

# Programming Introduction

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# 1 Terminal

## 1.1 Introduction

```
> uname -mns
Darwin imac.local i386
Report bugs to <bug-coreutils@gnu.org>.
> uname -mns
Darwin mbkp.local i386
> ssh anker.unibe.ch
user@bender.unibe.ch's password:
> uname
Linux
> uname -mon
bender x86_64 GNU/Linux
> uname --help
Usage: uname [OPTION]...
Print certain system information. With no OPTION, same as -s.
```

```
-a, --all print all information, in the following order,
              except omit -p and -i if unknown:
-s, --kernel-name print the kernel name
-n, --nodename print the network node hostname
-r, --kernel-release print the kernel release
-v, --kernel-version print the kernel version
-m, --machine print the machine hardware name
-p, --processor print the processor type or "unknown"
-i, --hardware-platform print the hardware platform or "unknown"
-o, --operating-system print the operating system
--help display this help and exit
--version output version information and exit
```

## 1.2 Commands

```
rm cami@bender:~/test$ ls
todelete.txt
cami@bender:~/test$ rm todelete.txt
cami@bender:~/test$ ls
```

`touch` updates the access and modification times of each FILE to the current time.

```
cami@bender:~/test$ ls -l
-rw-r--r-- 1 cami cami 0 2009-08-25 20:29 date.txt
cami@bender:~/test$ touch date.txt
cami@bender:~/test$ ls -l
-rw-r--r-- 1 cami cami 0 2009-08-25 20:30 date.txt
```

It can be very useful to create a new empty file on the fly:

```
~/test$ ls
~/test$ touch emptyfile.txt
~/test$ ls
emptyfile.txt
```

**man** gets help for all the other commands

**cd** changes the current directory to the chosen dir.

```
[kurs11@vasarely ~]$ ls
Desktop documentation Documents Download lessons Music Pictures Public
Templates Videos
[kurs11@vasarely ~]$ cd lessons
[kurs11@vasarely lessons]$ ls
\00 terminal introduction.txt 02 documentation 04 terminal extension
documentation
01 vim introduction 03 terminal basic commands 05 ruby
```

**ls** lists directory content

```
[kurs11@vasarely ~]$ ls
Desktop documentation Documents Download lessons Music Pictures Public
Templates Videos
```

**pwd** prints current working directory

```
[hiltpold@vasarely documentation]$ pwd
/home/hiltpold/Documents/documentation
```

**mkdir** makes directory(ies), if they don't already exist

```
mkdir a | new directory
```

**touch** Update the access and modification times of each FILE to the current time.

**mv** moves or renames files/directories

```
mv a b | moves a into b
mv a c | renames a
mv a .. | puts a out of b
```

**cp** copies files and directories

```
cp a b | copies a in b
```

**rm** removes files or directories

```
rm a | removes a
```

**cat** concatenate files and print on the standard output

```
[kurs11@vasarely 02 documentation]$  
cat 00\ cat\ this\ file\ for\ instructions
```

```
cat 00\ cat\ this\ file\ for\ instructions displays the content of 00\ cat\ this\ file\  
cat -n cat 00\ cat\ this\ file\ for\ instructions displays the content  
with all line numbers
```

**ssh** OpenSSH SSH client (remote login program)

```
[kurs11@vasarely 11 ssh]$ ssh anker.unibe.ch  
The authenticity of host 'anker.unibe.ch (130.92.63.43)' can't be established.  
RSA key fingerprint is 23:0a:a6:55:86:0e:90:8b:61:49:fc:fc:5b:0b:b6:36.  
Are you sure you want to continue connecting (yes/no)? y  
Please type 'yes' or 'no': yes  
Warning: Permanently added 'anker.unibe.ch,130.92.63.43' (RSA) to the list of known hosts  
kurs11@anker.unibe.ch's password:  
Permission denied, please try again.  
kurs11@anker.unibe.ch's password:  
[kurs11@anker ~]$ ls  
Desktop documentation Documents Download lessons Music Pictures Public  
Templates Videos
```

