

Example 19: Write an A.L.P. to copy the value of the 3rd bit of the memory location specified by [BP+DI+33h] to all bits of register BX.

Sol.

MOV BX, [BP+DI+33h]

MOV CL, 0Dh

SHL BX, CL

MOV CL, 0Fh

SAR CX, CL

HLT

Example 20: Rebuild CBW.

Sol.

MOV AH, AL

MOV CL, 07

SAR AH, CL

HLT

Example 21: Write an A.L.P. to rotate a 32-bit of data stored into DX AX registers to the left 1 time.

Sol.

ROL DX, 1

RCL AX, 1

ROR DX, 1

RCL DX, 1

HLT

H.W. 2: Write an A.L.P. to copy the value of the carry flag to all bits of a M.L. specified by BX.

H.W. 3: Write an A.L.P. to rotate a 32-bit of data stored into DX AX registers to the right 1 time.

H.W. 4: Rebuild CWD.

3.2.5 Flag Control Instructions

The instruction set includes a group of instructions that when executed directly affects the state of the flags. These instructions are shown in table below:

Mnemonics	Meaning	Format	Operation	Flags affected
CLC	Clear carry flag	CLC	CF = 0	CF
STC	Set carry flag	STC	CF = 1	CF
CMC	Complement carry flag	CMC	CF = $\overline{\text{CF}}$	CF
CLD	Clear direction flag	CLD	DF = 0	DF
STD	Set direction flag	STD	DF = 1	DF
CLI	Clear interrupt flag	CLI	IF = 0	IF
STI	Set interrupt flag	STI	IF = 1	IF

LAHF and SAHF instructions

The LAHF and SAHF instructions are seldom used because they were designed as bridge instructions. These instructions allowed 8085 (an early 8-bit microprocessor) software to be translated into 8086 software by a translation program. Because any software that required translation was completed many years ago, these instructions have little application today. The **LAHF** instruction transfers the rightmost 8 bits of the flag register (status flags) into the AH register. The **SAHF** instruction transfers the AH register into the status flags of the flag register.

Mnemonics	Meaning	Format	Operation	Flags affected
LAHF	Load AH reg. from status flags	LAHF	AH = low byte of flag reg.	none
SAHF	Store AH reg. in status flags	SAHF	Low byte of flag reg. = AH	SF,ZF,ACF,PF,CF

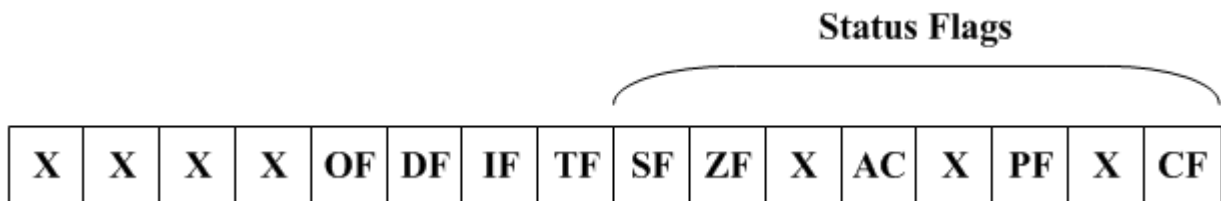


Figure Flag Register

Example 22: Write an A.L.P. to square the value of the right byte of the flag register (status flags).

Sol.

LAHF

MOV AL,AH

MUL AL or MUL AH

SAHF

HLT