## Anchors

| Anchors |  |
| :---: | :---: |
| $\wedge$ | Start of a string, or start of a line in a multiline pattern |
| \$ | End of string, or end of a line in a multi-line pattern |
| $\backslash \mathrm{A}$ | Start of string |
| \Z | End of string |
| \b | Word boundary |
| \B | Not word boundary |
| 1< | Start of word |
| 1> | End of word |
| ${ }^{\wedge} \backslash \mathbf{s +}$ | Matches leading whitespace(s) |
| $\backslash s+\$$ | Matches trailing whitespace(s) |

Character Classes

| Character Classes |  |
| :---: | :--- |
| Ic | Control Character |
| \s | White space |
| IS | Not white space |
| \d | Digit |
| Iw | Word |
| \W | Not word |
| \x | Hexadecimal digit |
| \0 | Octal digit |

## Quantifiers

| Quantifiers |  |
| :---: | :--- |
| $*$ | 0 or more |
| + | 1 or more |
| $?$ | 0 or 1 |
| $\{n\}$ | Exactly $n$ times |
| $\{n\}$, | $n$ or more times |
| $\{n, m\}$ | $n$ to $m$ (inclusive of $m$ ) |

## Special Characters

| Special Characters |  |
| :---: | :--- |
| $\mathbf{n}$ | New line |
| $\backslash \mathbf{r}$ | Carriage return |
| $\backslash \mathbf{t}$ | Tab |
| $\mathbf{l v}$ | Vertical tab |
| $\backslash \mathbf{f}$ | Form feed |
| $\backslash \mathbf{x x x}$ | Octal character xxx |
| \xhh | Hex character hh |

## Escape Sequences

| \ | Escape the following character |
| :---: | :--- |
| IQ | Begin literal sequence |
| \E $\quad$ End literal sequence |  |
| Escaping is used for literal matching by escaping the <br> protected meaning of metacharacters |  |

## Groups and Range

| Groups and Range |  |
| :---: | :--- |
| . | Any character except new line (\n) |
| (a\|b) | a or b |
| (...) | Grouping |
| (?...) | Passive (non-capturing) group |
| [abc] | Range (a or b or c) |
| [^abc] | Not within this range (not a or b or c) |
| [a-z] | Range of a to z |
| [A-Z] | Range of A to Z |
| [0-9] | Range of 0 to 9 |
| Ranges <br> come inclusive, and do not require the use of <br> cor example, [1-479] is understood <br> to be 1 to 4 or 7 or 9. |  |


| Assertions |  |
| :---: | :--- |
| ?= | Look ahead assertion |
| ? $\mid$ | Negative look ahead |
| ? $<=$ | Look behind assertion |
| ?!= or $\boldsymbol{?}<!$ | Negative look behind |
| ?> | Once-only sub-expression |
| ?() | Condition (if then) |
| ?\{\}\| | Condition (if then else) |
| ?\# | Comment |
|  |  |

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