

Cheat Sheets

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Bash Parameter

BASH PARAMETER EXPANSION

Parameter Expansion Syntax

Syntax	Description
<code>\${parameter%suffix}</code>	Remove suffix
<code>\${parameter#prefix}</code>	Remove prefix
<code>\${parameter%%suffix}</code>	Remove long suffix
<code>\${parameter##prefix}</code>	Remove long prefix
<code>\${parameter/pattern/string}</code>	Replace first pattern match with string
<code>\${parameter//pattern/string}</code>	Replace all the pattern with string
<code>\${parameter/%pattern/string}</code>	Replace suffix pattern with string
<code>\${parameter/#pattern/string}</code>	Replace prefix pattern with string

Default Values

<code>\${FOO:-val}</code>	Uses val if \$FOO is unset, without changing FOO
<code>\${FOO:=val}</code>	Sets \$FOO to val if unset, changing FOO
<code>\${FOO:+val}</code>	Uses val if \$FOO is set (does not change FOO)
<code>\${FOO:?message}</code>	Show message and exit if \$FOO is unset

Substrings

<code>\${FOO:0:3}</code>	Substring (<i>position</i> , <i>length</i>)
<code>\${FOO:~-3:3}</code>	Substring from the right

Length

<code>\${#FOO}</code>	Length of \$FOO
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String Substitutions

```
1 food=           # => food is set to an empty
2                 # string
3
4 echo ${food:-Cake} # => Since $food is empty,
5                   # outputs "Cake"
6
7 STR="/path/to/foo.cpp"
8
9 echo ${STR%.cpp}  # => /path/to/foo
10 echo ${STR%.cpp}.o # => /path/to/foo.o
11 echo ${STR%*/}    # => /path/to
12
13 echo ${STR##*.}   # => cpp (extension)
14 echo ${STR##*/}   # => foo.cpp (basepath)
15
16 echo ${STR#*/}    # => path/to/foo.cpp
17 echo ${STR##*/}   # => foo.cpp
18
19 echo ${STR/foo/bar} # => /path/to/bar.cpp
```

String Slicing

```
1 name="John"
2
3 echo ${name}      # => John
4 echo ${name:0:2}  # => Jo
5 echo ${name::2}   # => Jo
6 echo ${name::-1}  # => Joh
7 echo ${name:~1}   # => n
8 echo ${name:~2}   # => hn
9 echo ${name:~-2:2} # => hn
10
11 length=2
12 echo ${name:0:length} # => Jo
```

Basepath & Dirpath

```
1 SRC="/path/to/foo.cpp"
2
3 BASEPATH=${SRC##*/}
4 echo $BASEPATH      # => "foo.cpp"
5
6 DIRPATH=${SRC%$BASEPATH}
7 echo $DIRPATH       # => "/path/to/"
```

String Transformation

```
1 STR="HELLO WORLD!"
2
3 echo ${STR,,}      # => hello world!
4 echo ${STR,,,}     # => hello world!
5
6 STR="hello world!"
7
8 echo ${STR^}       # => Hello world!
9 echo ${STR^^}      # => HELLO WORLD!
10
11 ARR=(hello World)
12
13 echo "${ARR[@],}"  # => hello world
14 echo "${ARR[@]^}"  # => Hello World
```

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Bash Loops

BASH SCRIPTING LOOPS BASICS

Bash for loop

```
1 for i in /etc/*; do
2     echo $i
3 done
4
5 # Same as above(alternate
6 syntax), also works with other
7 loop structs
8
9 for i in /etc/*
10 do
11     echo $i
12 done
```

C-like for loop

```
1 for ((i = 0 ; i < 100 ; i++)); do
2     echo $i
3 done
4
5 # Same as above (alternate
6 syntax) also works with other
7 loop structs
8
9 for ((i = 0 ; i < 100 ; i++))
10 do
11     echo $i
12 done
```

For loop ranges

```
1 for i in {1..10}; do
2     echo "Number: $i"
3 done
4
5 # With step size
6
7 # => {START..STOP..STEP}
8
9 for i in {5..50..5}; do
10     echo "Number: $i"
11 done
12
13 done
```

