

OPCODES TABLE OF INTEL 8085

OpCodes of Intel 8085 in Alphabetical Order

Sr. No.	Mnemonics, Operand	Opcode	Bytes
1.	ACI Data	CE	2
2.	ADC A	8F	1
3.	ADC B	88	1
4.	ADC C	89	1
5.	ADC D	8A	1
6.	ADC E	8B	1
7.	ADC H	8C	1
8.	ADC L	8D	1
9.	ADC M	8E	1
10.	ADD A	87	1
11.	ADD B	80	1
12.	ADD C	81	1
13.	ADD D	82	1
14.	ADD E	83	1
15.	ADD H	84	1
16.	ADD L	85	1
17.	ADD M	86	1
18.	ADI Data	C6	2
19.	ANA A	A7	1
20.	ANA B	A0	1
21.	ANA C	A1	1
22.	ANA D	A2	1
23.	ANA E	A3	1
24.	ANA H	A4	1
25.	ANA L	A5	1
26.	ANA M	A6	1
27.	ANI Data	E6	2
28.	CALL Label	CD	3
29.	CC Label	DC	3
30.	CM Label	FC	3
31.	CMA	2F	1
32.	CMC	3F	1
33.	CMP A	BF	1
34.	CMP B	B8	1
35.	CMP C	B9	1
36.	CMP D	BA	1
37.	CMP E	BB	1
38.	CMP H	BC	1
39.	CMP L	BD	1
40.	CMP M	BD	1
41.	CNC Label	D4	3
42.	CNZ Label	C4	3

Sr. No.	Mnemonics, Operand	Opcode	Bytes
43.	CP Label	F4	3
44.	CPE Label	EC	3
45.	CPI Data	FE	2
46.	CPO Label	E4	3
47.	CZ Label	CC	3
48.	DAA	27	1
49.	DAD B	09	1
50.	DAD D	19	1
51.	DAD H	29	1
52.	DAD SP	39	1
53.	DCR A	3D	1
54.	DCR B	05	1
55.	DCR C	0D	1
56.	DCR D	15	1
57.	DCR E	1D	1
58.	DCR H	25	1
59.	DCR L	2D	1
60.	DCR M	35	1
61.	DCX B	0B	1
62.	DCX D	1B	1
63.	DCX H	2B	1
64.	DCX SP	3B	1
65.	DI	F3	1
66.	EI	FB	1
67.	HLT	76	1
68.	IN Port-address	DB	2
69.	INR A	3C	1
70.	INR B	04	1
71.	INR C	0C	1
72.	INR D	14	1
73.	INR E	1C	1
74.	INR H	24	1
75.	INR L	2C	1
76.	INR M	34	1
77.	INX B	03	1
78.	INX D	13	1
79.	INX H	23	1
80.	INX SP	33	1
81.	JC Label	DA	3
82.	JM Label	FA	3
83.	JMP Label	C3	3
84.	JNC Label	D2	3
85.	JNZ Label	C2	3
86.	JP Label	F2	3
87.	JPE Label	EA	3
88.	JPO Label	E2	3
89.	JZ Label	CA	3

