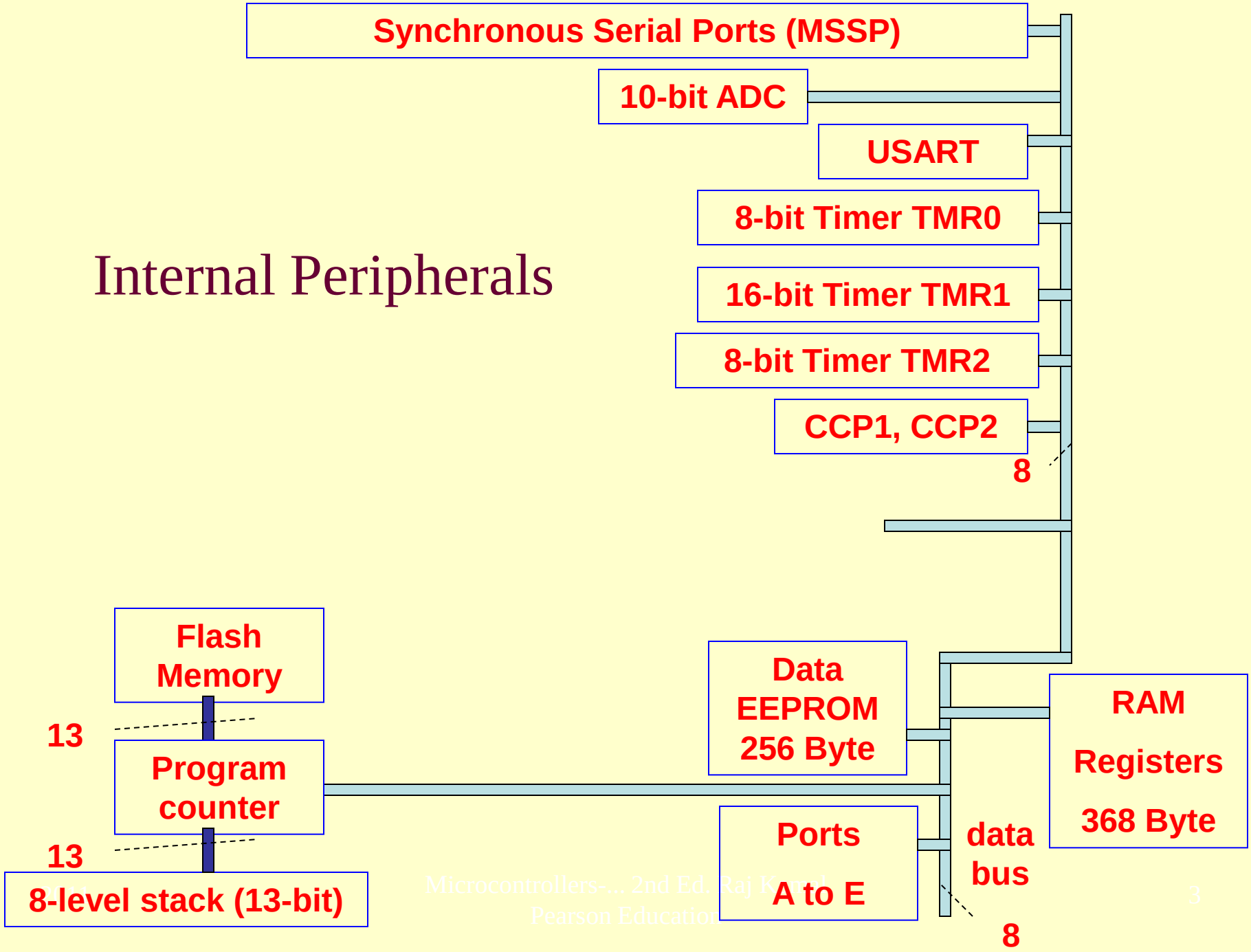
Chapter 13

PIC Family Microcontroller

Lesson 07

Master Synchronous Serial Port (MSSP)

Internal Peripherals



Master Synchronous Serial Port (MSSP)

- Master Synchronous Serial Interface Port
- Communicating with other peripheral (serial EEPROMs, shift registers, display drivers, AD etc) or MCU

MSSP

- Two modes
- SPI (serial peripheral interface)
- I^2C (Inter Integrated Circuit)

SPI mode

- SDO (Serial data out) and SDI (serial data in) pins [8-bit serial data synchronously out and simultaneously synchronously in]
- Serial clock SCK pin *synchronising clock output*
- SCK is set as input in slave mode
- An optional 4th signal may be used as SS (Slave select, when 0 then functions SPI functions as slave)

Port C Pins RC3, 4, and 5

- RC3 also as synchronous serial clock in or clock Out for SPI or I^2C modes. Capture 2 input or Compare 2 output or PWM2 output
- RC4 also as synchronous serial for SPI data in or I^2C data-in/data-out modes.
- RC5 also as synchronous serial for data out in SPI mode

SPI six registers

- INTCON (interrupt control register)
- PIR1 (peripheral interrupt flags register 1)
- PIE2 (peripheral interrupt enable register 1)
- SSPBUF(SSP transmit/receive buffer register)
- SSPSTAT (SSP status register)
- SSPCON (SSP control register)

I^2C

- Master and slave functions
- SDA (serial data pin) and SCL (serial clock pin) Two pins

Port C Pins RC3 and 4

- RC3 as synchronous serial clock in I^2C modes
- RC4 as synchronous serial for I^2C data-in/data-out modes.

I^2C associates six registers

- SSPCON (SSP control register)
- SSPCON2 (SSP control register2)
- SSPSTAT (SSP status register)
- SSPBUF(SSP transmit/receive buffer register)
- SSPSR (SSP shift register)
- SSADD (SSP address register)

Summary

We learnt

- Master Synchronous Serial Port
- Two modes: SPI and I^2C
- SPI mode uses SDI, SDO, SCLK pins and optional SS
- I^2C mode uses SDA, SCL pins

We learnt

- SPI Port C RC3, RC4 and RC5 pins
- I2C Port C RC3 and RC4 pins
- SFRs registers for Control, Status and Interrupts

End of Lesson 07 on

Master Synchronous Serial Port (MSSP)