LECTURE 13, 14

Special Function registers

Topics to be covered

- Special Function registers

SFRs(Special Function Registers)

Internal RAM is from address 00h through 7Fh whereas SFR registers exist in the address range of 80h through FFh.

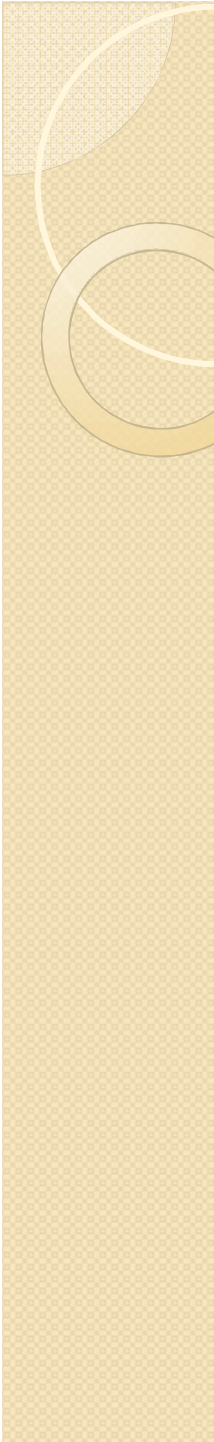| 80	P0	SP	DPL	DPH				PCON	87
88	TCON	TMOD	TL0	TL1	TH0	TH1			8F
90	P1								97
98	SCON	SBUF							9F
A0	P2								A7
A8	IE								AF
B0	P3								B7
B8	IP								B9
C0									C7
C8									CF
D0	PSW								D7
D8									DF
E0	ACC								E7
E8									EF
F0	B								F7
F8									FF

Blue background are I/O port SFRs
Yellow background are control SFRs
Green blackground are other SFRs

Special Function Registers

- SFRs contain memory locations that are used for special tasks.
- SFR occupies RAM from **0x80 to 0xFF**, (but some areas are empty!) They are 8 bits wide.
- Ex.

➢   **A register** or accumulator is used for most ALU operations & external moves

➢ **B** used for multiplication & division and can also be used for general purpose storage

➢ **PSW Program Status Word** is a bit addressable register.

SPECIAL FUNCTION REGISTERS

ACC	ACCUMULATOR	0E0H
B	B REGISTER	0F0H
SP	PROGRAM STATUS WORD	0D0H
PSW	STACK POINTER	81H
DPTR	DATA POINTER 2 BYTES	
DPL	LOW BYTE	82H
DPH	HIGH BYTE	83H
P0	PORT 0	80H
P1	PORT 1	90H
P2	PORT 2	0A0H
P3	PORT3	0B0H

PC or program counter. This is not directly addressable, nor does it have a memory location.
It is not part of SFR.

DPTR or data pointer.   DPL and DPH.

DPTR doesn't have a single internal address.

 This is used to furnish memory addresses for internal and external code access and external data access.

SFRs

SFRs which are also bit addressable

A, B, IP, IE, TCON, SCON, PSW, P0, P1, P2, P3

Other SFRs

TMOD, THO, TLO, TH1, TL1, SBUF, PCON, SP, DPTR