

Obsolete

5/11/66

### Appendix F. EBCDIC and ASCII-8 Charts

The numbering convention for the bit positions within a character differ for each of the codes. The conventions are:

EBCDIC            BIT POSITIONS  
 ASCII-8         01234567  
                   76X54321

**Extended Binary-Coded-Decimal Interchange Code (EBCDIC)**  
 The chart below shows bit positions, bit patterns, hole patterns (card), graphic characters, and control characters for EBCDIC.

		00				01				Bit Positions 0,1	
		00	01	10	11	00	01	10	11	Bit Positions 2,3	
Bit Positions 4,5,6,7	0000	①	②	③	④	⑤	⑥	⑦	⑧	Digit Punctures	
	0001	NUL		DS		SP	&	-	⑬		1
	0010			FS							2
	0011		TM								3
	0100	PF.	RES	BYP	PN						4
	0101	HT	NL	LF	RS						5
	0110	LC	BS	EOB	UC						6
	0111	DL	IL	PRE	EOT						7
	1000										8
		9	9	9	9	9	9	9	9	Zone Punctures	
		12				12	12	11	12		
			11					11	11		
				0			0	0	0		

		10				11				Bit Positions 0,1	
		00	01	10	11	00	01	10	11	Bit Positions 2,3	
Bit Positions 4,5,6,7	0000					⑨	⑩	⑪	⑫	Digit Punctures	
	0001		o	i		A	J	⑭	1		8-1
	0010		ö	k	s	B	K	S	2		2
	0011		c	l	t	C	L	T	3		3
	0100		d	m	u	D	M	U	4		4
	0101		e	n	v	E	N	V	5		5
	0110		f	o	w	F	O	W	6		6
	0111		g	p	x	G	P	X	7		7
	1000		h	q	y	H	Q	Y	8		8
1001		i	r	z	I	R	Z	9	9		
		12	12	11	12	12	11			Zone Punctures	
		0	11		11			0			
				0							

		00				01				Bit Positions 0,1	
		00	01	10	11	00	01	10	11	Bit Positions 2,3	
Bit Positions 4,5,6,7	1001									Digit Punctures	
	1010		CC	SM	]	[	⑮	:	8-2		
	1011				.	\$	,	#	8-3		
	1100				<	*	%	@	8-4		
	1101				(	)	-	'	8-5		
	1110				+	;	>	=	8-6		
	1111				!	^	?	"	8-7		
		9	9	9	9	12				Zone Punctures	
			11				11				
				0				0			

		10				11				Bit Positions 0,1	
		00	01	10	11	00	01	10	11	Bit Positions 2,3	
Bit Positions 4,5,6,7	1010									Digit Punctures	
	1011										8-2
	1100										8-3
	1101										8-4
	1110										8-5
	1111										8-6
	1111										8-7
		12	12	11	12	9	9	9	9	Zone Punctures	
		0	11		11	0	11		12		
				0				11	11		
								0	0		

- ① 12-0-9-8-1
- ⑤ No Punctures
- ⑨ 12-0
- ⑬ 0-1
- ② 12-11-9-8-1
- ⑥ 12
- ⑩ 11-0
- ⑭ 11-0-9-1
- ③ 11-0-9-8-1
- ⑦ 11
- ⑪ 0-8-2
- ⑮ 12-11
- ④ 12-11-0-9-8-1
- ⑧ 12-11-0
- ⑫ 0

EBCDIC chart explanation continued on next page.

EBCDIC chart explanation (continued)

Control Characters

NUL	Null	BS	Backspace	EOB	End of Block
PF	Punch Off	IL	Idle	PRE	Prefix
HT	Horizontal Tab	CC	Cursor Control	PN	Punch On
LC	Lower Case	DS	Digit Select	RS	Reader Stop
DL	Delete	SOS	Start of Significance	UC	Upper Case
TM	Tape Mark	FS	Field Separator	EOT	End of Transmission
RES	Restore	BYP	Bypass	SM	Set Mode
NL	New Line	LF	Line Feed	SP	Space

