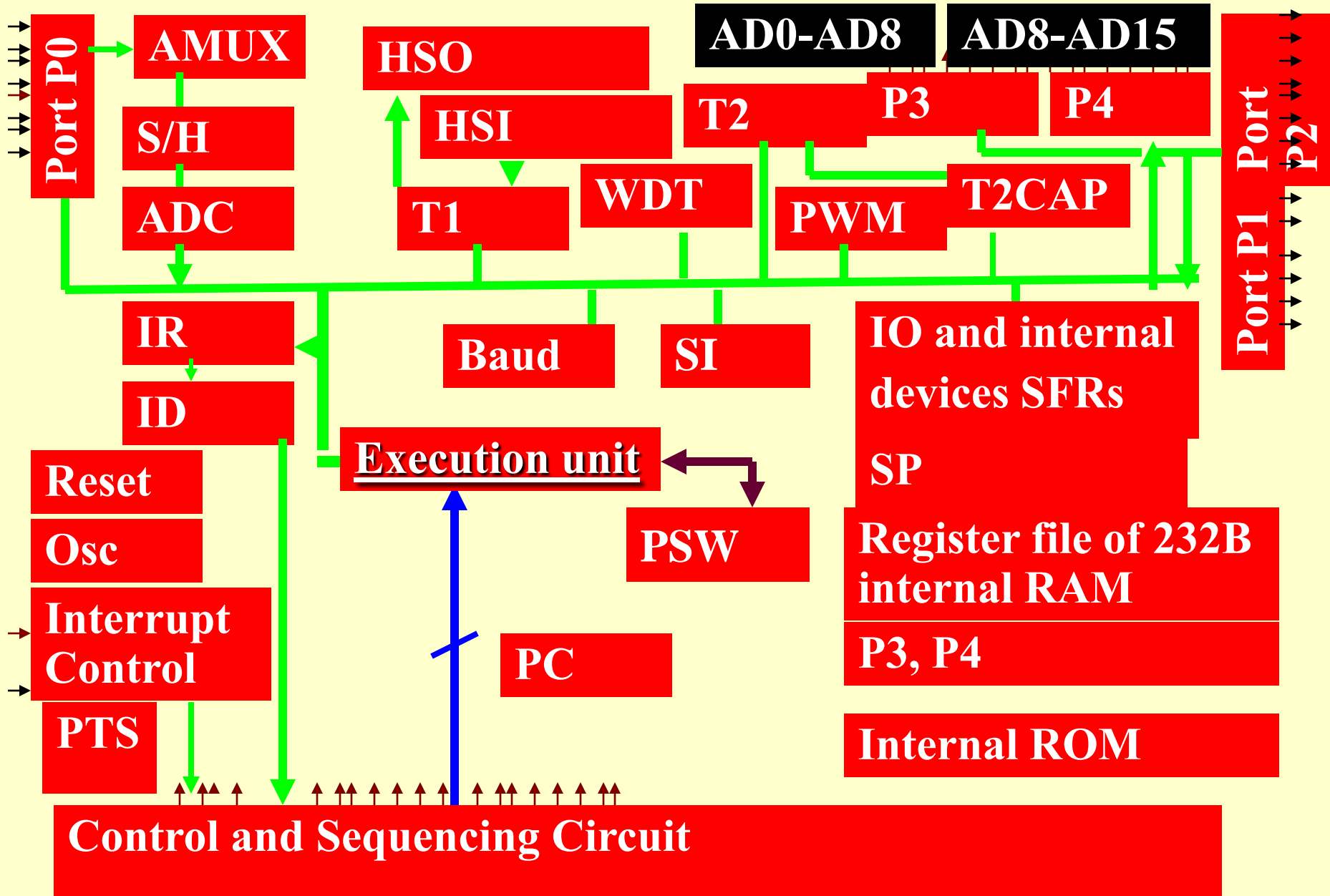


Chapter 14

80x96 Family Microcontrollers



Lesson 10

Serial Interface

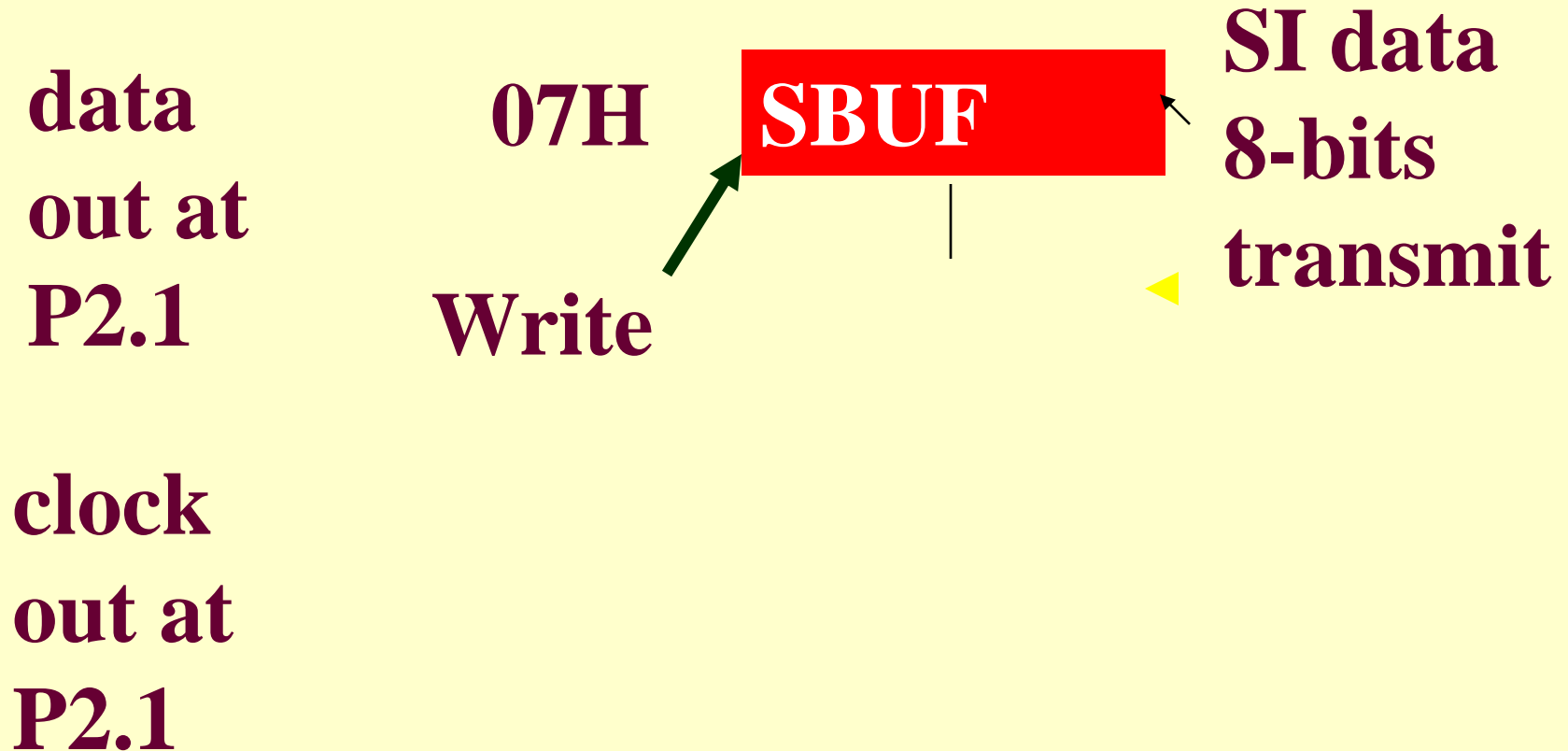
Synchronous SI

Serial bit transmits at data pin and reception at slave data pin

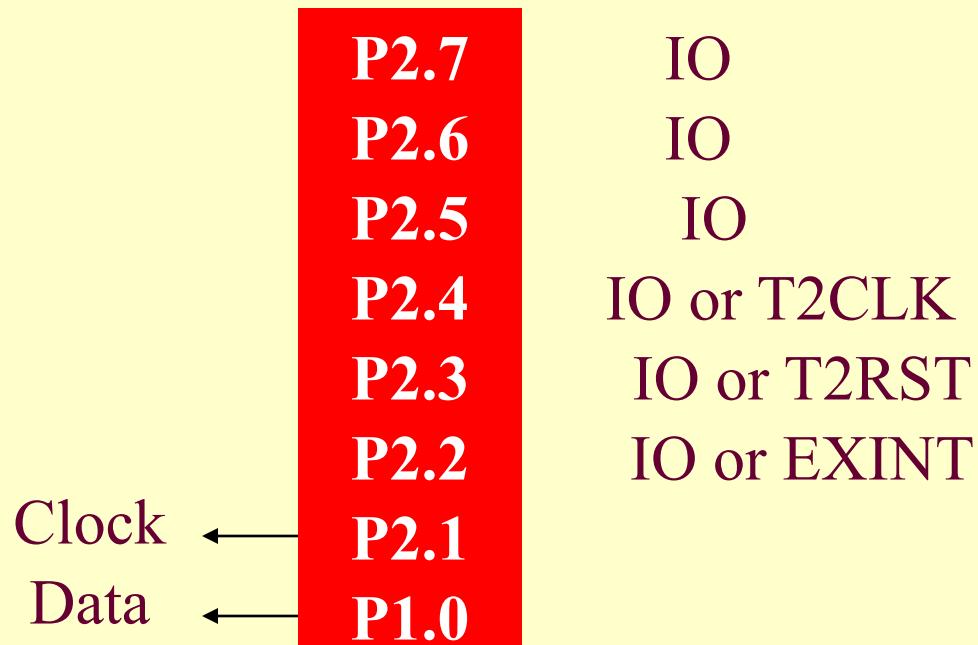
- Synchronous SI devices are half duplex connected between the master and slave
- Synchronous SI Master device transmits simultaneously serial clock pulses so that slave can synchronize the clocking inputs with the serial data bits.

Synchronous SI Device Data

Write (Transmit)



Address – 10H Port P2



Synchronous Transmitter Option 3

Synchronous SI Device Data Receive

SI data
8-bits
receive



07H



Read

Address – 10H Port P2

P2.7	IO
P2.6	IO
P2.5	IO
P2.4	IO or T2CLK
P2.3	IO or T2RST
P2.2	IO or EXINT
P2.1	← Clock
P1.0	← Data

