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NUMBER SYSTEMS*CROSS-REFERENCE GUIDE
MCS-8 MICROCOMPUTER

M. Ball

August 15, 1974

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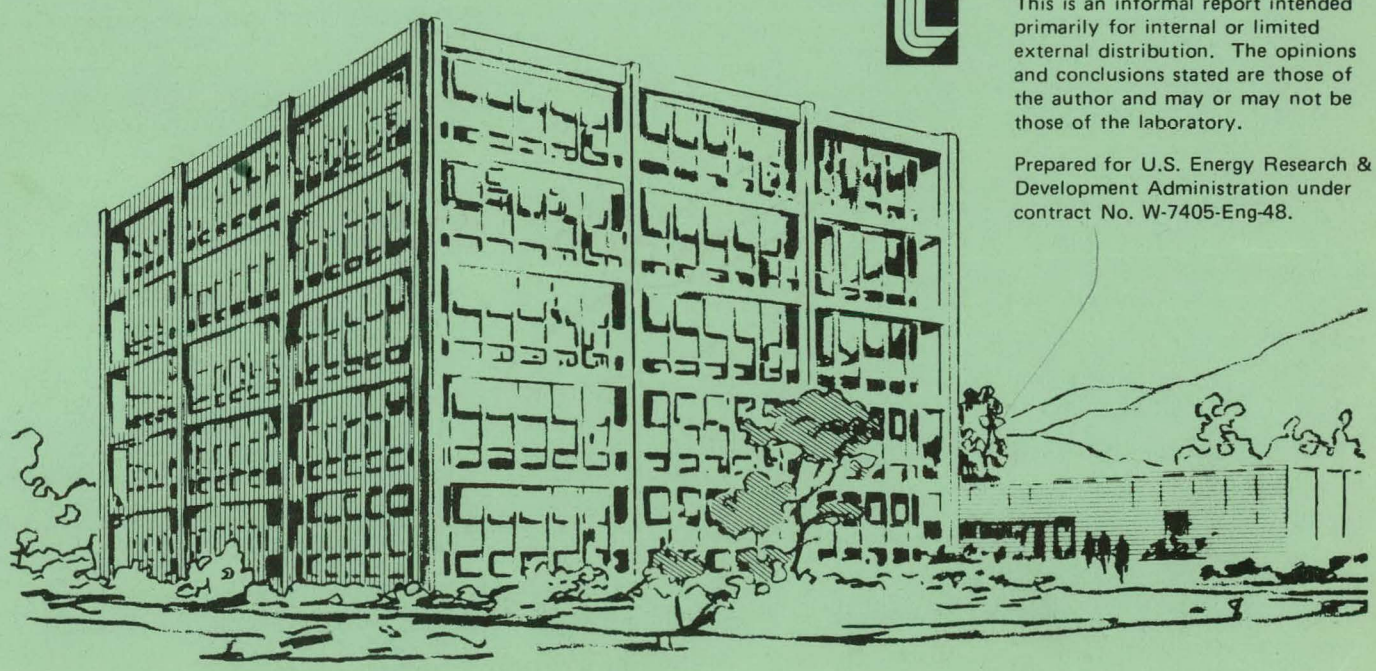

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This Number System Cross-Reference Guide is presented for those who need a ready reference in front of them while they are programming the MCS-8 Microcomputer or designing logic systems. Columns one through four give the number equivalents of decimal, binary, octal and hexidecimal systems for decimal numbers zero through 255. Column 5 shows a corresponding teletype character opposite each row of equivalent numbers.

In column 5 there are two identical series of teletype characters. In the first series, the bit pattern is shown for all teletype characters corresponding to octal numbers Ø through 177. In the second series, the bit pattern is shown for all teletype characters corresponding to octal numbers 2ØØ through 377. For MCS-8 Microcomputer users, the ASCII Code is found by referencing the teletype column (column five) with octal numbers 24Ø through 337. The reason that the teletype characters repeat is because the required binary-bit pattern is seven-bits long. Beginning at octal number 2ØØ, an eighth-bit (a parity-bit) is added and so the series repeats.