**svn** Subversion command-line client

```
svn checkout  
svn update  
svn status  
svn commit
```

**grep** prints lines matching a pattern

```
[hiltpold@vasarely 04 terminal extension]$ grep is grep.txt  
This manual is for version 2.5.4 of GNU Grep.  
This manual is for 'grep', a pattern matching engine.  
Permission is granted to copy, distribute and/or modify this
```

**less** views the files "text- content"

**wc** prints newline, word, and byte counts for each file

```
wc a prints lines, words, bytes of a
wc -l A prints only lines and file name A
```

du estimates file space usage

find searches for files in a directory hierarchy

wget downloads files from the web

```
[hiltpold@vasarely ~]$ wget http://bender.unibe.ch
--2009-09-09 09:49:36-- http://bender.unibe.ch/
Resolving proxy.unibe.ch... 130.92.253.200
Connecting to proxy.unibe.ch|130.92.253.200|:80... connected.
Proxy request sent, awaiting response... 200 OK
Length: 538 [text/html]
Saving to: 'index.html'

100[=====]
--.-K/s in 0s

2009-09-09 09:49:36 (36.7 MB/s) - 'index.html' saved [538/538]
```

vimtutor opens VIMTutorial

vim filename opens a new VIMfile

## 2 VIM

### 2.1 Commands

:wq : save and quit

:q! : quits without saving

y,p : "copy and past"

:wq : save and quit

## 3 Documentation with Latex

### 3.1 Introduction

In this section we explain some  $\text{\LaTeX}$  details and different formatting commands.

Whenever you need to lookup a certain symbol for  $\text{\LaTeX}$  we suggest you to use the online recognition tool `detexify` at <http://detexify.kirelabs.org/>.

### 3.2 Common Commands

#### 3.2.1 Sectioning

Depening on the documentclass given in the very beginning of this file there exist several sectioning levels:

1. `\section{NAME}`
2. `\subsection{NAME}`
3. `\subsubsection{NAME}`
4. `\paragraph{NAME}`

To enforce  $\text{\LaTeX}$  to use a newline add a double slash `\\` at the end of a line.

#### 3.2.2 Schriftgrösse / -style

<code>\rm</code>	A normaler text
<code>\sl</code>	<i>An italic text</i>
<code>\bf</code>	<b>A bold text</b>
<code>\tiny</code>	A tiny ext
<code>\scriptsize</code>	A very, very small text
<code>\footnotesize</code>	A very small text
<code>\small</code>	A small text
<code>\large</code>	A big text
<code>\Large</code>	A bigger text
<code>\LARGE</code>	An even bigger text
<code>\huge</code>	A huge text
<code>\Huge</code>	A enormous huge text
<code>\emph</code>	<i>An emphasized text</i>
<code>\underline</code>	<u>An underlined text and here using the ulem-package</u>
<code>\texttt</code>	<code>function goto(int a) ...</code>
<code>\uuline</code>	<u>A double unterstrichener text using the ulem-package</u>
<code>\uwave</code>	<u>A wavy unterstrichener text using the ulem-package</u>
<code>\sout</code>	<del>A crossed trough text using the ulem-package</del>
<code>\xout</code>	<del>A deleted text using the ulem-package</del>

### 3.2.3 Notes

To create a footnote use the `\footnote{YOUR NOTE}` command<sup>1</sup>.  
If you want to put a remark at side of a page use `\marginpar`.

This is a note at  
the border of the  
page.

### 3.2.4 Lists

There exist several list types in L<sup>A</sup>T<sub>E</sub>X. You start a list by adding a `\begin{LISTTYPE}` and end it with an `\end{LISTTYPE}`. A list item is added with a `\item` between the `begin` and `end`. LISTTYPE can be one of the following list:

- `enumerate`
- `itemize`
- `description` with `\item[topic]`

Note that you can nest lists if you want to.

1. e4
  - a) e4 e5
  - b) Lc4 d6
2. Lc4 d6

## 4 Ruby Programming

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<sup>1</sup>...as you can see here.