80x86 Instructions by Mnemonic

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
aaa	none	AF,CF SF,ZF,OF,PF ?	37	1	4	3	3
aad	none	SF,ZF,PF OF,AF,CF ?	D5 0A	2	19	14	10
aam	none	SF,ZF,PF OF,AF,CF ?	D4 0A	2	17	15	18
aas	none	AF,CF SF,ZF,OF,PF ?	3F	1	4	3	3
adc	AL,imm8	SF,ZF,OF,CF,PF,AF	14	2	2	1	1
adc	AX,imm16 EAX,imm32	SF,ZF,OF,CF,PF,AF	15	3 5	2	1	1
adc	reg8,imm8	SF,ZF,OF,CF,PF,AF	80	3	2	1	1
adc	reg16,imm16 reg32,imm32	SF,ZF,OF,CF,PF,AF	81	4 6	2	1	1
adc	reg16,imm8 reg32,imm8	SF,ZF,OF,CF,PF,AF	83	3	2	1	1
adc	mem8,imm8	SF,ZF,OF,CF,PF,AF	80	3+	7	3	3
adc	mem16,imm16 mem32,imm32	SF,ZF,OF,CF,PF,AF	81	4+ 6+	7	3	3
adc	mem16,imm8 mem32,imm8	SF,ZF,OF,CF,PF,AF	83	3+	7	3	3
adc	reg8,reg8	SF,ZF,OF,CF,PF,AF	12	2	2	1	1
adc	reg16,reg16 reg32,reg32	SF,ZF,OF,CF,PF,AF	13	2	2	1	1
adc	reg8,mem8	SF,ZF,OF,CF,PF,AF	12	2+	6	2	2
adc	reg16,mem16 reg32,mem32	SF,ZF,OF,CF,PF,AF	13	2+	6	2	2
adc	mem8,reg8	SF,ZF,OF,CF,PF,AF	10	2+	7	3	3
adc	mem16,reg16 mem32,reg32	SF,ZF,OF,CF,PF,AF	11	2+	7	3	3
add	AL,imm8	SF,ZF,OF,CF,PF,AF	04	2	2	1	1
add	AX,imm16 EAX,imm32	SF,ZF,OF,CF,PF,AF	05	3 5	2	1	1
add	reg8,imm8	SF,ZF,OF,CF,PF,AF	80	3	2	1	1
add	reg16,imm16 reg32,imm32	SF,ZF,OF,CF,PF,AF	81	4 6	2	1	1
add	reg16,imm8 reg32,imm8	SF,ZF,OF,CF,PF,AF	83	3	2	1	1
add	mem8,imm8	SF,ZF,OF,CF,PF,AF	80	3+	7	3	3
add	mem16,imm16 mem32,imm32	SF,ZF,OF,CF,PF,AF	81	4+ 6+	7	3	3
add	mem16,imm8 mem32,imm8	SF,ZF,OF,CF,PF,AF	83	3+	7	3	3
add	reg8,reg8	SF,ZF,OF,CF,PF,AF	02	2	2	1	1
add	reg16,reg16 reg32,reg32	SF,ZF,OF,CF,PF,AF	03	2	2	1	1
add	reg8,mem8	SF,ZF,OF,CF,PF,AF	02	2+	6	2	2
add	reg16,mem16 reg32,mem32	SF,ZF,OF,CF,PF,AF	03	2+	6	2	2
add	mem8,reg8	SF,ZF,OF,CF,PF,AF	00	2+	7	3	3

