

Download the Free ASCII Code Table PDF

Complete ASCII Code Chart 0–127

Download the free **ASCII Code Table PDF** for a printable reference of ASCII values from **0 to 127**, including decimal, hexadecimal, octal, binary, characters and control-code names.

This PDF includes:

- Complete ASCII table 0–127
- Printable ASCII chart
- ASCII control characters
- ASCII decimal values
- ASCII hexadecimal values
- ASCII octal values
- ASCII binary values
- ASCII codes A–Z
- ASCII codes a–z
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- ASCII punctuation codes
- ASCII symbols
- ASCII character ranges
- ASCII vs Extended ASCII
- ASCII vs Unicode
- HTML character references
- Programming reference
- Printable ASCII cheat sheet
- Frequently asked questions

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ASCII PDF Reference Information

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ASCII Code Table 0–127 – Complete Printable ASCII Chart with Decimal, Hex & Binary

Website:

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Related Article:

ASCII Code Table (Complete List with Printable Chart)

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2026

Language:

English

Purpose:

Educational and technical reference

Disclaimer

This guide describes the **standard 7-bit ASCII character set**, consisting of codes 0–127. The term “extended ASCII” can refer to different 8-bit character encodings, so values 128–255 are not included as a universal ASCII standard.

For modern text processing, Unicode-based encodings such as UTF-8 are widely used and support a much larger range of characters.

ASCII Code Table 0–127

Complete Printable ASCII Chart with Decimal, Hexadecimal, Octal & Binary Values

Updated: 2026

The **ASCII code table** is a standard reference for representing characters using numerical values. ASCII stands for **American Standard Code for Information Interchange**.

The standard ASCII character set contains **128 characters**, numbered from **0 to 127**.

Each ASCII character has a corresponding:

- Decimal value
- Hexadecimal value
- Octal value
- Binary value
- Character or control-code name

This printable ASCII chart is useful for **programmers, developers, students, system administrators, electronics enthusiasts and anyone working with text encoding or character codes**.

Quick Answer: What Is ASCII?

ASCII stands for **American Standard Code for Information Interchange**.

Standard ASCII uses **7 bits** and contains **128 codes**, numbered:

0 through 127

The ASCII table includes:

- **Control characters:** 0–31 and 127
- **Printable characters:** 32–126

For example:

Character	Decimal	Hexadecimal	Binary
Space	32	20	00100000
A	65	41	01000001
B	66	42	01000010
a	97	61	01100001
b	98	62	01100010
0	48	30	00110000
1	49	31	00110001

Complete ASCII Code Table 0–127

ASCII Control Characters: 0–31

Dec	Hex	Octal	Binary	Character / Name
0	00	000	00000000	NUL – Null
1	01	001	00000001	SOH – Start of Heading
2	02	002	00000010	STX – Start of Text
3	03	003	00000011	ETX – End of Text
4	04	004	00000100	EOT – End of Transmission
5	05	005	00000101	ENQ – Enquiry
6	06	006	00000110	ACK – Acknowledge
7	07	007	00000111	BEL – Bell
8	08	010	00001000	BS – Backspace
9	09	011	00001001	HT – Horizontal Tab
10	0A	012	00001010	LF – Line Feed

11	0B	013	00001011	VT – Vertical Tab
12	0C	014	00001100	FF – Form Feed
13	0D	015	00001101	CR – Carriage Return
14	0E	016	00001110	SO – Shift Out
15	0F	017	00001111	SI – Shift In
16	10	020	00010000	DLE – Data Link Escape
17	11	021	00010001	DC1 – Device Control 1
18	12	022	00010010	DC2 – Device Control 2
19	13	023	00010011	DC3 – Device Control 3
20	14	024	00010100	DC4 – Device Control 4
21	15	025	00010101	NAK – Negative Acknowledge
22	16	026	00010110	SYN – Synchronous Idle
23	17	027	00010111	ETB – End of Transmission Block
24	18	030	00011000	CAN – Cancel
25	19	031	00011001	EM – End of Medium
26	1A	032	00011010	SUB – Substitute
27	1B	033	00011011	ESC – Escape
28	1C	034	00011100	FS – File Separator
29	1D	035	00011101	GS – Group Separator
30	1E	036	00011110	RS – Record Separator
31	1F	037	00011111	US – Unit Separator

