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Computer Lab Environment

- Access to the Lab
  - Access to the lab is granted Monday-Sunday between 07:30 am to 09:00 pm. The room should be empty by 09:30 pm, when the alarm is automatically switched on. The computer lab is closed on legal holidays. Please report lost GU keycards to the FLoV administration as quickly as possible.
- Computer Environment
  - 15 Apple iMac workstations for students, 1 workstation for the teacher
  - 24 seats within workstation reach, where 6 computers can only be used by one student (some extra chairs are available in the room)
  - 0 printers (multifunction devices and network printers)
    - Different types of printers can be found in all university buildings.
    - Students can buy printer quota at the service centers. Please observe that every print-out and copy is charged. Color prints are more expensive.
    - It is recommended to check the printing settings before printing.
    - PCClient (software) and GUprint (print and copy service)

Computer Lab Environment (cont.)

- Policies and rules
  - Please observe that the common regulations for the use of the university's computer network apply.
  - For everybody's convenience, please do not eat or drink in the computer lab. For coffee breaks, lunch, etc. you can use the student lounges which are available in this building (Eklandagatan 86).
  - Non-study activities like private gaming are not allowed in the computer lab.
  - Class activities in the lab always have priority. Apart from that you are encouraged to use the lab for assignment work etc. as much as possible.
  - WiFi (Eduroam and GoteborgsUniversitet) as well as extra power sockets are available in the computer lab, in case you need to use your private computer alongside the lab computers.

Apple macOS Sierra

- Accounts and Login
  - To be able to login, please use your GU student account, **gus●●●●●**.
  - There is no disk quota for single users. Please use the available storage space with care and do not store large files and data unnecessarily.
  - Copyrighted material obtained illegally must NOT be stored on the computers.
  - Your student account will be deleted, if you do not register for the MLT program's courses for more than two consecutive semesters.
- Apple Menu

  Where you manage miscellaneous features
  - Logging out, pls logout after a session as you can not lock the screen.
  - System Preferences, e.g.
    * Audio I/O settings, pls use these and do not unplug the headsets.
    * Language settings (...)

- Keyboard
  - The command key, `cmd`, used for common shortcuts instead of ctrl on a PC.
  - Common character can be hard to find as they are not printed on the keyboard, notably {, }, `[`, `]`, `|`, \, and ~. Open the keyboard viewer to get help finding the keys.
- Finder

  Where you do your main filesystem management, launching applications, etc. Works almost like Windows Explorer.
  - Local folders

    Folders on your account that is stored on the lab computer currently in use. The contents of these folders can be cleaned at any time, and will not be available if the user log in to another lab computer. The local folders are

    * Downloads,
    * Dropbox,
    * Movies,
    * Music, and
    * Pictures.

- Documents folder

  Place all your important files/folders in this folder as it is guaranteed to be backed up. Saving files on the Desktop is not safe!

- Get info, `cmd-I`

  In the info window you can change permissions for the file/folder and change default program for opening these kind of files.

- Dock

  The dock is divided into two part, on the right-hand-side you have shortcuts to folders, minimised windows, and the trash can. On the left-hand-side you have shortcuts to your applications.

  Add folders and applications by draging them from a Finder window. Remove folders and applications from the dock by draging them from the Dock..

- Backups

  Again – only the Documents folder is guaranteed to be backed up! The backups are stored in a hidden folder, `.snapshot`, and it can be viewed in Finder by

  – opening the folder where the lost file was,

  – clicking `Go to folder...` in the Finder's `Go` menu

    Go → Go to folder...

  – write `.snapshot` in the pop-up window, and hit `<enter>`.

- Support

  Report problems in the lab to your teacher or Fei Roth (room T224, Olof Wijksgatan 6, mobile phone: 0766186784). Also, if possible, email problems to

  fei.roth@gu.se

  We do not support your private computers.

Terminal – Command-Line Interface, *CLI*

In the terminal application you have a text shell, *bash*, where you can enter commands, aka the command-line interface.

- Commands and navigating the commandline
  - The prompt, where you write your commands

    `COMPUTERNAME:CWD USERNAME$`

  - Command format

    `COMMANDNAME ARG1 ARG2 ARG3 ...`

    `ARG`s can be optional, `ARG`s can eg be options (aka switches/flags), filenames, or ...

