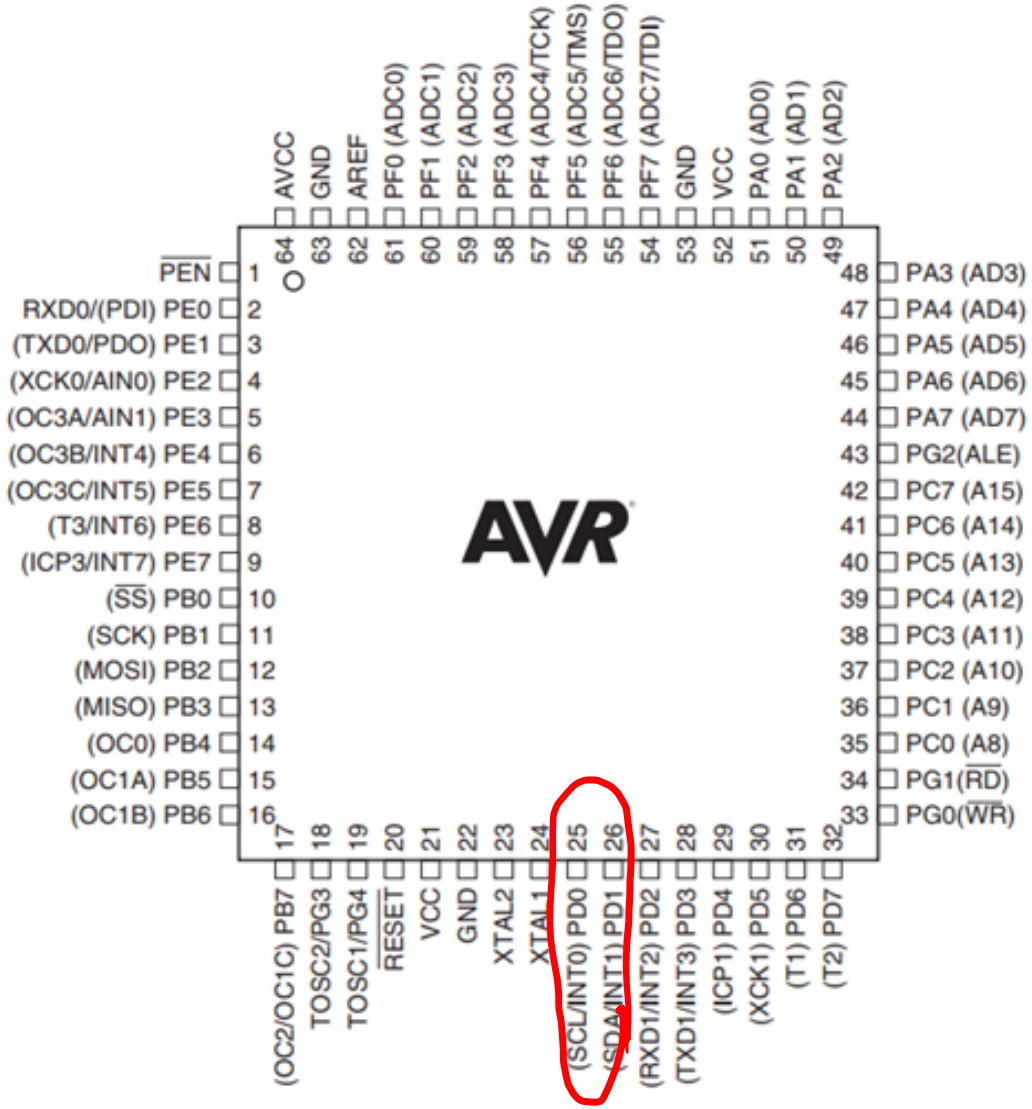
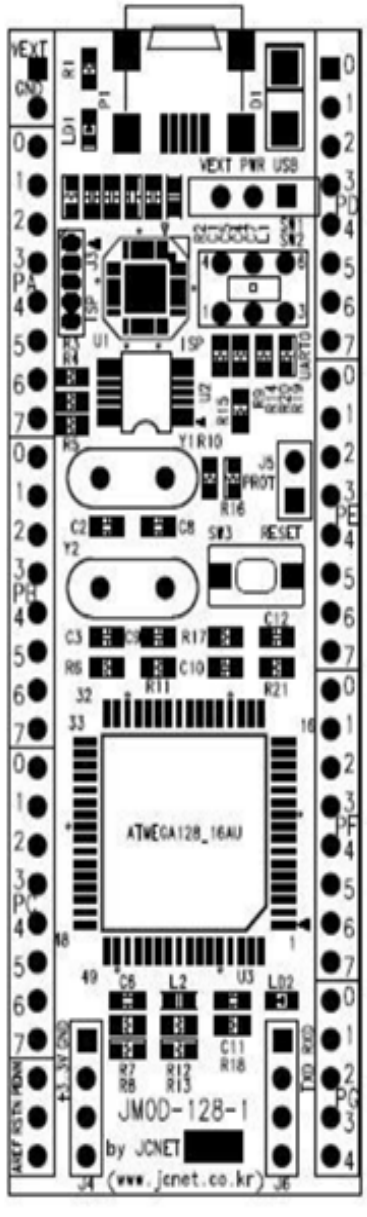
