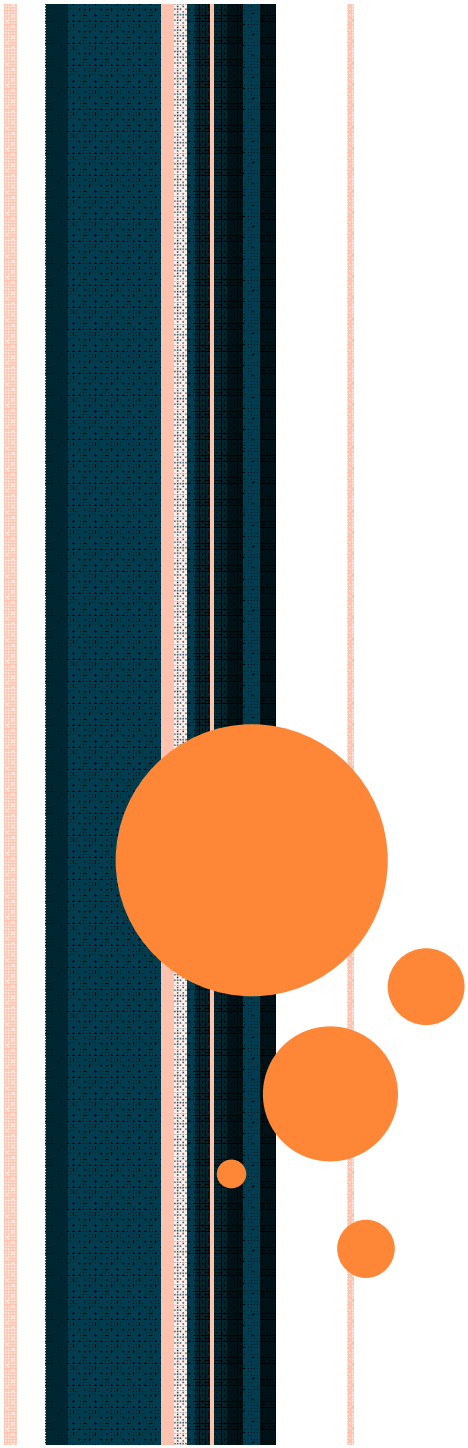
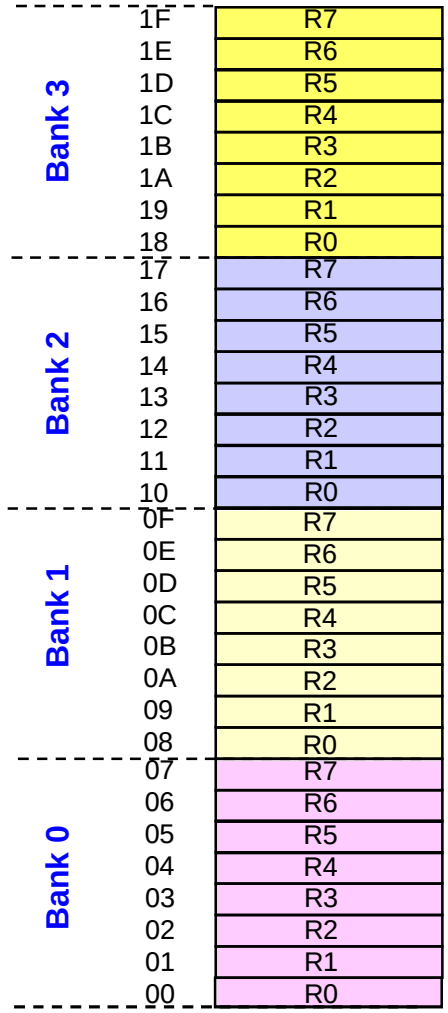


MEMORY ORGANIZATION
OF
8051

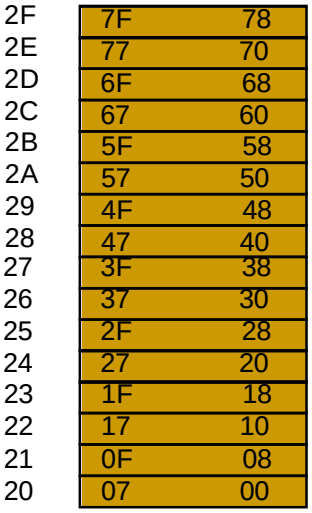
INTERNAL MEMORY

- A functioning computer must have memory for program code bytes, commonly in ROM, and RAM memory for variable data that can be altered as the program runs
- 8051 has internal RAM (128 bytes) and ROM (4Kbytes)
- 8051 uses the same address but in different memories for code and data
- Internal circuitry access the correct memory based on the nature of the operation in progress
- Can add memory externally if needed