As a further guide to column five, refer to zero numbers at the head of the columns. For teletypes using the no parity-bit system, when the operator simultaneously presses the CTRL, SHIFT, and P keys, the result is a (NULL) character from the teletype. For teletypes using the system where the eighth binary-bit is added for parity, the identical result is produced at octal number 2ØØ.

In each of the two teletype coding systems, the combination of CTRL (control) and character keys can be cross-referenced to corresponding numbers and binary-bit patterns.

*This Number Systems Cross-Reference Guide was developed at Diablo Valley College and submitted to LLL in accordance with terms and conditions of P/O 4994805.

DECIMAL	BINARY	OCT	HEX	CHARACTER
0	00000000	000	00	CTRL SHIFT P (NULL)
1	00000001	001	01	CTRL A
2	00000010	002	02	CTRL B
3	00000011	003	03	CTRL C
4	00000100	004	04	CTRL D
5	00000101	005	05	CTRL E
6	00000110	006	06	CTRL F
7	00000111	007	07	CTRL G
8	00001000	010	08	CTRL H
9	00001001	011	09	CTRL I
10	00001010	012	0A	CTRL J
11	00001011	013	0B	CTRL K
12	00001100	014	0C	CTRL L
13	00001101	015	0D	CTRL M
14	00001110	016	0E	CTRL N
15	00001111	017	0F	CTRL O
16	00010000	020	10	CTRL P
17	00010001	021	11	CTRL Q
18	00010010	022	12	CTRL R
19	00010011	023	13	CTRL S
20	00010100	024	14	CTRL T
21	00010101	025	15	CTRL U
22	00010110	026	16	CTRL V
23	00010111	027	17	CTRL W
24	00011000	030	18	CTRL X
25	00011001	031	19	CTRL Y
26	00011010	032	1A	CTRL Z
27	00011011	033	1B	CTRL [
28	00011100	034	1C	CTRL \
29	00011101	035	1D	CTRL]
30	00011110	036	1E	CTRL ↑
31	00011111	037	1F	CTRL (BACKSPACE)
32	00100000	040	20	(SPACE)
33	00100001	041	21	!
34	00100010	042	22	(QUOTE)
35	00100011	043	23	#
36	00100100	044	24	$
37	00100101	045	25	%
38	00100110	046	26	&
39	00100111	047	27	'
40	00101000	050	28	(
41	00101001	051	29	)
42	00101010	052	2A	*
43	00101011	053	2B	+
44	00101100	054	2C	,
45	00101101	055	2D	-
46	00101110	056	2E	.
47	00101111	057	2F	/
48	00110000	060	30	0
49	00110001	061	31	1

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DECIMAL	BINARY	OCT	HEX	CHARACTER
50	00110010	062	32	2
51	00110011	063	33	3
52	00110100	064	34	4
53	00110101	065	35	5
54	00110110	066	36	6
55	00110111	067	37	7
56	00111000	070	38	8
57	00111001	071	39	9
58	00111010	072	3A	:
59	00111011	073	3B	;
60	00111100	074	3C	<
61	00111101	075	3D	=
62	00111110	076	3E	>
63	00111111	077	3F	?
64	01000000	100	40	@
65	01000001	101	41	A
66	01000010	102	42	B
67	01000011	103	43	C
68	01000100	104	44	D
69	01000101	105	45	E
70	01000110	106	46	F
71	01000111	107	47	G
72	01001000	110	48	H
73	01001001	111	49	I
74	01001010	112	4A	J
75	01001011	113	4B	K
76	01001100	114	4C	L
77	01001101	115	4D	M
78	01001110	116	4E	N
79	01001111	117	4F	O
80	01010000	120	50	P
81	01010001	121	51	Q
82	01010010	122	52	R
83	01010011	123	53	S
84	01010100	124	54	T
85	01010101	125	55	U
86	01010110	126	56	V
87	01010111	127	57	W
88	01011000	130	58	X
89	01011001	131	59	Y
90	01011010	132	5A	Z
91	01011011	133	5B	[
92	01011100	134	5C	\
93	01011101	135	5D	]
94	01011110	136	5E	↑
95	01011111	137	5F	[BACKSPACE]
96	01100000	140	60	CTRL [SPACE] LOWER CASE @
97	01100001	141	61	CTRL ! LOWER CASE A
98	01100010	142	62	CTRL [QUOTE] LOWER CASE B
99	01100011	143	63	CTRL # LOWER CASE C

