8080A Opcodes in Hex and Octal with (Z-80 Opcodes) Indicated

Hex	Oct	Instr	Hex	Oct	Instr	Hex	Oct	Instr	Hex	Oct	Instr	Hex	Oct	Instr	Hex	Oct	Instr
00	000	NOP	2C	054	INR L	58	130	MOV E,B	84	204	ADD H	B0	260	ORA B	DC	334	CC nn
01	001	LXI B,nn	2D	055	DCR L	59	131	MOV E,C	85	205	ADD L	B1	261	ORA C	DD	335	(Group)
02	002	STAX B	2E	056	MVI L,n	5A	132	MOV E,D	86	206	ADD M	B2	262	ORA D	DE	336	SBI n
03	003	INX B	2F	057	CMA	5B	133	MOV E,E	87	207	ADD A	B3	263	ORA E	DF	337	RST 3
04	004	INR B	30	060	(JRNC e)	5C	134	MOV E,H	88	210	ADC B	B4	264	ORA H	E0	340	RPO
05	005	DCR B	31	061	LXI SP,nn	5D	135	MOV E,L	89	211	ADC C	B5	265	ORA L	E1	341	POP H
06	006	MVI B,n	32	062	STA nn	5E	136	MOV E,M	8A	212	ADC D	B6	266	ORA M	E2	342	JPO nn
07	007	RLC	33	063	INX SP	5F	137	MOV E,A	8B	213	ADC E	B7	267	ORA A	E3	343	XTHL
08	010	(EXAF)	34	064	INR M	60	140	MOV H,B	8C	214	ADC H	B8	270	CMP B	E4	344	CPO nn
09	011	DAD B	35	065	DCR M	61	141	MOV H,C	8D	215	ADC L	B9	271	CMP C	E5	345	PUSH H
0A	012	LDAX B	36	066	MVI M,n	62	142	MOV H,D	8E	216	ADC M	BA	272	CMP D	E6	346	ANI n
0B	013	DCX B	37	067	STC	63	143	MOV H,E	8F	217	ADC A	BB	273	CMP E	E7	347	RST 4
0C	014	INR C	38	070	(JRC e)	64	144	MOV H,H	90	220	SUB B	BC	274	CMP H	E8	350	RPE
0D	015	DCR C	39	071	DAD SP	65	145	MOV H,L	91	221	SUB C	BD	275	CMP L	E9	351	PCHL
0E	016	MVI C,n	3A	072	LDA nn	66	146	MOV H,M	92	222	SUB D	BE	276	CMP M	EA	352	JPE nn
0F	017	RRC	3B	073	DCX SP	67	147	MOV H,A	93	223	SUB E	BF	277	CMP A	EB	353	XCHG
10	020	(DJNZ e)	3C	074	INR A	68	150	MOV L,B	94	224	SUB H	C0	300	RNZ	EC	354	CPE nn
11	021	LXI D,nn	3D	075	DCR A	69	151	MOV L,C	95	225	SUB L	C1	301	POP B	ED	355	(Group)
12	022	STAX D	3E	076	MVI A,n	6A	152	MOV L,D	96	226	SUB M	C2	302	JNZ nn	EE	356	XRI n
13	023	INX D	3F	077	CMC	6B	153	MOV L,E	97	227	SUB A	C3	303	JMP nn	EF	357	RST 5
14	024	INR D	40	100	MOV B,B	6C	154	MOV L,H	98	230	SBB B	C4	304	CNZ nn	F0	360	RP
