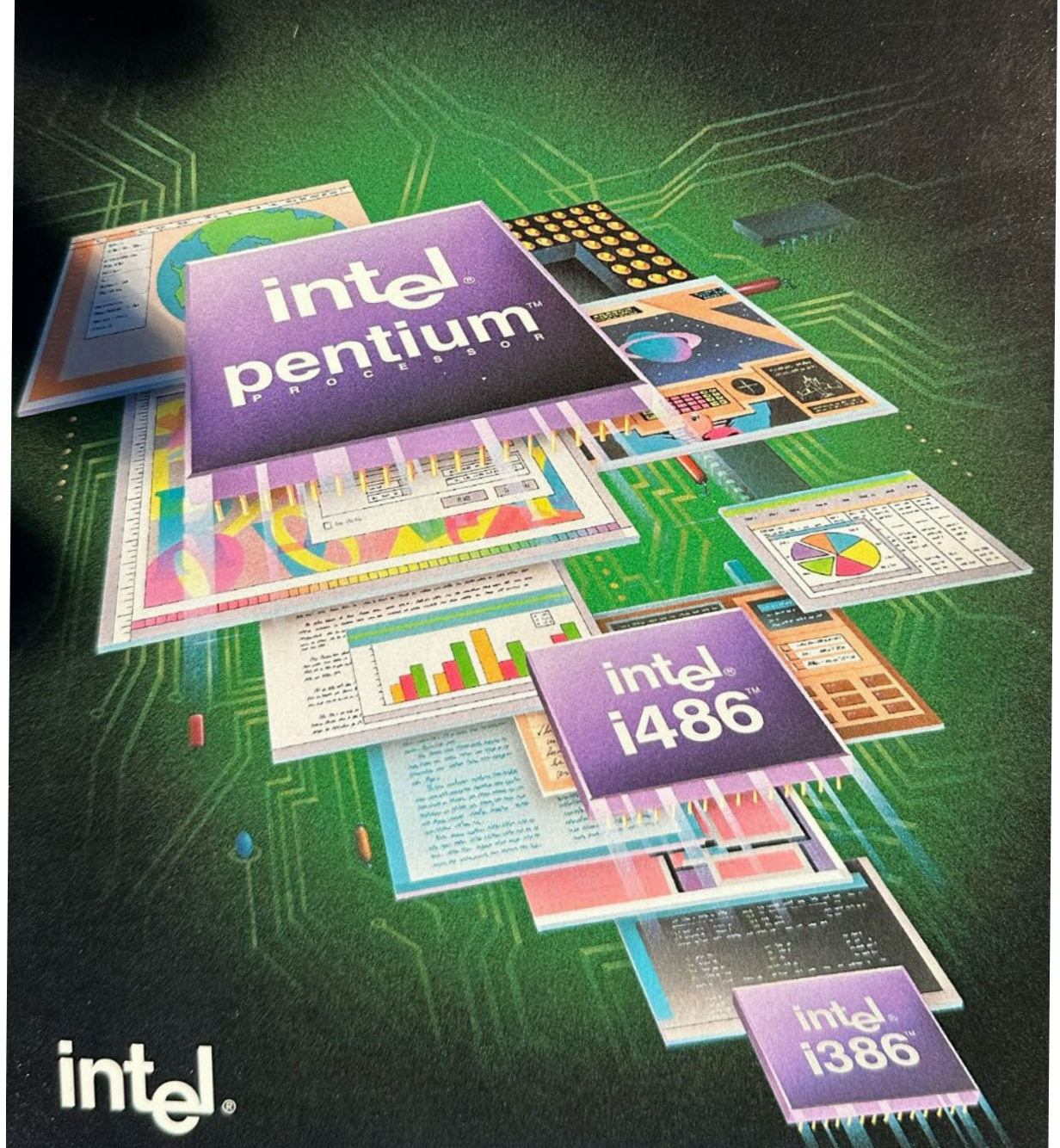


Pentium™ Processor User's Manual

Volume 3: Architecture and Programming Manual



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IBM's Exhibit 2005

Ex. 2005, Page 1



Pentium™ Processor User's Manual Volume 3: Architecture and Programming Manual

NOTE: The *Pentium™ Processor User's Manual* consists of three books: *Pentium™ Processor Data Book*, Order Number 241428; the *82496 Cache Controller and 82491 Cache SRAM Data Book*, Order Number 241429; and the *Architecture and Programming Manual*, Order Number 241430. Please refer to all three volumes when evaluating your design needs.

