

# Appendix-D

## ASCII CHART (IBM CHARACTER CODES)

Src: [http://www.ascii-codes.com/#standard\\_character\\_set](http://www.ascii-codes.com/#standard_character_set)

The character table below is showing a pixel precise graphical representation for each character, alongside with a text description.

### Control characters (0 - 31) :

| Dec | Hex | Char | Description                | Dec | Hex | Char | Description                     |
|-----|-----|------|----------------------------|-----|-----|------|---------------------------------|
| 0   | 0   |      | NUL (Null)                 | 16  | 10  | ▶    | DLE (Data Link Escape)          |
| 1   | 1   | ␣    | SOH (Start of Header)      | 17  | 11  | ◀    | DC1 (Device Control 1)          |
| 2   | 2   | ␣    | STX (Start of Text)        | 18  | 12  | ‡    | DC2 (Device Control 2)          |
| 3   | 3   | ␣    | ETX (End of Text)          | 19  | 13  | ‡‡   | DC3 (Device Control 3)          |
| 4   | 4   | ♦    | EOT (End of Transmission)  | 20  | 14  | ¶    | DC4 (Device Control 4)          |
| 5   | 5   | ♣    | ENQ (Enquiry)              | 21  | 15  | §    | NAK (Negative Acknowledge)      |
| 6   | 6   | ♣    | ACK (Acknowledge)          | 22  | 16  | ■    | SYN (Synchronous Idle)          |
| 7   | 7   | •    | BEL (Bell)                 | 23  | 17  | ‡    | ETB (End of Transmission Block) |
| 8   | 8   | ␣    | BS (BackSpace)             | 24  | 18  | ↑    | CAN (Cancel)                    |
| 9   | 9   | ␣    | HT (Horizontal Tabulation) | 25  | 19  | ↓    | EM (End of Medium)              |
| 10  | A   | ␣    | LF (Line Feed)             | 26  | 1A  | →    | SUB (Substitute)                |
| 11  | B   | ␣    | VT (Vertical Tabulation)   | 27  | 1B  | ←    | ESC (Escape)                    |
| 12  | C   | ♀    | FF (Form Feed)             | 28  | 1C  | ↵    | FS (File Separator)             |
| 13  | D   | ␣    | CR (Carriage Return)       | 29  | 1D  | ⋄    | GS (Group Separator)            |
| 14  | E   | ␣    | SO (Shift Out)             | 30  | 1E  | ▲    | RS (Record Separator)           |
| 15  | F   | *    | SI (Shift In)              | 31  | 1F  | ▼    | US (Unit Separator)             |

### Standard character set (32 - 127) :

| Dec | Hex | Char | Description      | Dec | Hex | Char | Description          |
|-----|-----|------|------------------|-----|-----|------|----------------------|
| 32  | 20  |      | Space            | 80  | 50  | P    | Upper case P         |
| 33  | 21  | !    | Exclamation mark | 81  | 51  | Q    | Upper case Q         |
| 34  | 22  | "    | Quotation Mark   | 82  | 52  | R    | Upper case R         |
| 35  | 23  | #    | Hash             | 83  | 53  | S    | Upper case S         |
| 36  | 24  | \$   | Dollar           | 84  | 54  | T    | Upper case T         |
| 37  | 25  | %    | Percent          | 85  | 55  | U    | Upper case U         |
| 38  | 26  | &    | Ampersand        | 86  | 56  | V    | Upper case V         |
| 39  | 27  | '    | Apostrophe       | 87  | 57  | W    | Upper case W         |
| 40  | 28  | (    | Open bracket     | 88  | 58  | X    | Upper case X         |
| 41  | 29  | )    | Close bracket    | 89  | 59  | Y    | Upper case Y         |
| 42  | 2A  | *    | Asterisk         | 90  | 5A  | Z    | Upper case Z         |
| 43  | 2B  | +    | Plus             | 91  | 5B  | [    | Open square bracket  |
| 44  | 2C  | ,    | Comma            | 92  | 5C  | \    | Backslash            |
| 45  | 2D  | -    | Dash             | 93  | 5D  | ]    | Close square bracket |
| 46  | 2E  | .    | Full stop        | 94  | 5E  | ^    | Caret                |
| 47  | 2F  | /    | Slash            | 95  | 5F  | _    | Underscore           |
| 48  | 30  | 0    | Zero             | 96  | 60  | `    | Grave accent         |
| 49  | 31  | 1    | One              | 97  | 61  | a    | Lower case a         |
| 50  | 32  | 2    | Two              | 98  | 62  | b    | Lower case b         |
| 51  | 33  | 3    | Three            | 99  | 63  | c    | Lower case c         |
| 52  | 34  | 4    | Four             | 100 | 64  | d    | Lower case d         |
| 53  | 35  | 5    | Five             | 101 | 65  | e    | Lower case e         |
| 54  | 36  | 6    | Six              | 102 | 66  | f    | Lower case f         |
| 55  | 37  | 7    | Seven            | 103 | 67  | g    | Lower case g         |
| 56  | 38  | 8    | Eight            | 104 | 68  | h    | Lower case h         |
| 57  | 39  | 9    | Nine             | 105 | 69  | i    | Lower case i         |
| 58  | 3A  | :    | Colon            | 106 | 6A  | j    | Lower case j         |
| 59  | 3B  | ;    | Semicolon        | 107 | 6B  | k    | Lower case k         |
| 60  | 3C  | <    | Less than        | 108 | 6C  | l    | Lower case l         |

