

Linux: Installing & Using



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Room: 310

Office Hours: Tue. Wd. 13:30 - 15:30

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What is Linux?



Linux is an open source operating system kernel
– with GNU tools, it is a complete, free, open,
operating system.

It already belongs to you – GPL

Although you can build a Linux system *from scratch*, you don't have to. There are distributions that let you install and maintain a Linux system easily.

Ubuntu, Pardus, Fedora, SuSE, Slackware and Debian and hundreds more!

Why *should* I use Linux?



Linux is a UNIX variant – UNIX is everywhere and so is Linux.

Linux is rock solid – stable, fast and secure.

Servers, which have to run 24/7 and have to handle millions of requests run Linux.

It is highly likely that you'll sit in front of a Linux/Unix machine at least once in your career.

It is easy to maintain using only an SSH server.

It is easy to learn and use.

Before we begin



Get rid of all your prejudices.

Do not expect it to work like Windows.

Do not hesitate to read manuals and documentations or to do a simple search on Google in case you have a problem.

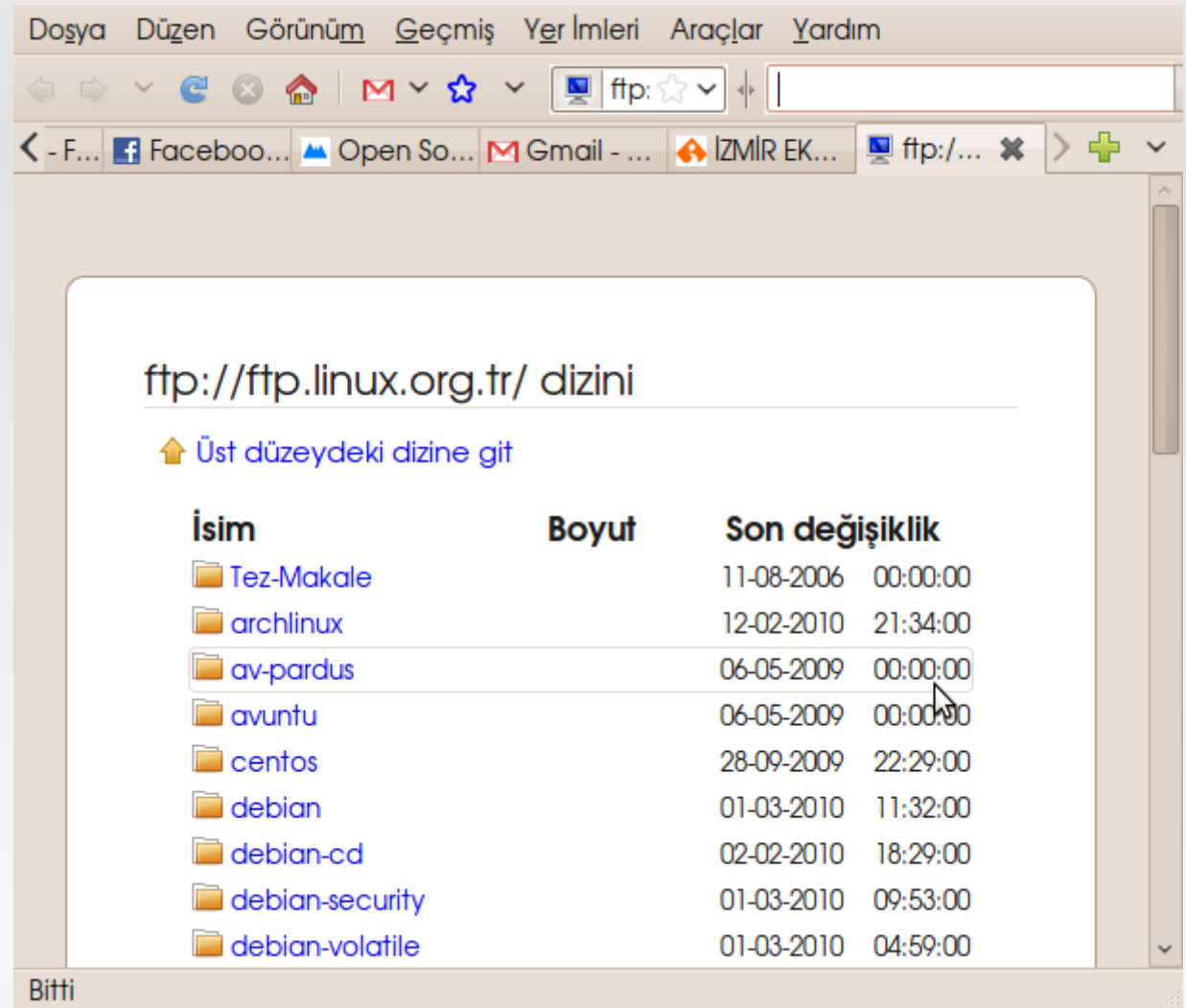
Everyone can use it, so why can't you – it's not rocket science; and you are to-be-engineers in a '*Faculty of Computer Sciences*' – so no **excuses!**