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When the EBP register is used to address memory, the current stack segment is referenced (i.e., the SS segment). Because the stack segment does not have to be specified, instruction encoding is more compact. The EBP register also can be used to address other segments. Instructions, such as the ENTER and LEAVE instructions, are provided which automatically set up the EBP register for convenient access to variables.

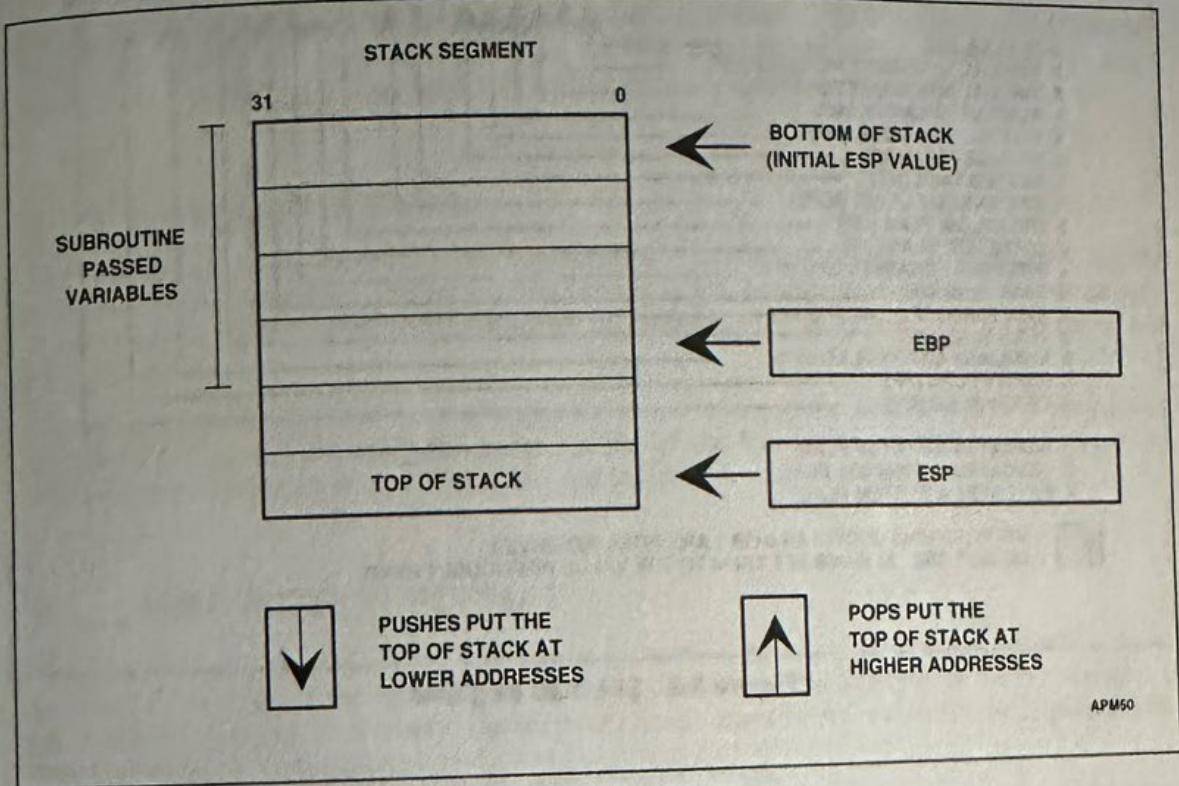


Figure 3-8. Stacks

3.3.4. Flags Register

Condition codes (e.g., carry, sign, overflow) and mode bits are kept in a 32-bit register named EFLAGS. Figure 3-9 defines the bits within this register.

The flags control certain operations and indicate the status of the Pentium processor. Besides status and control flag bits, the flag register also contains system flags. See Chapter 10 for a description of the system and control flags.

3.3.4.1. STATUS FLAGS

The status flags of the EFLAGS register report the kind of result produced from the execution of arithmetic instructions, such as ADD, SUB, MUL, and DIV. The MOV instruction does not affect these flags. Conditional jumps and subroutine calls allow a program to sense the state of the status flags and respond to them. For example, when the counter controlling a loop is decremented to zero, the state of the ZF flag changes, and this change can be used to suppress the conditional jump to the start of the loop. The status flags are shown in Table 3-2.

