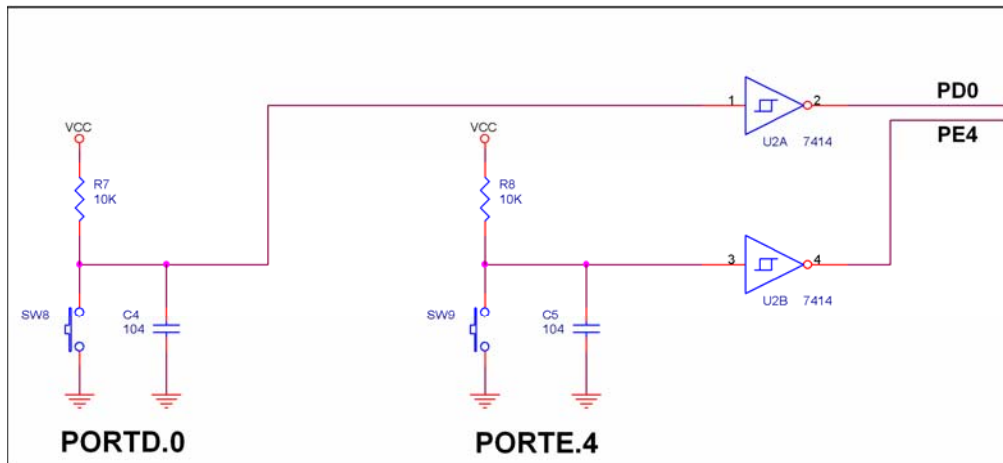# 범용 입출력 포트

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LED 점등

- LED 1,3 과 2,4 를 500msec 간격으로 교대로 점멸하는 프로그램을 작성하라
- PB7 | PB6 | PB5 | PB4
- 1 | 2 | 3 | 4 번 LED

스위치 입력을 받아 LED on-off

- 키를 눌렀다 떼는 순간 LED On 과 Off 토글
- PD0: 스위치 입력
- PB0: LED 출력

프로그램 구조

```
#include <***.h>
#define *****

Define Functions

int main(void)
{


}
```

Delay Functions

```c
void Delay_us(unsigned char time_us)            /* time delay for us */
{ register unsigned char i;

  for(i = 0; i < time_us; i++)                  // 4 cycle +
    { asm volatile(" PUSH  R0 ");               // 2 cycle +  R0: temporary register
      asm volatile(" POP   R0 ");        // 2 cycle +
      asm volatile(" PUSH  R0 ");        // 2 cycle +
      asm volatile(" POP   R0 ");        // 2 cycle +
      asm volatile(" PUSH  R0 ");        // 2 cycle +
      asm volatile(" POP   R0 ");        // 2 cycle = 16 cycle = 1 us for 16MHz
    }
}

void Delay_ms(unsigned int time_ms)             /* time delay for ms */
{ register unsigned int i;

  for(i = 0; i < time_ms; i++)
    { Delay_us(250);
      Delay_us(250);
      Delay_us(250);
      Delay_us(250);
    }
}
```

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