Getting Linux



ftp.linux.org.tr

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Installing Linux



Simple.

Boot from the install CD.

You need space on your hard-disk

- A partition that will belong only to Linux, around 8-10 GB

- A swap partition that will be used as extra RAM in case you run out of it, around 1-2 GB.

A Linux install CD – Ubuntu, Pardus, etc.

You can get a copy from me (Room: 310), just bring a writable CD (not DVD).

VVIT: Very Very Important Tips



Make sure you manually partition the hard-disk, most Linux installers use the *whole disk* as the **default** option. In that case, you may **lose all your data**, and your **Windows installation** if you have one.

Do **NOT** use Turkish characters such as ğ, ı, ş in your usernames and passwords. You should stay away from the letter 'l' and its variants (ı, l, i, İ). Make sure you don't lose or forget your password, unless you want to install again.

More About Installing



A boot loader helps you choose the operating system to boot when your computer starts up.

The installer will ask you where to install the boot loader. The default answer is almost always correct.

Once the hard drive, password and boot loader is set up, the installer simply copies necessary files and in no time your Linux is ready to boot!

Linux Desktop



Depending on your distro of choice, you'll likely to get one of the following desktop environments: GNOME (Ubuntu) or KDE (Pardus).

There are other desktop environments (XFCE, Window Maker, Fluxbox, IceWM etc.) But GNOME and KDE are the most popular.

Both of them will look familiar with a 'Start' menu, taskbar, system tray, icons on desktop, drag and drop etc.

For this course, we are more interested in the command line.

GUI vs CLI



GUI = Graphical User Interface

CLI = Command Line Interface

Shells: bash, sh, csh...

Interface between the user and the O.S.