Synchronous Receiver

Option 3

Synchronous SI Device Control Bits

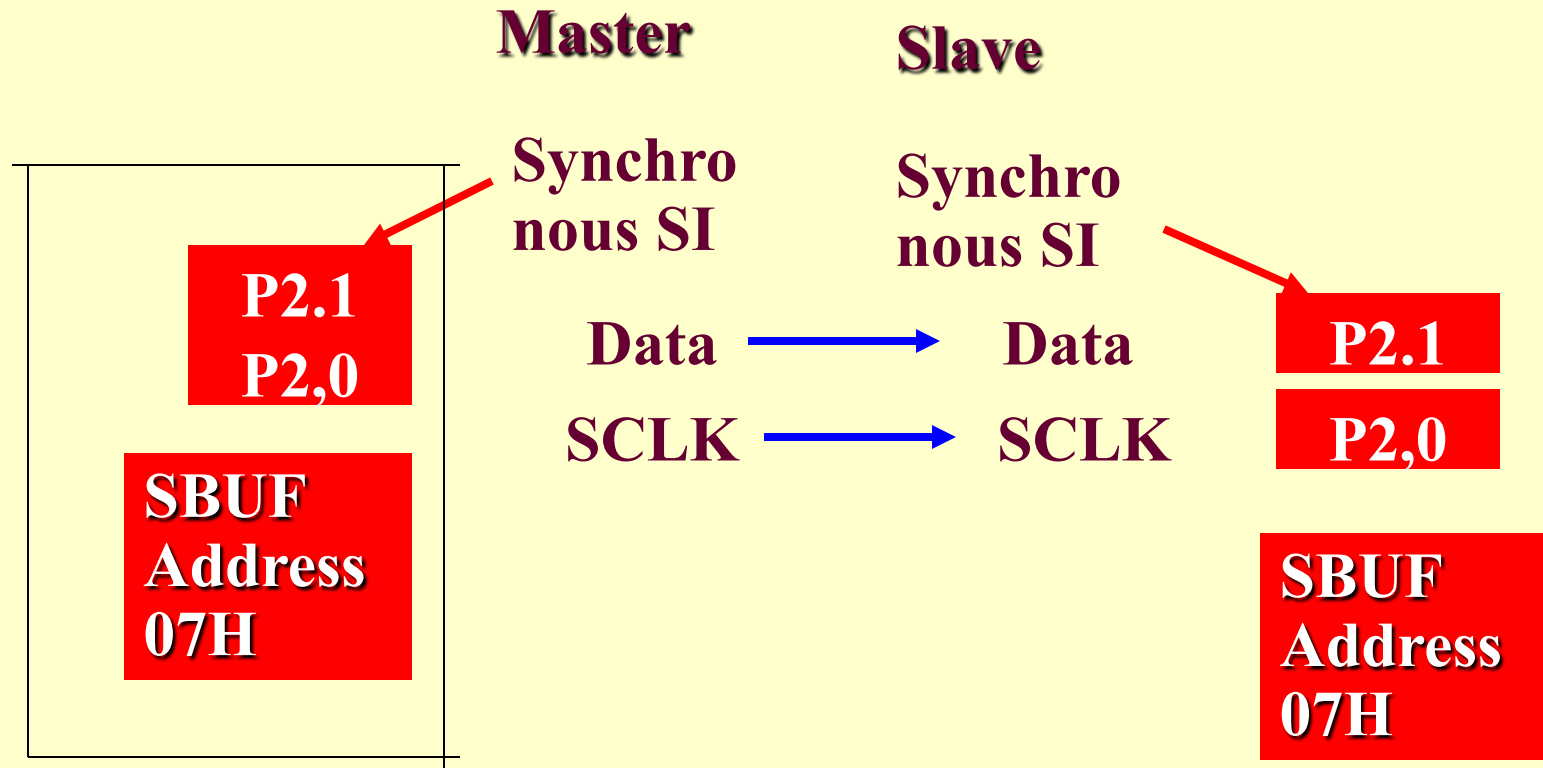
11H **SP_CON**

Write 

bit1-bit0 = 00

For Synchronous mode of SI Device

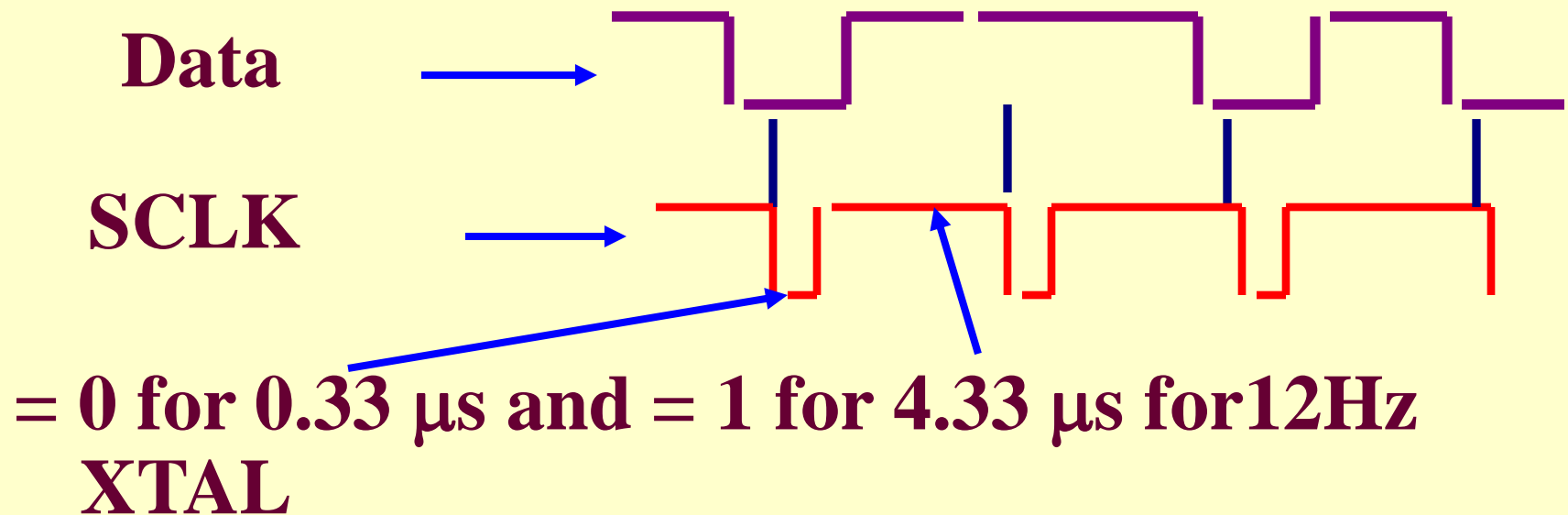
Synchronous SI Master- Slave Connection Between Two MCUs



