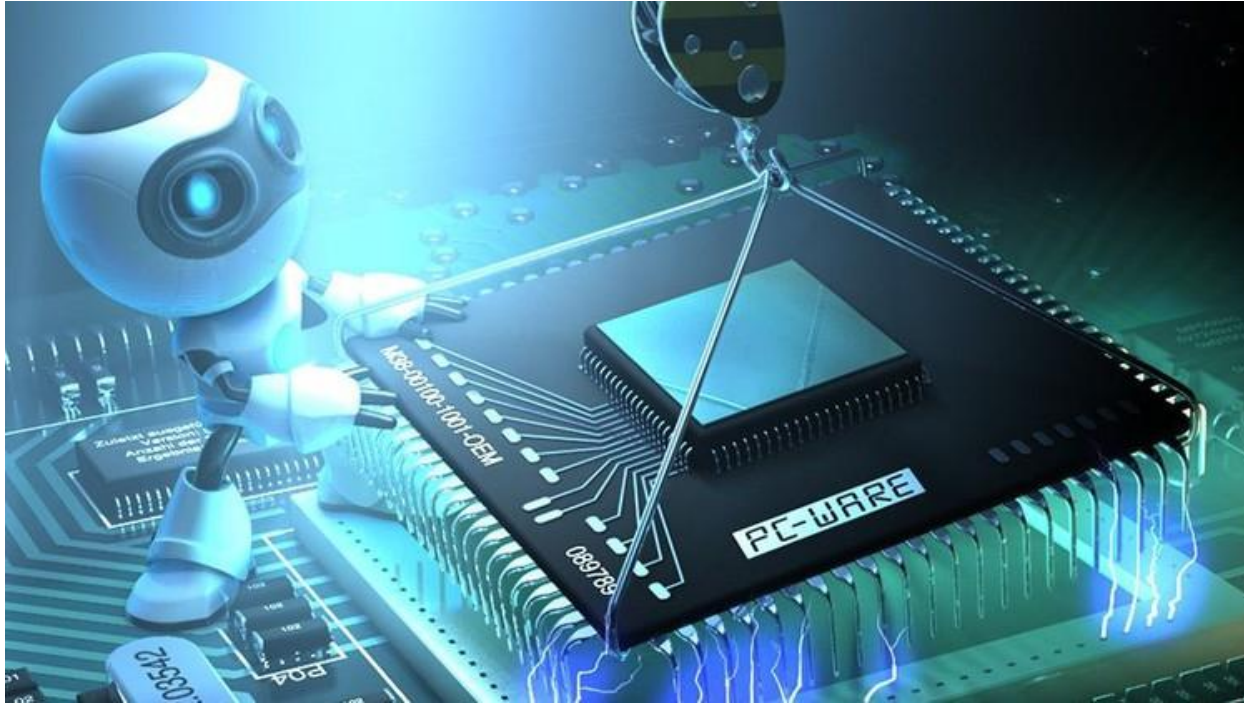


Advanced Logical Instructions



Advanced Logical Instructions



Instructions	Description	Notes	Example
ANDx op1, op2	$op2 \leftarrow op2 \& op1$	$x = \{L, W, B\}$	ANDL \$13,%EAX
ORx op1, op2	$op2 \leftarrow op2 op1$	$x = \{L, W, B\}$	ORW %CX,%AX
XORx op1, op2	$op2 \leftarrow op2 \wedge op1$	$x = \{L, W, B\}$	XORL %EDX,%EAX
NOTx op1	$op1 \leftarrow \sim op1$	$x = \{L, W, B\}$	NOTB %AH
SALx k,op1	$op1 \leftarrow op1 \ll k$ (aritm.)	$x = \{L, W, B\}$, k: inm. o %CL	SALL \$1,%EAX
SHLx k,op1	$op1 \leftarrow op1 \ll k$ (log.)	$x = \{L, W, B\}$, k: inm. o %CL	SHLW %CL,%DX
SARx k,op1	$op1 \leftarrow op1 \gg k$ (aritm.)	$x = \{L, W, B\}$, k: inm. o %CL	SARL \$1,%EAX
SHRx k,op1	$op1 \leftarrow op1 \gg k$ (log.)	$x = \{L, W, B\}$, k: inm. o %CL	SHRW %CL,%DX
CMPx op1, op2	$op2 - op1$	$x = \{L, W, B\}$, activa flags	CMPL \$13,%EAX
TESTx op1, op2	$op2 \& op1$	$x = \{L, W, B\}$, activa flags	TESTW %CX,%AX

SAL Example



SAL \$4, / AH

1100 0000

/ AH

AH ← AH << 4

~~1100~~

1100 0000

SAR Example



SAR \$3, 1/2 CH

$CH \leftarrow CH \gg 3 \text{ (Arit)}$

1111110

↑
1/2 CH

111 11 11 0000

SHR Example



SHR \$3, %CH

00011110

%CH

$CH \leftarrow CH \gg 3 (\text{Log})$

Right Logical Shift

0001111 0000

Summary



SHL }
SAL } // / ... 000

SHR } 000 ... / / /

SAR } 111 .1. . / / /
 000 .0. . / / /

Programmer Vision



Available registers

32 bits	16 bits	8 bits	
%eax	%ax	%ah, %al	
%ebx	%bx	%bh, %bl	
%ecx	%cx	%ch, %cl	
%edx	%dx	%dh, %dl	
%esi	%si		
%edi	%di		
%esp	%sp		Reserved for specific use of subroutines
%ebp	%bp		
%eip			Program counter
%eflags			Status word