8051 ASSEMBLY LANGUAGE PROGRAMMING

Chapter 2

Inside the 8051

The vast majority of 8051 registers are 8-bit registers.

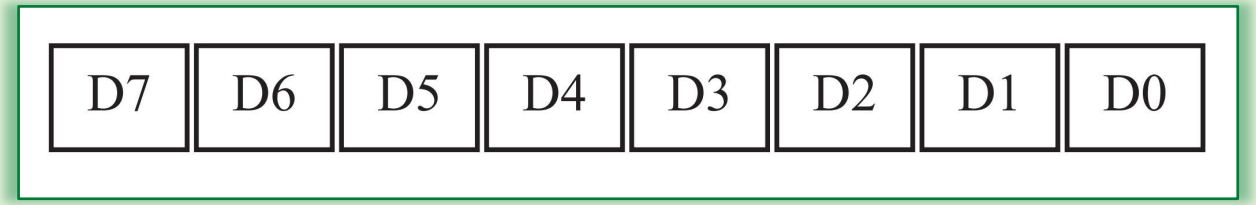


Figure 2-1 (b). Some 8051 16-bit Registers

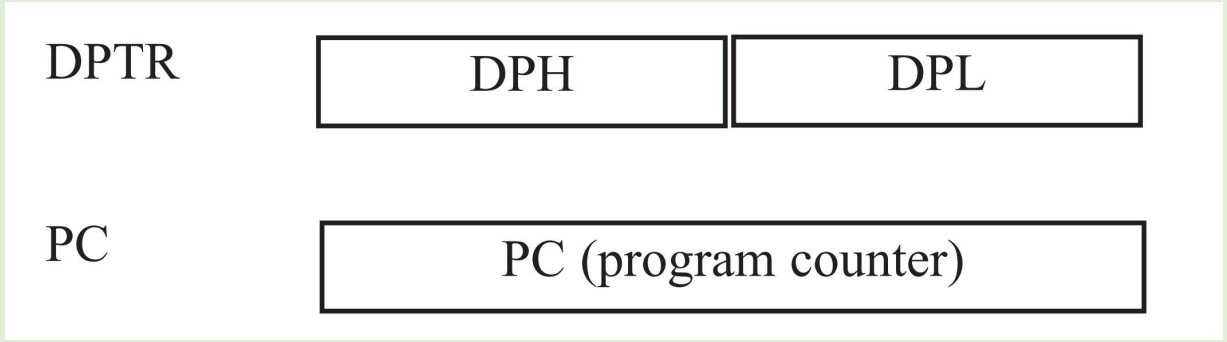
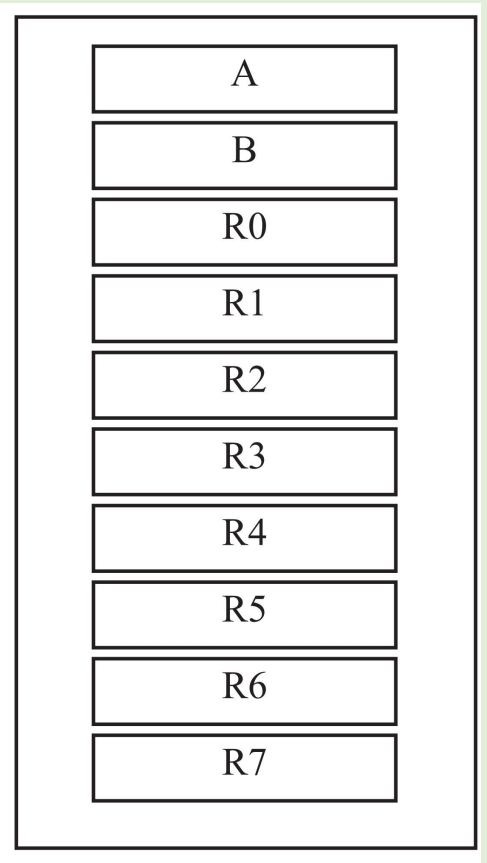
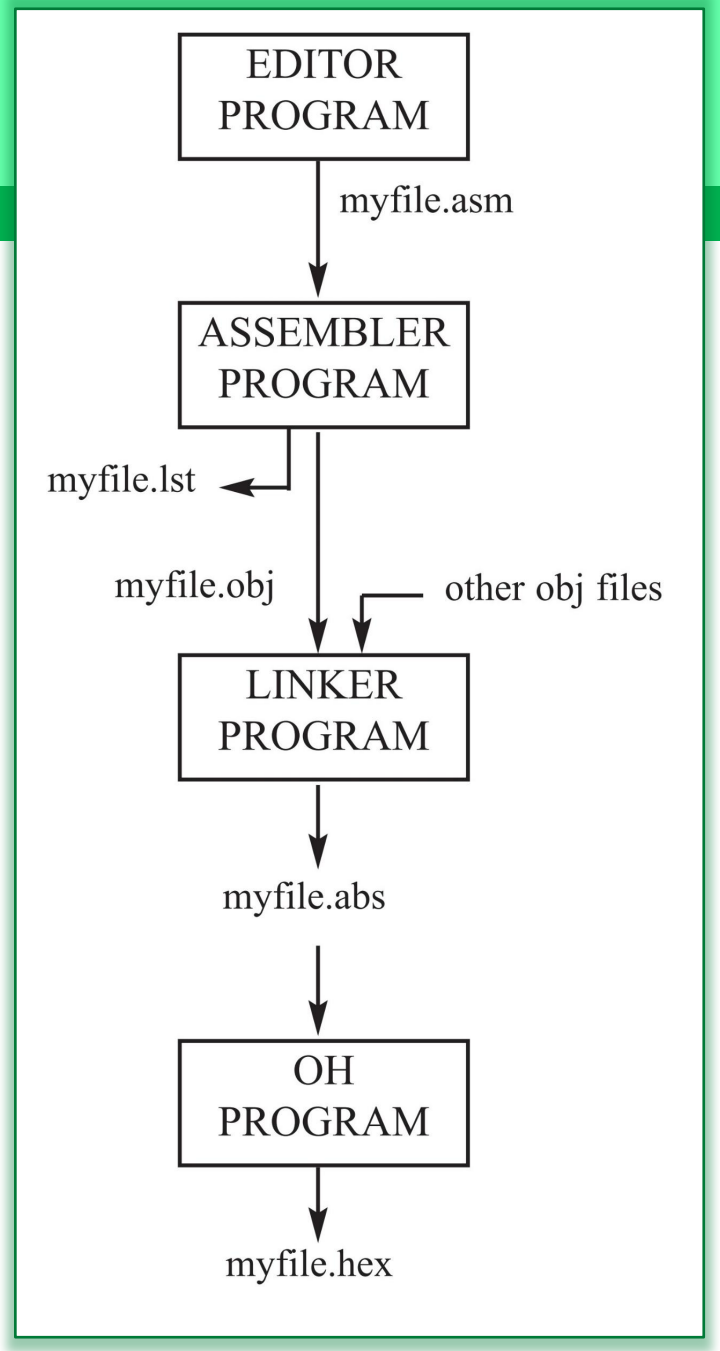


Figure 2-1 (a). Some 8-bit Registers of the 8051



Assembling and Running an 8051 Program

Figure 2-2. Steps to Create a Program



The “asm” file is also called the source file and for this reason some assemblers require that this file have the “src” extension.

Placing Code in Program ROM

ROM Address	Machine Language	Assembly Language
0000	7D25	MOV R5,#25H
0002	7F34	MOV R7,#34H
0004	7400	MOV A,#0
0006	2D	ADD A,R5
0007	2F	ADD A,R7
0008	2412	ADD A,#12H
000A	80FE	HERE: SJMP HERE

Placing Code in Program ROM

Program 2-1: ROM Contents

Address	Code
0000	7D
0001	25
0002	7F
0003	34
0004	74
0005	00
0006	2D
0007	2F
0008	24
0009	12
000A	80
000B	FE

PSW (Program Status Word) Register

The program status word (PSW) register, also referred to as the flag register, is an 8-bit register.