Printable ASCII Characters: 32–126

Dec	Hex	Octal	Binary	Character
-----	-----	-------	--------	-----------

32	20	040	00100000	Space
----	----	-----	----------	-------

33	21	041	00100001	!
----	----	-----	----------	---

34	22	042	00100010	"
----	----	-----	----------	---

35	23	043	00100011	#
----	----	-----	----------	---

36	24	044	00100100	\$
----	----	-----	----------	----

37	25	045	00100101	%
----	----	-----	----------	---

38	26	046	00100110	&
----	----	-----	----------	---

39	27	047	00100111	'
----	----	-----	----------	---

40	28	050	00101000	(
----	----	-----	----------	---

41	29	051	00101001	)
----	----	-----	----------	---

42	2A	052	00101010	*
----	----	-----	----------	---

43	2B	053	00101011	+
----	----	-----	----------	---

44	2C	054	00101100	,
----	----	-----	----------	---

45	2D	055	00101101	-
----	----	-----	----------	---

46	2E	056	00101110	.
----	----	-----	----------	---

47	2F	057	00101111	/
----	----	-----	----------	---

48	30	060	00110000	0
----	----	-----	----------	---

49	31	061	00110001	1
----	----	-----	----------	---

50	32	062	00110010	2
----	----	-----	----------	---

51	33	063	00110011	3
----	----	-----	----------	---

52	34	064	00110100	4
----	----	-----	----------	---

53	35	065	00110101	5
----	----	-----	----------	---

54	36	066	00110110	6
----	----	-----	----------	---

55	37	067	00110111	7
----	----	-----	----------	---

56	38	070 00111000	8
57	39	071 00111001	9
58	3A	072 00111010	:
59	3B	073 00111011	;
60	3C	074 00111100	<
61	3D	075 00111101	=
62	3E	076 00111110	>
63	3F	077 00111111	?
64	40	100 01000000	@
65	41	101 01000001	A
66	42	102 01000010	B
67	43	103 01000011	C
68	44	104 01000100	D
69	45	105 01000101	E
70	46	106 01000110	F
71	47	107 01000111	G
72	48	110 01001000	H
73	49	111 01001001	I
74	4A	112 01001010	J
75	4B	113 01001011	K
76	4C	114 01001100	L
77	4D	115 01001101	M
78	4E	116 01001110	N
79	4F	117 01001111	O
80	50	120 01010000	P

81	51	121 01010001	Q
82	52	122 01010010	R
83	53	123 01010011	S
84	54	124 01010100	T
85	55	125 01010101	U
86	56	126 01010110	V
87	57	127 01010111	W
88	58	130 01011000	X
89	59	131 01011001	Y
90	5A	132 01011010	Z
91	5B	133 01011011	[
92	5C	134 01011100	\
93	5D	135 01011101	]
94	5E	136 01011110	^
95	5F	137 01011111	_
96	60	140 01100000	`
97	61	141 01100001	a
98	62	142 01100010	b
99	63	143 01100011	c
100	64	144 01100100	d
101	65	145 01100101	e
102	66	146 01100110	f
103	67	147 01100111	g
104	68	150 01101000	h
105	69	151 01101001	i

