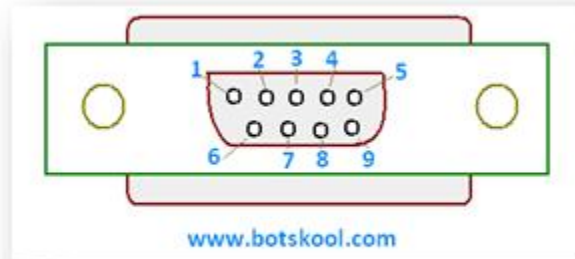


SERIAL COMMUNICATION IN 8051 - II

Numbering of DB9 or serial port:



(Note that we have to ground the pin number 5 for transmission of data)

Are serial port of computer and microcontroller logically equivalent?

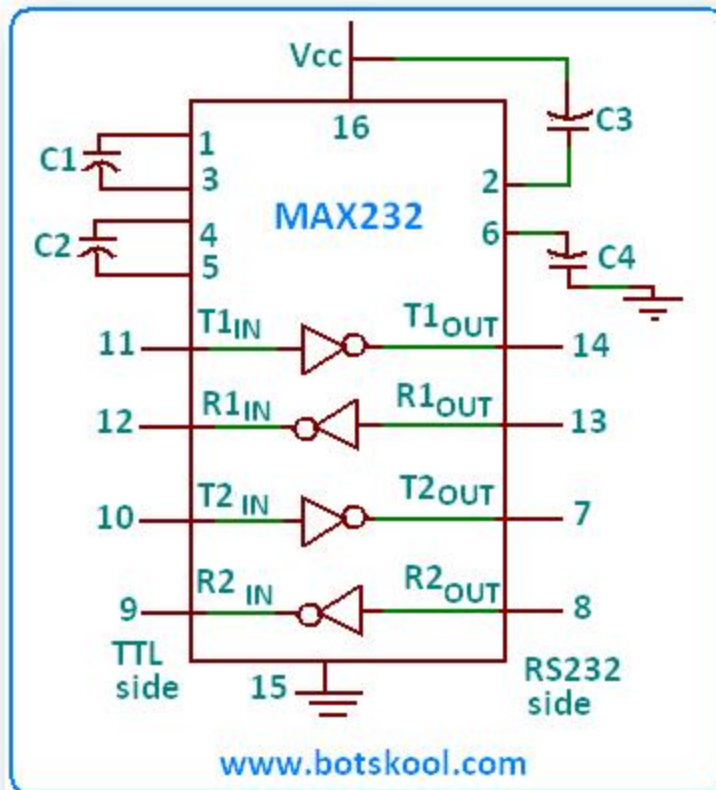
1.) The computer works on RS232 logic:-

- ♣ logic 1 = -3V to -25V
- ♣ logic 0 = +3V to +25V

2.) The microcontroller works on TTL logic:-

- ♣ logic 1 = 5V
- ♣ logic zero = 0V

3.) An IC MAX232 (or MAX233) that can convert the RS232 logic to TTL logic is used.



TRANSFER OF DATA

The program below will keep on transferring string "YES" serially at a baud rate of 4800 continuously.

```

ORG    0H

MOV    TMOD, #20H           ; timer1, mode2

MOV    TH1, #-6            ; 4800 baud rate

MOV    SCON, #50H          ; 8-bit, 1 stop, REN enabled

SETB   TR1                 ; start timer1

AGAIN: MOV    A, #"Y"       ; transfer the ASCII value of Y

        ACALL TRANS

        MOV    A, #"E"     ; transfer the ASCII value of E

        ACALL TRANS

        MOV    A, #"S"     ; transfer the ASCII value of Y

        ACALL TRANS

        SJMP  AGAIN        ; keep doing this

; _____ serial data transfer subroutine

TRANS:  MOV    SBUF, A      ; load SBUF to transfer data

HERE:   JNB    TI, HERE    ; monitor flag TI, to check the transfer of last
bit

        CLR    TI         ; get ready to transfer next byte

        RET

        END

```

RECEIVING DATA

Let's write a program to receive data and send it to port 1. We can use an 8-bit display or a LCD to display the output.

```

ORG    0H

MOV    TMOD, # 20H           ; timer1, mode2

MOV    TH1, #-3             ; 9600 baud rate

MOV    SCON, #50H          ; 8-bit, 1 stop, REN enabled

SETB   TR1                 ; start timer1

HERE:  JNB    RI, HERE       ; wait for character to come in

MOV    A, SBUF              ; save incoming byte in A

MOV    P1, A                ; send the value of A to port1

CLR    RI                   ; get ready to receive next byte

SJMP   HERE                 ; keep doing this

END

```

Note:- In the above two examples the baud rate is different just to show how you can use different baud rates in your own program. While writing a program baud rate should be same on both transmitter and receiver side.

Source : <http://www.botskool.com/tutorials/electronics/8051/serial-communication>