# Ordering of characters in computers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Character** | **Number** | **Character** | **Number** | **Character** |
| 32 | [␠](http://en.wikipedia.org/wiki/Space_(punctuation)) | 64 | [@](http://en.wikipedia.org/wiki/@) | 96 | [`](http://en.wikipedia.org/wiki/Grave_accent) |
| 33 | [!](http://en.wikipedia.org/wiki/Exclamation_mark) | 65 | [A](http://en.wikipedia.org/wiki/A) | 97 | [a](http://en.wikipedia.org/wiki/A) |
| 34 | ["](http://en.wikipedia.org/wiki/Quotation_mark) | 66 | [B](http://en.wikipedia.org/wiki/B) | 98 | [b](http://en.wikipedia.org/wiki/B) |
| 35 | [#](http://en.wikipedia.org/wiki/Number_sign) | 67 | [C](http://en.wikipedia.org/wiki/C) | 99 | [c](http://en.wikipedia.org/wiki/C) |
| 36 | [$](http://en.wikipedia.org/wiki/Dollar_sign) | 68 | [D](http://en.wikipedia.org/wiki/D) | 100 | [d](http://en.wikipedia.org/wiki/D) |
| 37 | [%](http://en.wikipedia.org/wiki/Percent_sign) | 69 | [E](http://en.wikipedia.org/wiki/E) | 101 | [e](http://en.wikipedia.org/wiki/E) |
| 38 | [&](http://en.wikipedia.org/wiki/Ampersand) | 70 | [F](http://en.wikipedia.org/wiki/F) | 102 | [f](http://en.wikipedia.org/wiki/F) |
| 39 | ['](http://en.wikipedia.org/wiki/Apostrophe) | 71 | [G](http://en.wikipedia.org/wiki/G) | 103 | [g](http://en.wikipedia.org/wiki/G) |
| 40 | [(](http://en.wikipedia.org/wiki/Parentheses) | 72 | [H](http://en.wikipedia.org/wiki/H) | 104 | [h](http://en.wikipedia.org/wiki/H) |
| 41 | [)](http://en.wikipedia.org/wiki/Parentheses) | 73 | [I](http://en.wikipedia.org/wiki/I) | 105 | [i](http://en.wikipedia.org/wiki/I) |
| 42 | [\*](http://en.wikipedia.org/wiki/Asterisk) | 74 | [J](http://en.wikipedia.org/wiki/J) | 106 | [j](http://en.wikipedia.org/wiki/J) |
| 43 | [+](http://en.wikipedia.org/wiki/Plus_sign) | 75 | [K](http://en.wikipedia.org/wiki/K) | 107 | [k](http://en.wikipedia.org/wiki/K) |
| 44 | [,](http://en.wikipedia.org/wiki/Comma_(punctuation)) | 76 | [L](http://en.wikipedia.org/wiki/L) | 108 | [l](http://en.wikipedia.org/wiki/L) |
| 45 | [-](http://en.wikipedia.org/wiki/Hyphen-minus) | 77 | [M](http://en.wikipedia.org/wiki/M) | 109 | [m](http://en.wikipedia.org/wiki/M) |
| 46 | [.](http://en.wikipedia.org/wiki/Full_stop) | 78 | [N](http://en.wikipedia.org/wiki/N) | 110 | [n](http://en.wikipedia.org/wiki/N) |
| 47 | [/](http://en.wikipedia.org/wiki/Slash_(punctuation)) | 79 | [O](http://en.wikipedia.org/wiki/O) | 111 | [o](http://en.wikipedia.org/wiki/O) |
| 48 | [0](http://en.wikipedia.org/wiki/0_(number)) | 80 | [P](http://en.wikipedia.org/wiki/P) | 112 | [p](http://en.wikipedia.org/wiki/P) |
| 49 | [1](http://en.wikipedia.org/wiki/1_(number)) | 81 | [Q](http://en.wikipedia.org/wiki/Q) | 113 | [q](http://en.wikipedia.org/wiki/Q) |
| 50 | [2](http://en.wikipedia.org/wiki/2_(number)) | 82 | [R](http://en.wikipedia.org/wiki/R) | 114 | [r](http://en.wikipedia.org/wiki/R) |
| 51 | [3](http://en.wikipedia.org/wiki/3_(number)) | 83 | [S](http://en.wikipedia.org/wiki/S) | 115 | [s](http://en.wikipedia.org/wiki/S) |