106	6A	152	01101010	j
107	6B	153	01101011	k
108	6C	154	01101100	l
109	6D	155	01101101	m
110	6E	156	01101110	n
111	6F	157	01101111	o
112	70	160	01110000	p
113	71	161	01110001	q
114	72	162	01110010	r
115	73	163	01110011	s
116	74	164	01110100	t
117	75	165	01110101	u
118	76	166	01110110	v
119	77	167	01110111	w
120	78	170	01111000	x
121	79	171	01111001	y
122	7A	172	01111010	z
123	7B	173	01111011	{
124	7C	174	01111100	
125	7D	175	01111101	}
126	7E	176	01111110	~

ASCII Code 127

Dec	Hex	Octal	Binary Character	Name
-----	-----	-------	------------------	------

127	7F	177	01111111	DEL – Delete
-----	----	-----	----------	--------------

ASCII Character Categories

The standard ASCII table can be divided into three major groups.

Range	Category	Description
0–31	Control characters	Non-printing control codes
32–126	Printable characters	Letters, numbers, punctuation and symbols
127	Control character	DEL

Therefore:

ASCII 0–127 = 128 total codes

ASCII Control Characters Reference

Code	Name	Common Meaning
------	------	----------------

0	NUL	Null
---	-----	------

1	SOH	Start of Heading
---	-----	------------------

2	STX	Start of Text
---	-----	---------------

3	ETX	End of Text
---	-----	-------------

4	EOT	End of Transmission
---	-----	---------------------

5	ENQ	Enquiry
---	-----	---------

6	ACK	Acknowledge
---	-----	-------------

7	BEL	Bell
---	-----	------

8	BS	Backspace
---	----	-----------

9 HT	Horizontal Tab
10 LF	Line Feed
11 VT	Vertical Tab
12 FF	Form Feed
13 CR	Carriage Return
14 SO	Shift Out
15 SI	Shift In
16 DLE	Data Link Escape
17 DC1	Device Control 1
18 DC2	Device Control 2
19 DC3	Device Control 3
20 DC4	Device Control 4
21 NAK	Negative Acknowledge
22 SYN	Synchronous Idle
23 ETB	End of Transmission Block
24 CAN	Cancel
25 EM	End of Medium
26 SUB	Substitute
27 ESC	Escape
28 FS	File Separator
29 GS	Group Separator
30 RS	Record Separator
31 US	Unit Separator
127 DEL	Delete

ASCII Codes for Numbers 0–9

The ASCII codes for numeric characters are sequential.

Character	Decimal	Hex	Binary
-----------	---------	-----	--------

0	48	30	00110000
---	----	----	----------

1	49	31	00110001
---	----	----	----------

2	50	32	00110010
---	----	----	----------

3	51	33	00110011
---	----	----	----------

4	52	34	00110100
---	----	----	----------

5	53	35	00110101
---	----	----	----------

6	54	36	00110110
---	----	----	----------

7	55	37	00110111
---	----	----	----------

8	56	38	00111000
---	----	----	----------

9	57	39	00111001
---	----	----	----------

Important shortcut

The ASCII decimal codes for **0–9** range from:

48–57

ASCII Codes for Uppercase Letters A–Z

Character	Decimal	Hex
-----------	---------	-----

A	65	41
---	----	----

B	66	42
---	----	----

C	67	43
---	----	----

D	68	44
---	----	----

E	69	45
F	70	46
G	71	47
H	72	48
I	73	49
J	74	4A
K	75	4B
L	76	4C
M	77	4D
N	78	4E
O	79	4F
P	80	50
Q	81	51
R	82	52
S	83	53
T	84	54
U	85	55
V	86	56
W	87	57
X	88	58
Y	89	59
Z	90	5A

[Important shortcut](#)

Uppercase **A–Z** occupy decimal ASCII codes:

