Introduction to Computers
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1 Useful Web Sites

1.1 UNIX

- *http://unixhelp.ed.ac.uk/*
- *http://www.computerhope.com/unix.htm*
- *http://sunsite.utk.edu/UNIX-help/*

1.2 MATLAB

- *http://www.mathworks.com*
- *http://www.math.mtu.edu/~msgocken/intro/intro.html*
- *http://www.maths.uq.edu.au/~gac/mlb/mlb.html*
- *http://www.me.pdx.edu/~gerry/MATLAB/*
- *http://physics.gac.edu/~huber/matlab/*
- *http://www.eece.maine.edu/mm/matweb.html*

1.3 LaTeX

- *http://www-h.eng.cam.ac.uk/help/tpl/textprocessing/LaTeX_intro.html*
- *http://www.math.harvard.edu/texman/*
- *http://www-ccs.ucsd.edu/latex/*

1.4 KL specific

All available computers can be checked at the web site
http://www.mathematik.uni-kl.de/~merkur/

As well, check the web page of the CTM:
http://www.mathematik.uni-kl.de/~support/

2 Basic UNIX commands

More help about all commands can be got by

man *command*

2.1 File organization

Command	*Description*	*Examples*
pwd	the full path of the current directory	
ls	contents of the current directory	**ls -l** **ls -a** **ls *.ps** **ls -R**
cp	copy a file	**cp *original_file new_file***
mv	move a file	**mv *original_file new_position***
mkdir	create directory	**mkdir *directory_name***
rm	remove a file	**rm *filename*** **rm -r *directory_name*** (remove the whole directory. Be extremely careful with this!!)
rmdir	remove directory	**rmdir *directory_name*** (directory must be empty!)
cd	move to the directory	**cd ..** (move one level up) **cd ~** (move to home directory) **cd *directory_name***
find	find files and directories	**find -name *file_name*** **find -size *+200k***

FOR WINDOWS USERS:
Whatever you do: there is no UNDO command or TRASH folder!!! If you delete files, they are really deleted. You can ask system administrator, and he might be able to restore some older version of your files from the backup. But you have to react quickly.

2.2 Floppy disc

Command	*Description*	*Examples*
mdir	contents of the floppy disc	**mdir** **mdir "a:*directory_name*"** (list the contents of the directory *directory_name* on the floppy disc)
mcopy	copying files	**mcopy *file_name* a:** (copy *to* the floppy disk) **mcopy "a:*file_name*" .** (copy *from* the floppy disk) **mcopy *file_name* a:*directory_name*** copy a file to the directory *directory_name* on the floppy disc
mdel	delete file from the floppy disc	**mdel *file_name***
mdeltree	delete a directory from the floppy disc	**mdeltree "a:*directory_name*"**
mmd	create a directory on the floppy disc	**mmd "a:*directory_name*"**

2.3 Access to files

Information about the file permissions can be got by the command

ls -l

The first column contains access information

directory/file user group others

Notations:

d	:	directory	**u**	:	user
-	:	file	**g**	:	group
r	:	read	**o**	:	other
w	:	write	**a**	:	all
x	:	execute			

chmod: change file access permissions e.g.

chmod u-r *file_name* (remowe user rights to read file *file_name*)
chmod o+w *file_name* (allow other users to edit file *file_name*)

All Mathematics International students are in the same *group*. By default, all group members have *read* permission to your files. Thus, if you have some personal information, e.g., some documents you're preparing, it is highly recommended to remove *read* permission for the group for those files.

2.4 Compressing files

Command	*Description*	*Examples*
quota	quota information	**quota -v**
zip	generate a zip archive	**zip *filename*.zip *.tex** (compress all .tex files in file *filename.zip*)
unzip	uncompress zip archive	**unzip *filename.zip***
tar	generate a tar archive	**tar -cvf *filename*.tar *directory_name*** (store the whole directory *directory_name* in archive *filename.tar*. To save space, .tar files need to be compressed later with **gzip**) **tar -xvf *filename.tar*** (extract archive *filename.tar*) **tar -cvzf *filename.tgz directory_name*** (create compressed archive from the directory *directory_name*) **tar -xvzf *filename.tgz*** (uncompress and extract archive)
gzip	compress a file	**gzip *filename***
gunzip	uncompress gz archive	**gunzip *filename.gz***

Each student in Mathematics Department has quota **6MB** (it can be extended for the Modelling Seminar and Master Thesis). Typical problem is *quota overfull*. If you have it for more than 8 days you are not able to log in in a usual way. How it happens: you enter your login name and password, and after some time again the login window appears.

What to do:

a) ask somebody who can log in and from his account make **telnet** session to some of our network computers, e.g., *jupiter* (see Section 2.8). Then you can delete the unnecessary files and as soon as your quota is in the allowed limits again, you will be able to log in in the usual way.

b) go to system administrator (Dr. H. Schönemann) and ask for the help. But you will have to delete some of your files anyhow...

