

# Pattern and String Substitution Cheatsheet

| String Operations                    |   |
|--------------------------------------|---|
| <code>\${VAR#pattern}</code>         | Remove from beginning to the FIRST occurrence of the match                            |
| <code>\${VAR##pattern}</code>        | Remove from beginning to the LAST occurrence of the match                             |
| <code>\${VAR%pattern}</code>         | Remove from the EOL to the FIRST occurrence of the match                              |
| <code>\${VAR%%pattern}</code>        | Remove from the EOL to the LAST occurrence of the match                               |
| <code>\${VAR/pattern/string}</code>  | Replace matching pattern with string  |
| <code>\${VAR/#pattern/string}</code> | Replace matching pattern at the BEGINNING of the line with string                     |
| <code>\${VAR/%pattern/string}</code> | Replace matching pattern at the END of the line with string                           |
| <code>\${VAR//pattern/string}</code> | Replace ALL matching occurrences of pattern with string                               |
| <code>\${VAR:offset:length}</code>   | Returns the substring of \$VAR starting at offset to the length of characters         |
| <code>\${VAR:-length}</code>         | Returns the substring of \$VAR starting at offset from the END                        |
| Variable Manipulations               |   |
| <code>\${#VAR}</code>                | Get length of variable  |
| <code>\${!pattern*}</code>           | Indirect reference - matches all variables names that match the pattern               |
| <code>\${VAR^}</code>                | Transform first character of string to uppercase                                      |
| <code>\${VAR^^}</code>               | Transform all characters of string to uppercase                                       |
| <code>\${VAR,}</code>                | Transform first character of string to lowercase                                      |
| <code>\${VAR,,}</code>               | Transform all characters of string to lowercase                                       |
| Expansions to handle empty variables |   |
| <code>\${VAR:-\$VAR2}</code>         | If \$VAR isn't null return it's value, else return \$VAR2                             |
| <code>\${VAR:= \$VAR2}</code>        | If \$VAR isn't null return it's value, else assign it to \$VAR2 and return it's value |
| <code>\${VAR:? \$VAR2}</code>        | If \$VAR isn't null return it's value, otherwise print VAR: \$VAR2 and abort          |
| <code>\${VAR:+\$VAR2}</code>         | If \$VAR isn't null, return \$VAR2 otherwise return null                              |

| String Operations Examples                    |   |
|---|---|
| VAR="The quick brown fox jumped over the fox" |   |
| <code>echo \${VAR#*fox}</code>                | jumped over the fox                     |
| <code>echo \${VAR%fox*}</code>                | The quick brown fox jumped over the     |
| <code>echo \${VAR%%fox*}</code>               | The quick brown                         |
| <code>echo \${VAR/fox/dog}</code>             | The quick brown dog jumped over the fox |
| <code>echo \${VAR//fox/dog}</code>            | The quick brown dog jumped over the dog |
| <code>echo \${VAR/#The/A}</code>              | A quick brown fox jumped over the fox   |

|                               |   |
|-------------------------------|---|
| <code>\${VAR/%fox/dog}</code> | The quick brown fox jumped over the dog |
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