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
add	mem16,reg16	SF,ZF,OF,CF,PF,AF	01	2+	7	3	3
	mem32,reg32						
and	AL,imm8	SF,ZF,OF,CF,PF,AF	24	2	2	1	1
and	AX,imm16	SF,ZF,OF,CF,PF,AF	25	3	2	1	1
	EAX,imm32				5		
and	reg8,imm8	SF,ZF,OF,CF,PF,AF	80	3	2	1	1
and	reg16,imm16	SF,ZF,OF,CF,PF,AF	81	4	2	1	1
	reg32,imm32				6		
and	reg16,imm8	SF,ZF,OF,CF,PF,AF	83	3	2	1	1
	reg32,imm8						
and	mem8,imm8	SF,ZF,OF,CF,PF,AF	80	3+	7	3	3
and	mem16,imm16	SF,ZF,OF,CF,PF,AF	81	4+	7	3	3
	mem32,imm32				6+		
and	mem16,imm8	SF,ZF,OF,CF,PF,AF	83	3+	7	3	3
	mem32,imm8						
and	reg8,reg8	SF,ZF,OF,CF,PF,AF	22	2	2	1	1
and	reg16,reg16	SF,ZF,OF,CF,PF,AF	23	2	2	1	1
	reg32,reg32						
and	reg8,mem8	SF,ZF,OF,CF,PF,AF	22	2+	6	2	2
and	reg16,mem16	SF,ZF,OF,CF,PF,AF	23	2+	6	2	2
	reg32,mem32						
and	mem8,reg8	SF,ZF,OF,CF,PF,AF	20	2+	7	3	3
and	mem16,reg16	SF,ZF,OF,CF,PF,AF	21	2+	7	3	3
	mem32,reg32						
call	rel32	none	E8	5	7+	3	1
call	reg32	none	FF	2	7+	5	2
	(near indirect)						
call	mem32	none	FF	2+	10+	5	2
	(near indirect)						
call	far direct	none	9A	7	17+	18	4
call	far indirect	none	FF	6	22+	17	5
cbw	none	none	98	1	3	3	3
cdq	none	none	99	1	2	3	2
clc	none	CF	F8	1	2	2	2
cld	none	DF	FC	1	2	2	2
cmc	none	CF	F5	1	2	2	2
cmp	AL,imm8	SF,ZF,OF,CF,PF,AF	3C	2	2	1	1
cmp	AX,imm16	SF,ZF,OF,CF,PF,AF	3D	3	2	1	1
	EAX,imm32			5			
cmp	reg8,imm8	SF,ZF,OF,CF,PF,AF	80	3	2	1	1
cmp	reg16,imm16	SF,ZF,OF,CF,PF,AF	81	4	2	1	1
	reg32,imm32			6			
cmp	reg16,imm8	SF,ZF,OF,CF,PF,AF	83	3	2	1	1
	reg32,imm8						
cmp	mem8,imm8	SF,ZF,OF,CF,PF,AF	80	3+	5	2	2
cmp	mem16,imm16	SF,ZF,OF,CF,PF,AF	81	4+	5	2	2
	mem32,imm32			6+			
cmp	mem16,imm8	SF,ZF,OF,CF,PF,AF	83	3+	5	2	2
	mem32,imm8						
cmp	reg8,reg8	SF,ZF,OF,CF,PF,AF	38	2	2	1	1

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
cmp	reg16,reg16	SF,ZF,OF,CF,PF,AF	3B	2	2	1	1
	reg32,reg32						
cmp	reg8,mem8	SF,ZF,OF,CF,PF,AF	3A	2+	6	2	2
cmp	reg16,mem16	SF,ZF,OF,CF,PF,AF	3B	2+	6	2	2
	reg32,mem32						
cmp	mem8,reg8	SF,ZF,OF,CF,PF,AF	38	2+	5	2	2
cmp	mem16,reg16	SF,ZF,OF,CF,PF,AF	39	2+	5	2	2
	mem32,reg32						
cmpsb	none	none	A6	1	10	8	5
cmpsw	none	none	A7	1	10	8	5
cmpsd							
cwd	none	none	99	1	2	3	2
cwde	none	none	98	1	3	3	3
daa	none	SF,ZF,PF,AF	27	1	4	2	3
		OF ?					
das	none	SF,ZF,PF,AF	2F	1	4	2	3
		OF ?					
dec	reg8		FE	2	2	1	1
dec	AX	SF,ZF,OF,PF,AF	48	1	2	1	1
	EAX						
dec	CX	SF,ZF,OF,PF,AF	49	1	2	1	1
	ECX						
dec	DX	SF,ZF,OF,PF,AF	4A	1	2	1	1
	EDX						
dec	BX	SF,ZF,OF,PF,AF	4B	1	2	1	1
	EBX						
dec	SP	SF,ZF,OF,PF,AF	4C	1	2	1	1
	ESP						
dec	BP	SF,ZF,OF,PF,AF	4D	1	2	1	1
	EBP						
dec	SI	SF,ZF,OF,PF,AF	4E	1	2	1	1
	ESI						
dec	DI	SF,ZF,OF,PF,AF	4F	1	2	1	1
	EDI						
dec	mem8	SF,ZF,OF,PF,AF	FE	2+	6	3	3
dec	mem16	SF,ZF,OF,PF,AF	FF	2+	6	3	3
	mem32						
div	reg8	SF,ZF,OF,PF,AF ?	F6	2	14	16	17
div	reg16	SF,ZF,OF,PF,AF ?	F7	2	22	24	25
	reg32				38	40	41
div	mem8	SF,ZF,OF,PF,AF ?	F6	2+	17	16	17
div	mem16	SF,ZF,OF,PF,AF ?	F7	2+	25	24	25
	mem32				41	40	41
idiv	reg8	SF,ZF,OF,PF,AF ?	F6	2	19	19	22
idiv	reg16	SF,ZF,OF,PF,AF ?	F7	2	27	27	30
	reg32				43	43	48
idiv	mem8	SF,ZF,OF,PF,AF ?	F6	2+	22	20	22
idiv	mem16	SF,ZF,OF,PF,AF ?	F7	2+	30	28	30
	mem32				46	44	48
imul	reg8	OF,CF	F6	2	9-14	13-18	11

