

# Commands: awk and sed.

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# Discussion of homework

- How to print lines containing the same character at the beginning and at the end of line.

Hint: Use `man -s 5 regexp` and find meaning of symbols `\n`, `\(` and `\)` in the section 2.6 on server `fray1.fit.cvut.cz`.

- How to print all palindromes of length 2, 3, 4 and 5 characters from the file `/usr/dict/words` on server `fray1.fit.cvut.cz`.

- What is the meaning of the `-n` option at command `sed`?
- What is the meaning of the following `sed` commands?
  - `p`
  - `d`
  - `s`

- How to print the first 10 lines of the file `/etc/passwd` by command `sed`?
- How to print the last 10 lines of the file `/etc/passwd` by command `sed`?
- How to print line of the file `/etc/passwd`, that represents info about an user account "root" (see `man 5 passwd`)?
- How to print lines of the file `/etc/passwd`, that don't represent info about an user account "root"?

- Use the output of command `ls -l /etc`. How to replace the first character at line, which define the file type (d, -, l), by string (dir:, file:, link:).

- Use the output of command `ls -l /`. How to replace all strings "root" by strings "ADMIN"?
- Use the output of command `ls -l /`. How to print only the second column by the command `sed`?

- Explain the behaviour of command `awk`.
- Example



- How to print the first 10 lines of the file `/etc/passwd` by command `awk`?
- How to print the last 10 lines of the file `/etc/passwd` by command `awk`?

- How to print lines containing string "root" from the file /etc/group by command `awk`?
- How to print lines not containing string "root" from the file /etc/group by command `awk`?
- Use output of command `getent passwd`.
- How to print lines that represent account info about users whose names are Jan or Peter or Eliska?
  - Trivial solution

- How to print lines that represent account info about users whose names are Jan or Peter or Eliska?
  - Correct solution

- How to print the name and the size of every regular file in `/etc/`?
- How to print the user name and the path to home directory for every user that has account on this system?  
Hint: Use command `getent passwd`.
- How to print the user name of user that has an account on this system and has the longest name (the 5th column)?

- What is the meaning of the following `awk` functions?

- `length(str)`
- `substr(str, from, len)`
- `sub(ere, repl[, in])`
- `gsub(ere, repl[, in])`
- `split(str, arr[, fs])`

- Assume that the file `m.txt` has the following contents:

1	2	3
8	7	9
3	7	2

- How to change the order of columns, such that the column  $i$  ( $0 \leq i < n$ ) will be swap with column  $(n - i)$  (reverse column order).

3	2	1
9	7	8
2	7	3

- Use output of command `ps -ef`. How to print info about processes which are running under the user `root`.

- Use output of command `ps -eo user,rss,comm`. How to print the number of processes running under the effective identity "root" and the number of memory (RSS) allocated by these processes.
- Example of output

```
$> ps -eo user,rss,comm | awk -f ps1a.awk  
root: nproc=85 rss=602264 KB
```

- Solution A



- Solution B

- Use the output from the command `ps -eo user,rss,comm`.  
How to print the following information about the processes of user whose name is given?

```
user_name:  nproc=number_of_running_processes  
rss=size_of_RSS_memory_alocatted_by_these_processes,  
list=list_of_these_processes
```

- Example of output

```
$> ps -eo user,rss,comm | awk -f ps2.awk  
root:  nproc=83  rss=582952  KB  
      proclist:  sched, /usr/sbin/init, ...
```

- Solution A

- Solution B

# Homework

- Use the output from the command `ps -eo user,rss,comm`.  
How to print the following information for every user that is working on the server?

`user_name`, `nproc=number_of_running_processes`,  
`rss=size_of_RSS_memory_alocatted_by_these_processes`

- Example of output

```
$> ps -eo user,rss,comm | nawk -f ps4.awk
```

User	NProc	RSS (KB)
-----		
kolensta	2	28888
root	94	689168
trdlicka	4	24448
klamovik	4	38112
...		