Bash while loop

```
1 # incrementing the value
2 i=1
3 while [[ $i -lt 4 ]]; do
4     echo "Number: $i"
5     ((i++))
6 done
7
8 # decrementing the value
9
10 i=3
11 while [[ $i -gt 0 ]]; do
12     echo "Number: $i"
13     ((i--))
14 done
```

Bash while True loop

```
1 # while true long hand
2
3 while true; do
4     # TODO
5     # TODO
6 done
7
8 # or the shorthand (alternate
9 syntax)
10
11 while ;; do
12     # TODO
13     # TODO
14 done
```

Reading files

```
1 # using pipes
2
3 cat file.txt | while read line
4 do
5     echo $line
6 done
7
8
9 # OR using input redirection
10
11 while read line; do
12     echo $line
13 done < "/path/to/txt/file"
```

Continue statement

```
1 # seq command can be used to
2 generate ranges
3
4 for number in $(seq 1 3); do
5
6     if [[ $number = 2 ]];
7     then
8         continue;
9     fi
10
11     echo "$number"
12
13 done
```

Break statement

```
1 for number in $(seq 1 3); do
2
3     if [[ $number = 2 ]]; then
4
5         # Skip entire rest of
6         loop or break out
7         of the loop.
8
9         break;
10
11     fi
12     # This will only print 1
13     echo "$number"
14 done
```

Until or do loop

```
1 # incrementing
2 count=0
3 until [ $count -gt 10 ]; do
4     echo "$count"
5     ((count++))
6 done
7
8 # decrementing
9 count=10
10 until [ $count -eq 0 ]; do
11     echo "$count"
12     ((count--))
13 done
```

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Bash Basics

BASH SCRIPTING BASICS

```
1  #!/bin/bash -----> Shebang Line
2
3  username="Jay" -----> Variables
4  filename=$3
5
6  read -p "Enter your username: " user -----> User Input
7  echo "Username: $user"
8
9  if [ "$EUID" -ne 0 ]; then
10     echo "You are not running this script as the root user."
11 else
12     echo "You are running this script as the root user." -----> Conditional if Statement
13 fi
14
15 echo "Counting to 5:" -----> For Loop
16 for i in {1..5}; do
17     echo "$i"
18 done
19
20
21 function greet() { -----> Functions
22     echo "Hello, $1!"
23 }
24 greet "Alice"
25
26 echo "Enter a number between 1 and 2: " -----> Conditional Case Statement
27 read num
28 case $num in
29     1) echo "You chose one." ;;
30     2) echo "You chose two." ;;
31     *) echo "Invalid choice." ;;
32 esac
33
34 if [ -e "$filename" ] && [ -d "$filename" ]; then -----> File Operations
35     echo "File exists and is a directory."
36 else
37     echo "File does not exist or is not a directory."
38 fi
39
40 echo "First argument: $1" -----> Command Line Arguments
41 echo "Second argument: $2"
42
43 cat nonexistent-file.txt 2> /dev/null -----> Exit Status Codes
44 echo "Exit status: $?"
45
46 fruits=("Apple" "Orange" "Banana") -----> Indexed Arrays
47 echo "Fruits: ${fruits[0]}"
48
49 declare -A capitals -----> Associative Arrays
50 capitals[USA]="Washington D.C."
51 capitals[France]="Paris"
52 echo "Capital of France: ${capitals[France]}"
53
54 current_date=$(date) -----> Command Substitution
55 echo "Today's date is: $current_date"
56
57 echo "This is a sample text." > example.txt -----> Command Line Redirections
58 find / -name hello.txt &> /dev/null
59
60 result=$(( expr 15 - 2 )) -----> Arithmetic Operations
61 echo $result
62
63 SRC="/path/to/foo.cpp" -----> Parameter Expansion
64 BASEPATH=${SRC##*/}
65 echo $BASEPATH
66
67 trap 'echo "Received SIGTERM signal. Cleaning up..."; exit' SIGTERM -----> Process Signal Handling
68
69 # This is a single line comment -----> Comments
70
71 :' this a multiline -----> Comments
72    comment'
```

 bash script.sh

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