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
		SF,ZF, PF,AF ?					
imul	reg16	OF,CF	F7	2	9-22	13-26	11
	reg32	SF,ZF, PF,AF ?			9-38	13-42	10
imul	mem8	OF,CF	F6	2+	12-17	13-18	11
		SF,ZF, PF,AF ?					
imul	mem16	OF,CF	F7	2+	12-25	13-26	11
	mem32	SF,ZF, PF,AF ?			12-41	13-42	10
imul	reg16,reg16	OF,CF	0F AF	3	9-22	13-26	11
	reg32,reg32	SF,ZF, PF,AF ?			9-38	13-42	10
imul	reg16,mem16	OF,CF	0F AF	3+	12-25	13-26	11
	reg32,mem32	SF,ZF, PF,AF ?			12-41	13-42	10
imul	reg16,imm8	OF,CF	6B	3	9-14	13-18	10
	reg32,imm8	SF,ZF, PF,AF ?					
imul	mem16	OF,CF	F7	4	9-22	13-26	11
	mem32	SF,ZF, PF,AF ?		6	9-38	13-42	10
imul	reg16,reg16,imm8	OF,CF	6B	3	9-14	13-18	10
	reg32,reg32,imm8	SF,ZF, PF,AF ?					
imul	reg16,reg16,imm16	OF,CF	69	4	9-22	13-26	10
	reg32,reg32,imm32	SF,ZF, PF,AF ?		6	9-38	13-42	10
imul	reg16,mem16,imm8	OF,CF	6B	3+	9-17	13-18	10
	reg32,mem32,imm8	SF,ZF, PF,AF ?					
imul	reg16,mem16,imm16	OF,CF	69	4+	12-25	13-26	10
	reg32,mem32,imm32	SF,ZF, PF,AF ?		6+	12-41	13-42	10
inc	reg8	SF,ZF,OF,PF,AF	FE	2	2	1	1
inc	AX	SF,ZF,OF,PF,AF	40	1	2	1	1
	EAX						
inc	CX	SF,ZF,OF,PF,AF	41	1	2	1	1
	ECX						
inc	DX	SF,ZF,OF,PF,AF	42	1	2	1	1
	EDX						
inc	BX	SF,ZF,OF,PF,AF	43	1	2	1	1
	EBX						
inc	SP	SF,ZF,OF,PF,AF	44	1	2	1	1
	ESP						
inc	BP	SF,ZF,OF,PF,AF	45	1	2	1	1
	EBP						
inc	SI	SF,ZF,OF,PF,AF	47	1	2	1	1
	ESI						
inc	DI	SF,ZF,OF,PF,AF	48	1	2	1	1
	EDI						
inc	mem8	SF,ZF,OF,PF,AF	FE	2+	6	3	3
inc	mem16	SF,ZF,OF,PF,AF	FF	2+	6	3	3
	mem32						
ja	rel8	none	77	7+,3	3,1	1	2
jnbe							
ja	rel32	none	0F 87	7+,3	3,1	1	6
jnbe							
jae	rel8	none	73	7+,3	3,1	1	2
jnb							
jae	rel32	none	0F 83	7+,3	3,1	1	6

