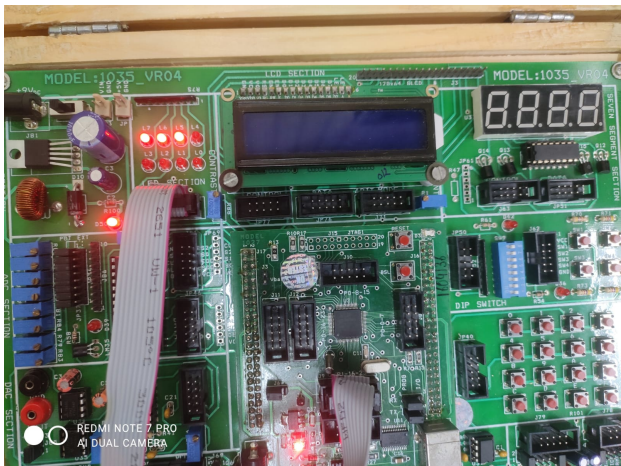
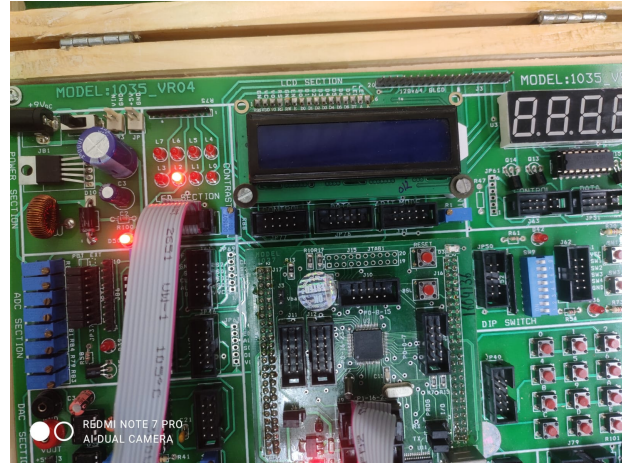
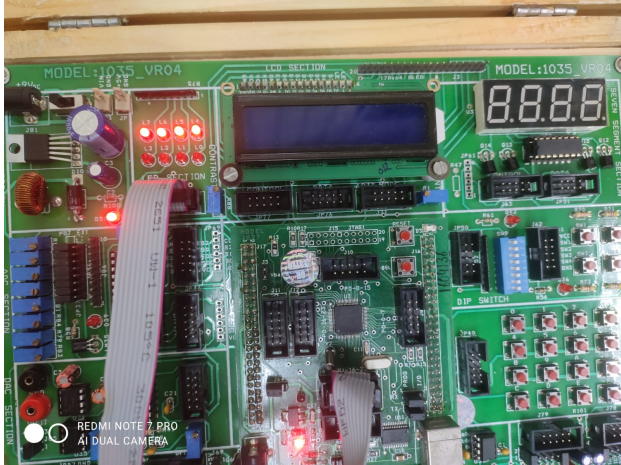
        for(i=0;i<7;i++)
        {

```

```
LED_PIN = (LED_PIN >> 1);
delay_ms(500);
```

```
}
}
```

OBSERVATION:



CODE: 7 Segment Display

```
#include"lpc214x.h"
#include"delay.h"
```

```
int main()
{
    int a,b,c,d,e;
    unsigned char arr[] = {0xbf, 0x86, 0xdb, 0xcf, 0xe6, 0xed, 0xfd, 0x87, 0xff,
    0xef};
    IODIR0 = 0xffffffff;
    while(1)
    {
        for(a=0;a<=9;a++)
        {
            for(b=0;b<=9;b++)
```

```
{
    for(c=0;c<=9;c++)
    {
        for(d=0;d<=9;d++)
        {
```


OBSERVATION:



RESULT:

The C codes Written above have been implemented and verified successfully.