DECIMAL	BINARY	OCT	HEX	CHARACTER
100	01100100	144	64	CTRL $ LOWER CASE D
101	01100101	145	65	CTRL % LOWER CASE E
102	01100110	146	66	CTRL & LOWER CASE F
103	01100111	147	67	CTRL ' LOWER CASE G
104	01101000	150	68	CTRL (LOWER CASE H
105	01101001	151	69	CTRL) LOWER CASE I
106	01101010	152	6A	CTRL * LOWER CASE J
107	01101011	153	6B	CTRL + LOWER CASE K
108	01101100	154	6C	CTRL , LOWER CASE L
109	01101101	155	6D	CTRL - LOWER CASE M
110	01101110	156	6E	CTRL . LOWER CASE N
111	01101111	157	6F	CTRL / LOWER CASE O
112	01110000	160	70	CTRL 0 LOWER CASE P
113	01110001	161	71	CTRL 1 LOWER CASE Q
114	01110010	162	72	CTRL 2 LOWER CASE R
115	01110011	163	73	CTRL 3 LOWER CASE S
116	01110100	164	74	CTRL 4 LOWER CASE T
117	01110101	165	75	CTRL 5 LOWER CASE U
118	01110110	166	76	CTRL 6 LOWER CASE V
119	01110111	167	77	CTRL 7 LOWER CASE W
120	01111000	170	78	CTRL 8 LOWER CASE X
121	01111001	171	79	CTRL 9 LOWER CASE Y
122	01111010	172	7A	CTRL : LOWER CASE Z
123	01111011	173	7B	CTRL ; LOWER CASE [
124	01111100	174	7C	CTRL < LOWER CASE \
125	01111101	175	7D	CTRL = LOWER CASE]
126	01111110	176	7E	CTRL > LOWER CASE ↑
127	01111111	177	7F	CTRL ? LOWER CASE (BACKSPACE)
128	10000000	200	80	CTRL SHIFT P (NULL)
129	10000001	201	81	CTRL A
130	10000010	202	82	CTRL B
131	10000011	203	83	CTRL C
132	10000100	204	84	CTRL D
133	10000101	205	85	CTRL E
134	10000110	206	86	CTRL F
135	10000111	207	87	CTRL G
136	10001000	210	88	CTRL H
137	10001001	211	89	CTRL I
138	10001010	212	8A	CTRL J
139	10001011	213	8B	CTRL K
140	10001100	214	8C	CTRL L
141	10001101	215	8D	CTRL M
142	10001110	216	8E	CTRL N
143	10001111	217	8F	CTRL O
144	10010000	220	90	CTRL P
145	10010001	221	91	CTRL Q
146	10010010	222	92	CTRL R
147	10010011	223	93	CTRL S
148	10010100	224	94	CTRL T
149	10010101	225	95	CTRL U