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
jnb							
jb	rel8	none	72	7+,3	3,1	1	2
jnae							
jb	rel32	none	0F 82	7+,3	3,1	1	6
jnae							
jbe	rel8	none	76	7+,3	3,1	1	2
jna							
jbe	rel32	none	0F 86	7+,3	3,1	1	6
jna							
jc	rel8	none	72	7+,3	3,1	1	2
jc	rel32	none	0F 82	7+,3	3,1	1	6
je	rel8	none	74	7+,3	3,1	1	2
jz							
je	rel32	none	0F 84	7+,3	3,1	1	6
jz							
jecxz	rel8	none	E3			6,5	2
jg	rel8	none	7F	7+,3	3,1	1	2
jnle							
jg	rel32	none	0F 8F	7+,3	3,1	1	6
jnle							
jge	rel8	none	7D	7+,3	3,1	1	2
jnl							
jge	rel32	none	0F 8D	7+,3	3,1	1	6
jnl							
jl	rel8	none	7C	7+,3	3,1	1	2
jnge							
jl	rel32	none	0F 8C	7+,3	3,1	1	6
jnge							
jle	rel8	none	7E	7+,3	3,1	1	2
jng							
jle	rel32	none	0F 8E	7+,3	3,1	1	6
jng							
jmp	rel8	none	EB	2	7+	3	1
jmp	rel32	none	E9	5	7+	3	1
jmp	reg32	none	FF	2	10+	5	2
jmp	mem32	none	FF	2+	10+	5	2
jnc	rel8	none	73	7+,3	3,1	1	2
jnc	rel32	none	0F 83	7+,3	3,1	1	6
jne	rel8	none	75	7+,3	3,1	1	2
jnz							
jne	rel32	none	0F 85	7+,3	3,1	1	6
jnz							
jno	rel8	none	71	7+,3	3,1	1	2
jno	rel32	none	0F 81	7+,3	3,1	1	6
jnp	rel8	none	7B	7+,3	3,1	1	2
jpo							
jnp	rel32	none	0F 8B	7+,3	3,1	1	6
jpo							
jns	rel8	none	79	7+,3	3,1	1	2
jns	rel32	none	0F 89	7+,3	3,1	1	6

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
jo	rel8	none	70	7+,3	3,1	1	2
jo	rel32	none	0F 80	7+,3	3,1	1	6
jp	rel8	none	7A	7+,3	3,1	1	2
jpe							
jp	rel32	none	0F 8A	7+,3	3,1	1	6
jpe							
js	rel8	none	78	7+,3	3,1	1	2
js	rel32	none	0F 88	7+,3	3,1	1	6
lea	reg32,mem32	none	8D	2+	2	1	1
lodsb	none	none	AC	1	5	5	2
lodsw	none	none	AD	1	5	5	2
	lodsd						
loop	none	none	E2	11+	6,7	5,6	2
loope	none	none	E1	11+	6,9	7,8	2
loopz							
loopne	none	none	E0	11+	6,9	7,8	2
loopnz							
mov	AL, imm8	none	B0	2	2	1	1
mov	CL, imm8	none	B1	2	2	1	1
mov	DL, imm8	none	B2	2	2	1	1
mov	BL, imm8	none	B3	2	2	1	1
mov	AH, imm8	none	B4	2	2	1	1
mov	CH, imm8	none	B5	2	2	1	1
mov	DH, imm8	none	B6	2	2	1	1
mov	BH, imm8	none	B7	2	2	1	1
mov	AX, imm16	none	B8	3	2	1	1
	EAX, imm32			5			
mov	CX, imm16	none	B9	3	2	1	1
	ECX, imm32			5			
mov	DX, imm16	none	BA	3	2	1	1
	EDX, imm32			5			
mov	BX, imm16	none	BB	3	2	1	1
	EBX, imm32			5			
mov	SP, imm16	none	BC	3	2	1	1
	ESP, imm32			5			
mov	BP, imm16	none	BD	3	2	1	1
	EPB, imm32			5			
mov	SI, imm16	none	BE	3	2	1	1
	ESI, imm32			5			
mov	DI, imm16	none	BF	3	2	1	1
	EDI, imm32			5			
mov	mem8, imm8	none	C6	3+	2	1	1
mov	mem16,imm16	none	C7	4+	2	1	1
	mem32,imm32			6+			
mov	reg8,reg8	none	8A	2	2	1	1
mov	reg16,reg16	none	8B	2	2	1	1
	reg32,reg32						
mov	AL, direct	none	A0	5	4	1	1
mov	AX, direct	none	A1	5	4	1	1
	EAX, direct						