65–90

ASCII Codes for Lowercase Letters a–z

Character	Decimal	Hex
-----------	---------	-----

a	97	61
---	----	----

b	98	62
---	----	----

c	99	63
---	----	----

d	100	64
---	-----	----

e	101	65
---	-----	----

f	102	66
---	-----	----

g	103	67
---	-----	----

h	104	68
---	-----	----

i	105	69
---	-----	----

j	106	6A
---	-----	----

k	107	6B
---	-----	----

l	108	6C
---	-----	----

m	109	6D
---	-----	----

n	110	6E
---	-----	----

o	111	6F
---	-----	----

p	112	70
---	-----	----

q	113	71
---	-----	----

r	114	72
---	-----	----

s	115	73
---	-----	----

t	116	74
---	-----	----

u	117	75
---	-----	----

v	118	76
w	119	77
x	120	78
y	121	79
z	122	7A

Important shortcut

Lowercase **a–z** occupy decimal ASCII codes:

97–122

Uppercase vs Lowercase ASCII

There is a useful numerical relationship between uppercase and lowercase English letters.

For example:

A = 65

a = 97

Difference:

97 – 65 = 32

The same 32-value difference applies to corresponding English letters.

Examples:

Uppercase	Decimal	Lowercase	Decimal
-----------	---------	-----------	---------

A	65	a	97
B	66	b	98
C	67	c	99
D	68	d	100
E	69	e	101

ASCII Punctuation and Symbol Codes

Character Decimal Hex

Space 32 20

! 33 21

" 34 22

35 23

\$ 36 24

% 37 25

& 38 26

' 39 27

(40 28

) 41 29

* 42 2A

+ 43 2B

, 44 2C

- 45 2D

. 46 2E

/ 47 2F

: 58 3A

; 59 3B

< 60 3C

= 61 3D

>	62	3E
?	63	3F
@	64	40
[	91	5B
\	92	5C
]	93	5D
^	94	5E
_	95	5F
`	96	60
{	123	7B
	124	7C
}	125	7D
~	126	7E

ASCII Decimal, Hexadecimal and Binary

ASCII values are commonly represented using different number systems.

Decimal

Base 10.

Example:

A = 65

Hexadecimal

Base 16.

Example:

A = 41

Binary

Base 2.

Example:

A = 01000001

Octal

Base 8.

Example:

A = 101

Therefore:

A = Decimal 65 = Hex 41 = Octal 101 = Binary 01000001

Example ASCII Conversions

Letter A

Number System	Value
Decimal	65
Hexadecimal	41
Octal	101
Binary	01000001

Letter a

Number System	Value
Decimal	97
Hexadecimal	61
Octal	141

Binary	01100001
--------	----------

Number 0

Number System	Value
Decimal	48
Hexadecimal	30
Octal	60
Binary	00110000

Space

Number System	Value
Decimal	32
Hexadecimal	20
Octal	40
Binary	00100000

ASCII vs Extended ASCII

Standard ASCII uses:

7 bits

and provides:

128 codes (0–127)

The term **extended ASCII** is commonly used for 8-bit character sets that use values from **128–255**.

However, there is **no single universal extended ASCII standard**. Different character encodings can assign different characters to values 128–255.

Therefore:

Standard ASCII ends at 127.

Values **128–255 should not automatically be treated as one universal ASCII table.**

ASCII vs Unicode

ASCII and Unicode are related but are not the same thing.

ASCII

- 7-bit standard
- 128 codes
- Primarily English letters, digits, punctuation and control characters

Unicode

- Much larger character repertoire
- Supports writing systems from around the world
- Includes characters beyond standard ASCII

For example, Unicode can represent many characters that standard ASCII cannot.

Is ASCII Still Used?

Yes.

ASCII remains important because many modern character encodings preserve the original ASCII character assignments.

ASCII concepts are still encountered in:

- Programming
- Software development
- Networking
- Command-line interfaces
- Text processing
- Data transmission
- File formats
- HTML and web development
- Database systems
- Embedded systems

- Computer science education

ASCII in Programming

Programmers may need ASCII values when working with:

- Character comparisons
- String processing
- Input validation
- Encoding and decoding
- File processing
- Legacy systems
- Network protocols
- Command-line tools

For example:

'A' = 65

'a' = 97

'0' = 48

ASCII Codes in HTML

Some ASCII characters can be represented using HTML character references.