DECIMAL	BINARY	OCT	HEX	CHARACTER
150	10010110	226	96	CTRL V
151	10010111	227	97	CTRL W
152	10011000	230	98	CTRL X
153	10011001	231	99	CTRL Y
154	10011010	232	9A	CTRL Z
155	10011011	233	9B	CTRL [
156	10011100	234	9C	CTRL \
157	10011101	235	9D	CTRL]
158	10011110	236	9E	CTRL ↑
159	10011111	237	9F	CTRL [BACKSPACE]
160	10100000	240	A0	[SPACE]
161	10100001	241	A1	!
162	10100010	242	A2	[QUOTE]
163	10100011	243	A3	#
164	10100100	244	A4	$
165	10100101	245	A5	%
166	10100110	246	A6	&
167	10100111	247	A7	'
168	10101000	250	A8	(
169	10101001	251	A9	)
170	10101010	252	AA	*
171	10101011	253	AB	+
172	10101100	254	AC	,
173	10101101	255	AD	-
174	10101110	256	AE	.
175	10101111	257	AF	/
176	10110000	260	B0	0
177	10110001	261	B1	1
178	10110010	262	B2	2
179	10110011	263	B3	3
180	10110100	264	B4	4
181	10110101	265	B5	5
182	10110110	266	B6	6
183	10110111	267	B7	7
184	10111000	270	B8	8
185	10111001	271	B9	9
186	10111010	272	BA	:
187	10111011	273	BB	;
188	10111100	274	BC	<
189	10111101	275	BD	=
190	10111110	276	BE	>
191	10111111	277	BF	?
192	11000000	300	C0	@
193	11000001	301	C1	A
194	11000010	302	C2	B
195	11000011	303	C3	C
196	11000100	304	C4	D
197	11000101	305	C5	E
198	11000110	306	C6	F
199	11000111	307	C7	G
200	11001000	310	C8	H
201	11001001	311	C9	I
202	11001010	312	CA	J

DECIMAL	BINARY	OCT	HEX	CHARACTER
203	11001011	313	CB	K
204	11001100	314	CC	L
205	11001101	315	CD	M
206	11001110	316	CE	N
207	11001111	317	CF	O
208	11010000	320	D0	P
209	11010001	321	D1	Q
210	11010010	322	D2	R
211	11010011	323	D3	S
212	11010100	324	D4	T
213	11010101	325	D5	U
214	11010110	326	D6	V
215	11010111	327	D7	W
216	11011000	330	D8	X
217	11011001	331	D9	Y
218	11011010	332	DA	Z
219	11011011	333	DB	[
220	11011100	334	DC	\
221	11011101	335	DD	]
222	11011110	336	DE	↑
223	11011111	337	DF	[BACKSPACE]
224	11100000	340	E0	CTRL [SPACE] LOWER CASE @
225	11100001	341	E1	CTRL ! LOWER CASE A
226	11100010	342	E2	CTRL [QUOTE] LOWER CASE B
227	11100011	343	E3	CTRL # LOWER CASE C
228	11100100	344	E4	CTRL $ LOWER CASE D
229	11100101	345	E5	CTRL % LOWER CASE E
230	11100110	346	E6	CTRL & LOWER CASE F
231	11100111	347	E7	CTRL ' LOWER CASE G
232	11101000	350	E8	CTRL (LOWER CASE H
233	11101001	351	E9	CTRL) LOWER CASE I
234	11101010	352	EA	CTRL * LOWER CASE J
235	11101011	353	EB	CTRL + LOWER CASE K
236	11101100	354	EC	CTRL , LOWER CASE L
237	11101101	355	ED	CTRL - LOWER CASE M
238	11101110	356	EE	CTRL . LOWER CASE N
239	11101111	357	EF	CTRL / LOWER CASE O
240	11110000	360	F0	CTRL 0 LOWER CASE P
241	11110001	361	F1	CTRL 1 LOWER CASE Q
242	11110010	362	F2	CTRL 2 LOWER CASE R
243	11110011	363	F3	CTRL 3 LOWER CASE S
244	11110100	364	F4	CTRL 4 LOWER CASE T
245	11110101	365	F5	CTRL 5 LOWER CASE U
246	11110110	366	F6	CTRL 6 LOWER CASE V
247	11110111	367	F7	CTRL 7 LOWER CASE W
248	11111000	370	F8	CTRL 8 LOWER CASE X
249	11111001	371	F9	CTRL 9 LOWER CASE Y
250	11111010	372	FA	CTRL : LOWER CASE Z
251	11111011	373	FB	CTRL ; LOWER CASE [
252	11111100	374	FC	CTRL < LOWER CASE \
253	11111101	375	FD	CTRL = LOWER CASE]
254	11111110	376	FE	CTRL > LOWER CASE ↑
255	11111111	377	FF	CTRL ? LOWER CASE [BACKSPACE]

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