Special Graphic Characters

]	Right Bracket	*	Asterisk	>	Greater-than Sign
.	Period, Decimal Point	)	Right Parenthesis	?	Question Mark
<	Less-than Sign	;	Semicolon	:	Colon
(	Left Parenthesis	^	Circumflex, Logical NOT	#	Number Sign
+	Plus Sign	-	Minus Sign, Hyphen	@	At Sign
!	Exclamation Point, Logical OR	/	Slash	'	Prime, Apostrophe
&	Amperсанд	,	Comma	=	Equal Sign
[	Left Bracket	%	Percent	"	Quotation Mark
\$	Dollar Sign	_	Underscore		

Example	Type	Bit Pattern Bit Positions 01 23 4567	Hole Pattern	
			Zone Puncthes	Digit Puncthes
PF	Control Character	00 00 0100	12 - 9	4
%	Special Graphic	01 10 1100	0	1 8 - 4
R	Upper Case	11 01 1001	11	9
o	Lower Case	10 00 0001	12 - 0	1
	Control Character, function not yet assigned	00 11 0000	12 - 11 - 0 - 9	1 8 - 1

American Standard Code for Information Interchange (ASCII)  
Extended to Eight Bits

Bit Positions → 76 X5	00				01				10				11			
	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
4321	NUL	DLE			SP	0					\	P			@	P
0000	SOH	DC1			!	1					A	Q			a	q
0001	STX	DC2			"	2					B	R			b	r
0010	ETX	DC3			#	3					C	S			c	s
0011	EOT	DC4			\$	4					D	T			d	t
0100	ENQ	NAK			%	5					E	U			e	u
0101	ACK	SYN			&	6					F	V			f	v
0110	BEL	ETB			'	7					G	W			g	w
0111	BS	CAN			(	8					H	X			h	x
1000	HT	EM			)	9					I	Y			i	y
1001	LF	SS			*	:					J	Z			j	z
1010	VT	ESC			+	;					K	[			k	{
1011	FF	FS			,	<					L	~			l	~
1100	CR	GS			-	=					M	]			m	}
1101	SO	RS			.	>					N	^			n	
1110	SI	US			/	?					O	_			o	DEL
1111																

*From 360 - 2 mm*

### Appendix F. EBCDIC and ASCII-8 Charts

The numbering convention for the bit positions within a character differ for each of the codes. The conventions are:

EBCDIC	BIT POSITIONS
ASCII-8	01234567
	7654321

*Extended Binary-Coded-Decimal Interchange Code (EBCDIC)*  
The chart below shows bit positions, bit patterns, hole patterns (card), graphic characters, and control characters for EBCDIC.

		00				01				← Bit Positions 0,1	
		00	01	10	11	00	01	10	11	← Bit Positions 2,3	
Bit Positions 4,5,6,7	0000	NUL	DS	SP	&	1	2	3	4	Digit Punctures	
	0001		SOS		/				13		1
	0010		FS								2
	0011		TM								3
	0100	PF	RES	BYP	PN						4
	0101	HT	NL	LF	RS						5
	0110	LC	BS	EOB	UC						6
	0111	DL	IL	PRE	EOT						7
	1000										8
		9	9	9	9	9	9	9	9	Zone Punctures	
		12	11	0		12	12	11	12		
						0	11	0	0		

		10				11				← Bit Positions 0,1	
		00	01	10	11	00	01	10	11	← Bit Positions 2,3	
Bit Positions 4,5,6,7	0000					9	10	11	12	8-1	
	0001	a	i			A	J		14	1	
	0010	b	k	s		B	K	S	2	2	
	0011	c	l	r		C	L	T	3	3	
	0100	d	m	u		D	M	U	4	4	
	0101	e	n	v		E	N	V	5	5	
	0110	f	o	w		F	O	W	6	6	
	0111	g	p	x		G	P	X	7	7	
	1000	h	q	y		H	Q	Y	8	8	
	1001	i	r	z		I	R	Z	9	9	
		12	12	11	12	12	11			Zone Punctures	
		0	11	0	0						