15	025	DCR D	41	101	MOV B,C	6D	155	MOV L,L	99	231	SBB C	C5	305	PUSH B	F1	361	POP PSW
16	026	MVI D,n	42	102	MOV B,D	6E	156	MOV L,M	9A	232	SBB D	C6	306	ADI n	F2	362	JP nn
17	027	RAL	43	103	MOV B,E	6F	157	MOV L,A	9B	233	SBB E	C7	307	RST 0	F3	363	DI
18	030	(JR e)	44	104	MOV B,H	70	160	MOV M,B	9C	234	SBB H	C8	310	RZ	F4	364	CP nn
19	031	DAD D	45	105	MOV B,L	71	161	MOV M,C	9D	235	SBB L	C9	311	RET	F5	365	PUSH PSW
1A	032	LDAX D	46	106	MOV B,M	72	162	MOV M,D	9E	236	SBB M	CA	312	JZ nn	F6	366	ORI n
1B	033	DCX D	47	107	MOV B,A	73	163	MOV M,E	9F	237	SBB A	CB	313	(Group)	F7	367	RST 6
1C	034	INR E	48	110	MOV C,B	74	164	MOV M,H	A0	240	ANA B	CC	314	CZ nn	F8	370	RM
1D	035	DCR E	49	111	MOV C,C	75	165	MOV M,L	A1	241	ANA C	CD	315	CALL nn	F9	371	SPHL
1E	036	MVI E,n	4A	112	MOV C,D	76	166	HLT	A2	242	ANA D	CE	316	ACI n	FA	372	JM nn
1F	037	RAR	4B	113	MOV C,E	77	167	MOV M,A	A3	243	ANA E	CF	317	RST 1	FB	373	EI
20	040	(JRNZ e)	4C	114	MOV C,H	78	170	MOV A,B	A4	244	ANA H	D0	320	RNC	FC	374	CM nn
21	041	LXI H,nn	4D	115	MOV C,L	79	171	MOV A,C	A5	245	ANA L	D1	321	POP D	FD	375	(Group)
22	042	SHLD nn	4E	116	MOV C,M	7A	172	MOV A,D	A6	246	ANA M	D2	322	JNC nn	FE	376	CPI n
23	043	INX H	4F	117	MOV C,A	7B	173	MOV A,E	A7	247	ANA A	D3	323	OUT p	FF	377	RST 7
24	044	INR H	50	120	MOV D,B	7C	174	MOV A,H	A8	250	XRA B	D4	324	CNC nn			
25	045	DCR H	51	121	MOV D,C	7D	175	MOV A,L	A9	251	XRA C	D5	325	PUSH D			
26	046	MVI H,n	52	122	MOV D,D	7E	176	MOV A,M	AA	252	XRA D	D6	326	SUI n			
27	047	DAA	53	123	MOV D,E	7F	177	MOV A,A	AB	253	XRA E	D7	327	RST 2			
28	050	(JRZ e)	54	124	MOV D,H	80	200	ADD B	AC	254	XRA H	D8	330	RC			
29	051	DAD H	55	125	MOV D,L	81	201	ADD C	AD	255	XRA L	D9	331	(EXX)			
2A	052	LHLD nn	56	126	MOV D,M	82	202	ADD D	AE	256	XRA M	DA	332	JC nn			
2B	053	DCX H	57	127	MOV D,A	83	203	ADD E	AF	257	XRA A	DB	333	IN p			