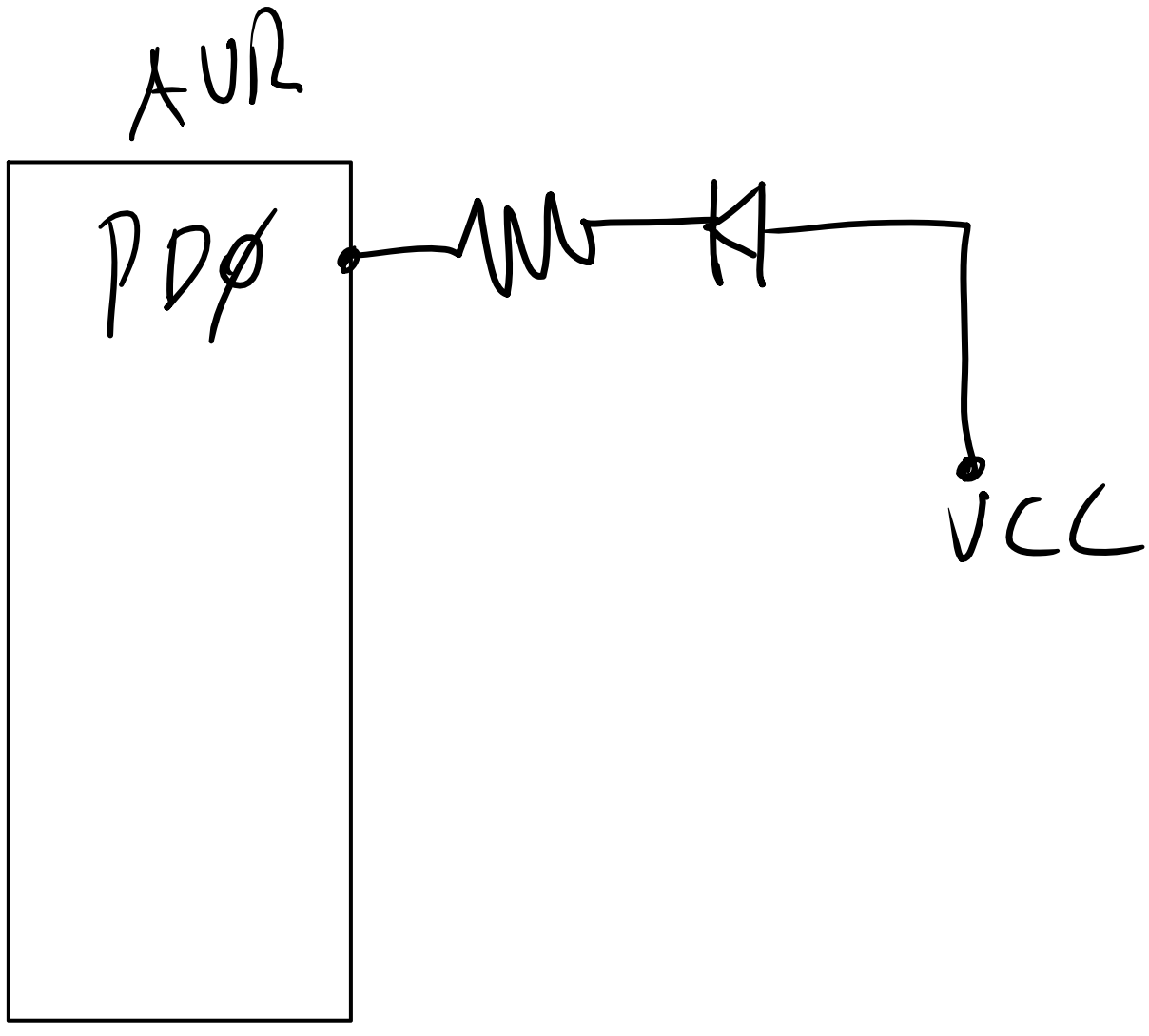