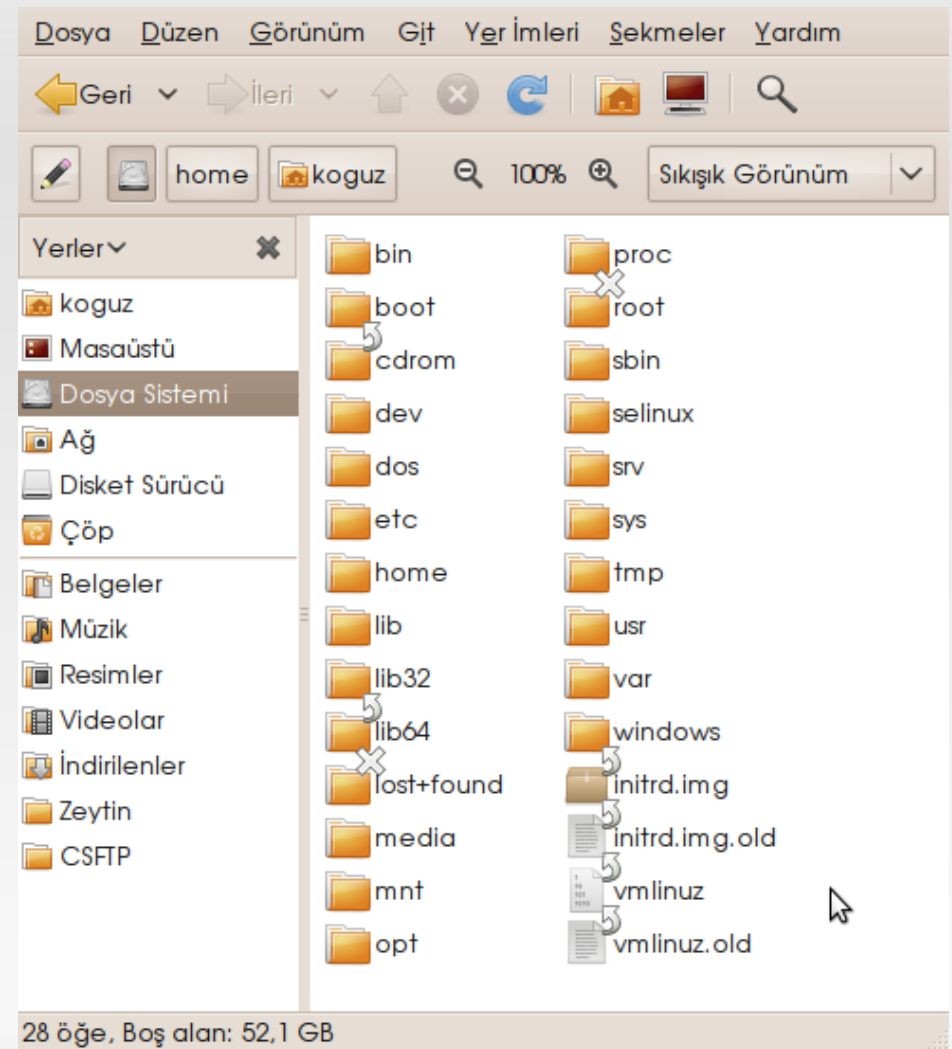
Linux Filesystem



/

Everything gets
mounted under the
root file system (/)

bin, etc, dev, home,
mnt, usr, var... etc.



Users in Linux



Superuser (root)

Normal user (kaya)

A normal user account is used for daily usage of the system.

Superuser account is reserved for system administration

Every user belongs to one or more groups

Linux is very strict about permissions

Every file belongs to a user

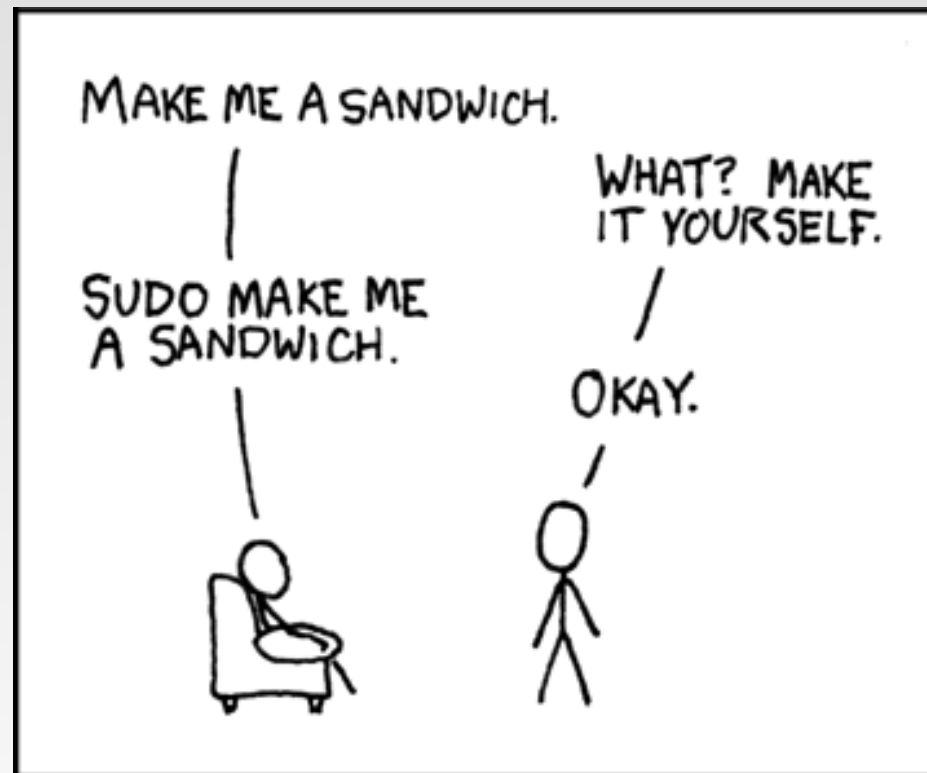
Being 'root'



