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ICTP-INFN-UNU-MICROPROCESSOR LABORATORY
THIRD COURSE ON BASIC VLSI DESIGN TECHNIQUES
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INTRODUCTION TO UNIX

Daniele BULFONE
Control Group
SINCROTRONE
Area di Ricerca
Padricciano 99
34100 Trieste
ITALY

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Exercise 1

Introduction to UNIX

A. Log In

- Press the RETURN key until the login prompt appears on the screen.

- Type in your login ID (usually your name or initials) in lowercase letter at the prompt, and press RETURN.
The system now prompts you to enter your password.

- Type in your password (which is not displayed on the screen, for security reasons), and press RETURN.

If the login is successful, you will get some system messages and finally the UNIX system prompt.

B. Some simple UNIX commands

To execute a command, type in the **command** and press the RETURN key. Remember that UNIX commands are always typed in lower case.

1. Find out today's date

date

2. Find out logged in users

who

3. Call for help, and try the different options of the commands above.

command --help

C. Exploring the File System

1. Go to your home directory

cd

2. Find out your working directory

pwd

3. Create new directory called *temp*

mkdir temp

4. Change to new directory

cd temp

5. Copy distant file /etc/passwd to your working directory, and call it *myfile*

cp /etc/passwd myfile

6. Redirect standard output of command **who** to file *users*

who > users

7. List files in new working directory

ls

8. Using a single command line. change directory to root and list files there

cd /; ls

9. Call for help and try different options of **ls** command (l, a, F, etc....).

10. Change to *etc* directory, using relative pathname

cd etc

11. Go to the *temp* subdirectory of your home directory, using absolute pathname, and check it with command **pwd**.

C'. File Permissions

12. Check permissions, owner and group of files in your *temp* directory.

13. Make file *users* readable and writeable by you and your group, using octal numerical specification

chmod 660 users

14. Make file *users* <u>also</u> executable by you (but don' t execute it, it is not an executble program!), using symbolic mode

chmod +x users

15. Change permissions of file *users* to their original state (as at point 12), using symbolic mode.

16. Copy file *myfile* to file *vlsi* in your home directory

cp myfile ../vlsi   or   cp myfile ~/vlsi

17. Rename file *vlsi* as *whereamI*.

cd and mv vlsi whereamI

D. Manipulating files

1. Go to your home directory

2. Copy distant file */etc/passwd* to file *trieste* in your working directory.

                                      cp /etc/passwd trieste

3. Create new directory *school*

                                        mkdir school

4. Move file *trieste* to new directory *school*

                                        mv trieste school

5. Change working directory to *school*

                                        cd school

6. Copy file *trieste* to file *trieste.two*

                                        cp trieste trieste.two

7. List filenames starting with string *"trieste"* using * metacharacter

                                        ls trieste*

8. Remove files *trieste* and *trieste.two* using * metacharacter

                                        rm trieste*

9. Go to parent directory

                                        cd ..

10. Remove directory *school*

                                        rmdir school

11. Verify that directory was removed

                                        ls -l

E. Creating and Editing files

1. Go to your home directory

2. Put text (whatever you like) in a new file called *ictp1*, redirecting the standard output of the **cat** command

cat > ictp1

3. Display file ictp1 with the **more** command.

more ictp1

4. Edit file *ictp1* using the **vi** editor

vi ictp1

5. Exercise the use of vi, using table in Appendix A.

F. Take a rest and send a mail to some other system users

mail *username*

G. Using Pipes

1. Go to root directory

2. List directory files

ls

3. Using **ls**, **wc** and a pipe, build a command that counts the number of listed files and directories

ls | wc -l

4. Find files that were modified in October

ls -l | grep "Oct"

5. Sort them by order of size

ls -l | grep "Oct" | sort +4n

H. Some simple script examples

1. Edit and try the following scripts:

```
#csh script to prepend std input to file argument
#Version 1.0

set tf = /tmp/ppd.$$          #name temp file
set dest = $argv[1]           #get argument name

cat - $dest > $tf             #cp std input,$dest to $tf
mv $tf $dest
```

```
#csh script that gives formatted display of
#current date and time
#Version 1.0

set d = `date`
echo "Today's date: $d[2-3] $d[6]"
echo "Current time: $d[4]"
```

2. Write a simple script and call it **numfiles**) that counts the number of files and directories in an arbitrary directory, given as argument: **numfiles** *dirname*

```
# csh script to count number of files and
# directories in argument 1
# Usage: numfiles directory

echo -n "Number of files and directories: "
ls $argv[1] | wc -l
```

I. Customizing your account

1. Check **rm** command options and define an alias for it that asks for confirmation before removing a file.

<div align="center">alias rm 'rm -i'</div>

2. Define an alias that gives you the time.

<div align="center">alias tm '(set d = `date` ; echo $d[4])`</div>

3. Edit and try the following **.cshrc** file:

```
#.cshrc file - Version 1.0


# Set up shell variables
set noclobber              #redirection protection
set path = (~/bin /bin /usr/bin /usr/local .)


# Set up aliases
alias bye logout           #bye for logout
alias nusers \
'(set a = `who|wc -l` ;echo "There are $a users")'
```

4. Edit and try the following **.login** file:

```
# .login - Version 1.0


# Greetings and Salutations
echo Hello, $USER !
echo Welcome to UNIX
echo -n "Today is "; date


#Environment Variables
setenv SHELL /bin/csh      #C shell
setenv TERM vt100


stty intr ^C               #set inerrupt to cntrl-C
nusers
```

5. Edit and try the following **.loout** file:

```
# .logout - Version 1

set d = `date`
if ($d[1] == Fri) then
    echo Thanks God It is Friday
endif

echo -n "Logging out at: "
date
```