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1. Drive a stepper motor interface to rotate the motor in anticlockwise by N steps. Introduce suitable delay between successive steps.

```
#include <stdio.h>
#include <reg51.h>
char xdata port_at_0xe803;
char xdata porta_at_0xe806;
char idata acc_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();
```

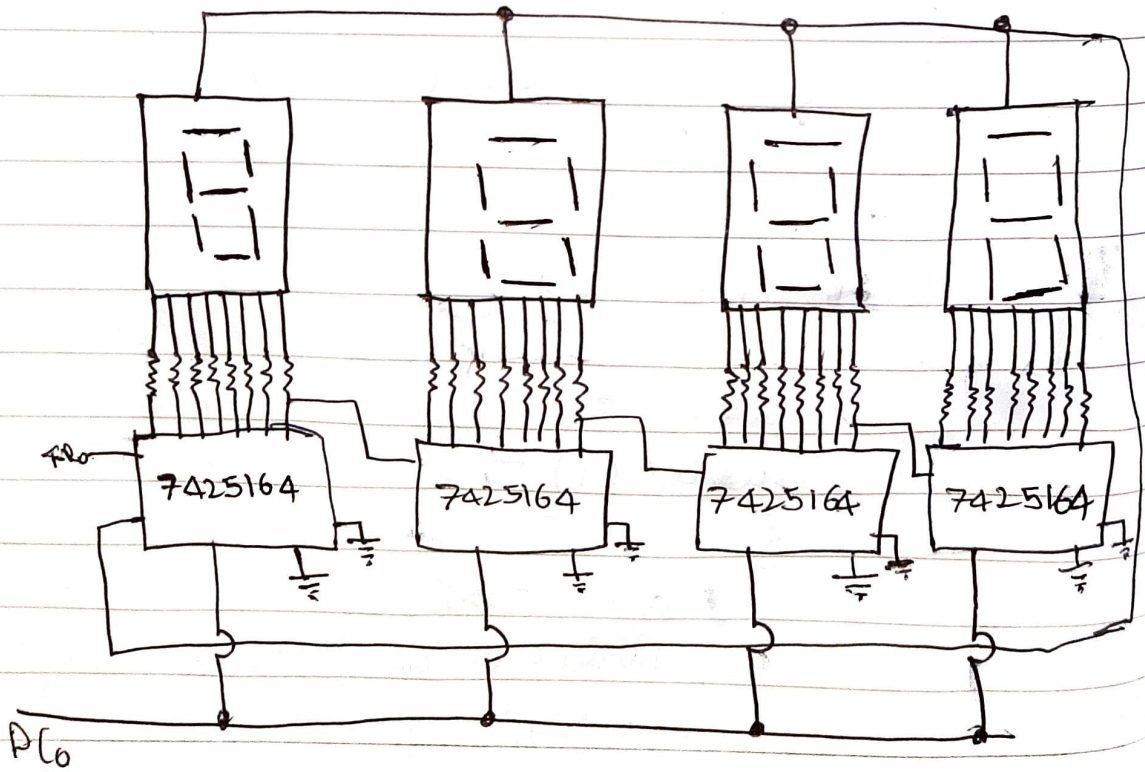
```
        acc = 0x88;
        porta = acc;
        delay();
    }
}
```

2. Drive a stepper motor interface to rotate the motor in clockwise by N steps. Introduce delay in between successive steps.

```
#include <stdio.h>
#include <reg51.h>
char xdata port_at_0xe803;
char xdata porta_at_0xe800;
char idata acc_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 messages FIRE and HELP alternatively 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 messages.



```
#include <stdio.h>
#include <reg51.h>

xdata(commW - at - 0xe803;
xdata portB - at - 0xe801;
xdata portC - at - 0xe802;
char port[20] = {0x8e, 0xf9, 0xde, 0x86, 0xff,
                 0xff, 0xff, 0xff, 0x89, 0x86, 0xc7,
                 0x8c};
delay()
{
    long u;
    for(u=0; u<8000; u++);
}
void main()
{
    int d, b, j, m;
    unsigned char k;
    comm W = 0x80;
    do{
      {=0;
      for(d=0; d<3; d++)
      {
          for(b=0; b<4; b++)
          {
              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);
}
```

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

```
#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,
                  0x83, 0x88, 0xc8, 0x82, 0x88,
                  0xc7, 0xc0, 0xAF, 0x86, i;
delay()
{
    long u;
    for(u=0; u<4000; u++);
}
void main()
{
    int 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);
 }
```