VCC
GND

1	VEXT
2	GND
3	PA0, AD0
4	PA1, AD1
5	PA2, AD2
6	PA3, AD3
7	PA4, AD4
8	PA5, AD5
9	PA6, AD6
10	PA7, AD7
11	PB0, SS*
12	PB1, SCK
13	PB2, MOSI
14	PB3, MISO
15	PB4, OC0
16	PB5, OC1A
17	PB6, OC1B
18	PB7, OC2, OC1C
19	PC0, A8
20	PC1, A9
21	PC2, A10
22	PC3, A11
23	PC4, A12
24	PC5, A13
25	PC6, A14
26	PC7, A15
27	PEN*
28	RESET*
29	AREF



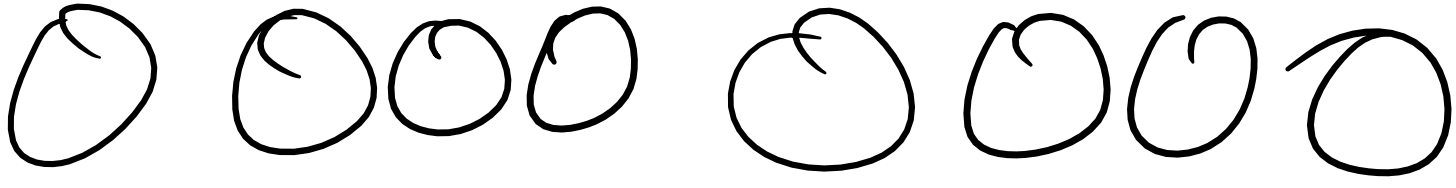
PD0, SCL, INT0	58
PD1, SDA, INT1	57
PD2, RXD1, INT2	56
PD3, TXD1, INT3	55
PD4, ICP1	54
PD5, XCK1	53
PD6, T1	52
PD7, T2	51
PE0, RXD0, PDI	50
PE1, TXD0, PDO	49
PE2, XCK0, AIN0	48
PE3, OC3A, AIN1	47
PE4, OC3B, INT4	46
PE5, OC3C, INT5	45
PE6, T3, INT6	44
PE7, ICP3, INT7	43
PF0, ADC0	42
PF1, ADC1	41
PF2, ADC2	40
PF3, ADC3	39
PF4, ADC4, TCK	38
PF5, ADC5, TMS	37
PF6, ADC6, TDO	36
PF7, ADC7, TDI	35
PG0, WR*	34
PG1, RD*	33
PG2, ALE	32
PG3, TOSC2	31
PG4, TOSC1	30


AVR
PD0
VCC

GPIO 범용 입출력.

Register (레지, 장치) 8bit

DDRx (Data Direction Register)



