

ASCII Character Set and Ansi.sys

ASCII (American Standard Code for Information Interchange) is a coding system used by personal computers to store character data, such as letters of the alphabet, numerals, some symbols, and certain control characters. There are 128 characters defined by the standard ASCII character set. Each ASCII character is assigned an 8-bit code that converts to a decimal number from 0 to 127, although in the standard set, the first bit is always 0. The first 31 values, which are nonprintable codes, are for control characters used to send commands to printers or other peripheral devices. Files that store data as ASCII characters are sometimes called ASCII files, ASCII text files, or simply text files. ASCII can be read by most text editors and word processors and is considered the universal file format for personal computers. Autoexec.bat is one example of an ASCII file.

In addition to the standard ASCII character set, some manufacturers use an extended ASCII character set that is specific to their equipment and is not necessarily compatible with other computers. The extended ASCII character sets use the codes 128 through 255.

The American National Standards Institute (ANSI), an organization responsible for many computer standards, developed an extended character set using codes 128 through 255 that includes special characters such as letters in an international alphabet and accents, currency symbols, and fractions. ANSI has also defined a series of control codes that can be used to control monitors. For example, a sequence of control codes can clear a monitor, cause characters to be displayed upside down, or put color on a DOS screen. Ansi.sys is a device driver that, when loaded in a DOS environment, provides these monitor and keyboard functions. Ansi.sys is loaded from the Config.sys file with this command:

```
Device=C:\DOS\Ansi.sys
```

Some DOS programs need Ansi.sys loaded in order to interpret the extended character set entered from the keyboard, display these characters on the screen, and control the monitor in other ways.

Table B-1 lists the standard ASCII character set. Note that items 2 through 32, the control characters, and the extended ASCII character set are not included.

Item Number	Symbol	Meaning	ASCII in Decimal Representation	ASCII in Binary Representation	ASCII in Hex Representation
1	.	Null	0	0000 0000	0
33	b/	Space	32	0010 0000	20
34	!	Exclamation point	33	0010 0001	21
35	"	Quotation mark	34	0010 0010	22
36	#	Number sign	35	0010 0011	23
37	\$	Dollar sign	36	0010 0100	24
38	%	Percent sign	37	0010 0101	25
39	&	Ampersand	38	0010 0110	26
40	'	Apostrophe, prime sign	39	0010 0111	27
41	(	Opening parenthesis	40	0010 1000	28
42	)	Closing parenthesis	41	0010 1001	29
43	*	Asterisk	42	0010 1010	2A
44	+	Plus sign	43	0010 1011	2B
45	,	Comma	44	0010 1100	2C
46	-	Hyphen, minus sign	45	0010 1101	2D
47	.	Period, decimal point	46	0010 1110	2E
48	/	Slant	47	0010 1111	2F
49	0		48	0011 0000	30
50	1		49	0011 0001	31
51	2		50	0011 0010	32
52	3		51	0011 0011	33
53	4		52	0011 0100	34
54	5		53	0011 0101	35

Table B-1 (continued)

Item Number	Symbol	Meaning	ASCII in Decimal Representation	ASCII in Binary Representation	ASCII in Hex Representation
55	6		54	0011 0110	36
56	7		55	0011 0111	37
57	8		56	0011 1000	38
58	9		57	0011 1001	39
59	:	Colon	58	0011 1010	3A
60	;	Semicolon	59	0011 1011	3B
61	<	Less than sign	60	0011 1100	3C
62	=	Equals sign	61	0011 1101	3D
63	>	Greater than sign	62	0011 1110	3E
64	?	Question mark	63	0011 1111	3F
65	@	Commercial at sign	64	0100 0000	40
66	A		65	0100 0001	41
67	B		66	0100 0010	42
68	C		67	0100 0011	43
69	D		68	0100 0100	44
70	E		69	0100 0101	45
71	F		70	0100 0110	46
72	G		71	0100 0111	47
73	H		72	0100 1000	48
74	I		73	0100 1001	49
75	J		74	0100 1010	4A
76	K		75	0100 1011	4B
77	L		76	0100 1100	4C
78	M		77	0100 1101	4D
79	N		78	0100 1110	4E
80	O		79	0100 1111	4F

Table B-1 (continued)

Item Number	Symbol	Meaning	ASCII in Decimal Representation	ASCII in Binary Representation	ASCII in Hex Representation
81	P		80	0101 0000	50
82	Q		81	0101 0001	51
83	R		82	0101 0010	52
84	S		83	0101 0011	53
85	T		84	0101 0100	54
86	U		85	0101 0101	55
87	V		86	0101 0110	56
88	W		87	0101 0111	57
89	X		88	0101 1000	58
90	Y		89	0101 1001	59
91	Z		90	0101 1010	5A
92	[	Opening bracket	91	0101 1011	5B
93	\	Reverse slant	92	0101 1100	5C
94	]	Closing bracket	93	0101 1101	5D
95	^	Caret	94	0101 1110	5E
96	_	Underscore	95	0101 1111	5F
97	`	Acute accent	96	0110 0000	60
98	a		97	0110 0001	61
99	b		98	0110 0010	62
100	c		99	0110 0011	63
101	d		100	0110 0100	64
102	e		101	0110 0101	65
103	f		102	0110 0110	66
104	g		103	0110 0111	67
105	h		104	0110 1000	68
106	i		105	0110 1001	69

Table B-1 (continued)

Item Number	Symbol	Meaning	ASCII in Decimal Representation	ASCII in Binary Representation	ASCII in Hex Representation
107	j		106	0110 1010	6A
108	k		107	0110 1011	6B
109	l		108	0110 1100	6C
110	m		109	0110 1101	6D
111	n		110	0110 1110	6E
112	o		111	0110 1111	6F
113	p		112	0111 0000	70
114	q		113	0111 0001	71
115	r		114	0111 0010	72
116	s		115	0111 0011	73
117	t		116	0111 0100	74
118	u		117	0111 0101	75
119	v		118	0111 0110	76
120	w		119	0111 0111	77
121	x		120	0111 1000	78
122	y		121	0111 1001	79
123	z		122	0111 1010	7A
124	{	Opening brace	123	0111 1011	7B
125	|	Split vertical bar	124	0111 1100	7C
126	}	Closing brace	125	0111 1101	7D
127	~	Tilde	126	0111 1110	7E
128	Δ	Small triangle	127	0111 1111	7F

Table B-1 Standard ASCII character set