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
mov	reg8,mem8	none	8A	2+	4	1	1
mov	reg16,mem16	none	8B	2+	4	1	1
	reg32,mem32						
mov	mem8,reg8	none	88	2+	2	1	1
mov	mem16,reg16	none	89	2+	2	1	1
	mem32,reg32						
mov	direct ,AL	none	A2	5	2	1	1
mov	direct, AX	none	A3	5	2	1	1
	direct, EAX						
mov	sreg, reg16	none	8E	2	2	3	1
mov	reg16, sreg	none	8C	2	2	3	1
mov	sreg,mem16	none	8E	2+	2	3[*]	2[*]
mov	mem16,sreg	none	8C	2+	2	3	1
movsb	none	none	A4	1	7	7	4
movsw	none	none	A5	1	7	7	4
movsd							
movsx	reg16,reg8	none	0F BE	3	3	3	3
	reg32,reg8						
movsx	reg16,mem8	none	0F BE	3+	6	3	3
	reg32,mem8						
movsx	reg32,reg16	none	0F BF	3	3	3	3
movsx	reg32,mem16	none	0F BF	3+	6	3	3
movzx	reg16,reg8	none	0F B6	3	3	3	3
	reg32,reg8						
movzx	reg16,mem8	none	0F B6	3+	6	3	3
	reg32,mem8						
movzx	reg32,reg16	none	0F B7	3	3	3	3
movzx	reg32,mem16	none	0F B7	3+	6	3	3
mul	reg8	OF,CF	F6	2	9-14	13-18	11
		SF,ZF, PF,AF ?					
mul	reg16	OF,CF	F7	2	9-22	13-26	11
	reg32	SF,ZF, PF,AF ?			9-38	13-42	10
mul	mem8	OF,CF	F6	2+	12-17	13-18	11
		SF,ZF, PF,AF ?					
mul	mem16	OF,CF	F7	2+	12-25	13-26	11
	mem32	SF,ZF, PF,AF ?			12-41	13-42	10
neg	reg8	SF,ZF,OF,CF,PF,AF	F6	2	2	1	1
neg	reg16	SF,ZF,OF,CF,PF,AF	F7	2	2	1	1
	reg32						
neg	mem8	SF,ZF,OF,CF,PF,AF	F6	2+	2	1	1
neg	mem16	SF,ZF,OF,CF,PF,AF	F7	2+	2	1	1
	mem32						
not	reg8	none	F6	2	2	1	1
not	reg16	none	F7	2	2	1	1
	reg32						
not	mem8	none	F6	2+	6	3	3
not	mem16	none	F7	2+	6	3	3
	mem32						
or	AL,imm8	SF,ZF,OF,CF,PF,AF	0C	2	2	1	1
or	AX,imm16	SF,ZF,OF,CF,PF,AF	0D	3	2	1	1

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
	EAX,imm32			5			
or	reg8,imm8	SF,ZF,OF,CF,PF,AF	80	3	2	1	1
or	reg16,imm16	SF,ZF,OF,CF,PF,AF	81	4	2	1	1
	reg32,imm32			6			
or	reg16,imm8	SF,ZF,OF,CF,PF,AF	83	3	2	1	1
	reg32,imm8						
or	mem8,imm8	SF,ZF,OF,CF,PF,AF	80	3+	7	3	3
or	mem16,imm16	SF,ZF,OF,CF,PF,AF	81	4+	7	3	3
	mem32,imm32			6+			
or	mem16,imm8	SF,ZF,OF,CF,PF,AF	83	3+	7	3	3
	mem32,imm8						
or	reg8,reg8	SF,ZF,OF,CF,PF,AF	0A	2	2	1	1
or	reg16,reg16	SF,ZF,OF,CF,PF,AF	0B	2	2	1	1
	reg32,reg32						
or	reg8,mem8	SF,ZF,OF,CF,PF,AF	0A	2+	6	2	2
or	reg16,mem16	SF,ZF,OF,CF,PF,AF	0B	2+	6	2	2
	reg32,mem32						
or	mem8,reg8	SF,ZF,OF,CF,PF,AF	08	2+	7	3	3
or	mem16,reg16	SF,ZF,OF,CF,PF,AF	09	2+	7	3	3
	mem32,reg32						
pop	AX	none	58	1	4	1	1
	EAX						
pop	CX	none	59	1	4	1	1
	ECX						
pop	DX	none	5A	1	4	1	1
	EDX						
pop	BX	none	5B	1	4	1	1
	EBX						
pop	SP	none	5C	1	4	1	1
	ESP						
pop	BP	none	5D	1	4	1	1
	EBP						
pop	SI	none	5E	1	4	1	1
	ESI						
pop	DI	none	5F	1	4	1	1
	EDI						
pop	DS	none	1F	1	7	3	3
pop	ES	none	07	1	7	3	3
pop	SS	none	17	1	7	3	3
pop	FS	none	0F A1	2	7	3	3
pop	GS	none	0F A9	2	7	3	3
pop	mem16	none	8F	2+	5	6	3
	mem32						
popa	none	none	61	1	24	9	5
popad							
popf	none	none	9D	1	5	9	4
popfd							
push	AX	none	50	1	2	1	1
	EAX						
push	CX	none	51	1	2	1	1