For example:

Character Decimal HTML Hex HTML

Space

! ! !

" " "

#

& & &

< < <

> `>` `>`

For HTML, certain characters also have named entities. For example:

`&` = `&`;

`<` = `<`;

`>` = `>`;

`"` = `"`;

ASCII Printable Character Range

The standard printable ASCII range is:

32–126

This includes:

- Space
- Numbers
- Uppercase letters
- Lowercase letters
- Punctuation
- Common symbols

The printable range contains:

95 characters

Calculation:

$126 - 32 + 1 = 95$

ASCII Character Ranges at a Glance

Range	Characters
-------	------------

0–31	Control characters
------	--------------------

32	Space
----	-------

33–47 Punctuation and symbols

48–57 Digits 0–9

58–64 Punctuation and symbols

65–90 Uppercase A–Z

91–96 Punctuation and symbols

97–122 Lowercase a–z

123–126 Punctuation and symbols

127 DEL control character

Most Important ASCII Values

Character Decimal Hex

Space	32	20
0	48	30
1	49	31
A	65	41
B	66	42
Z	90	5A
a	97	61
b	98	62
z	122	7A
DEL	127	7F

Printable ASCII Cheat Sheet

Numbers

0–9 = ASCII 48–57

Uppercase letters

A–Z = ASCII 65–90

Lowercase letters

a–z = ASCII 97–122

Printable characters

ASCII 32–126

Complete standard ASCII

ASCII 0–127

ASCII character count

128 total codes

Frequently Asked Questions

What is the ASCII code table?

The ASCII code table is a reference showing the numerical codes assigned to characters in the standard ASCII character set.

How many ASCII characters are there?

Standard ASCII contains **128 codes**, numbered from **0 to 127**.

What is the ASCII range?

The standard ASCII range is:

0–127

What is the printable ASCII range?

Printable ASCII characters occupy:

32–126

What is the ASCII code for A?

The ASCII decimal code for uppercase **A** is:

65

What is the ASCII code for a?

The ASCII decimal code for lowercase **a** is:

97

What is the ASCII code for 0?

The ASCII decimal code for the character **0** is:

48

What is the ASCII code for space?

The ASCII decimal code for the space character is:

32

What is ASCII 127?

ASCII 127 is:

DEL – Delete

It is a control character.

Is ASCII 8-bit or 7-bit?

Standard ASCII is a **7-bit character encoding** containing 128 codes.

An 8-bit byte can store those values with an additional leading zero when represented in binary.

What is the difference between ASCII and Unicode?

ASCII contains 128 standard codes, while Unicode provides a much larger character set designed to represent text from many writing systems.

What is extended ASCII?

“Extended ASCII” is a general term often used for 8-bit character sets containing values 128–255. There is no single universal extended ASCII standard.

ASCII Code Quick Reference

Remember These Values

Space = 32

0 = 48

A = 65

Z = 90

a = 97

z = 122

DEL = 127

Printable ASCII Chart – One-Page Reference

Decimal	Hex	Character
---------	-----	-----------

32	20	Space
----	----	-------

33	21	!
----	----	---

34	22	"
----	----	---

35	23	#
----	----	---

36	24	\$
----	----	----

37	25	%
----	----	---

38	26	&
----	----	---

39	27	'
----	----	---

40 28 (

41 29)

42 2A *

43 2B +

44 2C ,

45 2D -

46 2E .

47 2F /

48-57 30-39 0-9

58 3A :

59 3B ;

60 3C <

61 3D =

62 3E >

63 3F ?

64 40 @

65-90 41-5A A-Z

91 5B [

92 5C \

93 5D]

94 5E ^

95 5F _

96 60 `

97-122 61-7A a-z

123 7B {

124	7C	
125	7D	}
126	7E	~