(Group) means this byte prefixes a group of Z-80 instructions.

H19 Terminal Escape Sequence Summary

ESCAPE Sequence*	Mnemonic	CHR$ Equivalent	Definition
ESC H	HCUH	CHR$(72)	Cursor Home
ESC C	HCUF	CHR$(67)	Cursor Forward
ESC D	HCUB	CHR$(68)	Cursor Backward
ESC B	HCUD	CHR$(66)	Cursor Down
ESC A	HCUU	CHR$(65)	Cursor Up
ESC I	HRI	CHR$(73)	Reverse Index
ESC n	HCPR	CHR$(110)	Cursor Position Report
ESC j	HSCP	CHR$(106)	Save Cursor Position
ESC k	HRCP	CHR$(107)	Set Cursor to Previously Saved Position
ESC Y	HDCA	CHR$(89)	Direct Cursor Addressing (followed by line and column chars)
ESC E	HCD	CHR$(69)	Clear Display (Shift Erase)
ESC b	HBD	CHR$(98)	Erase Beginning of Display
ESC J	HEOP	CHR$(74)	Erase to End of Page (Erase Key)
ESC l	HEL	CHR$(108)	Erase Entire Line
ESC o	HEBL	CHR$(111)	Erase Beginning of Line
ESC K	HEOL	CHR$(75)	Erase to End of Line
ESC L	HIL	CHR$(76)	Insert Line
ESC M	HDL	CHR$(77)	Delete Line
ESC N	HDCH	CHR$(78)	Delete Character
ESC @	HEIM	CHR$(64)	Enter Insert Character Mode
ESC O	HERM	CHR$(79)-	Exit Insert Character Mode
ESC z	HRAM	CHR$(122)	Reset to Power-Up Configuration
ESC r Bn	HMBR	CHR$(114);"Bn"	Modify Baud Rate (Bn =: A =110, B =150, C =300, D =600, E =1200, F =1800, G =2000, H =2400,I=3600 J =4800, K =7200, L =9600)
ESC x Ps	HSM	CHR$(120);"Ps"	Set Mode(s): Ps = 1 = Enable 25th line 2 = No key click 3 = Hold screen mode 4 = Block cursor 5 = Cursor off 6 = Keypad shifted 7 = Alternate keypad mode 8 = Auto line feed on receipt of CR 9 = Auto CR on receipt of line feed
ESC y Ps	HRM	CHR$(121);"Ps"	Reset Mode(s): Ps = 1 = Disable 25th line 2 = Enable key click 3= Exit hold screen mode 4= Underscore cursor 5= Cursor on 6= Keypad unshifted 7= Exit alternate keypad mode 8= No auto line feed 9= No auto CR
ESC <	HEAM	CHR$(60)	Enter ANSI Mode

*The space between ESC sequence arguments is only for clarity.

H19 Terminal Escape Sequence Summary

```
ESCAPE                CHR$
Sequence    Mnemonic  equivalents     Definition


ESC [       HEHS      CHR$(91)        Enter Hold Screen Mode
ESC \       HXHS      CHR$(92)        Exit Hold Screen Mode
ESC p       HERV      CHR$(112)       Enter Reverse Video Mode
ESC q       HXRV      CHR$(113)       Exit Reverse Video Mode
ESC F       HEGM      CHR$(70)        Enter Graphics Mode
ESC G       HXGM      CHR$(71)        Exit Graphics Mode
ESC t       HEKS      CHR$(116)       Enter Keypad Shifted Mode
ESC u       HXKS      CHR$(117)       Exit Keypad Shifted Mode
ESC =       HAKM      CHR$(61)        Enter Alternate Keypad Mode
ESC >       HXAM      CHR$(62)        Exit Alternate Keypad Mode
ESC }       HDK       CHR$(125)       Keyboard Disabled
ESC {       HEK       CHR$(123)       Keyboard Enabled
ESC v       HEWA      CHR$(118)       Wrap Around at End of Line
ESC w       HXWA      CHR$(119)       Discard at End of Line
ESC Z       HID       CHR$(90)        Identify as VT52 (ESC / K)
ESC ]       HX25      CHR$(93)        Transmit 25th Line
ESC #       HXMP      CHR$(35)        Transmit Page
```

NOTE: The Terminal will transmit the following sequences, but it will not respond to them if they are received by the Terminal.

```
ESC S       HF1       CHR$(83)        Function Key #1 (f1)
ESC T       HF2       CHR$(84)        Function Key #2 (f2)
ESC U       HF3       CHR$(85)        Function Key #3 (f3)
ESC V       HF4       CHR$(86)        Function Key #4 (f4)
ESC W       HF5       CHR$(87)        Function Key #5 (f5)
ESC P       HF7       CHR$(80)        Function Key (BLUE)
ESC Q       HF8       CHR$(81)        Function Key (RED)
ESC R       HF9       CHR$(82)        Function Key (GRAY)
```

