

x86 architecture

1 byte opcodes

xxh	x0h	x1h	x2h	x3h	x4h	x5h	x6h	x7h
0xh	ADD Eb,Gb	ADD Ev,Gv	ADD Gb,Eb	ADD Gv,Ev	ADD AL,Ib	ADD rAX,Iz	PUSH ¹⁶⁴ ES	POP ¹⁶⁴ ES
1xh	ADC Eb,Gb	ADC Ev,Gv	ADC Gb,Eb	ADC Gv,Ev	ADC AL,Ib	ADC rAX,Iz	PUSH ¹⁶⁴ SS	POP ¹⁶⁴ SS
2xh	AND Eb,Gb	AND Ev,Gv	AND Gb,Eb	AND Gv,Ev	AND AL,Ib	AND rAX,Iz	ES:	DAA ¹⁶⁴
3xh	XOR Eb,Gb	XOR Ev,Gv	XOR Gb,Eb	XOR Gv,Ev	XOR AL,Ib	XOR rAX,Iz	SS:	AAA ¹⁶⁴
4xh	INC ¹⁶⁴ eAX	INC ¹⁶⁴ eCX	INC ¹⁶⁴ eDX	INC ¹⁶⁴ eBX	INC ¹⁶⁴ eSP	INC ¹⁶⁴ eBP	INC ¹⁶⁴ eSI	INC ¹⁶⁴ eDI
REX								
5xh	PUSH ^{D64} rAX / r8	PUSH ^{D64} rCX / r9	PUSH ^{D64} rDX / r10	PUSH ^{D64} rBX / r11	PUSH ^{D64} rSP / r12	PUSH ^{D64} rBP / r13	PUSH ^{D64} rSI / r14	PUSH ^{D64} rDI / r15
6xh	PUSHA ¹⁶⁴ PUSHAD ¹⁶⁴ (80186+)	POPA ¹⁶⁴ POPAD ¹⁶⁴ (80186+)	BOUND ¹⁶⁴ Gv, Ma (80186+) L10M MVEX EVEX	ARPL ¹⁶⁴ Ew, Gw (80286+) MOVSD ¹⁶⁴ Gv, Ed (PM64)	FS: (80386+) Hint Alt Taken for Jcc (P4)	GS: (80386+)	OPSIZE: (80386+)	ADDSIZE: (80386+)
7xh	JO ^{Df64} Jb	JNO ^{Df64} Jb	JB ^{Df64} Jb	JNB ^{Df64} Jb	JZ ^{Df64} Jb JKZ ^{Dv64} vKw, Jb ^v (K10M)	JNZ ^{Df64} Jb JKNZ ^{Dv64} vKw, Jb ^v (K10M)	JBE ^{Df64} Jb	JNBE ^{Df64} Jb
8xh	group #1 Eb,Ib	group #1 Ev,Iz	group #1 ¹⁶⁴ Eb,Ib	group #1 Ev,Ib	TEST Eb,Gb	TEST Ev,Gv	XCHG Eb,Gb	XCHG Ev,Gv
9xh	NOP (PM64 032: IZX) (F3h) PAUSE (see CPUID)	XCHG rCX,rAX r9,rAX	XCHG rDX,rAX r10,rAX	XCHG rBX,rAX r11,rAX	XCHG rSP,rAX r12,rAX	XCHG rBP,rAX r13,rAX	XCHG rSI,rAX r14,rAX	XCHG rDI,rAX r15,rAX
Axh	MOV AL,Ov	MOV rAX,Ov	MOV Ov,AL	MOV Ov,rAX	MOVS Yb,Xb	MOVS Yv,Xv	CMPS Yb,Xb	CMPS Yv,Xv
Bxh	MOV AL,Ib R8B,Ib	MOV CL,Ib R9B,Ib	MOV DL,Ib R10B,Ib	MOV BL,Ib R11B,Ib	MOV AH,Ib R12B,Ib	MOV CH,Ib R13B,Ib	MOV DH,Ib R14B,Ib	MOV BH,Ib R15B,Ib
Cxh	group #2 Eb,Ib (80186+)	group #2 Ev,Ib (80186+)	RET near ^{Df64} Iw	RET near ^{Df64}	LES ¹⁶⁴ Gv,Mp (w:v) VEX3	LDS ¹⁶⁴ Gv,Mp (w:v) VEX2	group #11 Eb,Ib	group #11 Ev,Iz
Dxh	group #2 Eb,1	group #2 Ev,1	group #2 Eb,CL	group #2 Ev,CL	AAM ¹⁶⁴ Ib	AAD ¹⁶⁴ Ib	S(ET)ALC ¹⁶⁴ L10M	XLAT
Exh	LOOPNE ^{Df64} LOOPNZ ^{Df64} Jb	LOOPE ^{Df64} LOOPZ ^{Df64} Jb	LOOP ^{Df64} Jb	JCXZ ^{Df64} JECX ^{Df64} JRCX ^{Df64} Jb	IN AL,Ib	IN eAX,Ib	OUT Ib,AL	OUT Ib,eAX
Fxh	LOCK:	INT1 (ICEBP) (80386+)	REPNE: BND: (MPX) XAQUIRE: (HLE)	REP: REPE: XRELEASE: (HLE)	HLT	CMC	group #3 Eb	group #3 Ev