2가지 Input : bit 0

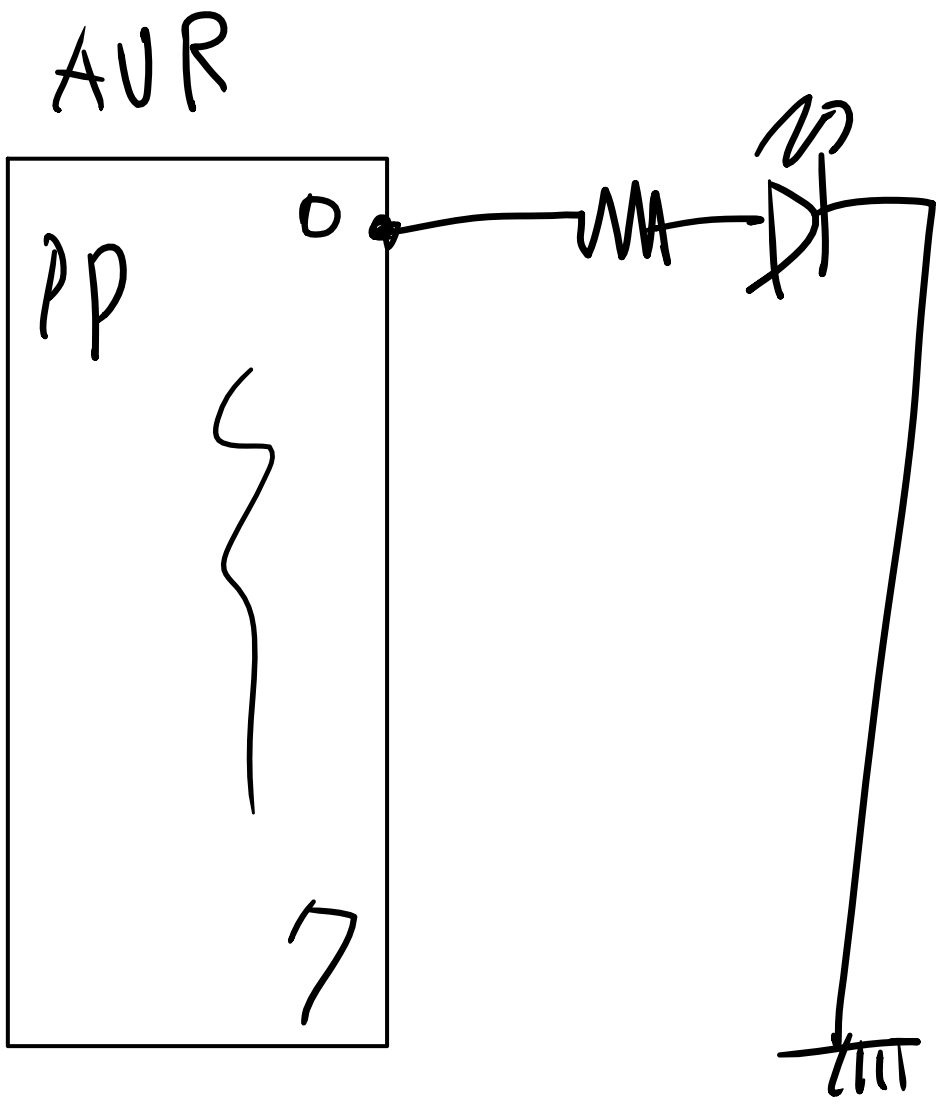
Output : bit 1

PORTx

- 데이터를 출력하는 Register (핀)
- PORTx 레지스터 입력하면 나간다

PINx

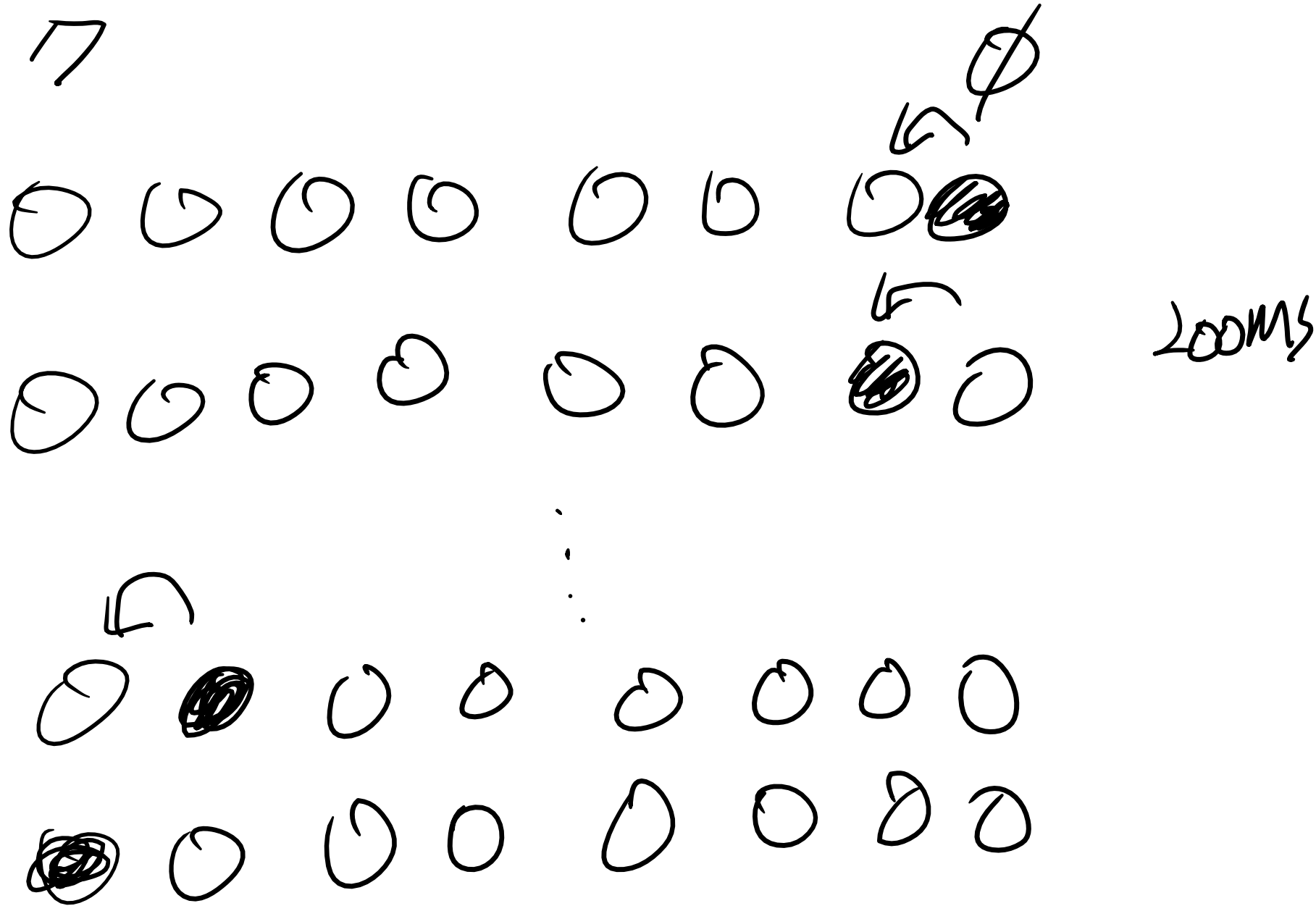
- 데이터의 입력용 Register
- 8bit



DDRD = 0b10100100;