NOTE: When in Normal or Alternate Keyboard Mode (HAKM) the keypad can send the the following ASCII codes and ESC sequences:

```
            Normal    Alternate       Normal
KEYPAD      State     KeyPad Mode     SHIFTED Function


0 | 0       0         ESC ? P         0      ( Zero Key )
1 | IL      1         ESC ? q         ESC L  ( InsertLine)
2 | ↓       2         ESC ? r         ESC B  ( Cursor Down)
3 | DL      3         ESC ? s         ESC M  ( Delete Line)
4 | ←       4         ESC ? t         ESC D  ( Cursor Left)
5 | HOME    5         ESC ? u         ESC H  ( Cursor Home)
6 | →       6         ESC ? v         ESC C  ( Cursor Right)
7 | IC      7         ESC ? w         ESC @  ( Enter IC mode)
                                      ESC O  ( Exit IC mode)
8 | ↑       8         ESC ? x         ESC A  ( Cursor Up  )
9 | DC      9         ESC ? y         ESC N  ( Delete Char)
. | .       .         ESC ? n         .      ( Period Key )
ENTER       RETURN    ESC ? M         RETURN ( ENTER Key  )
```

NOTE:Shifted and unshifted modes can be interchanged by ESC t or ESC u

H19 Terminal Escape Sequence Summary

Notes on Direct Cursor Addressing:

The full escape sequence is ESC Y <line char> <column char>

The screen lines are numbers 1 to 24, plus line 25 (the status line).
Screen columns are numbers 1 to 80.
In order to avoid non-printing characters in the sequence, the first line and column are encoded as ASCII(32) and continue on from that character. If the coded line number is too high, the cursor will not move, If the coded column number is too high, the cursor will move to the end of the line.

Lin# or Col# == addressing character:

```
 1 ==    Space           33 == @  At sign        65 == `  GraveAcent
 2 == !  Exclamation      34 == A  Letter A        66 == a  Letter a
 3 == "  Quotation        35 == B  Letter B        67 == b  Letter b
 4 == #  NumberSign       36 == C  Letter C        68 == c  Letter c
 5 == $  DollarSign       37 == D  Letter D        69 == d  Letter d
 6 == %  PercentSign      38 == E  Letter E        70 == e  Letter e
 7 == &  Ampersand        39 == F  Letter F        71 == f  Letter f
 8 == '  Apostrophe       40 == G  Letter G        72 == g  Letter g
 9 == (  OpenParen.       41 == H  Letter H        73 == h  Letter h
10 == )  CloseParen.      42 == I  Letter I        74 == i  Letter i
11 == *  Asterisk         43 == J  Letter J        76 == j  Letter J
12 == +  PlusSign         44 == K  Letter K        77 == k  Letter k
13 == ,  Comma            45 == L  Letter L        78 == l  Letter l
14 == -  Minus sign       46 == M  Letter M        79 == m  Letter m
15 == .  Period           47 == N  Letter N        80 == n  Letter n
16 == /  Slash            48 == O  Letter O
17 == 0  Number 0         49 == P  Letter P
18 == 1  Number 1         50 == Q  Letter Q
19 == 2  Number 2         51 == R  Letter R
20 == 3  Number 3         52 == S  Letter S
21 == 4  Number 4         53 == T  Letter T
22 == 5  Number 5         54 == U  Letter U
23 == 6  Number 6         55 == V  Letter V
24 == 7  Number 7         56 == W  Letter W
25 == 8  Number 8         57 == X  Letter X
26 == 9  Number 9         58 == Y  Letter Y
27 == :  Colon            59 == Z  Letter Z
28 == ;  Semicolon        60 == [  OpenBracket
29 == <  LessThan         61 == \  BackSlash
30 == =  EqualSign        62 == ]  CloseBracket
31 == >  GreaterThan      63 == ^  Caret
32 == ?  Question         64 == _  UnderScore
```