From time to time you may need to become the superuser; for installing applications, setting system settings etc.

The commands: `su` and `sudo`

When you are root, **BE VERY CAREFUL!** The system considers you know what you are doing and does not ask you 'if you are sure' – it just executes the command!



Files



	User	Group	Others
Read	4	4	4
Write	2	2	2
Execute	1	1	1

```
-rw-r--r-- 1 kaya kaya 17K 2009-06-24 13:50 kayaoguz.pdf
-rw-r--r-- 1 kaya kaya 374 2009-06-24 13:55 kayaoguz.tex
drwxr-xr-x 4 kaya kaya 1016 2009-07-06 10:31 Masaüstü
```

```
$ chmod 655 dosyaAdi
$ chmod 777 dosyaAdi2
$ chmod -R 546 dizinVeIcindekiler
```

Ownership



You can change the owner of the file with the command: `chown`

You can change the group of the file with the command: `chgrp`

You can use, users, groups and file mode bits to restrict or allow access to files.



Shell is...



An interpreter. It can execute commands.

A programming language. It has control structures, loops, variables and NO pointers :)

You may try:

```
for i in $(ls); do  
    echo item: $i  
done
```

We'll do a lot of shell programming in this course!

Some Basic Commands



Command	Description
<code>ls</code>	Lists files in a directory
<code>cd</code>	Change Directory
<code>cp</code>	Copies file(s)
<code>mv</code>	Moves (Renames) files
<code>mkdir</code>	Creates a directory
<code>rm</code>	Removes files or folders
<code>less</code>	Less is more
<code>mc</code>	Midnight Commander
<code>man</code>	Manuals

Learning More



Manuals – the `man` command gives you more information about a command.

Try:

```
man ls
```

```
man cp
```

Reading the manuals, you can learn about the parameters and other features of the commands.

More Linux Commands



Text editors: vi, vim, pico, nano

Changing your password: passwd

Print Working Directory: pwd

Who are you?: whoami

Who is logged in now?: who

How long has it been?: uptime

System information: uname

Listing the tasks, processes: top, ps

Stop the processes!: kill, killall

And MORE!!



How much space?: du, df, free

File contents: less (less is more)

Print on screen: echo

Path of a command: which

Rename command: alias

Compressing: tar

Links: ln

Compiling: gcc, g++, javac

Configuring Linux



There are many things you can do to configure your Linux system;

- You can edit configuration files

- You can use configuration tools

- You can configure services

- You can install/remove software

You can configure system-wide or user-wide

Repositories



There are not many 'Next, next Wizards' to install applications on Linux.

Usually, every distro has a central repository, where applications can be searched and installed with one command.

For example, let's say you need tcpdump for the Network course; it is highly likely that it is already installed, but let's try to install it using the repository.

Repository Tips



Always search the repository first before you install an application. Do not bother going to their web-site and downloading.