0	0	I	0V
	0	I	0V
	1	0	5V
	1	0	0V
	0	I	0V
	1	0	5V
	0	I	0V
7	1	0	0V

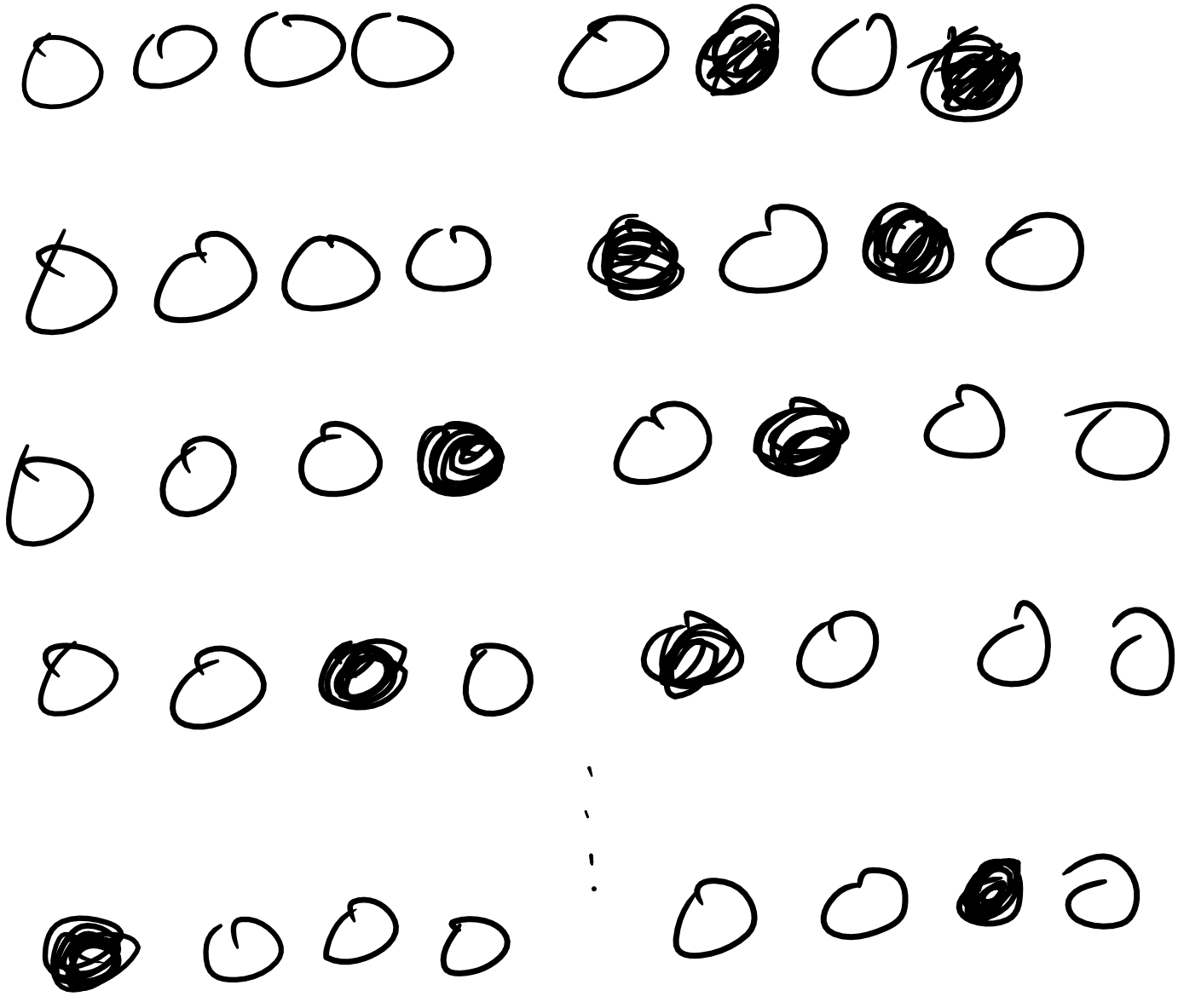
PORTD = 0b00100100;