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
	ECX						
push	DX	none	52	1	2	1	1
	EDX						
push	BX	none	53	1	2	1	1
	EBX						
push	SP	none	54	1	2	1	1
	ESP						
push	BP	none	55	1	2	1	1
	EBP						
push	SI	none	56	1	2	1	1
	ESI						
push	DI	none	57	1	2	1	1
	EDI						
push	CS	none	0E	1	2	3	1
push	DS	none	1E	1	2	3	1
push	ES	none	06	1	2	3	1
push	SS	none	16	1	2	3	1
push	FS	none	0F A0	2	2	3	1
push	GS	none	0F A8	2	2	3	1
push	mem16	none	FF	2+	5	4	2
	mem32						
push	imm8	none	6A	2	2	1	1
push	imm16	none	68	3	2	1	1
	imm32			5			
pusha	none	none	60	1	18	11	5
pushad							
pushf	none	none	9C	1	4	4	3
pushfd							
rep	none	none	F3	1			
repz	(string instruction						
repe	prefix)						
rep	none	none	F3 A4	2	7+4n	12+3n	13+4n
movsb							
rep	none	none	F3 A5	2	7+4n	12+3n	13+4n
movsw							
rep							
movsd							
rep stosb	none	none	F3 A6	2	5+5n	7+4n	9n
rep stosw	none	none	F3 A7	2	5+5n	7+4n	9n
rep stosd							
repe	none	none	F3 A6	2	5+9n	7+7n	9+4n
cmpsb							
repe	none	none	F3 A7	2	5+9n	7+7n	9+4n
cmpsw							
repe							
cmpsd							
repe	none	none	F3 AE	2	5+8n	7+5n	9+4n
scasb							
repe	none	none	F3 AF	2	5+8n	7+5n	9+4n
scasw							

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
repe							
scasd							
repne	none	none	F2 A6	2	5+9n	7+7n	9+4n
cmpsb							
repne	none	none	F2 A7	2	5+9n	7+7n	9+4n
cmpsw							
repne							
cmpsd							
repne	none	none	F2 AE	2	5+8n	7+5n	9+4n
scasb							
repne	none	none	F2 AF	2	5+8n	7+5n	9+4n
scasw							
repne							
scasd							
repnz	none	none	F2	1			
repne	(string instruction prefix)						
ret (far)	none	none	CB	1	18+	13	4
ret (far)	imm16	none	CA	3	18+	14	4
ret (near)	none	none	C3	1	10+	5	2
ret (near)	imm16	none	C2	3	10+	5	3
rol	reg8	SF,ZF,OF,CF,PF	D0	2	3	3	1
ror		AF ?					
rol	reg16	SF,ZF,OF,CF,PF	D1	2	3	3	1
ror	reg32	AF ?					
rol	mem8	SF,ZF,OF,CF,PF	D0	2+	7	4	3
ror		AF ?					
rol	reg16	SF,ZF,OF,CF,PF	D1	2+	7	4	3
ror	reg32	AF ?					
rol	reg8, imm8	SF,ZF,OF,CF,PF	C0	3	3	2	1
ror		AF ?					
rol	reg16,imm8	SF,ZF,OF,CF,PF	C1	3	3	2	1
ror	reg32,imm8	AF ?					
rol	mem8, imm8	SF,ZF,OF,CF,PF	C0	3+	7	4	3
ror		AF ?					
rol	mem16,imm8	SF,ZF,OF,CF,PF	C1	3+	7	4	3
ror	mem32,imm8	AF ?					
rol	reg8, CL	SF,ZF,OF,CF,PF	D2	2	3	2	1
ror		AF ?					
rol	reg16,CL	SF,ZF,OF,CF,PF	D3	2	3	2	1
ror	reg32,CL	AF ?					
rol	mem8, CL	SF,ZF,OF,CF,PF	D2	2+	7	4	4
ror		AF ?					
rol	mem16,CL	SF,ZF,OF,CF,PF	D3	2+	7	4	4
ror	mem32,CL	AF ?					
sbb	AL,imm8	SF,ZF,OF,CF,PF,AF	1C	2	2	1	1
sbb	AX,imm16	SF,ZF,OF,CF,PF,AF	1D	3	2	1	1
	EAX,imm32			5			
sbb	reg8,imm8	SF,ZF,OF,CF,PF,AF	80	3	2	1	1
sbb	reg16,imm16	SF,ZF,OF,CF,PF,AF	81	4	2	1	1