Size of files

1 Bit	the smallest unity
8 Bit	1 Byte
1024 Byte	1 Kilobyte
1024 Kilobyte	1 Megabyte
1024 Megabyte	1 Gigabyte
1024 Gigabyte	1 Terabyte

2.5 Printing

Command	*Description*	*Examples*
lpr	print a file	**lpr -P*printer_name file_name*** The following printers are available: *lj4* (room 48/521, BW laser, one sided) *rhrk_ps* (printouts in 34/256, BW laser, two sided) *rhrk_ps-eins* (printouts in 34/256, BW laser, one sided) *rhrk_cps* (printouts in 34/256, colour laser, one sided) **Use only if really necessary!** *rhrk_hps-fol* (printouts in 34/256, BW laser for OH slides) Other printers are available in the working groups. Ask your supervisors.
lpq	queue to the printer	**lpq -P*printer_name***
lprm	remove a job from the queue	**lprm -P*printer_name job_number*** (the job number can be found by **lpq** command)

You are allowed to print **150 pages each 3 monthes** (October—December, January—March, April—June, July—September) in the Mathematics Department. Information about your print quota you can get if you make e.g., **slogin** session to computer called *phoebe* and then use the command **printquota**.

For rhrk printers, quotas are 1000 pages for BW printouts, 300 pages for the colourful ones and 100 pages for OH slides, if you do it from your account here. However, **please, don't print the whole Internet!**

2.6 Postscript files

Command	*Description*	*Examples*
psnup	fit several pages onto one	**psnup -*n original_file.ps new_file.ps*** (*n* is a natural number, telling how many pages should fit onto one)
dvips	generate postscript (.ps) file from .dvi file	**dvips -o *filename*.ps *filename.dvi*** (generate file *filename.ps* from the file *filename.dvi*.) **dvips -t landscape -o *filename*.ps *filename.dvi*** (output in landscape format)

Often, in the Internet, only .pdf files are available. To generate .ps file (sometimes you need it...) you can do the following: run Acrobat Reader (command **acroread**) and open the .pdf file with it. After it, make print command from Acrobat Reader, but do not send directly to printer, use *Print to file* instead.

2.7 Job control

Command	*Examples*
ps	information about user's processes
top	information about all processes (also from previous sessions)
kill	terminate the job. **kill *job_number*** (job number you get by command **ps** or **top**) **kill -KILL *job_number*** (if the previous does not work) **kill -9 *job_number*** (if nothing else works)

2.8 Working in the network

Command	*Examples*
telnet	**telnet *host*** **telnet *jupiter.mathematik.uni-kl.de*** (not always possible due to security)
ssh	**ssh *host*** **ssh *jupiter.mathematik.uni-kl.de*** **ssh -l *your_login jupiter.mathematik.uni-kl.de*** (possible from each place on the world)
slogin	**slogin *host*** **slogin -l *your_login host***
ftp	**ftp *host*** You can do **ftp** to *merkur.mathematik.uni-kl.de* for data transferring. However, not always it is possible, in such cases, use **scp** instead.
scp	**scp *user@host:file_name .*** e.g.: **scp *rutka@nereid.mathematik.uni-kl.de:CCOURSE/info.ps .*** (copy file info.ps from directory rutka/CCOURSE on the computer *nereid* to the directory where you are logged in for the moment) **scp *file_name user@host:directory_name/*** (copy file *file_name* to the directory *directory_name* on the computer *host*) e.g. **scp *info.ps rutka@aixd2.rhrk.uni-kl.de:CourseMat/*** *Usage of scp always asks to enter the password.*

Useful computers might be: *jupiter* (if you want to log in from somewhere outside of the university and for LaTeX), *nereid* and *triton* (for MATLAB and also for accessing from "outside").

2.9 General purpose commands and programs

passwd	change the password (do it on jupiter)
xemacs &	start the text redactor xEmacs
ghostview &	start the ghostview (for ps and eps files)
matlab	start MATLAB
xmaple &	start MAPLE (start in xterm window)

xv &	start XV (for graphical files)
gimp &	a very nice graphical programm
netscape &	start Netscsape
latex *file_name*	compile tex file
xdvi *file_name*	open dvi file
xlatex &	start LaTeX with user's interface
acroread &	start Acrobat Reader
xpdf	also for .pdf files
nedit &	steart the text redactor nedit

3 "Emergency Exit"

I can not log in!!!	See page 4. If does not work–ask somebody from computer team.
Hang-up of one program	Kill command (page 6).
Absolute hang-up	Ask somebody from the computer team, but do not restart the computer! (A special password is needed to do it.) What you can try: login into another computer, and from there login to the hanged one, if possible. And then try to kill all possible processes which are on your name.
Deleted files by mistake	Contact system administrator (Dr. H. Schönemann). He might have a solution.
Quota too small	For short time: can use /tmp directory on the local computer. For longer: if you do some project, you can get a quota extension. Ask your supervisor.

Sometimes, you can get the answer to your questions if you visit the homepage of Computer Team Mathematik (CTM). Go to homepage of Mathematics Department, then look for the link to CTM.

4 Vi editor

This text redactor can be used if you are not logged in using some graphical interface. Typically, you need it when using *telnet*. The basic commands are listed below, for more information check the Internet (you find a plenty of help there).

vi *file_name*	open the file *file_name*
"PgUp"	scroll up the buffer
"PgDown"	scroll down the buffer
i	insert text (start editing)
"Esc"	leave the editing mode
:w!	save the file with the current name E.g., if you are in the insert modus, at first press "Esc" and then enter :w!
:w *file_name*	save the file with a new name *file_name*
"/"	Search forwards E.g., enter (when you are in the command mode!) */some_string*
"?"	Search backwards

5 A general remark

If you find some incompatibilities in this material (like wrong print quotas, non-existing server names etc.), please, inform me per e-mail to `rutka@mathematik.uni-kl.de`. The situation is changing continuously and you who are really using the computer rooms are the best informed persons.

As well, if you see that something is not ok (not working computer, strange colored monitor or whatever), inform the Computer Team Mathematik (their e-mail is `ctm@mathematik.uni-kl.de`).