8080 Reference Card

NOTATION

r :Any 8 bit register: A B C D E H L

rp :Any 16 bit register pair
Write B for BC
D for DE
H for HL

PC :Program Counter

SP :Stack Pointer

M :Memory byte referenced by HL

F :Flag bits: s z 0 a 0 p 1 c
c: carry bit
p: parity bit
a: auxiliary carry bit
z: zero bit
s: sign bit

INTE :Interrupt Enable flag

PSW :Program Status Word: A,F

addr :memory address, 16 bits } or expression

d3 :3 bits of data } evaluated

d8 :8 bits of data } to the given

d16 :16 bits of data } length

(item) :memory area referenced by "item"

port :Input/Output port

$:present value of location counter

[ ] :optional field, may be omitted

Pauger Jun

BME-HEI 1984

①

SOURCE FORM	EFFECT	FLAGS AFFECTED
Data transfer		
MOV r_1,r_2	$r_1 \leftarrow r_2$	
MOV r,M	r ← (HL)	
MOV M,r	(HL) ← r	
MVI r,d8	r ← d8	
MVI M,d8	(HL) ← d8	
LXI rp,d16	rp ← d16	
LXI SP,d16	SP ← d16	
LDA addr	A ← (addr)	
LHLD addr	HL ← (addr)	
LDAX B	A ← (BC)	
LDAX D	A ← (DE)	
STA addr	(addr) ← A	
SHLD addr	(addr) ← HL	
STAX B	(BC) ← A	
STAX D	(DE) ← A	
XCHG	HL ↔ DE	
Stack		
PUSH rp	SP ← SP-2; (SP) ← rp	
PUSH PSW	SP ← SP-2; (SP) ← A,F	
POP rp	rp ← (SP); SP ← SP+2	
POP PSW	A,F ← (SP); SP ← SP+2	szapc
SPHL	SP ← HL	
XTHL	HL ↔ (SP)	
Compare unsigned		
CMP r	A-r	szapc
CMP M	A-(HL)	szapc
CPI d8	A-d8	szapc

c=1, ha A<
=0 A≥

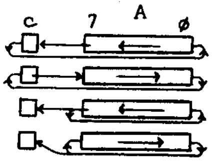
②

SOURCE FORM	EFFECT	FLAGS AFFECTED
Arithmetic		
ADD r	A ← A+r	szapc
ADD M	A ← A+(HL)	szapc
ADC r	A ← A+r+c	szapc
ADC M	A ← A+(HL)+c	szapc
ADI d8	A ← A+d8	szapc
ACI d8	A ← A+d8+c	szapc
DAD rp	HL ← HL+rp	c
DAD SP	HL ← HL+SP	c
SUB r	A ← A-r	szapc
SUB M	A ← A-(HL)	szapc
SBB r	A ← A-r-c	szapc
SBB M	A ← A-(HL)-c	szapc
SUI d8	A ← A-d8	szapc
SBI d8	A ← A-d8-c	szapc
DAA	if $A_{3..0}$>9 or a then A ← A+6; if $A_{7..4}$>9 or c then A ← A+60H	szapc
Logic		
ANA r	A ← A AND r	sz0p0
ANA M	A ← A AND (HL)	sz0p0
ANI d8	A ← A AND d8	sz0p0
ORA r	A ← A OR r	sz0p0
ORA M	A ← A OR (HL)	sz0p0
ORI d8	A ← A OR d8	sz0p0
XRA r	A ← A XOR r	sz0p0
XRA M	A ← A XOR (HL)	sz0p0
XRI d8	A ← A XOR d8	sz0p0
CMA	A ← $\overline{A}$	
STC	c ← 1	1
CMC	c ← $\overline{c}$	c

③

SOURCE FORM	EFFECT	FLAGS AFFECTED
Jump		
JMP addr	PC ← addr	
JZ addr	if z then PC ← addr	
JNZ addr	if $\overline{z}$ then PC ← addr	
JC addr	if c then PC ← addr	
JNC addr	if $\overline{c}$ then PC ← addr	
JPE addr	if p then PC ← addr	
JPO addr	if $\overline{p}$ then PC ← addr	
JM addr	if s then PC ← addr	
JP addr	if $\overline{s}$ then PC ← addr	
PCHL	PC ← HL	
Call		
CALL addr	SP ← SP-2; (SP) ← PC; PC ← addr	
CZ addr	if z then CALL	
CNZ addr	if $\overline{z}$ then CALL	
CC addr	if c then CALL	
CNC addr	if $\overline{c}$ then CALL	
CPE addr	if p then CALL	
CPO addr	if $\overline{p}$ then CALL	
CM addr	if s then CALL	
CP addr	if $\overline{s}$ then CALL	
Return		
RET	PC ← (SP); SP ← SP+2	
RZ	if z then RET	
RNZ	if $\overline{z}$ then RET	
RC	if c then RET	
RNC	if $\overline{c}$ then RET	
RPE	if p then RET	
RPO	if $\overline{p}$ then RET	
RM	if s then RET	
RP	if $\overline{s}$ then RET	