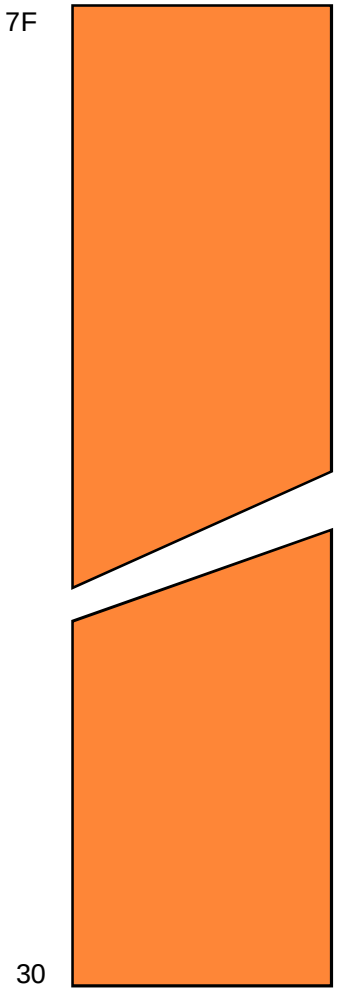
8051 Internal RAM Organisation



Working Registers



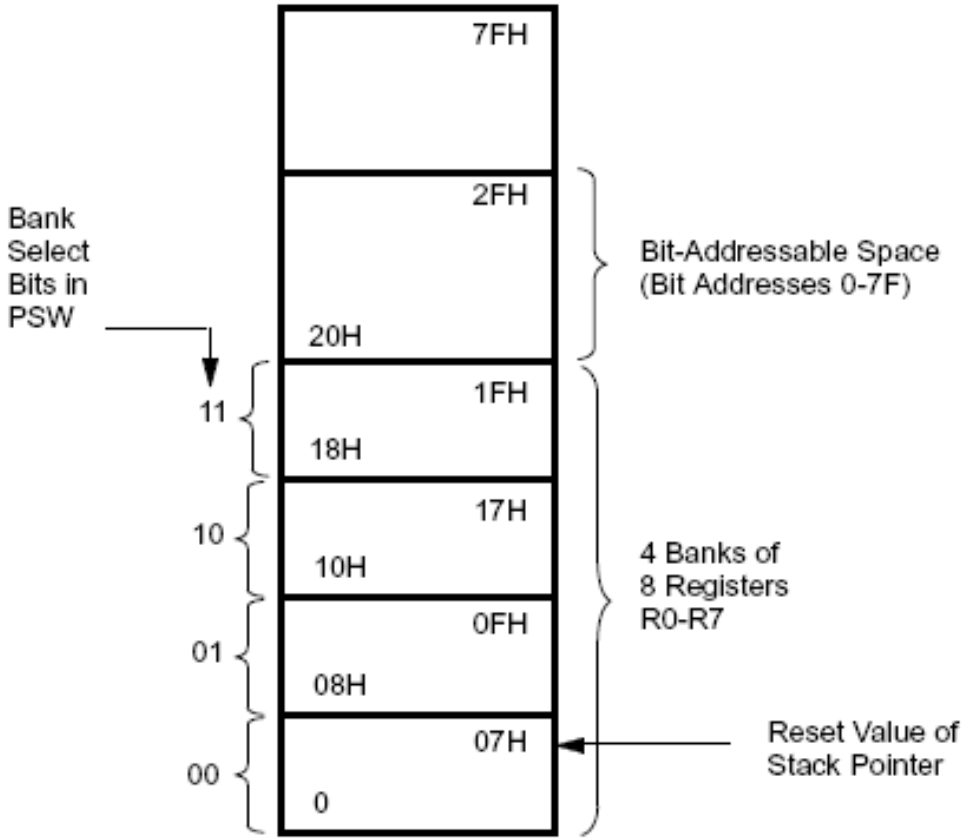
Bit Addressable

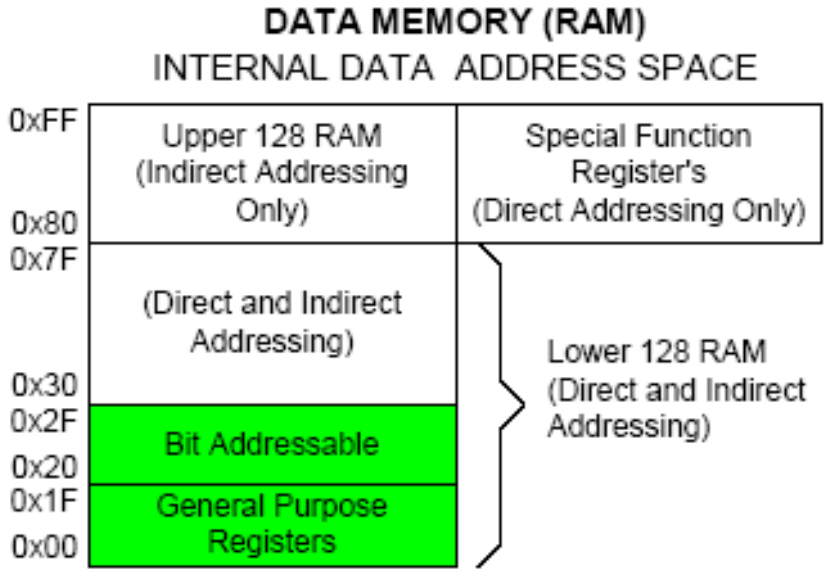


General Purpose

Program Status Word (PSW)