17
200ms

uint8_t ledData = 0x80;

```
ledData = (ledData >>7) | (ledData <<1);
```

10010000 10000000



Left shift

Right shift

반대

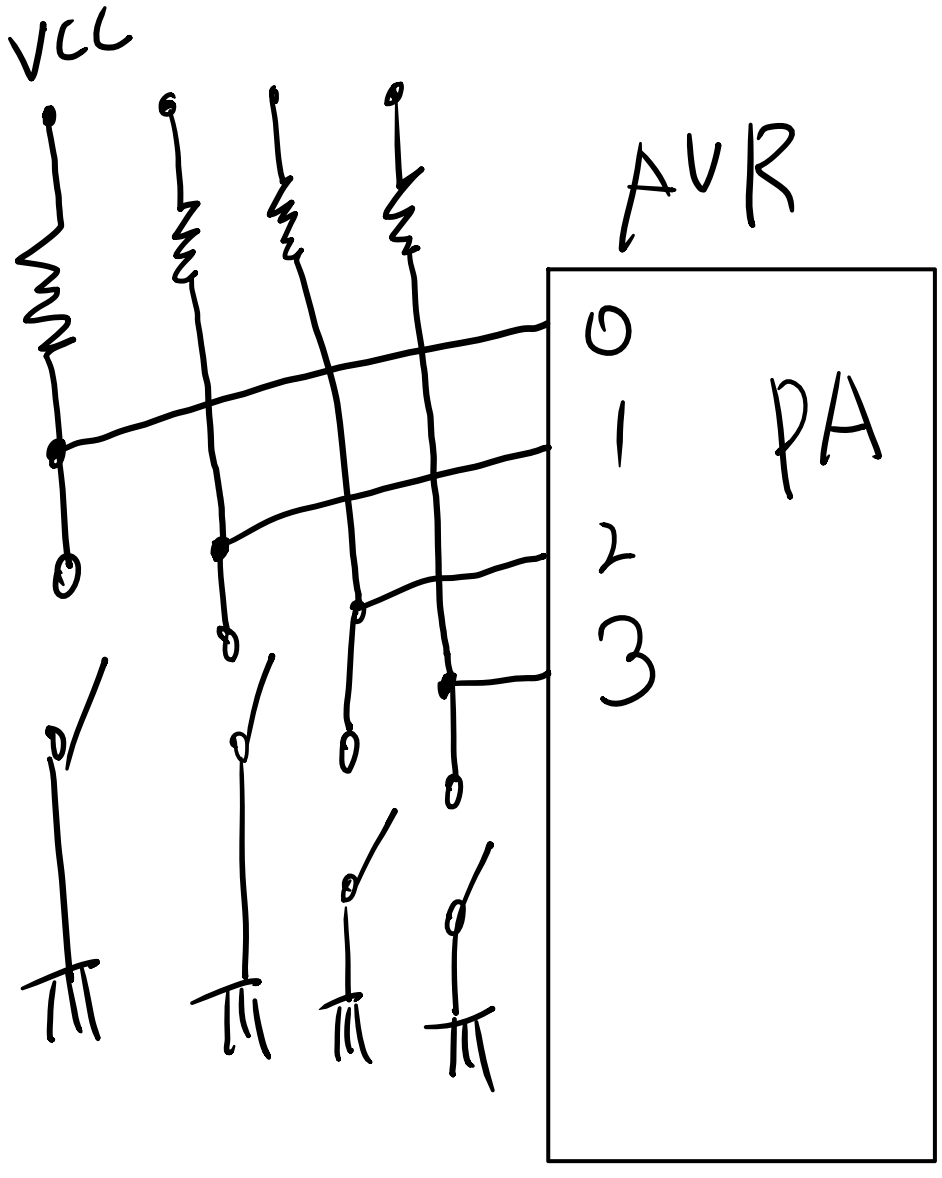

www.dotsigns.com

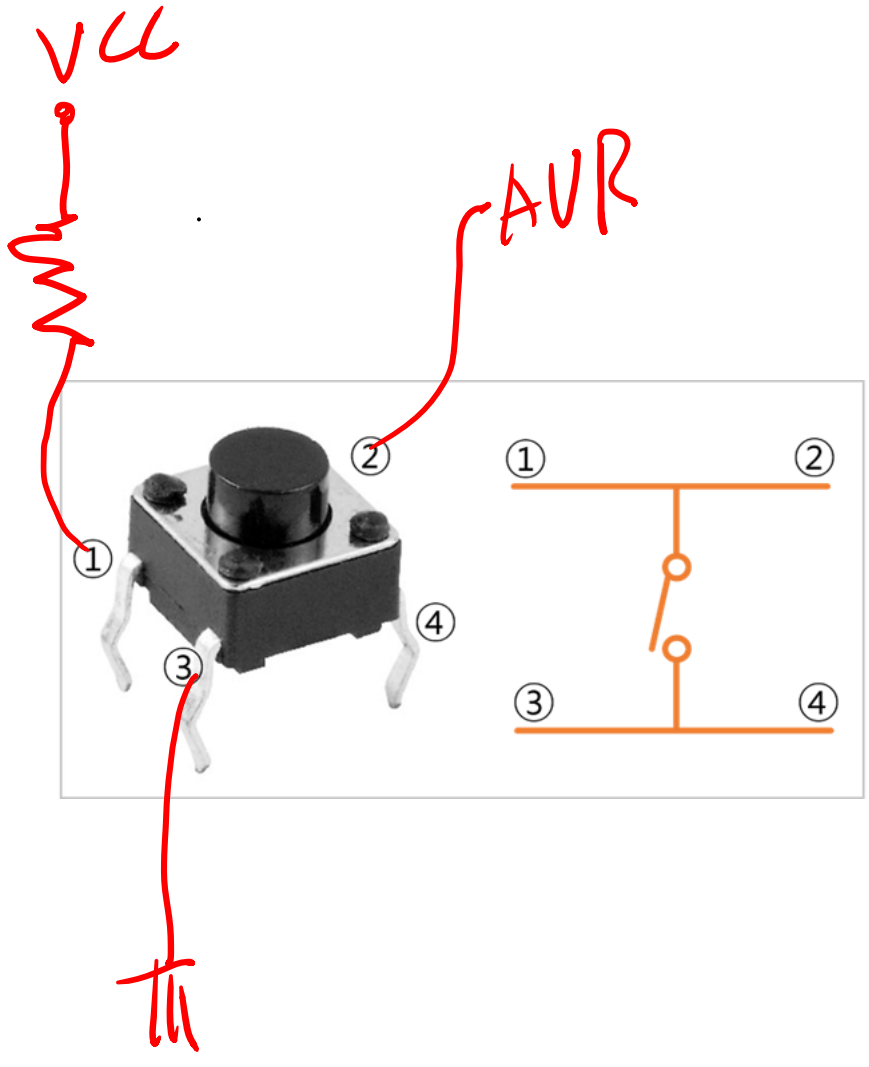
tip

rand 함수

srand 함수

구글링