CY	AC	F0	RS1	RS0	OV	--	P

CY	PSW.7	Carry flag.
AC	PSW.6	Auxiliary carry flag.
F0	PSW.5	Available to the user for general purpose.
RS1	PSW.4	Register Bank selector bit 1.
RS0	PSW.3	Register Bank selector bit 0.
OV	PSW.2	Overflow flag.
--	PSW.1	User-definable bit.
P	PSW.0	Parity flag. Set/cleared by hardware each instuction cycle to indicate an odd/even number of 1 bits in the accumulator.

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

Figure 2-4. Bits of the PSW Register

8051 Register Banks and Stack

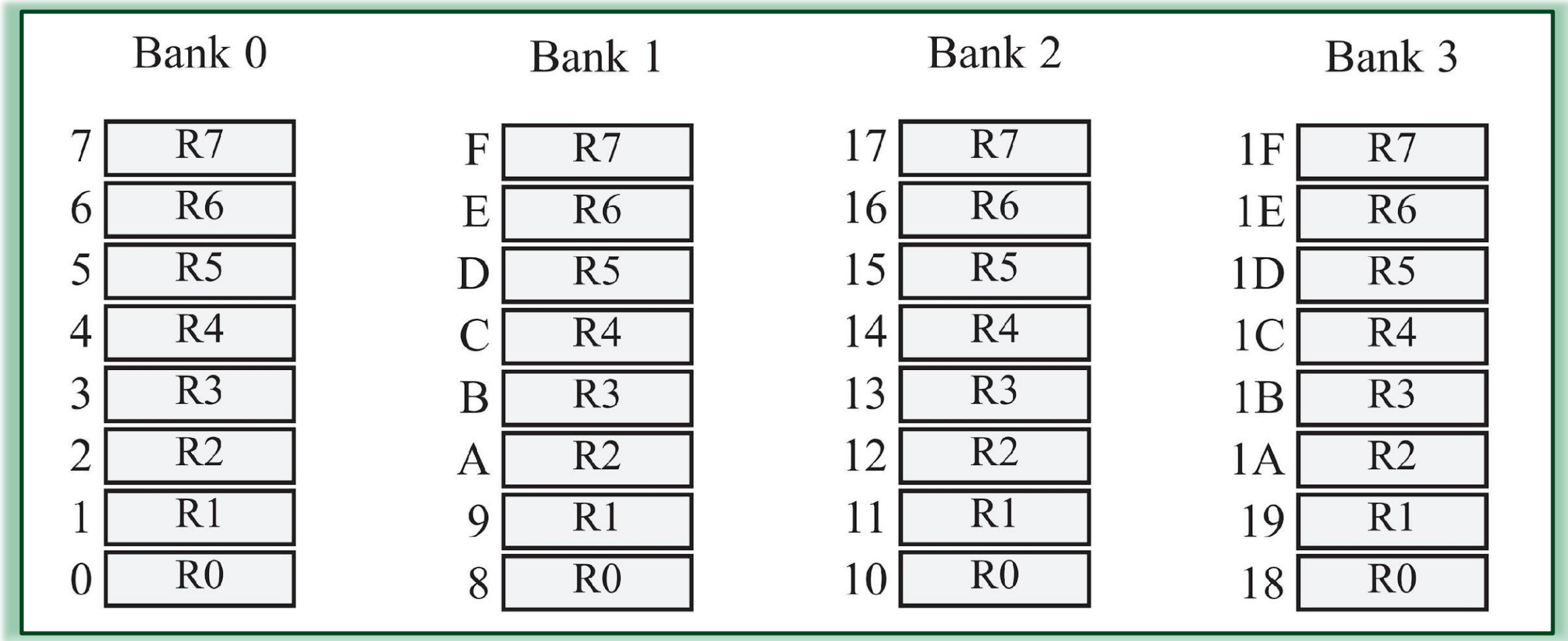


Figure 2-6. 8051 Register Banks and their RAM Addresses