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
	reg32,imm32			6			
sbb	reg16,imm8	SF,ZF,OF,CF,PF,AF	83	3	2	1	1
	reg32,imm8						
sbb	mem8,imm8	SF,ZF,OF,CF,PF,AF	80	3+	7	3	3
sbb	mem16,imm16	SF,ZF,OF,CF,PF,AF	81	4+	7	3	3
	mem32,imm32			6+			
sbb	mem16,imm8	SF,ZF,OF,CF,PF,AF	83	3+	7	3	3
	mem32,imm8						
sbb	reg8,reg8	SF,ZF,OF,CF,PF,AF	1A	2	2	1	1
sbb	reg16,reg16	SF,ZF,OF,CF,PF,AF	1B	2	2	1	1
	reg32,reg32						
sbb	reg8,mem8	SF,ZF,OF,CF,PF,AF	1A	2+	6	2	2
sbb	reg16,mem16	SF,ZF,OF,CF,PF,AF	1B	2+	6	2	2
	reg32,mem32						
sbb	mem8,reg8	SF,ZF,OF,CF,PF,AF	18	2+	7	3	3
sbb	mem16,reg16	SF,ZF,OF,CF,PF,AF	19	2+	7	3	3
	mem32,reg32						
scasb	none	none	AE	1	7	6	4
scasw	none	none	AE	1	7	6	4
scasd							
shl/sal	reg8	SF,ZF,OF,CF,PF	D0	2	3	3	1
shr		AF ?					
sar							
shl/sal	reg16	SF,ZF,OF,CF,PF	D1	2	3	3	1
shr	reg32	AF ?					
sar							
shl/sal	mem8	SF,ZF,OF,CF,PF	D0	2+	7	4	3
shr	AF ?						
sar							
shl/sal	reg16	SF,ZF,OF,CF,PF	D1	2+	7	4	3
shr	reg32	AF ?					
sar							
shl/sal	reg8, imm8	SF,ZF,OF,CF,PF	C0	3	3	2	1
shr	AF ?						
sar							
shl/sal	reg16,imm8	SF,ZF,OF,CF,PF	C1	3	3	2	1
shr	reg32,imm8	AF ?					
sar							
shl/sal	mem8, imm8	SF,ZF,OF,CF,PF	C0	3+	7	4	3
shr	AF ?						
sar							
shl/sal	mem16,imm8	SF,ZF,OF,CF,PF	C1	3+	7	4	3
shr	mem32,imm8	AF ?					
sar							
shl/sal	reg8, CL	SF,ZF,OF,CF,PF	D2	2	3	2	1
shr	AF ?						
sar							
shl/sal	reg16,CL	SF,ZF,OF,CF,PF	D3	2	3	2	1
shr	reg32,CL	AF ?					
sar							

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
shl/sal	mem8, CL	SF,ZF,OF,CF,PF	D2	2+	7	4	4
shr	AF ?						
sar							
shl/sal	mem16,CL	SF,ZF,OF,CF,PF	D3	2+	7	4	4
shr	mem32,CL	AF ?					
sar							
shld	reg16,reg16,imm8	SF,ZF,CF,PF	0F 04	4	3	2	4
	reg32,reg32,imm8	OF,AF ?					
shld	mem16,reg16,imm8	SF,ZF,CF,PF	0F 04	4+	7	4	4
	mem32,reg32,imm8	OF,AF ?					
shld	reg16,reg16,CL	SF,ZF,CF,PF	0F 05	3	3	3	4
	reg32,reg32,CL	OF,AF ?					
shld	mem16,reg16,CL	SF,ZF,CF,PF	0F 05	3+	7	4	5
	mem32,reg32,CL	OF,AF ?					
shrd	reg16,reg16,imm8	SF,ZF,CF,PF	0F AC	4	3	2	4
	reg32,reg32,imm8	OF,AF ?					
shrd	mem16,reg16,imm8	SF,ZF,CF,PF	0F AC	4+	7	4	4
	mem32,reg32,imm8	OF,AF ?					
shrd	reg16,reg16,CL	SF,ZF,CF,PF	0F AD	3	3	3	4
	reg32,reg32,CL	OF,AF ?					
shrd	mem16,reg16,CL	SF,ZF,CF,PF	0F AD	3+	7	4	5
	mem32,reg32,CL	OF,AF ?					
stc	none	CF	F9	1	2	2	2
std	none	DF	FD	1	2	2	2
stosb	none	none	AA	1	4	5	3
stosw	none	none	AB	1	4	5	3
stosd							
sub	AL,imm8	SF,ZF,OF,CF,PF,AF	2C	2	2	1	1
sub	AX,imm16	SF,ZF,OF,CF,PF,AF	2D	3	2	1	1
	EAX,imm32			5			
sub	reg8,imm8	SF,ZF,OF,CF,PF,AF	80	3	2	1	1
sub	reg16,imm16	SF,ZF,OF,CF,PF,AF	81	4	2	1	1
	reg32,imm32			6			
sub	reg16,imm8	SF,ZF,OF,CF,PF,AF	83	3	2	1	1
	reg32,imm8						
sub	mem8,imm8	SF,ZF,OF,CF,PF,AF	80	3+	7	3	3
sub	mem16,imm16	SF,ZF,OF,CF,PF,AF	81	4+	7	3	3
	mem32,imm32			6+			
sub	mem16,imm8	SF,ZF,OF,CF,PF,AF	83	3+	7	3	3
	mem32,imm8						
sub	reg8,reg8	SF,ZF,OF,CF,PF,AF	2A	2	2	1	1
sub	reg16,reg16	SF,ZF,OF,CF,PF,AF	2B	2	2	1	1
	reg32,reg32						
sub	reg8,mem8	SF,ZF,OF,CF,PF,AF	2A	2+	6	2	2
sub	reg16,mem16	SF,ZF,OF,CF,PF,AF	2B	2+	6	2	2
	reg32,mem32						
sub	mem8,reg8	SF,ZF,OF,CF,PF,AF	28	2+	7	3	3
sub	mem16,reg16	SF,ZF,OF,CF,PF,AF	29	2+	7	3	3
	mem32,reg32						
test	AL,imm8	SF,ZF,OF,CF,PF,AF	A8	2	2	1	1