Synchronous SI Device Rate for SYNC Transmission

- Serial Rate **4.66 μ s for 12 MHz XTAL**

Synchronous SI Master output 4 bits (0100) and Clock pulses



lsb serial bit first out from SBUF

Synchronous SI Device Status Bits

Read  11H

SP_STAT

TI, RI

Asynchronous SI

SI UART mode

SI UART mode Tx Device at TxD and Rx Device at RxD - Between the MCUs

- SI UART mode devices are duplex connected between the Tx and Rx
- SI UART mode Tx device does not simultaneously transmit serial clock pulses. Baud is however defined same at Tx SI UART mode and Rx SI UART mode

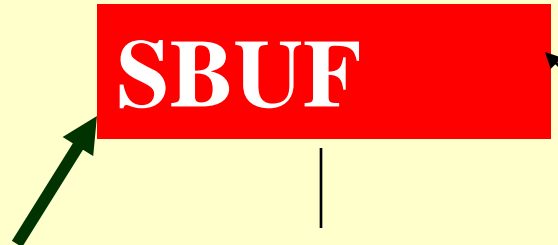
Asynchronous SI Device Data

Write (Transmit)

TxD
out at
P2.1

07H

Write



SI data
8-bits
transmit

Asynchronous SI Device Data

Read (Receive)