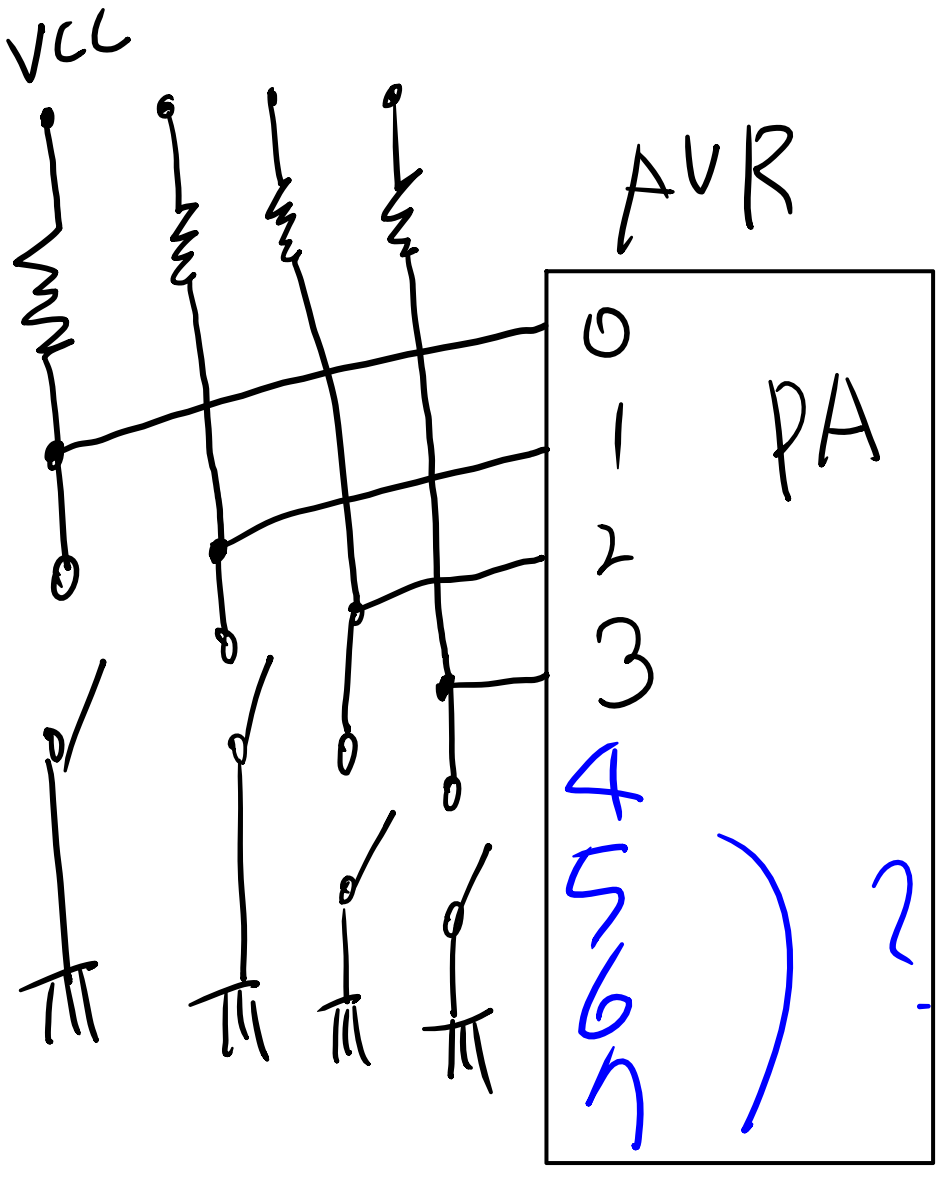

VCC
AVR
0
1
2
3
PA


VCC
AVR
1
2
3
4
1
2
3
4

Button 1번 SW 누르면 All LED on

Button 2번 SW 누르면 All LED off

```
buttonState = PINA;
if((buttonState & (1<<0)) == 0)
{
    PORTD = 0xff;
}
if((buttonState & (1<<1)) == 0)
{
    PORTD = 0x00;
}
```