    `ls -l filename.txt`

- Editing and navigating the commandline
  - After finishing a commandline, hit `<enter>` to execute
  - Keyboard shortcuts for editing on the command line

Editing, `C-` = ctrl key	
→ or `C-f`	forward character
← or `C-b`	back character
`C-e`	go to end of line
`C-a`	go to beginning of line
`C-d`	delete character
`C-k`	kill all following char
`C-u`	discard line
`C-w`	remove last word typed
`C-l`	clear screen

History, `C-` = ctrl key	
↓ or `C-n`	next line
↑ or `C-p`	previous line

Misc, `C-` = ctrl key	
`C-c`	abort current command
`<TAB>`	tab-completion

– Man pages – online manual in the terminal

  To read a man page for some command, issue the command

  `man` *COMMAND*

  Eg `man man` for reading the man page for the man command. A man page can contain numerous sections, a few of interest are

  * `NAME`, name of comand followed by a short description
  * `SYNOPSIS`, how to use and what options and args are expected
  * `DESCRIPTION`, longer description of the command
  * `OPTIONS`, what an option does (sometimes in the description section)
  * `EXAMPLES`, examples usages

Navigating the man pages, default keys

<SPACE> or <PgDn>	page down
b or <PgUp>	page up
q	exit the man page (takes you back to bash)

Eg. the command `say` will convert text to speech and output it the built-in MacOS X tts engine

```
say Hello, MLT-students
```

using the man for says

```
man say
```

one can eg find out how to use another voice

```
say -v Vicki Hello, masterstudents
say --voice=Vicki Hello, master students
```

- File management in the shell
  - Filenames

    `NAME.EXT`

    where `NAME` is the basename and `.EXT` indicates the content type of the file, eg `.txt`, `.py` etc.

    N.B. file and folder names are, per default, case insensitive on MacOS X, eg `FileName.TXT` = `filename.txt` when in the same folder
  - The filetree

    Viewing the filesystem as a reversed tree, root at top. TODO: graph

    N.B. a folder is now known as a *directory* when working in the terminal!

– Pathnames, Absolute vs Relative

A path is used to specify a unique location in a filesystem. The path point to a location by following the filetree using a slash, `/`, to delimit each item, folder or file in the tree.

An absolute path reference includes all levels from root, eg:

`/Users/gus●●●●●/Documents/file.txt`
`/opt/mlt/courses/labintro/`

A relative path reference points to a file from the current working directory, eg if the current working directory is `/Users/gus●●●●●` to the same file, `file.txt`, above with:

`Documents/file.txt`
`./Documents/file.txt`
`../gus●●●●●/Documents/file.txt`

`..` denotes on level up and
`.` denotes this level

– Shortcuts and wildcards

Shortcuts and variables may be expanded to paths, eg the following also points to the above file, `file.txt`

`~/Documents/file.txt`
`$HOME/Documents/file.txt`

as both the shortcut `~` and the variable `$HOME` expands to `/Users/gus●●●●●`

With the wildcard `*` you can match any number of unknown characters in eg

`~/*/file.txt`

points to the same file as above as `*` here matches Documents. The path

`/Users/gus●●●●●/Documents/*.txt`

points to all files in the Documents directory ending with `.txt`.

- Listing files and directories

`ls`	list contents in directory
`ls -l`	list contents in directory with long format
`ls -l PATH`	list `PATH` with long format

- Walking the filetree

`pwd`	print current working direcotry
`cd`	change working directory to home directory, ~
`cd PATH`	change working diretory to `PATH`

- Create and remove directories

`mkdir PATH`	make directory `PATH`
`rmdir PATH`	remove directory `PATH`

– Copy, move, and remove files

`cp PATH1 PATH2`	copy `PATH1` to `PATH2`
`cp -r PATH1 PATH2`	recursive copy of `PATH1` to `PATH2`
`mv PATH1 PATH2`	move, or rename, `PATH1` to `PATH2`
`rm PATH1`	remove `PATH1`

Use `.` as `PATH2` with `cp` to copy files to the current working directory without changing its name, eg

```
cp /opt/mlt/courses/labintro/testing.txt .
```

will copy the file `testing.txt` here.

– Misc commands

`file PATH`	determine file type, character encoding etc
`du`	display disk usage
`open PATH`	open files and directories

- Shells in shells

  Sometimes you will have to start a program that uses its own text shell, having its own set of commands, e.g.

  – the Python interpreter shell, and

  – the XFST interpreter shell etc.

  Note the initial text and that the prompt will probably be different, though navigating and editing text in these new "shells" is often the same as described for bash above.

  To exit a shell you can try `C-d` on a empty line, or execute the `exit` command.

References

http://en.wikibooks.org/wiki/Linux_Guide/Using_the_shell

http://en.wikibooks.org/wiki/Linux_Guide/Linux_commands

https://www.linuxtrainingacademy.com/