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
test	AX,imm16	SF,ZF,OF,CF,PF,AF	A9	3	2	1	1
	EAX,imm32			5			
test	reg8,imm8	SF,ZF,OF,CF,PF,AF	F6	3	2	1	1
test	reg16,imm16	SF,ZF,OF,CF,PF,AF	F7	4	2	1	1
	reg32,imm32			6			
test	mem8,imm8	SF,ZF,OF,CF,PF,AF	F6	3+	5	2	2
test	mem16,imm16	SF,ZF,OF,CF,PF,AF	F7	4+	5	2	2
	mem32,imm32			6+			
test	reg8,reg8	SF,ZF,OF,CF,PF,AF	84	2	2	1	1
test	reg16,reg16	SF,ZF,OF,CF,PF,AF	85	2	2	1	1
	reg32,reg32						
test	mem8,reg8	SF,ZF,OF,CF,PF,AF	84	2+	5	2	2
test	mem16,reg16	SF,ZF,OF,CF,PF,AF	85	2+	5	2	2
	mem32,reg32						
xchg	AX, CX	none	91	1	3	3	2
	EAX, ECX						
xchg	AX, DX	none	92	1	3	3	2
	EAX, EDX						
xchg	AX, BX	none	93	1	3	3	2
	EAX, EBX						
xchg	AX, SP	none	94	1	3	3	2
	EAX, ESP						
xchg	AX, BP	none	95	1	3	3	2
	EAX, EBP						
xchg	AX, SI	none	96	1	3	3	2
	EAX, ESI						
xchg	AX, DI	none	97	1	3	3	2
	EAX, EDI						
xchg	reg8,reg8	none	86	2	3	3	3
xchg	reg8,mem8	none	86	2+	5	5	3
xchg	reg16,reg16	none	87	2	3	3	3
xchg	reg16,mem16	none	87	2+	5	5	3
xlat	none	none	D7	1	5	4	4
xor	AL,imm8	SF,ZF,OF,CF,PF,AF	34	2	2	1	1
xor	AX,imm16	SF,ZF,OF,CF,PF,AF	35	3	2	1	1
	EAX,imm32			5			
xor	reg8,imm8	SF,ZF,OF,CF,PF,AF	80	3	2	1	1
xor	reg16,imm16	SF,ZF,OF,CF,PF,AF	81	4	2	1	1
	reg32,imm32			6			
xor	reg16,imm8	SF,ZF,OF,CF,PF,AF	83	3	2	1	1
	reg32,imm8						
xor	mem8,imm8	SF,ZF,OF,CF,PF,AF	80	3+	7	3	3
xor	mem16,imm16	SF,ZF,OF,CF,PF,AF	81	4+	7	3	3
	mem32,imm32			6+			
xor	mem16,imm8	SF,ZF,OF,CF,PF,AF	83	3+	7	3	3
	mem32,imm8						
xor	reg8,reg8	SF,ZF,OF,CF,PF,AF	32	2	2	1	1
xor	reg16,reg16	SF,ZF,OF,CF,PF,AF	33	2	2	1	1
	reg32,reg32						
xor	reg8,mem8	SF,ZF,OF,CF,PF,AF	32	2+	6	2	2

Mnemonic	Operand(s)	Flags affected	Opcode	Number of Bytes	Timing 386	Timing 486	Timing Pentium
xor	reg16,mem16	SF,ZF,OF,CF,PF,AF	33	2+	6	2	2
	reg32,mem32						
xor	mem8,reg8	SF,ZF,OF,CF,PF,AF	30	2+	7	3	3
xor	mem16,reg16	SF,ZF,OF,CF,PF,AF	31	2+	7	3	3
	mem32,reg32						

[*]timing varies