현상 상황

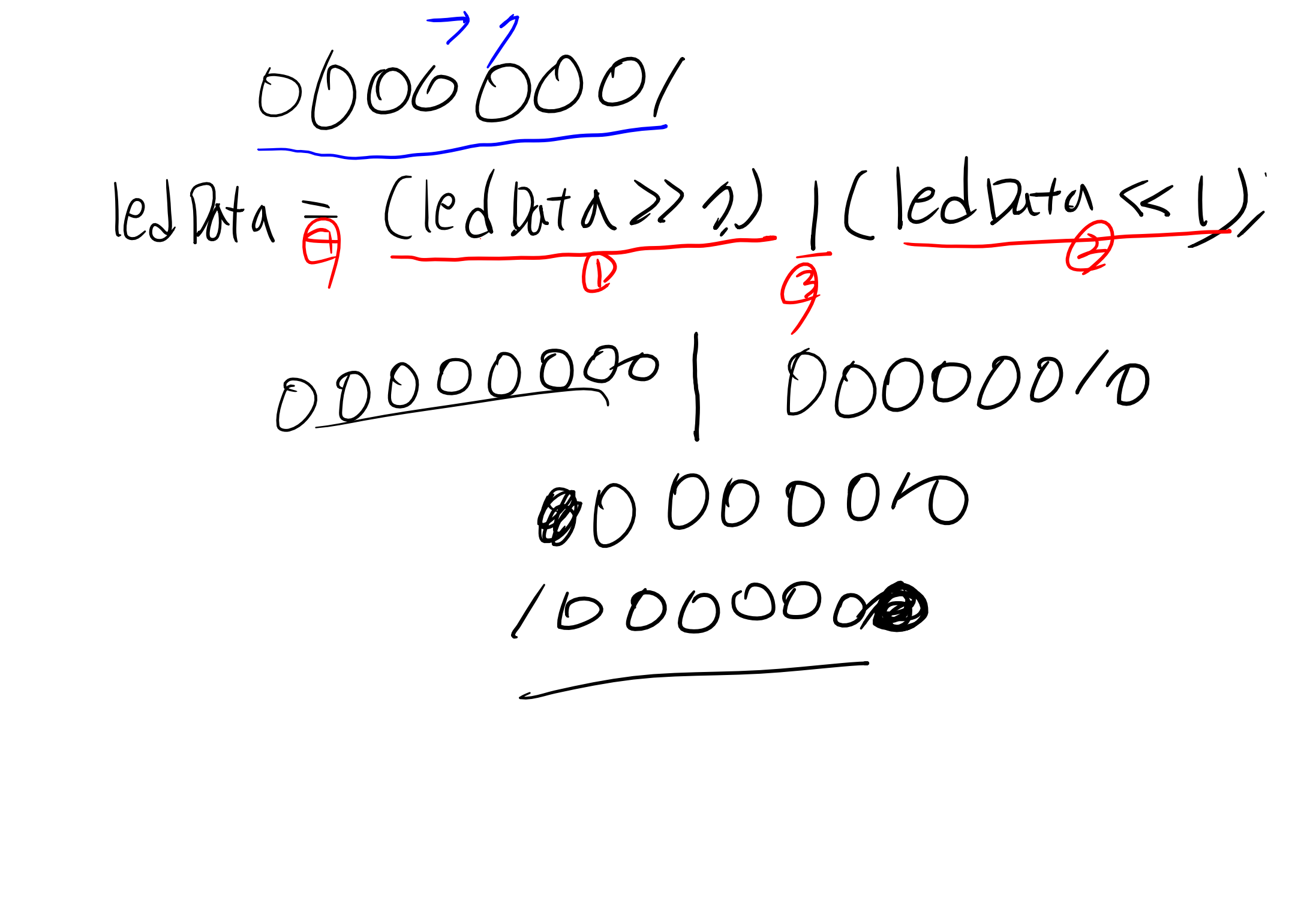
플로팅

전원이 인가되면 (on)
LED의 초깃값이 0으로 간주로
Round Left Shift 동작

Button 1을 누르면 Round Right shift
Button 2을 누르면 Round Left shift
Button 3을 누르면 정지 (Stop)

Data 중심의 구조를 해라.

버튼	동작
1	Round Left Shift
2	Round Right Shift
3	All Led Blink
4	All Led Off


00000001
ledData = (ledData >> 7) | (ledData << 1);
00000000 | 00000010
00000010
10000000