|    |    |   |               |     |    |   |              |
|----|----|---|---------------|-----|----|---|--------------|
| 61 | 3D | = | Equals sign   | 109 | 6D | m | Lower case m |
| 62 | 3E | > | Greater than  | 110 | 6E | n | Lower case n |
| 63 | 3F | ? | Question mark | 111 | 6F | o | Lower case o |
| 64 | 40 | @ | At            | 112 | 70 | p | Lower case p |
| 65 | 41 | A | Upper case A  | 113 | 71 | q | Lower case q |
| 66 | 42 | B | Upper case B  | 114 | 72 | r | Lower case r |
| 67 | 43 | C | Upper case C  | 115 | 73 | s | Lower case s |
| 68 | 44 | D | Upper case D  | 116 | 74 | t | Lower case t |
| 69 | 45 | E | Upper case E  | 117 | 75 | u | Lower case u |
| 70 | 46 | F | Upper case F  | 118 | 76 | v | Lower case v |
| 71 | 47 | G | Upper case G  | 119 | 77 | w | Lower case w |
| 72 | 48 | H | Upper case H  | 120 | 78 | x | Lower case x |
| 73 | 49 | I | Upper case I  | 121 | 79 | y | Lower case y |
| 74 | 4A | J | Upper case J  | 122 | 7A | z | Lower case z |
| 75 | 4B | K | Upper case K  | 123 | 7B | { | Open brace   |
| 76 | 4C | L | Upper case L  | 124 | 7C |   | Pipe         |
| 77 | 4D | M | Upper case M  | 125 | 7D | } | Close brace  |
| 78 | 4E | N | Upper case N  | 126 | 7E | ~ | Tilde        |
| 79 | 4F | O | Upper case O  | 127 | 7F | ␣ | Delete       |

**Extended character set (128 - 255) :**

| Dec | Hex | Char | Description                  | Dec | Hex | Char | Description  |
|-----|-----|------|------------------------------|-----|-----|------|--|
| 128 | 80  | Ç    | Upper case C with cedilla    | 192 | C0  | ␣    | Box drawings light up and right                    |
| 129 | 81  | ü    | Lower case u with diaeresis  | 193 | C1  | ␣    | Box drawings light up and horizontal               |
| 130 | 82  | é    | Lower case e with acute      | 194 | C2  | ␣    | Box drawings light down and horizontal             |
| 131 | 83  | â    | Lower case a with circumflex | 195 | C3  | ␣    | Box drawings light vertical and right              |
| 132 | 84  | ä    | Lower case a with diaeresis  | 196 | C4  | —    | Box drawings light horizontal                      |
| 133 | 85  | à    | Lower case a with grave      | 197 | C5  | ␣    | Box drawings light vertical and horizontal         |
| 134 | 86  | å    | Lower case a with ring above | 198 | C6  | ␣    | Box drawings vertical single and right double      |
| 135 | 87  | ç    | Lower case c with cedilla    | 199 | C7  | ␣    | Box drawings vertical double and right single      |
| 136 | 88  | ê    | Lower case e with circumflex | 200 | C8  | ␣    | Box drawings double up and right                   |
| 137 | 89  | ë    | Lower case e with diaeresis  | 201 | C9  | ␣    | Box drawings double down and right                 |
| 138 | 8A  | è    | Lower case e with grave      | 202 | CA  | ␣    | Box drawings double up and horizontal              |
| 139 | 8B  | ï    | Lower case i with diaeresis  | 203 | CB  | ␣    | Box drawings double down and horizontal            |
| 140 | 8C  | î    | Lower case i with circumflex | 204 | CC  | ␣    | Box drawings double vertical and right             |
| 141 | 8D  | ì    | Lower case i with grave      | 205 | CD  | =    | Box drawings double horizontal                     |
| 142 | 8E  | ÿ    | Upper case A with diaeresis  | 206 | CE  | ␣    | Box drawings double vertical and horizontal        |
| 143 | 8F  | Å    | Upper case A with ring above | 207 | CF  | ␣    | Box drawings up single and horizontal double       |
| 144 | 90  | É    | Upper case E with acute      | 208 | D0  | ␣    | Box drawings up double and horizontal single       |
| 145 | 91  | æ    | Lower case ae                | 209 | D1  | ␣    | Box drawings down single and horizontal double     |
| 146 | 92  | Æ    | Upper case AE                | 210 | D2  | ␣    | Box drawings down double and horizontal single     |
| 147 | 93  | ô    | Lower case o with circumflex | 211 | D3  | ␣    | Box drawings up double and right single            |
| 148 | 94  | ö    | Lower case o with diaeresis  | 212 | D4  | ␣    | Box drawings up single and right double            |
| 149 | 95  | ò    | Lower case o with grave      | 213 | D5  | ␣    | Box drawings down single and right double          |
| 150 | 96  | û    | Lower case u with circumflex | 214 | D6  | ␣    | Box drawings down double and right single          |
| 151 | 97  | ù    | Lower case u with grave      | 215 | D7  | ␣    | Box drawings vertical double and horizontal single |
| 152 | 98  | ÿ    | Lower case y with diaeresis  | 216 | D8  | ␣    | Box drawings vertical single and horizontal double |
| 153 | 99  | ÿ    | Upper case O with diaeresis  | 217 | D9  | ␣    | Box drawings light up and left                     |
| 154 | 9A  | ÿ    | Upper case U with diaeresis  | 218 | DA  | ␣    | Box drawings light down and right                  |
| 155 | 9B  | ¢    | Cent sign                    | 219 | DB  | ■    | Full block   |
| 156 | 9C  | £    | Pound sign                   | 220 | DC  | ■    | Lower half block                                   |
| 157 | 9D  | ¥    | Yen sign                     | 221 | DD  | ■    | Left half block                                    |
| 158 | 9E  | ₧    | Peseta sign                  | 222 | DE  | ■    | Right half block                                   |
| 159 | 9F  | ƒ    | Lower case f with hook       | 223 | DF  | ■    | Upper half block                                   |

