Cheatography

bash Cheat Sheet

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basic bash commands

- ☐ pwd : print working directory
- ☐ cd /path/to/dir : change direcotry
- ☐ ls /dir/to/list : list directory content (default is .)
  - -1 : display the content on one column
  - -l : display the content with long listing format
  - -a : display the content of the directory (including hidden files)
  - -R : Display the content of the directory and the content of subdirectories
- ☐ mv /path/to/file /path/where/to/move : move or rename a file or a directory
- ☐ cp /path/to/file /path/where/to/copy : copy a file
  - -r : copy recursively (used to copy directory)
- ☐ rm /path/to/file : remove a file
  - -r : remove recursively (used to remove directories)
  - -f : force remove
- ☐ mkdir /path/dirName : create an empty directory
- ☐ rmdir /path/to/dir : remove a directory (works only if the direcotry is empty)

bash redirections

- ☐ command > file : redirect stdout to file. (creates the file if it doesn't exist and overwrite it if it does exist)
- ☐ command >> file : redirect stdout to file. (creates the file if it doesn't exist and append to the end it if it does exist)
- ☐ command 2> file : redirect stderr to file (creates the file if it doesn't exist and overwrite it if it does exist)
- ☐ command 2>> file : redirect stdout to file. (creates the file if it doesn't exist and append to the end it if it does exist)
- ☐ command &> file : redirect stdout and stderr to file (creates the file if it doesn't exist and overwrite it if it does exist)

bash redirections (cont)

- ☐ command &>> file : redirect stdout and stderr to file. (creates the file if it doesn't exist and append to the end it if it does exist)
- ☐ command < file : redirect stdin to file.
- ☐ command1 | command 2 : uses the output of command1 as the input of command2

file globbing regex

- ☐ \ : escape character. It deletes the signification of a special character
- ☐ ? : Any character, once.
- ☐ * : Any character, 0, 1 or many time.
- ☐ [...] : Any character that is in the class. ex: [abc], [a-z], [0-9]
- ☐ [^...]: Any character that is not in the class. ex: [^abc], [^a-z], [^0-9]
- ☐ {s1, s2, sN} : match s1 or s2 or sN

control structure (if)

```
if <expression>; then
    [statements]
elif <expression>; then
    [statements]
else
    [statements]
fi
```

control structure (while)

```
while <expression>; do
    [statements]
done
```

control structure (for)

```
for var in <expression>; do
    echo $var
    [statements]
done
```

control structure (case)

```
# patterns are file globing regex
case <expression> in
    pattern1)
        [statements]
        ;;
    pattern2)
        [statements]
        ;;
    *)
        [statements]
        ;;
esac
```

function definition

```
function functionName {
    [statements]
    [return X]
}
```

conditional expressions

- ☐ && : logical and operator
- ☐ || : logical or operator
- ☐ [[string]] : return 0 if string is not empty
- ☐ [[-z string]] : return 0 if the string is empty
- ☐ [[string1 == string2]] : return 0 if the string are equivalent
- ☐ [[string1 != string2]] : return 0 if the string are not equivalent
- ☐ [[string =~ pattern]] : return 0 if the string matches the pattern (extended regex)
- ☐ [[-e file]] : return 0 if the file exists
- ☐ [[-d file]] : return 0 if file is a directory
- ☐ [[-f file]] : return 0 if file is a file
- ☐ [[-x file]] : return 0 if file is executable
- ☐ [[$n1 -eq $n2]] : return 0 if $n1 == $n2
- ☐ [[$n1 -lt $n2]] : return 0 if $n1 < $n2
- ☐ [[$n1 -gt $n2]] : return 0 if $n1 > $n2
- ☐ [[$n1 -ge $n2]] : return 0 if $n1 >= $n2
- ☐ [[$n1 -le $n2]] : return 0 if $n1 <= $n2
- ☐ [[$n1 -ne $n2]] : return 0 if $n1 != $n2

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Published 14th March, 2016.
Last updated 12th April, 2016.

more basic bash commands

- ☐ passwd : change your password
- ☐ history : consult the history of your command
- ☐ jobs : list of your pending proccesses
- ☐ cat file1 file2 ... : concatenate files and print to stdout
- ☐ more / less file1 file2 .. : diplsay a file page by page on stdout
- ☐ tail / head number : display the "number" first or last line of a file on stdout
- ☐ touch file1 file2 ... : change the modification date of the files
- ☐ chmod : change the privileges of a file / directory
- ☐ echo "text" : display a line of text to stdout
- ☐ sort file1 file2 ... : sort the file (combine files if many are specified) and print the result to stdout (files aren't impacted)
  - -r : sort in reverse order
  - -n : numerical sort
  - -u : delete duplicated lines
- ☐ wc file1 file2 ... : print to stdout the number of characters, words and lines of files
  - -l : number of lines only
  - -w : number of words only
  - -w : number of characters only
- ☐ diff file1 file1 : compare file1 and file 2 for differences
  - -i : ignore the character case
  - -B : ignore empty lines
  - -w : ignore whitespaces
  - -c : add context to the output (good for readability)
- ☐ which commandName : print the path of a command
- ☐ pushd / popd /path/to/dir : change directory using the directory stack
- ☐ dirs : print the directory stack
- ☐ find /path/to/dir -name pattern : find every files and directory that have a name that matches "pattern" in the directory specified and its subdirectories

more basic bash commands (cont)