Sr. No.	Mnemonics, Operand	Opcode	Bytes
90.	LDA Address	3A	3
91.	LDAX B	0A	1
92.	LDAX D	1A	1
93.	LHLD Address	2A	3
94.	LXI B	01	3
95.	LXI D	11	3
96.	LXI H	21	3
97.	LXI SP	31	3
98.	MOV A, A	7F	1
99.	MOV A, B	78	1
100.	MOV A, C	79	1
101.	MOV A, D	7A	1
102.	MOV A, E	7B	1
103.	MOV A, H	7C	1
104.	MOV A, L	7D	1
105.	MOV A, M	7E	1
106.	MOV B, A	47	1
107.	MOV B, B	40	1
108.	MOV B, C	41	1
109.	MOV B, D	42	1
110.	MOV B, E	43	1
111.	MOV B, H	44	1
112.	MOV B, L	45	1
113.	MOV B, M	46	1
114.	MOV C, A	4F	1
115.	MOV C, B	48	1
116.	MOV C, C	49	1
117.	MOV C, D	4A	1
118.	MOV C, E	4B	1
119.	MOV C, H	4C	1
120.	MOV C, L	4D	1
121.	MOV C, M	4E	1
122.	MOV D, A	57	1
123.	MOV D, B	50	1
124.	MOV D, C	51	1
125.	MOV D, D	52	1
126.	MOV D, E	53	1
127.	MOV D, H	54	1
128.	MOV D, L	55	1
129.	MOV D, M	56	1
130.	MOV E, A	5F	1
131.	MOV E, B	58	1
132.	MOV E, C	59	1
133.	MOV E, D	5A	1
134.	MOV E, E	5B	1
135.	MOV E, H	5C	1
136.	MOV E, L	5D	1

Sr. No.	Mnemonics, Operand	Opcode	Bytes
137.	MOV E, M	5E	1
138.	MOV H, A	67	1
139.	MOV H, B	60	1
140.	MOV H, C	61	1
141.	MOV H, D	62	1
142.	MOV H, E	63	1
143.	MOV H, H	64	1
144.	MOV H, L	65	1
145.	MOV H, M	66	1
146.	MOV L, A	6F	1
147.	MOV L, B	68	1
148.	MOV L, C	69	1
149.	MOV L, D	6A	1
150.	MOV L, E	6B	1
151.	MOV L, H	6C	1
152.	MOV L, L	6D	1
153.	MOV L, M	6E	1
154.	MOV M, A	77	1
155.	MOV M, B	70	1
156.	MOV M, C	71	1
157.	MOV M, D	72	1
158.	MOV M, E	73	1
159.	MOV M, H	74	1
160.	MOV M, L	75	1
161.	MVI A, Data	3E	2
162.	MVI B, Data	06	2
163.	MVI C, Data	0E	2
164.	MVI D, Data	16	2
165.	MVI E, Data	1E	2
166.	MVI H, Data	26	2
167.	MVI L, Data	2E	2
168.	MVI M, Data	36	2
169.	NOP	00	1
170.	ORA A	B7	1
171.	ORA B	B0	1
172.	ORA C	B1	1
173.	ORA D	B2	1
174.	ORA E	B3	1
175.	ORA H	B4	1
176.	ORA L	B5	1
177.	ORA M	B6	1
178.	ORI Data	F6	2
179.	OUT Port-Address	D3	2
180.	PCHL	E9	1
181.	POP B	C1	1
182.	POP D	D1	1
183.	POP H	E1	1

Sr. No.	Mnemonics, Operand	Opcode	Bytes
184.	POP PSW	F1	1
185.	PUSH B	C5	1
186.	PUSH D	D5	1
187.	PUSH H	E5	1
188.	PUSH PSW	F5	1
189.	RAL	17	1
190.	RAR	1F	1
191.	RC	D8	1
192.	RET	C9	1
193.	RIM	20	1
194.	RLC	07	1
195.	RM	F8	1
196.	RNC	D0	1
197.	RNZ	C0	1
198.	RP	F0	1
199.	RPE	E8	1
200.	RPO	E0	1
201.	RRC	0F	1
202.	RST 0	C7	1
203.	RST 1	CF	1
204.	RST 2	D7	1
205.	RST 3	DF	1
206.	RST 4	E7	1
207.	RST 5	EF	1
208.	RST 6	F7	1
209.	RST 7	FF	1
210.	RZ	C8	1
211.	SBB A	9F	1
212.	SBB B	98	1
213.	SBB C	99	1
214.	SBB D	9A	1
215.	SBB E	9B	1
216.	SBB H	9C	1
217.	SBB L	9D	1
218.	SBB M	9E	1
219.	SBI Data	DE	2
220.	SHLD Address	22	3
221.	SIM	30	1
222.	SPHL	F9	1
223.	STA Address	32	3
224.	STAX B	02	1
225.	STAX D	12	1
226.	STC	37	1
227.	SUB A	97	1
228.	SUB B	90	1
229.	SUB C	91	1
230.	SUB D	92	1