xxh	x8h	x9h	xAh	xBh	xCh	xDh	xEh	xFh
0xh	OR Eb,Gb	OR Ev,Gv	OR Gb,Eb	OR Gv,Ev	OR AL,Ib	OR rAX,Iz	PUSH ¹⁶⁴ CS	2 byte opcodes (80286+)
1xh	SBB Eb,Gb	SBB Ev,Gv	SBB Gb,Eb	SBB Gv,Ev	SBB AL,Ib	SBB rAX,Iz	PUSH ¹⁶⁴ DS	POP ¹⁶⁴ DS
2xh	SUB Eb,Gb	SUB Ev,Gv	SUB Gb,Eb	SUB Gv,Ev	SUB AL,Ib	SUB rAX,Iz	CS: Hint Not Taken for Jcc (P4)	DAS ¹⁶⁴

3xh	CMP Eb,Gb	CMP Ev,Gv	CMP Gb,Eb	CMP Gv,Ev	CMP AL,Ib	CMP rAX,Iz	DS: CET: (CET) Hint Taken for Jcc (P4)	AAS ^{I64}
4xh	DEC ^{I64} eAX	DEC ^{I64} eCX	DEC ^{I64} eDX	DEC ^{I64} eBX	DEC ^{I64} eSP	DEC ^{I64} eBP	DEC ^{I64} eSI	DEC ^{I64} eDI
REX								
5xh	POP ^{D64} rAX / r8	POP ^{D64} rCX / r9	POP ^{D64} rDX / r10	POP ^{D64} rBX / r11	POP ^{D64} rSP / r12	POP ^{D64} rBP / r13	POP ^{D64} rSI / r14	POP ^{D64} rDI / r15
6xh	PUSH ^{D64} Iz (80186+)	IMUL Gv,Ev,Iz (80186+)	PUSH ^{D64} Ib (80186+)	IMUL Gv,Ev,Ib (80186+)	INS Yb,DX (80186+)	INS Yz,DX (80186+)	OUTS DX,Xb (80186+)	OUTS DX,Xz (80186+)
7xh	JS ^{Df64} Jb	JNS ^{Df64} Jb	JP ^{Df64} Jb	JNP ^{Df64} Jb	JL ^{Df64} Jb	JNL ^{Df64} Jb	JLE ^{Df64} Jb	JNLE ^{Df64} Jb
8xh	MOV Eb,Gb	MOV Ev,Gv	MOV Gb,Eb	MOV Gv,Ev	MOV Mw,Sw MOV Rv,Sw	LEA Gv,M	MOV Sw,Mw MOV Sw,Rv	group #1A
9xh	CBW (8088) CWDE (80386+) CDQE (PM64)	CWD (8088) CDQ (80386+) CQO (PM64)	CALL ^{I64} Ap (w:z)	WAIT FWAIT	PUSHF ^{D64} Fv	POPF ^{D64} Fv	SAHF (LM: if AHF64)	LAHF (LM: if AHF64)
Axh	TEST AL,Ib	TEST rAX,Iz	STOS Yb,AL	STOS Yv,rAX	LODS AL,Xb	LODS rAX,Xv	SCAS Yb,AL	SCAS Yv,rAX
Bxh	MOV rAX,Iv r8,Iv	MOV rCX,Iv r9,Iv	MOV rDX,Iv r10,Iv	MOV rBX,Iv r11,Iv	MOV rSP,Iv r12,Iv	MOV rBP,Iv r13,Iv	MOV rSI,Iv r14,Iv	MOV rDI,Iv r15,Iv
Cxh	ENTER ^{D64} Iw,Ib (80186+)	LEAVE ^{D64} (80186+)	RET far Iw	RET far	INT3	INT Ib	INTO ^{I64}	IRET
Dxh	ESC 0	ESC 1	ESC 2	ESC 3	ESC 4	ESC 5	ESC 6	ESC 7
Exh	CALL ^{Df64} Jz	JMP ^{Df64} Jz	JMP ^{I64} Ap (w:z)	JMP ^{Df64} Jb	IN AL,DX	IN eAX,DX	OUT DX,AL	OUT DX,eAX
Fxh	CLC	STC	CLI	STI	CLD	STD	group #4 INC/DEC	group #5 INC/DEC/etc.

note: The opcodes marked with * are aliases to other opcodes.