RxD
data in
at P2.0

07H

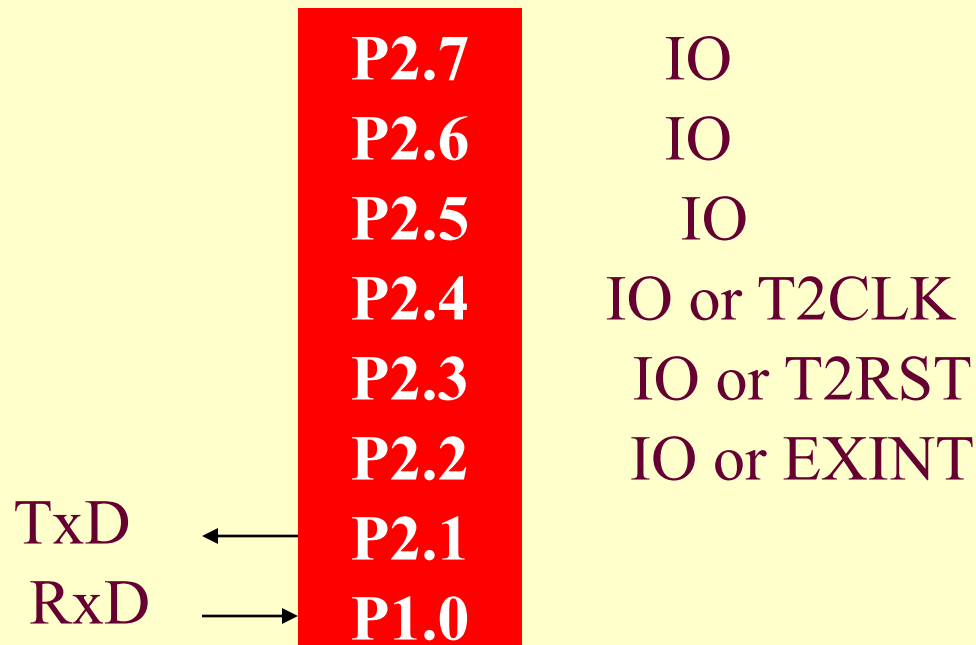
Read

SBUF



SI data
8-bits
Receive

Address – 10H Port P2



Asynchronous UART Transmitter and receiver Option 3

Asynchronous SI Device Control Bits

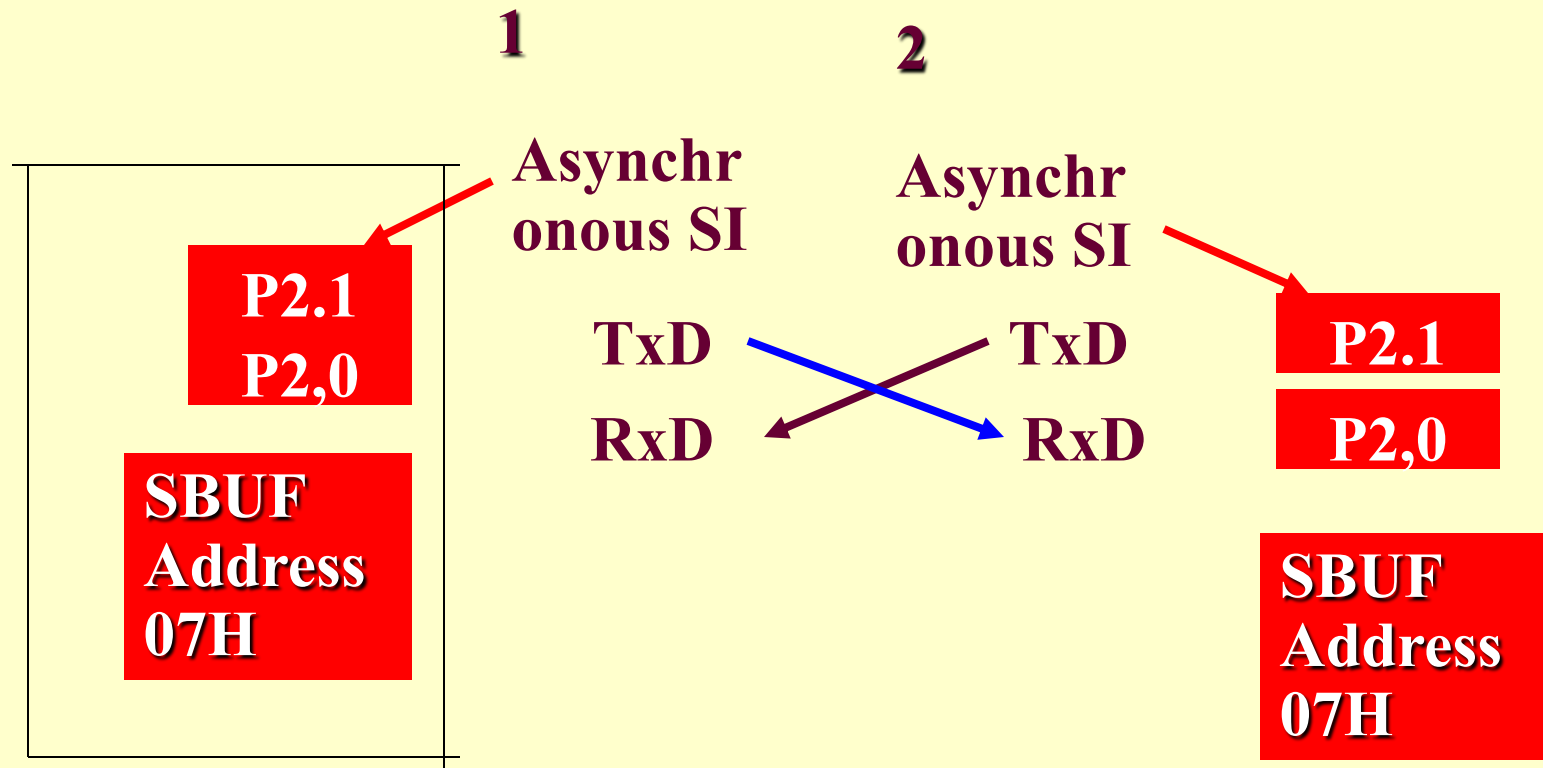
11H **SP_CON**

Write 

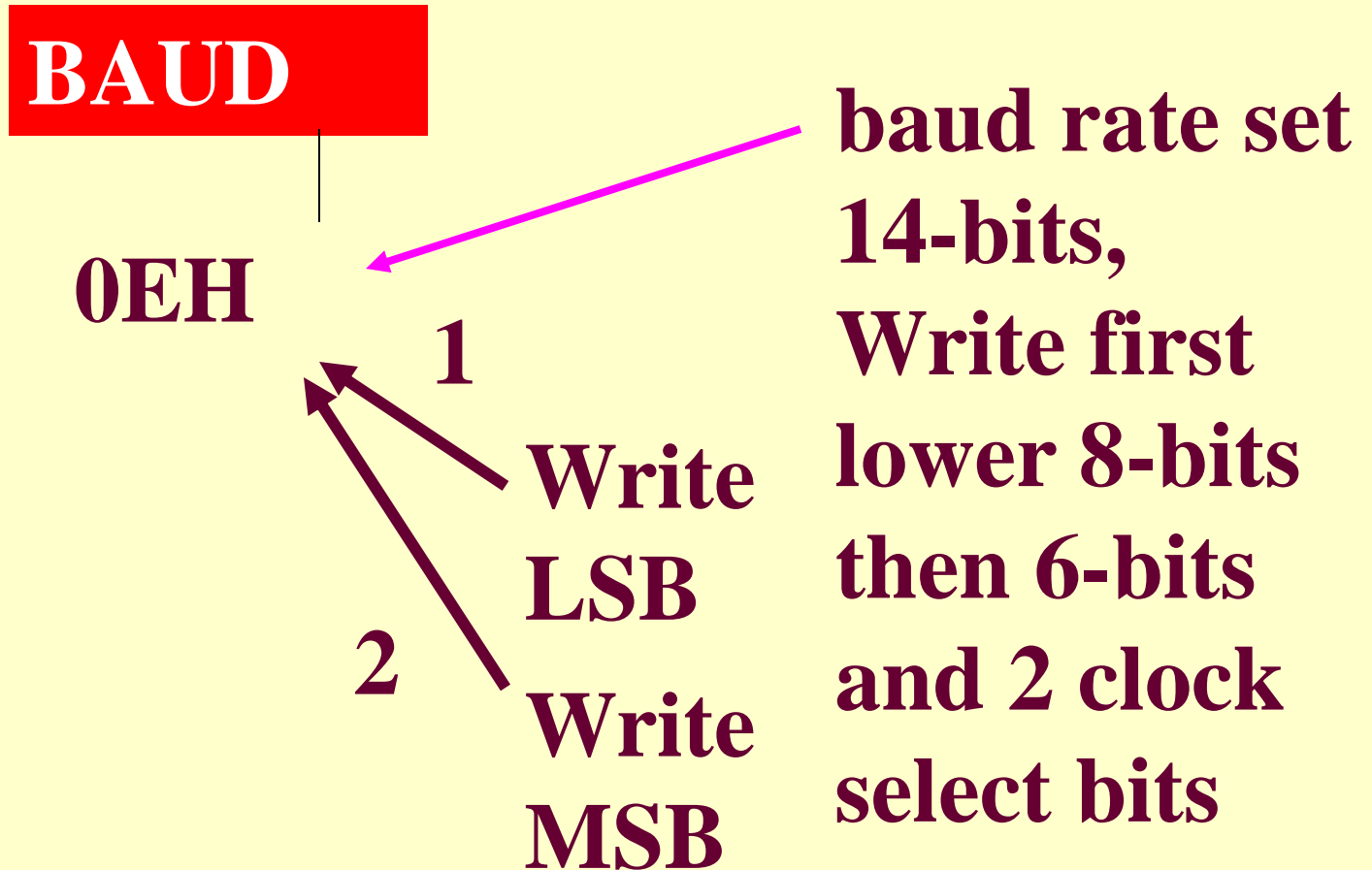
bit1-bit0 = 00

For asynchronous mode of SI Device

Asynchronous SI Connection Between Two MCUs



SI UART mode Device Baud control bits



SI UART mode Device Control

Register bits

bit1-bit0=

01 (10Tmode1)

10 (11Tmode2)

11(11T mode3)

SP_CON



11H

Write

bit2-Parity send enable, bit3= Rx
enable, bit 4 = Tx enable, bit:define TB8
for mode2 and 3

X' four bits are as per init register

Serial Communication Control bits

Modes using SP_CON

00= means Synchronous mode,

01=UART mode 1- start bit, 8 data bits, stop bit in 10T)

10=UART mode 2- start bit, 8 data bits, Extra TB8/Parity in 11T)

11=UART mode 3- start bit, 8 data bits, Extra TB8/Parity in 11T)

Summary

We learnt

- Synchronous SI
- SI UART mode

End of Lesson 10 on 80x96 Serial Interface