

Z80 CPU

MICROPROCESSOR INSTANT REFERENCE CARD

MICRO CHART

Example of reading instruction set tables: ADC A,A... ADC A - entry says to see table; table shows opcode 8F, 4 states; and flag code 'A' which is defined under 'Flag Codes'. ADC HL,LC ... 2 byte opcode is ED,4A; flag code is H; takes 15 states. CALL C, address ... opcode is DC followed by 2 byte address; flag code is Z; states are described by note 5.

Instruction Set

ADC	A,-	TABLE	A	LD	(IX+d),C	DD71d	Z19
ADC	HL,BC	ED04	H15	LD	(IX+d),D	DD72d	Z19
ADC	HL,DE	ED50	H15	LD	(IX+d),D	DD73d	Z19
ADC	HL,HL	ED6A	H15	LD	(IX+d),H	DD74d	Z19
ADC	HL,SP	ED70	H15	LD	(IX+d),L	DD75d	Z19
ADD	A,-	TABLE	A	LD	(IX+d),N	DD36dn	Z19
ADD	HL,B,C	09	G11	LD	(IV+d),A	FD77d	Z19
ADD	HL,DE	19	G11	LD	(IV+d),B	FD70d	Z19
ADD	HL,HL	29	G11	LD	(IV+d),C	FD71d	Z19
ADD	HL,SP	39	G11	LD	(IV+d),D	FD72d	Z19
ADD	IX,BC	DD09	G15	LD	(IV+d),E	FD73d	Z19
ADD	IX,DE	DD19	G15	LD	(IV+d),H	FD74d	Z19
ADD	IX,IX	DD29	G15	LD	(IV+d),L	FD75d	Z19
ADD	IX,SP	DD39	G15	LD	(IV+d),N	FD36dn	Z19
ADD	Y,I,BC	FD09	G15	LD	(aa),A	32aa	Z13
ADD	Y,I,DE	FD19	G15	LD	(aa),DE	ED53aa	Z20
ADD	Y,I,IX	FD29	G15	LD	(aa),HL	22aa	Z16
ADD	Y,I,SP	FD39	G15	LD	(aa),IX	DD22aa	Z20
AND	-	TABLE	C	LD	(aa),SP	ED73aa	Z20
BIT	-	TABLE	V	LD	(aa),U	ED70aa	Z20
CALL	aa	CDaa	Z17	LD	A,(BC)	0A	Z7
CALL	C,aa	DCaa	Z15	LD	A,(DE)	1A	Z7
CALL	M,aa	FCaa	Z15	LD	A,(aa)	3aa	Z13
CALL	NC,aa	D4aa	Z15	LD	A,I	E507	U9
CALL	NZ,aa	C4aa	Z15	LD	A,R	ED5F	U9
CALL	P,aa	F4aa	Z15	LD	A,-	TABLE	Z
CALL	PE,aa	ECaa	Z15	LD	B,-	TABLE	Z
CALL	PO,aa	E4aa	Z15	LD	BC,(aa)	ED4Ba	Z20
CALL	Z,aa	CCaa	Z15	LD	BC,aa	01aa	Z10
CCF	-	TABLE	G4	LD	C,-	TABLE	Z
CP	-	TABLE	B	LD	D,-	TABLE	Z
CPD	EDA9	T16	LD	D,E	DE5Ba	Z20	
CPDR	EDB9	T(1)	LD	D,E	aa	11aa	Z10
CPI	EDA1	T16	LD	D,E	TABLE	Z	
CPIR	EDB1	T(1)	LD	D,E	TABLE	Z	
CPL	2F	N4	LD	H,-	TABLE	Z	
DAA	27	M4	LD	HL,(aa)	22aa	Z16	
DEC	(HL)	35	F11	LD	HL,aa	21aa	Z10
DEC	(IX+d)	DD35d	F23	LD	I,A	ED47	Z9
DEC	(Y+d)	FD35d	F23	LD	IX,(aa)	DD2Aaa	Z20
DEC	A	3D	F4	LD	IX,aa	DD21aa	Z14
DEC	B	05	F4	LD	IX,aa	FD22aa	Z20
DEC	BC	OB	Z6	LD	IX,aa	FD21aa	Z14
DEC	C	OD	F4	LD	L,-	TABLE	Z
DEC	D	15	F4	LD	R,A	ED4F	Z9
DEC	DE	1B	Z6	LD	SP,(aa)	ED7Baa	Z20
DEC	E	1D	F4	LD	SP,HL	F9	Z6
DEC	H	25	F4	LD	SP,IX	DDF9	Z10
DEC	HL	2B	Z6	LD	SP,IY	DDF9	Z10
DEC	IX	DD2B	Z10	LD	SP,aa	31aa	Z10
DEC	IY	FD2B	Z10	LD	SP,aa	ED8A	R16
