

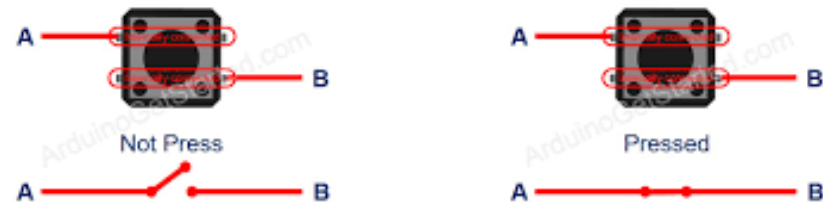
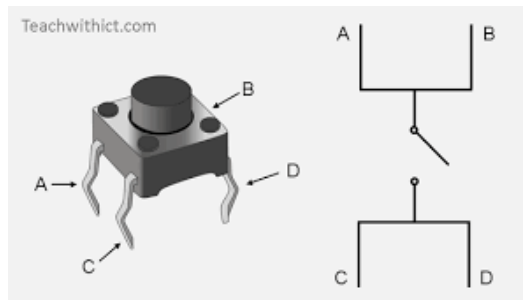


Cours Microcontrôleur PIC

Chapitre 2 : Bouton poussoir et resistance de pull-up

Proposé par: N. Ghoggali

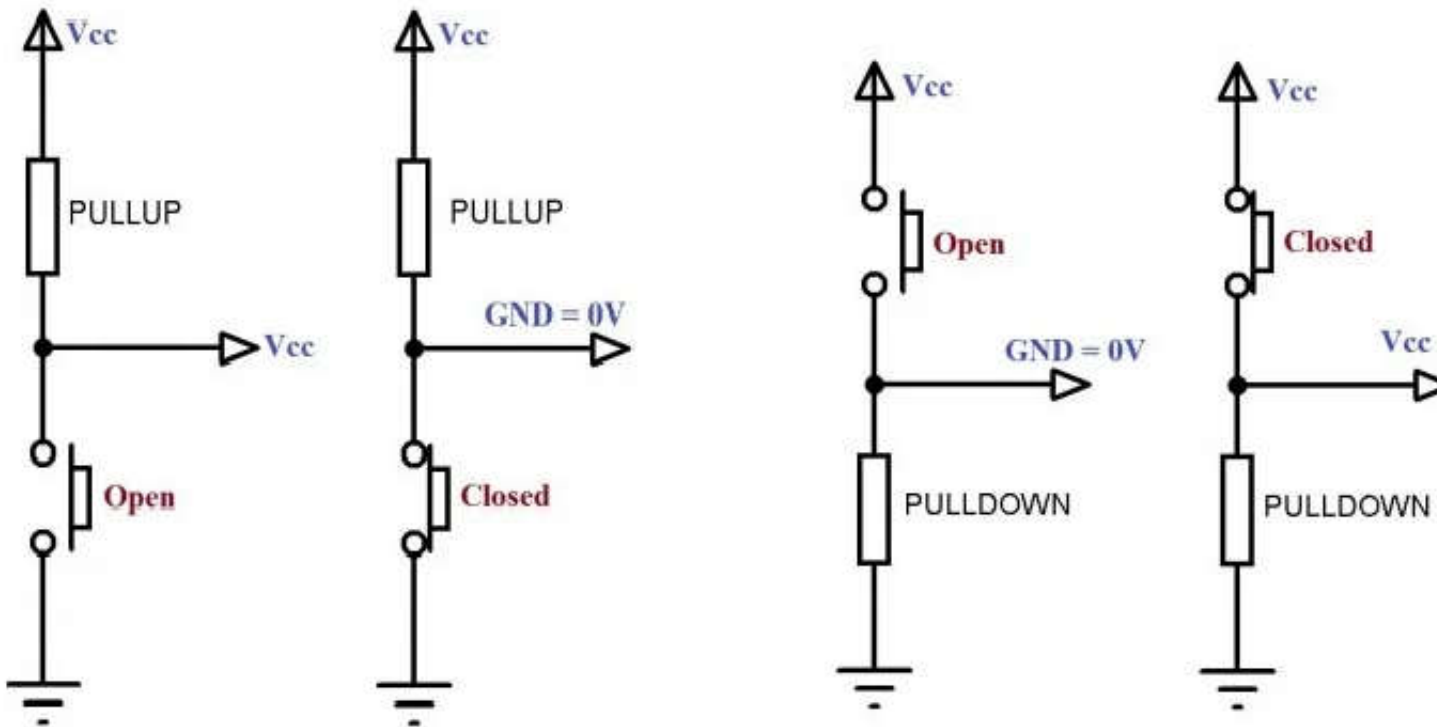
PIC16F877A push button et Pull-Up resistor



