11	Drive a Stepper Motor interface to rotate the motor in Anti- clockwise) by N steps. Introduce suitable delay between successive steps.
12	Drive a Stepper Motor interface to rotate the motor in clockwise by N steps. Introduce suitable delay between successive steps.
13	Display messages FIRE and HELP alternately with flickering effects on a 7-segment display interface for a suitable period of time. Ensure a flashing rate that makes it easy to read both the messages.
14	Display messages BANGALORE in rolling fasion on a 7-segment display interface for a suitable period of time.
15	Program to demo the elevator interface.

Hardware programs Using 8051

1. drive a Stepper Motor Interface to Rotate the Motor in Anti-clockwise by N steps. Introduce suitable delay.

Code -

```
#include<stdio.h>
#include<reg51.h>
char xdata port_at_0xe803;
Char xdata porta_at_0xe800;
Charidataacc_at_0x30;
delay()
{
  int j;
for(j=0; j<800; j++)
  {}
{ void main()
  {
  port = 0X80;
    While(1)
  {
    acc = 0X11;
    porta = acc;
   delay();
   acc = 0X22;
   porta = acc;
    delay();
  acc = 0X44;
   porta = acc;
     delay();
  acc = 0X88
  porta = acc;
    delay(); }}
```

2. drive a Stepper Motor Interface to rotate the Motor in clockwise. Introduce suitable delay b/w successive steps.

Code -

```
#include <stdio.h>
#include <reg 51.h>
Char xdata port_at_ 0xe303;
Char xdata porta_at 0xe800;
Char dataacc_at_0x30;
delay ()
{ int j;
for (j= 0; j<800; j++)
{}
}
void main ()
{
port = 0x80;
  while (1)
  {
  acc =0x88;
  porta = acc;
    delay ();
  acc = 0x44;
porta = acc;
    delay ();
  acc =0x22;
 porta =acc;
  delay ();
  acc = 0x11
   porta = acc;
    delay ();
  }
  }
```

3. display msg five & help Alternately with flickering effects on a 7-Segment display Interface for suitable period of time.

code -

```
#include <stdio.h>
#include <reg51.h>
Char xdata CommW_at_0xe803;
Char xdata portB_at_0xe801;
Char xdata portC_at_0xe802;
Char port[20]={0x8c, 0xf9, 0xde, 0x86, 0xff
               0xff, 0xff, 0x89, 0xc7,
               0x8c};
delay().
{
long u;
for (u=0; u<8000; u++)
}
void main()
{
int d, b, j, m;
Unsigned char k;
CommW=0x80;
do
{
i=0;
for(d=0; d<3; d++)
{
for(b=0; b<4; b++)
{
k= port[i++];
for(j=0; j<8; j++)
{
m=k;
```

store
67

```
k = k & 0x80;
{
  if (k == 00)
    portB = 0x00;
  else
    portB = 0x01;
}

portC = 0x01;
portC = 0x00;
  k = m;
  k <<= 1;
}
}
  delay ();
}
}

while (1);
}
```

4. display messages Bangalore in rolling fashion on a 7 segment display interface. for suitable period of time.

code -

```
#include <stdio.h>
#include <reg51.h>
char xdata CommW _at_ 0xe803;
char xdata portB _at_ 0xe801;
char xdata portC _at_ 0xe802;
char port[20] = { 0xff, 0xff, 0xff, 0xff, 0x83, 0x88,
0xC8, 0x82, 0x88, 0xC7, 0xC0, 0xAF, 0x86 };i;
    delay ()
{
  long u;
for ( u=0; u<4000; u++);
}
    void main ()
{
  int t,d, b, j, m;
unsigned char k;
    CommW = 0x80;
do
 {
  i=0;
for (d=0; d<1; d++)
 {
   for ( b=13; b>0; b--)
{
  delay ();
  k = port[i++];
  for (j=0; j<8; j++)
   {
     m=k;
```

```
    k = k & 0x80;
{
    if (k == 00)
      portB = 0x00;
      else
      portB = 0x01;
    }
      portC = 0x01;
      portC = 0x00;
        k = m;
        k <<= 1;
    }
    }
      delay ();
  }
  }
    while (1);
  }
```

5. program to demo the elevator interface.

Code -

```
#include <stdio.h>
#include <reg51.h>
Unsigned char xdata Command word_at_0xe803;
Unsigned char xdata portA_at_0xe800;
Unsigned char xdata portB_at_0xe801;
Unsigned char xdata present floor, requested floor, step=0x30;
Unsigned long xdata count, i;

delay()
{
  for (count=0; count<=4500; count++);
}
Reset()
{
Step = step & 0x0f;
portA = step;
  step = step | 0xf0;
portA = step;
  }
    goup()
    {
      switch (Requested floor)
{
case 0x0d: while (step<0xf3)
          { Stop++;
portA = step;
    delay();
  }
    Reset();
break;
```

```
Case 0x0b: while (step<0xf6)
{
  step++
  port A = step;
   delay();
}
  Reset();
break;
Case 0x07: while (step<0xf9)
        { step++;
       port A = step;
         delay();
      }
        Reset();
        break;
  }
  }
    godown()
{ switch (Requested Floor)
    {
      case 0x0d: while (step>0xf3)
    { step--;
       port A = step;
         delay();
      }
        Reset();
       break;

   Case 0x0b: while (step>0xf6)
        {
            step--;
```

```
        portA = step;
        delay();
    }
    Reset();
    break;
case 0x0e: while(step > 0x10)
    { step--;
    portA = step;
    delay();
    }
    reset();
    break;
    }
    }
    void main()
{ command word = 0x82;
    portA = 0x10;
    presentFloor = 0x0e;
    while(1)
{
    Requested floor = portB;
    Requested floor = requested floor & 0x0f;
if (Requested floor != 0x0f && Requested floor !=
        present floor)
{
    if (Requested Floor < present floor)
        goUp();
else go down();
    present floor = Requested Floor;
    }
    Requested floor = portB; }
```