DEC	L	2D	F4	LD	SP,aa	EDB8	S(1)
DEC	SP	3B	Z6	LD	SP,aa	ED7Baa	Z20
DI	F3	Z4	LDI	EDAO	R16		
DJNZ	d	10d	Z(2)	LDI	EDAO	R16	
EI	FB	Z4	NEG	ED44	B8		
EX	(SP),HL	E3	NOP	00	Z4		
EX	(SP),IX	DDE3	TABLE	ED7Baa	Z20		
EX	(SP),Y	FDE3	OTDR	EDBB	Q(1)		
EX	AF,AF'	08	Z4	OTIR	EDB3	Q(1)	
EX	DE,HL	E9	Z4	OUT	(C),A	ED79	Z12
EXX	D9	Z4	OUT	(C),B	ED41	Z12	
HALT	76	Z4	OUT	(C),C	ED49	Z12	
IM	0	E046	Z8	OUT	(C),D	ED51	Z12
IM	1	E056	Z8	OUT	(C),E	ED59	Z12
IM	2	E05E	Z8	OUT	(C),H	ED61	Z12
IN	A,(C)	ED78	W12	OUT	(n),A	D3n	Z11
IN	A,(n)	DBn	Z11	OUTD	EDAB	P16	
IN	B,(C)	ED40	W12	OUT I	EDA3	P16	
IN	C,(C)	ED48	W12	POP	AF	F1	Z10
IN	D,(C)	ED50	W12	POP	BC	C1	Z10
IN	E,(C)	ED58	W12	POP	DE	D1	Z10
IN	H,(C)	ED60	W12	POP	HL	E1	Z10
IN	L,(C)	ED68	W12	POP	IX	DDE1	Z14
INC	(HL)	34	E11	POP	IX	FEDE1	Z14
INC	(IX+d)	DD34d	E23	PUSH	AF	F5	Z11
INC	(Y+d)	FD34d	E23	PUSH	BC	C5	Z11
INC	A	3C	E4	PUSH	DE	D5	Z11
INC	B	04	E4	PUSH	HL	E5	Z11
INC	BC	03	Z6	PUSH	IX	DDE5	Z15
INC	C	0C	E4	PUSH	IY	FEDE5	Z15
INC	D	14	E4	RES	-	TABLE	Z
INC	DE	13	Z6	RET	C	C9	Z10
INC	E	1C	E4	RET	D	D8	Z14
INC	H	24	E4	RET	M	F8	Z14
INC	HL	23	Z6	RET	NC	D0	Z14
INC	IX	DD23	Z10	RET	NZ	C0	Z14
INC	IY	FD23	Z10	RET	P	F0	Z14
INC	L	2C	E4	RET	PE	E8	Z14
INC	SP	33	Z6	RET	PO	E0	Z14
IND	E0AA	P16	RET	Z	C8	Z(4)	
INDR	E0BA	P16	RET	ED44	ED45	Z14	
INI	E0BB	Q(1)	RET	ED44	ED45	Z14	
INIR	E0BC	Q(1)	RET	ED44	ED45	Z14	
JP	(HL)	E3	Z4	RRA	17	J4	
JP	(IX)	DDE9	Z8	RRC	07	J4	
JP	(Y)	FDE9	Z8	RRL	1F	J4	
JP	aa	C3aa	Z10	RR	ED6F	L18	
JP	C,aa	DAaa	Z10	RRA	ED6F	L18	
JP	M,aa	Faaa	Z10	RRC	ED6F	L18	
JP	NC,aa	D2aa	Z10	RRL	ED6F	L18	
JP	NZ,aa	C2aa	Z10	RR	ED6F	L18	
JP	P,aa	F2aa	Z10	RRA	ED6F	L18	
JP	PE,aa	EAAa	Z10	RRC	ED6F	L18	
JP	PO,aa	E2aa	Z10	RRL	ED6F	L18	
JP	Z,aa	CAaa	Z10	RR	ED6F	L18	
JR	C,d	38d	Z(3)	RST	00H	C7	Z11
JR	d	18d	Z12	RST	08H	CF	Z11
JR	NC,d	30d	Z(3)	RST	10H	D7	Z11
JR	NZ,d	20d	Z(3)	RST	18H	DF	Z11
JR	Z,d	28d	Z(3)	RST	20H	E7	Z11
LD	(BC),A	02	Z7	RST	28H	EF	Z11
LD	(DE),A	12	Z7	RST	30H	F7	Z11
LD	(HL),A	77	Z7	RST	38H	FF	Z11
LD	(HL),B	70	Z7	SBC	A,-	TABLE	B
LD	(HL),C	71	Z7	SBC	HLBC	ED42	I15
LD	(HL),D	72	Z7	SBC	HLDE	ED52	I15
LD	(HL),E	73	Z7	SBC	HLHL	ED62	I15
LD	(HL),H	74	Z7	SCF	-	37	O4
LD	(HL),L	75	Z7	SET	-	TABLE	Z
LD	(HL),N	36n	Z10	SLA	-	TABLE	K
LD	(IX+d),A	DD77d	Z19	SRA	-	TABLE	K
LD	(IX+d),B	DD70d	Z19	SRL	-	TABLE	B
S	-	-	XOR	-	XOR	-	D