SOURCE FORM	EFFECT	FLAGS AFFECTED
Increment		
INR r	r ← r+1	szap
INR M	(HL) ← (HL)+1	szap
INX rp	rp ← rp+1	
INX SP	SP ← SP+1	
Decrement		
DCR r	r ← r-1	szap
DCR M	(HL) ← (HL)-1	szap
DCX rp	rp ← rp-1	
DCX SP	SP ← SP-1	
Rotate		
RAL		c
RAR		c
RLC		c
RRC		c
Control		
IN d8	A ← $port_{d8}$	
OUT d8	$port_{d8}$ ← A	
EI	INTE ← 1	
DI	INTE ← Ø	
RST d3	(SP-2) ← PC; SP ← SP-2; PC ← d3*8	
NOP	no operation	
HLT	halt until interrupt	



RIM
SIM

DIRECTIVES

	ORG	d16	:Location Counter ← d16
	END	[start addr]	:end assembly
name	EQU	d16	:define name of value d16
name	SET	d16	:assign value d16 to name
[name]	DS	d16	:define storage of length d16
[name]	DB	d8[,d8]...	:define byte(s) with initial value(s) given with expression(s) or string(s)
[name]	DW	d16[,d16]...	:define word(s) with initial value(s) given with expression(s)
[name]	TEXT	'string'	:define ASCII character string
	TITLE	'string'	:define title
	IF	expr	:if expr=Ø then ignore statements until ENDIF
	ENDIF		:end range of preceding IF
name	MACRO	list	:define macro
	ENDM		:end macro definition

CONSTANTS

1Ø5 1Ø5D	} Decimal	720 72Q	} Octal	'A' '''' 'TEST'	} ASCII
1AH ØBDH	} Hexadecimal	11Ø11B Ø1Ø1ØB	} Binary		

CONVERSION TABLES

COLUMN 4 HEX	DEC	COLUMN 3 HEX	DEC	COLUMN 2 HEX	DEC	COLUMN 1 HEX	DEC
Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø
1	4 Ø96	1	256	1	16	1	1
2	8 192	2	512	2	32	2	2
3	12 288	3	768	3	48	3	3
4	16 384	4	1 Ø24	4	64	4	4
5	2Ø 48Ø	5	1 28Ø	5	8Ø	5	5
6	24 576	6	1 536	6	96	6	6
7	28 672	7	1 792	7	112	7	7
8	32 768	8	2 Ø48	8	128	8	8
9	36 864	9	2 3Ø4	9	144	9	9
A	4Ø 96Ø	A	2 56Ø	A	16Ø	A	1Ø
B	45 Ø56	B	2 816	B	176	B	11
C	49 152	C	3 Ø72	C	192	C	12
D	53 248	D	3 328	D	2Ø8	D	13
E	57 344	E	3 584	E	224	E	14
F	61 44Ø	F	3 84Ø	F	24Ø	F	15

2^n	n
256	8
512	9
1 Ø24	1Ø
2 Ø48	11
4 Ø96	12
8 192	13
16 384	14
32 768	15
65 536	16
131 Ø72	17
262 144	18
524 288	19
1 Ø48 576	2Ø
2 Ø97 152	21
4 194 3Ø4	22
8 388 6Ø8	23
16 777 216	24

16^n	n
1	Ø
16	1
256	2
4 Ø96	3
65 536	4
1 Ø48 576	5
16 777 216	6
268 435 456	7
4 294 967 296	8
68 719 476 736	9
1 Ø99 511 627 776	1Ø
17 592 186 Ø44 416	11
281 474 976 71Ø 656	12
4 5Ø3 599 627 37Ø 496	13
72 Ø57 594 Ø37 927 936	14
1 152 921 5Ø4 6Ø6 846 976	15

ASCII CHARACTER SET

	76.43..Ø	Ø ØØØ	1 ØØ1	2 Ø1Ø	3 Ø11	4 1ØØ	5 1Ø1	6 11Ø	7 111
Ø	ØØØØ	NUL	DLE	SP	Ø	@	P	`	p
1	ØØØ1	SOH	DC1	!	1	A	Q	a	q
2	ØØ1Ø	STX	DC2	"	2	B	R	b	r
3	ØØ11	ETX	DC3	#	3	C	S	c	s
4	Ø1ØØ	EOT	DC4	$	4	D	T	d	t
5	Ø1Ø1	ENQ	NAK	%	5	E	U	e	u
6	Ø11Ø	ACK	SYN	&	6	F	V	f	v
7	Ø111	BEL	ETB	'	7	G	W	g	w
8	1ØØØ	BS	CAN	(	8	H	X	h	x
9	1ØØ1	HT	EM	)	9	I	Y	i	y
A	1Ø1Ø	LF	SUB	*	:	J	Z	j	z
B	1Ø11	VT	ESC	+	;	K	[	k	{
C	11ØØ	FF	FS	,	<	L	\	l	¦
D	11Ø1	CR	GS	-	=	M	]	m	}
E	111Ø	SO	RS	.	>	N	^(↑)	n	~
F	1111	SI	VS	/	?	O	_(←)	o	DEL