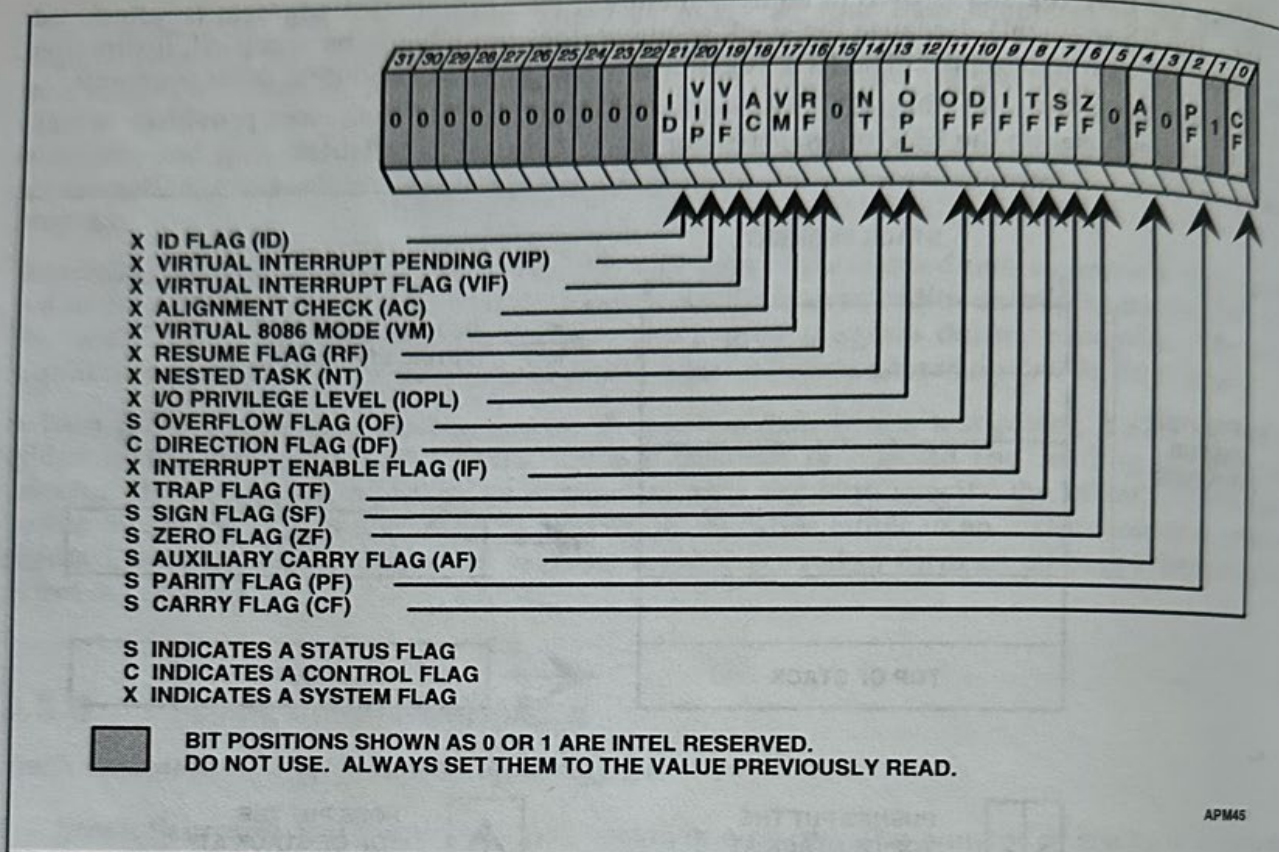


Figure 3-9. EFLAGS Register

Table 3-2. Status Flags

Name	Purpose	Condition Reported
OF	Overflow	Result exceeds positive or negative limit of number range
SF	Sign	Result is negative (less than zero)
ZF	Zero	Result is zero
AF	Auxiliary carry	Carry out of bit position 3 (used for BCD)
PF	Parity	Low byte of result has even parity (even number of set bits)
CF	Carry flag	Carry out of most significant bit of result