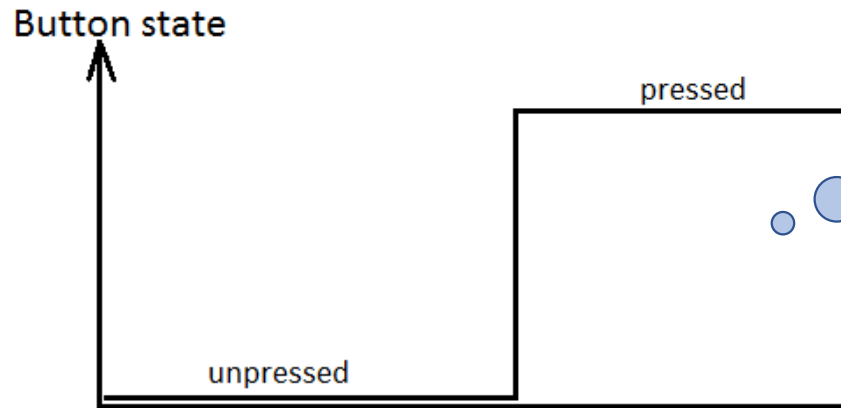
Bouton poussoir (Push Button)

- afin d'interfacer un bouton poussoir avec le microcontrôleur PIC16F877A, il faut utilisé une résistance monter comme pull-up ou pull-down pour protéger les pin du port;
- Seul le PORTB contient des résistance de pull-up intégrées par le constructeur Microchip.

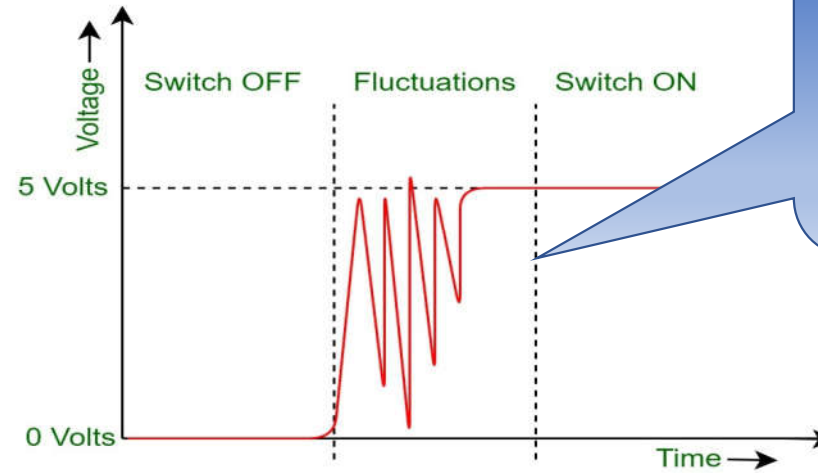
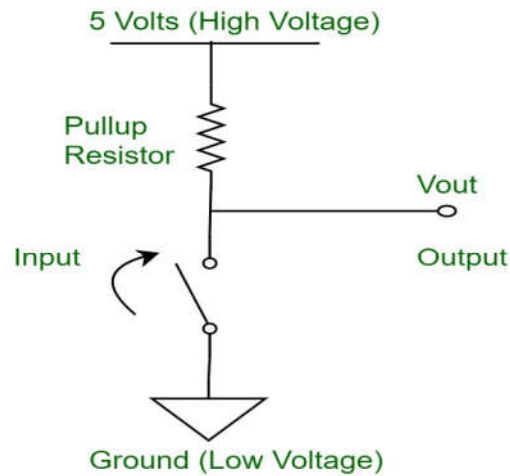
PIC16F877A push button et Pull-Up resistor



PIC16F877A push button et Pull-Up resistor



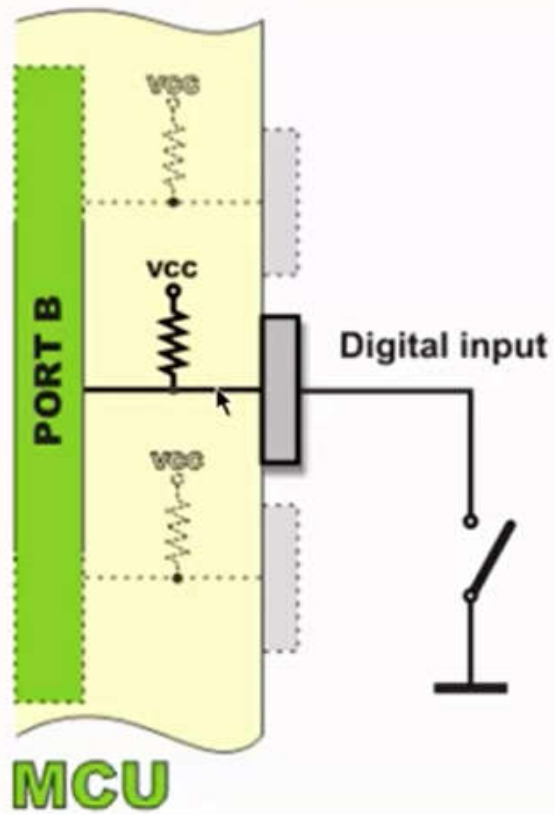
Théoriquement l'appui sur le bouton passe de 0v à 5v comme indiqué ici