- ☐ man commandName : Display the manual for command commandName
- ☐ sudo command : run the command as superuser
- ☐ command1 | xargs -i command2 : uses the output of the command1 as the input of the command2. output will be accessible via {} in command2

grep (simple regex)

- ☐ grep "pattern" file1 file2 ... : print the lines that matched the pattern
  - -v : print lines that didn't match the pattern
  - -i : ignore the character case
  - -l : print the name of the files that have at least one match
  - -o : print only the piece of line that matched the pattern
  - -E : uses the extended regex
  - -q : quiet. returns 0 in $? if at least one line has been matched. 1 if no line matched

variables

- ☐ VAR=VARVALUE : create a variable VAR. the variable can be accessed like so: $VAR or ${VAR}
- ☐ VAR="$VAR2" : $VAR will contains the value of $VAR2
- ☐ VAR='$VAR2' : $VAR will contains $VAR2
- ☐ VAR=$(command) : $VAR will contains the output of the command
- ☐ ((VAR = $VAR + 1)): the double parentheses must be used when doing arithmetics
- ☐ ${VAR#pattern} : return a substring of VAR where the smallest string (starting from the beginning) matching “pattern” will be cut
- ☐ ${VAR##pattern} : return a substring of VAR where the longest string (starting from the beginning) matching “pattern” will be cut
- ☐ ${VAR%pattern} : return a substring of VAR where the smallest string (starting from the end) matching “pattern” will be cut

variables (cont)

- ☐ ${VAR%%pattern} : return a substring of VAR where the longest string (starting from the end) matching “pattern” will be cut
- ☐ $? : the exit status of the last command / function executed. usually 0 when everything went right.
- ☐ $# : the number of args passed to the script / function
- ☐ $0 : the name of the script
- ☐ $n : the nth argument passed to the script / function
- ☐ $@ : the list of all the argument passde to the script / function
- ☐ Arrays
  - myArray=(value1 value2 value3): declare an array
  - declare -a myArray=(value1 value2 value3): declare an array
  - ${myArray[index]} : access an element (index starts at 0)
  - myArray[index]= : add or modify the element at index
  - ${#myArray[*]} : return the lenght of the array
  - ${myArray[*]}: all the elements of the array

simple regex

- ☐ \ : escape character. It deletes the signification of a special character
- ☐ . : joker. It represents any characters
- ☐ * : 0, 1 or many repetition of the last character / sequence of character
- ☐ ^ : The beginning of the line
- ☐ $: The end of the line
- ☐ [...] : Any character that is in the class. ex: [abc], [a-z], [0-9]
- ☐ [^...]: Any character that is not in the class. ex: [^abc], [^a-z], [^0-9]
- ☐ \(...\) : Capture the pattern. The pattern can then be accessed with \1, \2 ... \n depending on the number of capture in the regex
- ☐ \{n\} : n repetitions of the last character / sequence of character

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Published 14th March, 2016.
Last updated 12th April, 2016.

simple regex (cont)

- ☐ \{n,\} : At least n repetitions of the last character / sequence of character
- ☐ \{n, m\} : Between n and m repetitions of the last character / sequence of character

extended regex

- ☐ \ : escape character. It deletes the signification of a special character
- ☐ . : joker. It represents any characters
- ☐ * : 0, 1 or many repetition of the last character / sequence of character
- ☐ + : 1 or more repetition of the last character / sequence of character
- ☐ ? : The last character / sequence of character can appear or not
- ☐ ^ : The beginning of the line
- ☐ $: The end of the line
- ☐ [...] : Any character that is in the class. ex: [abc], [a-z], [0-9]
- ☐ [^...]: Any character that is not in the class. ex: [^abc], [^a-z], [^0-9]
- ☐ s1|s2 : Either s1 or s2 but not both
- ☐ (...) : change the priority
- ☐ {n} : n repetitions of the last character / sequence of character
- ☐ {n,} : At least n repetitions of the last character / sequence of character
- ☐ {n, m} : Between n and m repetitions of the last character / sequence of character

sed (simple regex)

- ☐ sed 'sed script' file : execute the script on every line of "file"

s/pattern/newString/gI : Substitute the piece of the line that matches "pattern" by "newString". g (optional): global, I (optional): ignore case

/pattern/d : delete the line if "pattern" is matched

/pattern/p : print the line if "pattern" is matched

sed (simple regex) (cont)

/pattern1/,/pattern2/ : print every lines between the first line that matches "pattern1" to the first line that matches "pattern2"

-i.ext : Modifications done "in-place". A backup file will be created with .ext extension (it is optional)

-n : print only the lines that matched the pattern

awk (extended regex)

- ☐ awk -Fc 'awk script' file1 file2 ... (where "c" is the delimiter)
- ☐ typical awk script: 'BEGIN {statements} /pattern/ {script statements} END {statements}'

BEGIN {} : Will be executed once at the start

END {} : Will be executed once at the end

/pattern/ : only lines that matched the pattern will be processed

/pattern1/,/pattern2/ : every line from the first line that matches pattern1 to the first line that matches pattern2 will be processed

{script statements} : core of the script

printf: C-style formatter (man printf)

$n : the nth field of the line

$0 : the entire line

NR : the record number

NF : the number of fields in the record

FS: The field separator (the delimiter)