Sr. No.	Mnemonics, Operand	Opcode	Bytes
231.	SUB E	93	1
232.	SUB H	94	1
233.	SUB L	95	1
234.	SUB M	96	1
235.	SUI Data	D6	2
236.	XCHG	EB	1
237.	XRA A	AF	1
238.	XRA B	A8	1
239.	XRA C	A9	1
240.	XRA D	AA	1
241.	XRA E	AB	1
242.	XRA H	AC	1
243.	XRA L	AD	1
244.	XRA M	AE	1
245.	XRI Data	EE	2
246.	XTHL	E3	1

1. transfer data, direct mode.
2. transfer data, immediate mode.
3. sum $8 + 8 \Rightarrow 8$
4. 2's comp.
5. sum $8 + 8 \Rightarrow 16$
6. multiply (LOOP)
7. sum $16 + 16 \Rightarrow 16$
8. division
9. fibonacci
10. sum of AP terms.

|

```
// 1.
// transfer data, direct mode.
|
9000 A 05
8000 LDA 9000
8001
8002
8003 MOV B,A
8004 HLT.
```

```
// 3.
// sum.
// 8 + 8 => 8
```

```
8000 05
8001 04
8005 LXI,H 8000
8006
8007
8008 MOV A,M
8009 INX H
800A ADD M    // A = A + M
800B STA 9000
800C HLT.
```

```
// 5.
// sum.
// 8 + 8 => 16.
8000 05
8000 13
```

```
8050 - LXI, H 8000
MVI C,0
MOV A,M
INX H
ADD M
JNC
INR C
STA 9000
MOV A,C
STA 9001
HLT.
```

```
// 2.
// transfer data, immediate mode.
```

```
8000 MVI A 05
8001
8002 MOV B,A
8003 HLT
```

```
// 4.
// 2's complement.
8000 05
8001 LDA 8000
8002
8003
8004 CMA
8005 INR A
8006 HLT.
```

```
// 6.
// multiply (or LOOP)
// 3 x 4 = 12
9000 03
9001 04
LXI,H 9000
MOV C,M // C act as counter.
MVI A,0
INX H
ADD M
DCR C
JNZ // to add m line.
STA 8050.
HLT
```



```
// 7.  
// sum  
// 16 + 16 => 16
```

```
// A = 0304  
// B = 0305
```

```
9000 04  
9001 03  
9002 05  
9003 03
```

```
LHLD 9000  
XCHG  
MVI C 0  
LHLD 9002 |  
DAD D  
JNC INR C  
SHLD 9004  
MOV A,C  
STA 9006  
HLT.
```

```
// 8.  
// division(multiple subtraction)  
// dividend = 8  
// divisor = 3
```

```
2050 8  
2051 3
```

```
MVI C FF  
LXI 2050  
MOV A, M  
INX H  
MOV B, M  
INR C  
SUB B  
JNC // connect to inr c  
ADD B  
STA 2052  
MOV A,C  
STA 2053  
HLT.
```

```
// 9.  
// fibonacci
```

```
LXI H, 3050  
MVI C, 08  
MVI B, 00  
MVI D, 01  
MOV M,B  
INX H  
MOV M,D  
MOV A,B  
ADD D  
MOV B,D  
MOV D,A  
DCR C  
JNZ // to mov A,B  
HLT.
```

```
// 10.  
// sum of AP terms.
```

```
MOV B, a  
MOV C, n  
MOV D, d
```

```
MOV H, B  
MOV A, B  
DCR C
```

```
MOV H, A  
MOV A, B  
ADD D  
MOV B, A  
MOV A, H  
ADD B  
DCR C  
JNC // to mov H,A  
STA 9000  
HLT.
```