

# Unix-like Operating Systems

Regular expressions, command grep.

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- What is the default behaviour of the command `grep`?
- What is the meaning of the following options?
  - `-V`
  - `-C`
  - `-i`

- What is the meaning of the following options?
  - -l
  - -n

# grep – extended regular expressions (ERE)

- What is the meaning of the following symbols in ERE?

- `^` (caret/hat)
- `$`
- `\<`
- `\>`
  
- `.`
- `[a-d]`, `[abcd]`, `[[:lower:]]`
- `^[a-d]`, `^[abcd]`, `^[[:lower:]]`
  
- `?`
- `+`
- `*`
- `{n}`
- `{n,}`
- `{,n}`
- `{m,n}`

# grep – extended regular expressions (ERE)

- What is the meaning of the following symbols in ERE?

- |
- ( )
- \n

# grep – extended regular expressions (ERE)

- Copy file /usr/dict/words from fray1.fit.cvut.cz to local system.

```
scp fray1.fit.cvut.cz:/usr/dict/words .
```

- Try the following commands and explain the output.

```
grep -E 'o' words
```

```
grep -E 'oo' words
```

```
grep -E 'oo$' words
```

```
grep -E '^oo' words
```

```
grep -E 'o.o' words
```

```
grep -E 'o.*o' words
```

```
grep -E '^o.*o$' words
```

# grep – extended regular expressions (ERE)

- What is the difference between the following commands?

```
grep -E 'o*' words
```

```
grep -E 'oo*' words
```

- What is the difference between the following commands?

```
grep -E '[^o]' words
```

```
grep -E -v 'o' words
```

- What is the difference between the following commands?

```
grep -E '^a.*a$' words
```

```
grep -E '^ (a) .* \1$' words
```

```
grep -E '^ (.) .* \1$' words
```



# grep – extended regular expressions (ERE)

- Use the output of the command `ps -ef`. How to print the number of processes running under the identity of the user `root`?  
Hint: try to find the correct solution for both Linux and Solaris.
- Use the output of the command `ps -eo pid,user,comm` on the server `fray1.fit.cvut.cz`. How to determine how many times the program `sshd` is running on this server?

- Use the output of the command `ps -eo pid,user,comm` on the server `fray1.fit.cvut.cz`. How to determine how many times the program `sshd` is running under the identity of the user `root` on this server?
- Use the output of the command `getent passwd` on the server `fray1.fit.cvut.cz`. How to determine how many students have the account on this server?

Hint: student's account has the flag `student` at the end of the fifth column.

- Assume that the variable `file` is defined as follows

```
file=/home/courses/BIPS1/public/07/NAMES.TXT
```

Use the output of the command `getent passwd` on the server `fray1.fit.cvut.cz`. How to find account info about users whose names are in the file `NAMES.TXT`?

# grep – extended regular expressions (ERE)

- How to print names of the days of the week from file `/usr/dict/words` on the server `fray1.fit.cvut.cz`?

```
M o n      day
T u e s    day
W e d nes  day
T h u rs   day
F r i      day
S a t ur   day
S u n      day
```

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