		00				01				← Bit Positions 0,1	
		00	01	10	11	00	01	10	11	← Bit Positions 2,3	
Bit Positions 4,5,6,7	1001									8-1	
	1010		CC	SM	1	1	13	:		8-2	
	1011					.	\$	,	#	8-3	
	1100					<	*	%	@	8-4	
	1101					(	)	-	'	8-5	
	1110					+	;	>	=	8-6	
	1111					!	^	?	"	8-7	
			9	9	9	9	9	9	9	9	Zone Punctures
		12	11	0		12	11				
						0	11	0	0		

		10				11				← Bit Positions 0,1		
		00	01	10	11	00	01	10	11	← Bit Positions 2,3		
Bit Positions 4,5,6,7	1010									8-2		
	1011									8-3		
	1100									8-4		
	1101									8-5		
	1110									8-6		
	1111									8-7		
			9	9	9	9	9	9	9	9	Zone Punctures	
			12	12	11	12	12	12	11	12		
		0	11	0	0	0	11	0	0			

- ① 12-0-9-8-1
- ② 12-11-9-8-1
- ③ 11-0-9-8-1
- ④ 12-11-0-9-8-1
- ⑤ No Punctures
- ⑥ 12
- ⑦ 11
- ⑧ 12-11-0
- ⑨ 12-0
- ⑩ 11-0
- ⑪ 0-8-2
- ⑫ 0
- ⑬ 0-1
- ⑭ 11-0-9-1
- ⑮ 12-11

*88 graphics  
1 graphic  
23 special*

EBCDIC chart explanation (continued)

Control Characters

NUL	Null	BS	Backspace	EOB	End of Block
PF	Punch Off	IL	Idle	PRE	Prefix
HT	Horizontal Tab	CC	Cursor Control	PN	Punch On
LC	Lower Case	DS	Digit Select	RS	Reader Stop
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]	Right Bracket	*	Asterisk	>	Greater-than Sign
.	Period, Decimal Point	)	Right Parenthesis	?	Question Mark
<	Less-than Sign	;	Semicolon	:	Colon
(	Left Parenthesis	^	Circumflex, Logical NOT	#	Number Sign
+	Plus Sign	-	Minus Sign, Hyphen	@	At Sign
!	Exclamation Point, Logical OR	/	Slash	'	Prime, Apostrophe
&	Amperсанд	,	Comma	=	Equal Sign
[	Left Bracket	%	Percent	"	Quotation Mark
\$	Dollar Sign	_	Underscore		

*what happened to percent bar? and number?  
who added brackets?  
cent sign missing.*

Example	Type	Bit Pattern Bit Positions 01 23 4567	Hole Pattern	
			Zone Punches	Digit Punches
PF	Control Character	00 03 0100	12 - 9	4
%	Special Graphic	01 10 1100	0	8 - 4
R	Upper Case	11 01 1001	11	9
a	Lower Case	10 00 0001	12 - 9	1
	Control Character, function not yet assigned	00 11 0000	12 - 11 - 0 - 9	8 - 1

American Standard Code for Information Interchange (ASCII)  
Extended to Eight Bits

Bit Positions → 76 → X5	00				01				10				11			
	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
4321	NUL	DLE			SP	0					\	P			@	P
0001	SOH	DC1			!	1					A	Q			a	q
0010	STX	DC2			"	2					B	R			b	r
0011	ETX	DC3			#	3					C	S			c	s
0100	EOT	DC4			\$	4					D	T			d	t
0101	ENQ	NAK			%	5					E	U			e	u
0110	ACK	SYN			&	6					F	V			f	v
0111	BEL	ETB			'	7					G	W			g	w
1000	BS	CAN			(	8					H	X			h	x
1001	HT	EM			)	9					I	Y			i	y
1010	LF	SS			*	:					J	Z			j	z
1011	VT	ESC			+	;					K	[			k	{
1100	FF	FS			,	<					L	~			l	~
1101	CR	GS			-	=					M	]			m	}
1110	SO	RS			.	>					N	^			n	
1111	SI	US			/	?					O	_			o	DEL