Name: Nimra Nasir

Reg No: 19-CP-35

Microprocessor & Interfacing

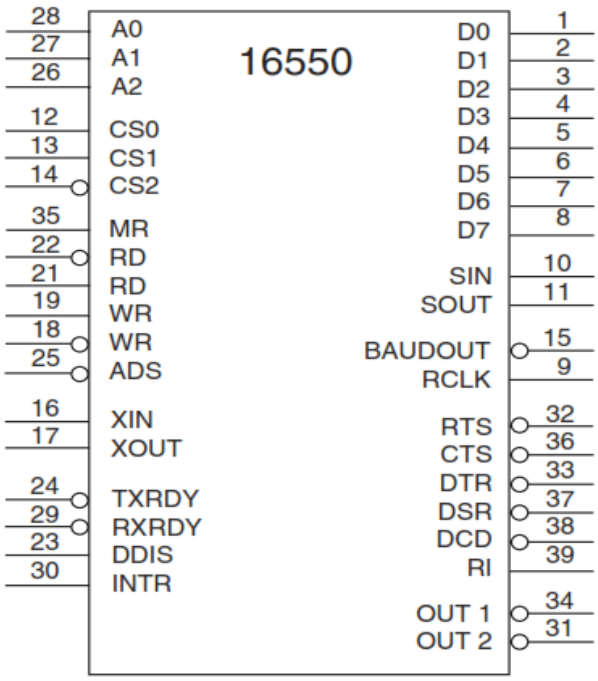
LAB: 13

Question:

Practice and implement Interface of UART with microprocessor in order to transmit serial data to the processor.

UART:

The pin-out of the 16550 UART this device is available as a 40-pin DIP (dual in-line package) or as a 44-pin PLCC (plastic leadless chip carrier). Two completely separate from the microprocessor after receiving 16 bytes of data. It also holds 16 bytes before the microprocessor must wait for the transmitter. The FIFO makes this UART ideal when interfacing to high-speed systems because less time is required to service itThe 16550 can control a modem (modulator/demodulator), which is a device that converts TTL levels of serial data into audio tones that can pass through the telephone system. Six pins on the 16650 are devoted to modem control: DSR (data set ready), DTR (data terminal ready), CTS (clear-to-send), RTS (request-to-send), RI (ring indicator), and DCD (data carrier detect). The modem is referred to as the data set and the 16550 is referred to as the data terminal.



PIN

EXPLANATIONS:

A_0, A_1, A_2:

The address inputs are used to select an internal register for programming and also data transfer. See Table 11–5 for a list of each combination of the address inputs and the registers selected.

ADS:

The address strobe input is used to latch the address lines and chip select lines. If not needed (as in the Intel system), connect this pin to ground. The ADS pin is designed for use with Motorola microprocessors.

BAUDOUT:

The baud out pin is where the clock signal generated by the baud rate generator from the transmitter section is made available. It is most often connected to the RCLK input to generate a receiver clock that is equal to the transmitter clock.

C_0, C_1, C_2:

The chip select inputs must all be active to enable the 16550 UART.

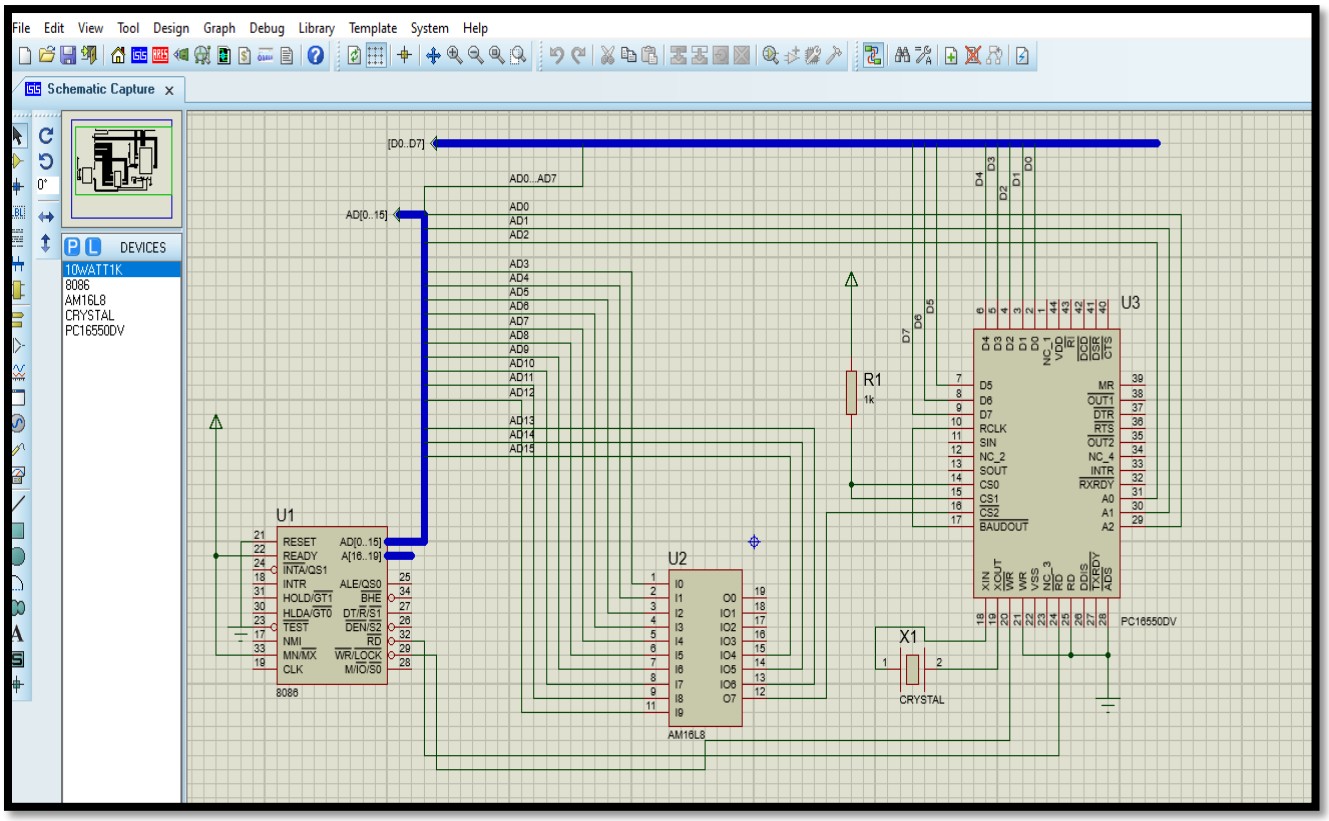
CTS:

The clear-to-send (if low) indicates that the modem or data set is ready to exchange information. This pin is often used in a half-duplex system to turn the line around.

CODE Receiving Serial Data:

```
LINE EQU 0F3H
LSB EQU 0F0H
MSB EQU 0F1H
FIFO EQU 0F2H
INIT PROC NEAR
MOV AL, 10001010B          ; enable baud rate divisor
OUT LINE, AL
MOV AL, 120                ; program baud 9600
OUT LSB, AL
MOV AL, 0
OUT MSB, AL
MOV AL, 00001010B          ; program 7 data, odd
OUT LINE, AL               ; parity, 1 stop
MOV AL, 00000111B          ; enable transmitter and
OUT FIFO, AL               ; receiver
RET
INIT ENDP
```

HLT ; halt!



----------THE END----------