DECIMAL TO OCTAL TO HEX TO ASCII CONVERSION

I				II				III				IV			
DEC	OCT	HEX	ASCII	DEC	OCT	HEX	ASCII	DEC	OCT	HEX	ASCII	DEC	OCT	HEX	ASCII
0 .	000 .	00 .	NUL	32 .	040 .	20 .	SPACE	64 .	100 .	40 .	@	96 .	140 .	60 .	`
1 .	001 .	01 .	SOH	33 .	041 .	21 .	!	65 .	101 .	41 .	A	97 .	141 .	61 .	a
2 .	002 .	02 .	STX	34 .	042 .	22 .	"	66 .	102 .	42 .	B	98 .	142 .	62 .	b
3 .	003 .	03 .	ETX	35 .	043 .	23 .	#	67 .	103 .	43 .	C	99 .	143 .	63 .	c
4 .	004 .	04 .	EOT	36 .	044 .	24 .	$	68 .	104 .	44 .	D	100 .	144 .	64 .	d
5 .	005 .	05 .	ENQ	37 .	045 .	25 .	%	69 .	105 .	45 .	E	101 .	145 .	65 .	e
6 .	006 .	06 .	ACK	38 .	046 .	26 .	&	70 .	106 .	46 .	F	102 .	146 .	66 .	f
7 .	007 .	07 .	BEL	39 .	047 .	27 .	'	71 .	107 .	47 .	G	103 .	147 .	67 .	g
8 .	010 .	08 .	BS	40 .	050 .	28 .	(	72 .	110 .	48 .	H	104 .	150 .	68 .	h
9 .	011 .	09 .	HT	41 .	051 .	29 .	)	73 .	Ill .	49 .	I	105 .	151 .	69 .	i
10 .	012 .	OA .	LF	42 .	052 .	2A .	*	74 .	112 .	4A .	J	106 .	152 .	6A .	j
11 .	013 .	OB .	VT	43 .	053 .	2B .	+	75 .	113 .	4B .	K	107 .	153 .	6B .	k
12 .	014 .	OC .	FF	44 .	054 .	2C .	,	76 .	114 .	4C .	L	108 .	154 .	6C .	l
13 .	015,.	OD .	CR	45 .	055 .	2D .	–	77 .	115 .	4D .	M	109 .	155 .	6D .	m
14 .	016 .	OE .	SO	46 .	056 .	2E .	PERIOD	78 .	116 .	4E .	N	110 .	156 .	6E .	n
15 .	017 .	OF .	SI	47 .	057 .	2F .	/	79 .	117 .	4F .	O	111 .	157 .	6F .	o
16 .	020 .	10 .	DLE	48 .	060 .	30 .	0	80 .	120 .	50 .	P	112 .	160 .	70 .	p
17 .	021 .	11 .	DC1	49 .	061 .	31 .	1	81 .	121 .	51 .	Q	113 .	161 .	71 .	q
18 .	022 .	12 .	DC2	50 .	062 .	32 .	2	82 .	122 .	52 .	R	114 .	162 .	72 .	r
19 .	023 .	13 .	DC3	51 .	063 .	33 .	3	83 .	123 .	53 .	S	115 .	163 .	73 .	s
20 .	024 .	14 .	DC4	52 .	064 .	34 .	4	84 .	124 .	54 .	T	116 .	164 .	74 .	t
21 .	025 .	15 .	NAK	53 .	065 .	35 .	5	85 .	125 .	55 .	U	117 .	165 .	75 .	u
22 .	026 .	16 .	SYN	54 .	066 .	36 .	6	86 .	126 .	56 .	V	118 .	166 .	76 .	v
23 .	027 .	17 .	ETB	55 .	067 .	37 .	7	87 .	127 .	57 .	W	119 .	167 .	77 .	w
24 .	030 .	18 .	CAN	56 .	070 .	38 .	8	88 .	130 .	58 .	X	120 .	170 .	78 .	x
25 .	031 .	19 .	EM	57 .	071 .	39 .	9	89 .	131 .	59 .	Y	121 .	171 .	79 .	y
26 .	032 .	1A .	SUB	58 .	072 .	3A .	:	90 .	132 .	5A .	Z	122 .	172 .	7A .	z
27 .	033 .	IB .	ESC	59 .	073 .	3B .	;	91 .	133 .	5B .	[	123 .	173 .	7B .	{
28 .	034 .	1C .	FS	60 .	074 .	3C .	<	92 .	134 .	5C .	\	124 .	174 .	7C .	|
29 .	035 .	ID .	GS	61 .	075 .	3D .	=	93 .	135 .	5D .	]	125 .	175 .	7D .	}
30 .	036 .	IE .	RS	62 .	076 .	3E .	>	94 .	136 .	5E .	^	126 .	176 .	7E .	~
31 .	037 .	IF .	US	63 .	077 .	3F .	?	95 .	137 .	5F .	_	127 .	177 .	7F .	DELETE