| 52 | [4](http://en.wikipedia.org/wiki/4_(number)) | 84 | [T](http://en.wikipedia.org/wiki/T) | 116 | [t](http://en.wikipedia.org/wiki/T) |
| 53 | [5](http://en.wikipedia.org/wiki/5_(number)) | 85 | [U](http://en.wikipedia.org/wiki/U) | 117 | [u](http://en.wikipedia.org/wiki/U) |
| 54 | [6](http://en.wikipedia.org/wiki/6_(number)) | 86 | [V](http://en.wikipedia.org/wiki/V) | 118 | [v](http://en.wikipedia.org/wiki/V) |
| 55 | [7](http://en.wikipedia.org/wiki/7_(number)) | 87 | [W](http://en.wikipedia.org/wiki/W) | 119 | [w](http://en.wikipedia.org/wiki/W) |
| 56 | [8](http://en.wikipedia.org/wiki/8_(number)) | 88 | [X](http://en.wikipedia.org/wiki/X) | 120 | [x](http://en.wikipedia.org/wiki/X) |
| 57 | [9](http://en.wikipedia.org/wiki/9_(number)) | 89 | [Y](http://en.wikipedia.org/wiki/Y) | 121 | [y](http://en.wikipedia.org/wiki/Y) |
| 58 | [:](http://en.wikipedia.org/wiki/Colon_(punctuation)) | 90 | [Z](http://en.wikipedia.org/wiki/Z) | 122 | [z](http://en.wikipedia.org/wiki/Z) |
| 59 | [;](http://en.wikipedia.org/wiki/Semicolon) | 91 | [[](http://en.wikipedia.org/wiki/Square_brackets) | 123 | [{](http://en.wikipedia.org/wiki/Bracket#Curly_brackets) |
| 60 | [<](http://en.wikipedia.org/wiki/Less-than_sign) | 92 | [\](http://en.wikipedia.org/wiki/Backslash) | 124 | [|](http://en.wikipedia.org/wiki/Vertical_bar) |
| 61 | [=](http://en.wikipedia.org/wiki/Equals_sign) | 93 | []](http://en.wikipedia.org/wiki/Square_brackets) | 125 | [}](http://en.wikipedia.org/wiki/Bracket#Curly_brackets) |
| 62 | [>](http://en.wikipedia.org/wiki/Greater-than_sign) | 94 | [^](http://en.wikipedia.org/wiki/Caret) | 126 | [~](http://en.wikipedia.org/wiki/Tilde) |
| 63 | [?](http://en.wikipedia.org/wiki/Question_mark) | 95 | [\_](http://en.wikipedia.org/wiki/Underscore) |  |  |

This chart shows the order of characters in a computer. Every letter is assigned a number (called an ASCII value, short for American Standard Code for Information Interchange), and those numbers determine the ordering of the characters. Notice that the upper-case alphanumeric characters are in a contiguous range. The lower-case alphanumeric characters are also in a contiguous, yet different range. In the ASCII scheme, lower-case letters are greater than upper-case letters.

**To determine if character is letter** (and not a symbol or number), you need to check two ranges as follows (note this is not real java, it’s more like pseudo/human code):

(ch >= “A” and ch <= “Z”) or (ch >= “a” and ch <= “z”)

**To determine if a character is a symbol** (and not a letter), you need to reverse the above logic. There are a couple ways to do this:

1. By DeMorgan’s Law:

(ch < “A” or ch > “Z”) and (ch < “a” or ch > “z”)

1. *Alternatively, you can* ***not***the original statement, but I think DeMorgan’s law is more straight forward and is how I would do it if it were my problem to solve.

not((ch >= “A” and ch <= “Z”) or (ch >= “a” and ch <= “z”))