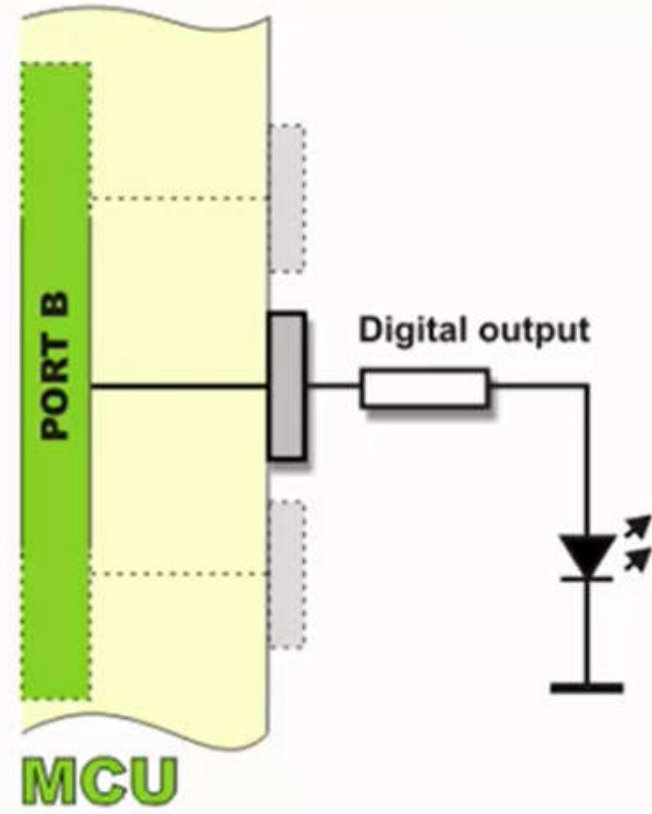
Pratiquement le bouton passe par une période transitoire fluctuante pour arriver à la stabilité (5v)

PIC16F877A Pull-Up resistor

Pin with pull-up resistor



Pin without pull-up resistor



PIC16F877A Pull-Up resistor

4.2 PORTB and the TRISB Register

PORTB is an 8-bit wide, bidirectional port. The corresponding data direction register is TRISB. Setting a TRISB bit (= 1) will make the corresponding PORTB pin an input (i.e., put the corresponding output driver in a High-Impedance mode). Clearing a TRISB bit (= 0) will make the corresponding PORTB pin an output (i.e., put the contents of the output latch on the selected pin).

Three pins of PORTB are multiplexed with the In-Circuit Debugger and Low-Voltage Programming function: RB3/PGM, RB6/PGC and RB7/PGD. The alternate functions of these pins are described in Section 14.0 "Special Features of the CPU".

Each of the PORTB pins has a weak internal pull-up. A single control bit can turn on all the pull-ups. This is performed by clearing bit $\overline{\text{RBPU}}$ (OPTION_REG<7>). The weak pull-up is automatically turned off when the port pin is configured as an output. The pull-ups are disabled on a Power-on Reset.

PIC16F877A Pull-Up resistor

TABLE 4-4: SUMMARY OF REGISTERS ASSOCIATED WITH PORTB

Address	Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Value on: POR, BOR	Value on all other Resets
06h, 106h	PORTB	RB7	RB6	RB5	RB4	RB3	RB2	RB1	RB0	xxxxx xxxxx	uuuuu uuuuu
86h, 186h	TRISB	PORTB Data Direction Register								1111 1111	1111 1111
81h, 181h	OPTION_REG	RBP	INTEDG	T0CS	T0SE	PSA	PS2	PS1	PS0	1111 1111	1111 1111

Legend: x = unknown, u = unchanged. Shaded cells are not used by PORTB.

PIC16F877A Pull-Up resistor

REGISTER 2-2: OPTION_REG REGISTER (ADDRESS 81h, 181h)

R/W-1	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1	R/W-1
$\overline{\text{RBPU}}$	INTEDG	T0CS	T0SE	PSA	PS2	PS1	PS0
bit 7							bit 0

- bit 7 **$\overline{\text{RBPU}}$** : PORTB Pull-up Enable bit
 1 = PORTB pull-ups are disabled
 0 = PORTB pull-ups are enabled by individual port latch values
- bit 6 **INTEDG**: Interrupt Edge Select bit
 1 = Interrupt on rising edge of RB0/INT pin
 0 = Interrupt on falling edge of RB0/INT pin
- bit 5 **T0CS**: TMR0 Clock Source Select bit
 1 = Transition on RA4/T0CKI pin
 0 = Internal instruction cycle clock (CLKO)
- bit 4 **T0SE**: TMR0 Source Edge Select bit
 1 = Increment on high-to-low transition on RA4/T0CKI pin
 0 = Increment on low-to-high transition on RA4/T0CKI pin

**pour plus de détail voir
Page 23 du datasheet**