

## ASCII

Alphanumerical characters are represented in computers as sequences of bits. Early computers used different conventions to represent letters and other symbols, until later some standard coding methods emerged. One of them, and the most popular today, is the American Standard Code for Information Interchange (ASCII), which represents symbols using seven bits. ASCII was defined in the 1960s and became a US government standard in 1968 when it was defined by the American National Standards Institute (ANSI) as "ANSI Standard x3.4". It has also been referred to as ISO 636.

The characters shown in the table below are the original ASCII set (often referred to as "plain ASCII"). To deal with symbols needed for other languages, some extensions of the ASCII code have been proposed by different computer manufacturers ("extended ASCII").

Some of the characters in the table are not printable; they are used as commands for the computer screen. Their names were coined according to their use in teletypes. The character NUL for example, was used as a filler after a carriage return (CR) to give the teletype printing head enough time to move to the beginning of the next line. The character ESC was used to "escape" from a transmission that had failed due to a misconnection. It is used now as the command of last resort to escape from a program that is crashing or has fallen into an unpredictable state.

The label of each column shows the most significant four bits of the ASCII code for a character, the label of each row shows the four least significant bits. The hexadecimal code can be obtained by concatenating the row bits to the column bits. Thus the hexadecimal ASCII code for the character 'A' is 0100 0001. Note that only the seven least significant bits are used - the eighth bit is always zero in plain ASCII.

	0000	0001	0010	0011	0100	0101	0110	0111
0000	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	SUB	*	:	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