

7.3.8.2 Conditional Transfer Instructions

The conditional transfer instructions execute jumps or loops that transfer program control to another instruction in the instruction stream if specified conditions are met. The conditions for control transfer are specified with a set of condition codes that define various states of the status flags (CF, ZF, OF, PF, and SF) in the EFLAGS register.

Conditional jump instructions — The Jcc (conditional) jump instructions transfer program control to a destination instruction if the conditions specified with the condition code (cc) associated with the instruction are satisfied (see Table 7-4). If the condition is not satisfied, execution continues with the instruction following the Jcc instruction. As with the JMP instruction, the transfer is one-way; that is, a return address is not saved.

Table 7-4. Conditional Jump Instructions

Instruction Mnemonic	Condition (Flag States)	Description
Unsigned Conditional Jumps		
JNBE	$(CF \text{ or } ZF) = 0$	Above/not below or equal
JAE/JNB	$CF = 0$	Above or equal/not below
JB/JNAE	$CF = 1$	Below/not above or equal
JBE/JNA	$(CF \text{ or } ZF) = 1$	Below or equal/not above
JC	$CF = 1$	Carry
JE/JZ	$ZF = 1$	Equal/zero
JNC	$CF = 0$	Not carry
JNE/JNZ	$ZF = 0$	Not equal/not zero
JNP/JPO	$PF = 0$	Not parity/parity odd
JP/JPE	$PF = 1$	Parity/parity even
JCXZ	$CX = 0$	Register CX is zero
JECXZ	$ECX = 0$	Register ECX is zero
Signed Conditional Jumps		
JG/JNLE	$((SF \text{ xor } OF) \text{ or } ZF) = 0$	Greater/not less or equal
JGE/JNL	$(SF \text{ xor } OF) = 0$	Greater or equal/not less
JL/JNGE	$(SF \text{ xor } OF) = 1$	Less/not greater or equal
JLE/JNG	$((SF \text{ xor } OF) \text{ or } ZF) = 1$	Less or equal/not greater
JNO	$OF = 0$	Not overflow
JNS	$SF = 0$	Not sign (non-negative)
JO	$OF = 1$	Overflow
JS	$SF = 1$	Sign (negative)