|     |    |   |  |     |    |   |                               |
|-----|----|---|--|-----|----|---|-------------------------------|
| 160 | A0 | á | Lower case a with acute                      | 224 | E0 | α | Greek lower case alpha        |
| 161 | A1 | í | Lower case i with acute                      | 225 | E1 | ß | Lower case sharp s            |
| 162 | A2 | ó | Lower case o with acute                      | 226 | E2 | Γ | Greek upper case letter gamma |
| 163 | A3 | ú | Lower case u with acute                      | 227 | E3 | π | Greek lower case pi           |
| 164 | A4 | ñ | Lower case n with tilde                      | 228 | E4 | Σ | Greek upper case letter sigma |
| 165 | A5 | Ñ | Upper case N with tilde                      | 229 | E5 | σ | Greek lower case sigma        |
| 166 | A6 | ª | Feminine ordinal indicator                   | 230 | E6 | μ | Micro sign                    |
| 167 | A7 | º | Masculine ordinal indicator                  | 231 | E7 | τ | Greek lower case tau          |
| 168 | A8 | ¿ | Inverted question mark                       | 232 | E8 | ϕ | Greek upper case letter phi   |
| 169 | A9 | ¬ | Reversed not sign                            | 233 | E9 | θ | Greek upper case letter theta |
| 170 | AA | ¬ | Not sign                                     | 234 | EA | Ω | Greek upper case letter omega |
| 171 | AB | ½ | Vulgar fraction one half                     | 235 | EB | δ | Greek lower case delta        |
| 172 | AC | ¼ | Vulgar fraction one quarter                  | 236 | EC | ∞ | Infinity                      |
| 173 | AD | ¡ | Inverted exclamation mark                    | 237 | ED | ø | Greek lower case phi          |
| 174 | AE | « | Left-pointing double angle quotation mark    | 238 | EE | ε | Greek lower case epsilon      |
| 175 | AF | » | Right-pointing double angle quotation mark   | 239 | EF | ∩ | Intersection                  |
| 176 | B0 | ░ | Light shade                                  | 240 | F0 | ≡ | Identical to                  |
| 177 | B1 | ▒ | Medium shade                                 | 241 | F1 | ± | Plus-minus sign               |
| 178 | B2 | ▓ | Dark shade                                   | 242 | F2 | ≥ | Greater-than or equal to      |
| 179 | B3 |   | Box drawings light vertical                  | 243 | F3 | ≤ | Less-than or equal to         |
| 180 | B4 | ┌ | Box drawings light vertical and left         | 244 | F4 | ∫ | Top half integral             |
| 181 | B5 | ┐ | Box drawings vertical single and left double | 245 | F5 | ∫ | Bottom half integral          |
| 182 | B6 | ┑ | Box drawings vertical double and left single | 246 | F6 | ÷ | Division sign                 |
| 183 | B7 | ┒ | Box drawings down double and left single     | 247 | F7 | ≈ | Almost equal to               |
| 184 | B8 | ┓ | Box drawings down single and left double     | 248 | F8 | ° | Degree sign                   |
| 185 | B9 | └ | Box drawings double vertical and left        | 249 | F9 | · | Bullet operator               |
| 186 | BA | ┘ | Box drawings double vertical                 | 250 | FA | · | Middle dot                    |
| 187 | BB | ┙ | Box drawings double down and left            | 251 | FB | √ | Square root                   |
| 188 | BC | ┚ | Box drawings up single and left double       | 252 | FC | ⁿ | Superscript lower case n      |
| 189 | BD | ┛ | Box drawings double up and left              | 253 | FD | ² | Superscript two               |
| 190 | BE | ├ | Box drawings up double and left single       | 254 | FE | ■ | Black square                  |
| 191 | BF | └ | Box drawings light down and left             | 255 | FF |   | No-break space                |