BIT 0,	CB,47	CB,40	CB,41	CB,42	CB,43	CB,44	CB,45	CB,46	DD,CB,d,46	FD,CB,d,46	V
BIT 1,	CB,4F	CB,48	CB,49	CB,4A	CB,4B	CB,4C	CB,4D	CB,4E	DD,CB,d,4E	FD,CB,d,4E	V
BIT 2,	CB,57	CB,50	CB,51	CB,52	CB,53	CB,54	CB,55	CB,56	DD,CB,d,56	FD,CB,d,56	V
BIT 3,	CB,5F	CB,54	CB,59	CB,5A	CB,5B	CB,5C	CB,5D	CB,5E	DD,CB,d,5E	FD,CB,d,5E	V
BIT 4,	CB,67	CB,60	CB,61	CB,62	CB,63	CB,64	CB,65	CB,66	DD,CB,d,66	FD,CB,d,66	V
BIT 5,	CB,6F	CB,68	CB,69	CB,6A	CB,6B	CB,6C	CB,6D	CB,6E	DD,CB,d,6E	FD,CB,d,6E	V
BIT 6,	CB,77	CB,70	CB,71	CB,72	CB,73	CB,74	CB,75	CB,76	DD,CB,d,76	FD,CB,d,76	V
BIT 7,	CB,7F	CB,78	CB,79	CB,7A	CB,7B	CB,7C	CB,7D	CB,7E	DD,CB,d,7E	FD,CB,d,7E	V
STATES:	8			12			20				

RES 0,	CB,87	CB,80	CB,81	CB,82	CB,83	CB,84	CB,85	CB,86	DD,CB,d,86	FD,CB,d,86	N
RES 1,	CB,8F	CB,88	CB,89	CB,8A	CB,8B	CB,8C	CB,8D	CB,8E	DD,CB,d,8E	FD,CB,d,8E	N
RES 2,	CB,97	CB,90	CB,91	CB,92	CB,93	CB,94	CB,95	CB,96	DD,CB,d,96	FD,CB,d,96	N
RES 3,	CB,9F	CB,98	CB,99	CB,9A	CB,9B	CB,9C	CB,9D	CB,9E	DD,CB,d,9E	FD,CB,d,9E	N
RES 4,	CB,A7	CB,A0	CB,A1	CB,A2	CB,A3	CB,A4	CB,A5	CB,A6	DD,CB,d,106	FD,CB,d,106	A
RES 5,	CB,AF	CB,A8	CB,A9	CB,AA	CB,AB	CB,AC	CB,AD	CB,AE	DD,CB,d,106	FD,CB,d,106	A
RES 6,	CB,B7	CB,B0	CB,B1	CB,B2	CB,B3	CB,B4	CB,B5	CB,B6	DD,CB,d,106	FD,CB,d,106	A
RES 7,	CB,BF	CB,B8	CB,B9	CB,BA	CB,BC	CB,BD	CB,BE	CB,EE	DD,CB,d,106	FD,CB,d,106	A
SET 0,	CB,C7	CB,C0	CB,C1	CB,C2	CB,C3	CB,C4	CB,C5	CB,C6	DD,CB,d,106	FD,CB,d,106	N
SET 1,	CB,CF	CB,C8	CB,C9	CB,CA	CB,CB	CB,CD	CB,CE	CB,CF	DD,CB,d,106	FD,CB,d,106	N
SET 2,	CB,D7	CB,D0	CB,D1	CB,D2	CB,D3	CB,D4	CB,D5	CB,D6	DD,CB,d,106	FD,CB,d,106	N
SET 3,	CB,DF	CB,D8	CB,D9	CB,DA	CB,DB	CB,DC	CB,DD	CB,DE	DD,CB,d,106	FD,CB,d,106	N
SET 4,	CB,E7	CB,E0	CB,E1	CB,E2	CB,E3	CB,E4	CB,E5	CB,E6	DD,CB,d,106	FD,CB,d,106	N
SET 5,	CB,EF	CB,E8	CB,E9	CB,EA	CB,EB	CB,EC	CB,ED	CB,EE	DD,CB,d,106	FD,CB,d,106	N
SET 6,	CB,F7	CB,F0	CB,F1	CB,F2	CB,F3	CB,F4	CB,F5	CB,F6	DD,CB,d,106	FD,CB,d,106	N
SET 7,	CB,FF	CB,F8	CB,F9	CB,FA	CB,FB	CB,FC	CB,FD	CB,FE	DD,CB,d,106	FD,CB,d,106	N
STATES:	8			15			23				

ADC A,	8F	88	8A	8B	8C	8D	8E	CE,n	DD,8E,d	FD,8E,d	A
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