Bank Select Bits, RS1, & RS0 to select 1 of 4 register bank



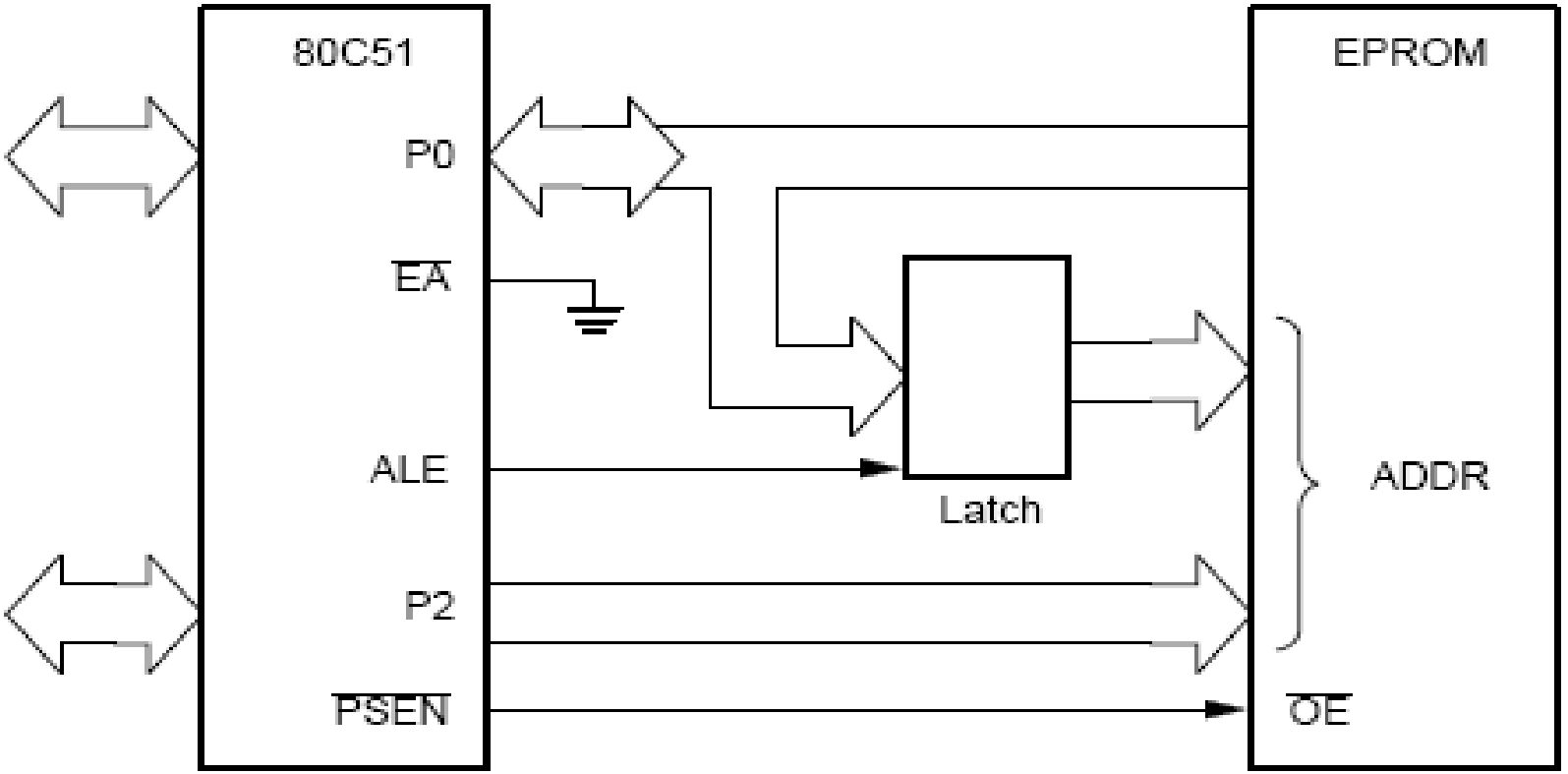


RS1	RS0	REGISTER BANK	ADDRESS
0	0	0	00H-07H
0	1	1	08H-0FH
1	0	2	10H-17H
1	1	3	18H-1FH

Internal ROM

- Internal ROM occupies the code address space from 0000H to 0FFFH (Size = 4K byte)
- Program addresses higher than 0FFFH will automatically fetch code bytes from external program memory
- Code bytes can also be fetched exclusively from an external memory by connecting the external access pin (***EA***) to ground

Interfacing with External Program Memory



Interfacing with External Data Memory