



โปรแกรมที่ 1

```
unsigned char c;
#include <avr/io.h>
```

int main(void)

```
{
    DDRB = 0x00;
    PORTB = 0xFF;
    DDRD = 0xFF;
    while(1)
    {
        c = PINB;
        PORTD = c;
    }
}
```

โปรแกรมที่ 2

```
while(1)
{
    c = PINB;
    PORTD = ~c;
}
```

โปรแกรมที่ 3 ไฟว้ 8 ดวง

```
#define F_CPU 1000000UL /* 1 MHz CPU clock */
#include <avr/io.h>
#include <stdio.h>
#include <util/delay.h>

int main(void)
{
    unsigned char led,i;
    DDRD = 0xff;
    while(1)
    {
        led = 0b00000001;
        for(i=0;i<8;i++)
        {
            PORTD = led;
            _delay_ms(500);
            led <<= 1;
        }
    }
}
```

โปรแกรมที่ 4 แสดงผลด้วย LED 7 ส่วน

```
#define F_CPU 1000000UL /* 1 MHz CPU clock */
#include <avr/io.h>
#include <stdio.h>
#include <util/delay.h>
unsigned char const seg[] = {0x3F, 0x06, 0x5B, 0x4F, 0x66, 0x6D, 0x7D, 0x07, 0x7F, 0x6F};
int main(void)
{
    unsigned char i;
    DDRC = 0xff;
    while(1)
    {
        for(i=0;i<10;i++)
        {
            PORTC = seg[i];
            _delay_ms(500);
        }
    }
}
```

โปรแกรมที่ 5 ตรวจสอบสวิทช์ ที่ PB0 ว่ากดแล้วป้ล่อย จึงจะแสดงตัวเลขต่อไป

```
#define F_CPU 1000000UL /* 1 MHz CPU clock */
#include <avr/io.h>
#include <stdio.h>
#include <util/delay.h>
```

```

unsigned char const seg[] = {0x3F, 0x06, 0x5B, 0x4F, 0x66, 0x6D, 0x7D, 0x07, 0X7F, 0X6F};
#define SWO_CLOSE (PINB & 0b00000001) == 0
#define SWO_OPEN (PINB & 0b00000001)==1

int main(void)
{
    unsigned char i, b;
    DDRB = 0x00;
    PORTB = 0xFF;
    DDRC = 0xFF;
    i = 0;
    while(1)
    {
        PORTC = seg[i];
        while(SWO_OPEN)
        {
        }
        _delay_ms(50);
        while(SWO_CLOSE)
        {
        }
        i++;
        if(i==10)
        {
            i = 0;
        }
    }
}

```

อะเรย์ 1 มิติ และ 2 มิติ

```

unsigned char c;
#include <avr/io.h>

int main(void)
{
    unsigned char x, y[3], z[2][3];
    DDRD = 0x00;
    PORTD = 0xFF;
    DDRB = 0xFF;
    x = 4;
    y[0] = 1;
    y[1] = 2;
    y[2] = 3;
    z[0][0] = 10;
    z[0][1] = 11;
    z[0][2] = 12;
    z[1][0] = 13;
    z[1][1] = 14;
    z[1][2] = 15;
    while(1)

```

```

{
    c = PIND;
        PORTB = ~c;
        PORTB = z[0][0];
        PORTB = z[0][2];
        PORTB = z[1][0];
        PORTB = z[1][2];
        y[0] = PIND;
        y[1] = PIND;
        y[2] = PIND;
        z[0][0] = PIND;
        z[0][1] = PIND;
        z[0][2] = PIND;
        z[1][0] = PIND;
        z[1][1] = PIND;
        z[1][2] = PIND;
    }
}

```

Pointer

```

unsigned char c;
#include <avr/io.h>

int main(void)
{
    unsigned char *ptr1;
    unsigned char *ptr2;
    unsigned char a, c, i;
    unsigned char mydata[10];
    DDRD = 0x00;
    PORTD = 0xFF;
    DDRB = 0xFF;
    c = PIND;
    ptr1 = &mydata;      // = start address of mydata
    ptr2 = &mydata+1;    // = end address of mydata + 1
    for(i=1; i<11; i++)
    {
        mydata[i-1] = i;
    }
    *ptr1 = c;
    a = *ptr1;
    a = a+5;
    *ptr2 = a;
    c = *ptr2;
    PORTB = c;
}

```