Computer Systems and -architecture

Introduction to UNIX

1 Ba INF 2012-2013

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Time Schedule

Exercises are made individually. Put all your files in a tgz archive, as explained on the course's website, and submit your solution to the exercises on Blackboard.

- Deadline: **October 1, 23u55**

Exercises

Use as few commands as possible. Nearly all exercises can be solved with only 1 command. Fill in all commands you used to solve the exercises in the file `oefeningen.html`.

1. Files and Browsing

    (a) Navigate to the root of the file system using the absolute path.

    (b) List all files and directories in the current directory.

    (c) Descend into the directory `usr`. Print the current directory.

    (d) Descend into the directory `bin`. List the file type for all files that start with an `f` in this directory.

    (e) Navigate up to the root directory using a relative path.

    (f) Navigate to your home directory.

    (g) List all files including hidden files.

    (h) Create in your home directory two new subdirectories named `color` and `shape`.

    (i) Navigate to the `color` directory, and create the files `red`, `green`, `blue`, `apple` and `square`.

    (j) List all files in the directory.

    (k) Remove `apple`, as it is not really a color.

    (l) Hide `square` by prepending a dot.

    (m) Edit the remaining files so that they contain their hexadecimal color codes (`FF0000` for red, `00FF00` for green, `0000FF` for blue).

    (n) Copy `blue` to a new file `purple`, and change the contents of the new file to `800080`.

    (o) Rename `red` to `yellow`, and change the contents of the file to `FFFF00`.

    (p) Create a soft link named `darkblue` to `blue`.

    (q) List all files in the directory.

(r) Edit `darkblue` to `0000A0`.

(s) Print the contents of `blue`.

(t) Move `.square` to the `shape` directory using the relative path and make it visible again.

(u) Print the disk size of every file in this directory *(hint: use the wildcard *)*.

(v) List the contents of the shape directory without navigating there.

(w) Go to the parent directory and remove the `shape` directory.

2. Archiving

   (a) Create an archive `color.tgz` containing all files in the color directory (not the color directory itself!).

   (b) Create a new file `orange` with contents `FFA500`.

   (c) Change the file `purple` to `FF0080`, which is a lighter variant of the color.

   (d) Remove the compression of the archive `color.tgz` by unzipping it.
       You have to unzip the archive because updating a compressed archive is not possible.

   (e) Update the archive `color.tar` to include the new and changed files.

   (f) Gzip the archive `color.tar` again, and make sure the file has a `.tgz` extension.

   (g) Remove the color directory, but keep the archive.

   (h) Create a new directory `color2` in your home directory, and unzip the archive into that directory. What happened to the soft link?

3. Processes

   (a) Navigate to the directory `/usr/games`.

   (b) Run another game in the background. Display the process info and note the process ID.

   (c) Run one of the games in the foreground. Kill the program using the keyboard shortcut.

   (d) Kill the process using the process ID.

   (e) Startup a number of `sleep 60` processes in the background, and terminate them all at the same time using the `pkill` command.

4. Streams

   (a) Download the file `http://msdl.cs.mcgill.ca/people/hv/teaching/ ComputerSystemsArchitecture/materials/Names.tgz`.

   (b) Unzip the downloaded archive.

   (c) Display the last 25 male names.

   (d) Display the first 30 female names.

   (e) Count the number of lines in both files. Are there more male or female names?

   (f) Search the list for your own name.
       (Hint: use `grep`)

   (g) Print all names that contain the letter `q`.

   (h) The name *raf* is not in the list. Append the name using the stream operator `>>`.

   (i) Sort the male names again and write the result to `male-names-sorted`.

(j) Merge the male and female names into the file `all-names`. Make sure the names are sorted.
    (Hint: use a pipe and a stream operator)

(k) Print the number of names that appear more than once in `all-names`, and are thus suitable for both boys and girls.
    *(Hint: use **uniq**)*

(l) Store all names that are both male and female names in `unisex-names`.

(m) Remove duplicate names from `all-names`.

(n) Update the archive `Names.tgz` so that it contains the updated version of `male-names` and the new files `all-names` and `unisex-names`.

(o) Use `find` to compile a list of all directories in `/proc`, redirecting the output so that the list of directories ends up in a file called `directories.txt` and the list of error messages ends up in a file called `errors.txt`.