Both Ubuntu and Pardus have huge repositories, this will save you time.

Don't bother going to the application's web site and download a package. Do not bother to *compile from source*.

More Repository Tips



You can also remove and update a package via the repositories.

The operating system may prompt you to update your system when updates are available.

Other than the official repositories of the distro, you may add additional repositories for more applications.

Configuring Your CLI



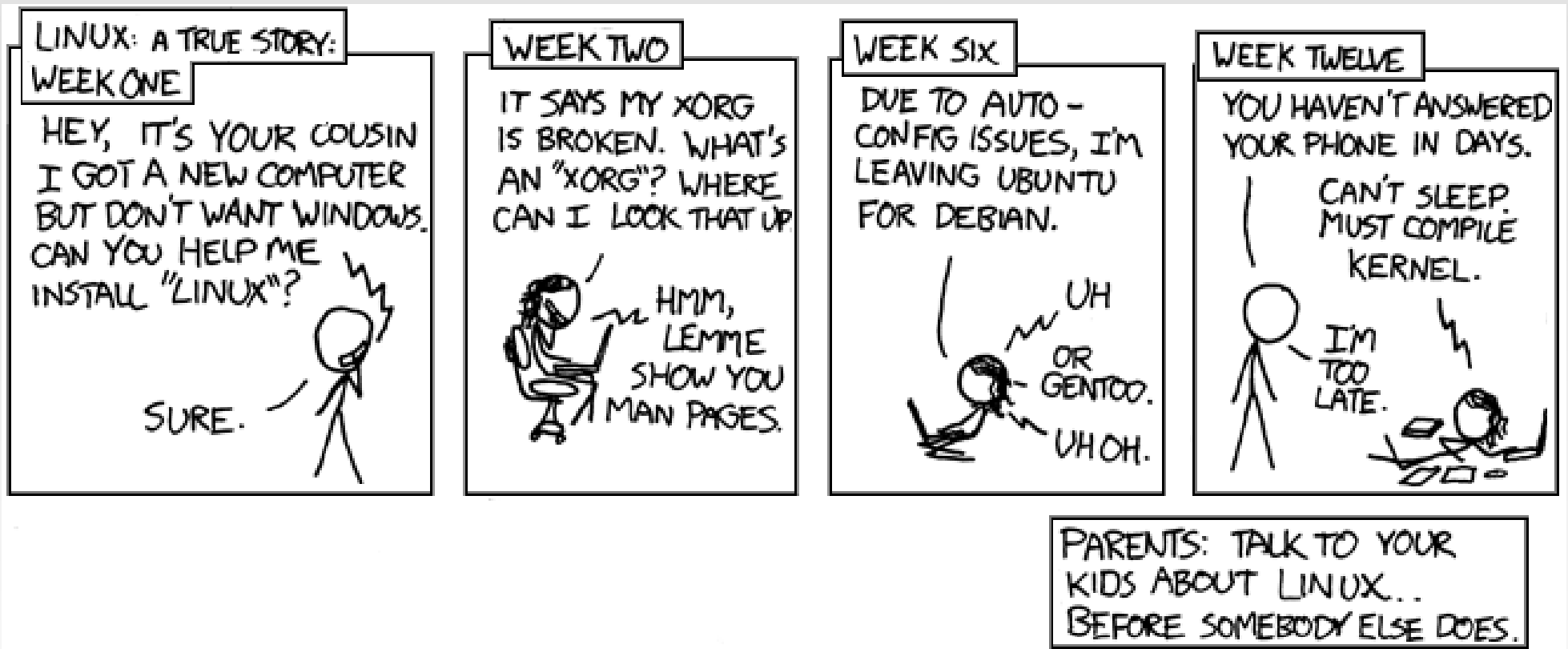
Environment Variables (PATH, LANG, etc.)

The Prompt (koguz@linux \$)

Command Aliases



Linux: A True Story



Comics from: <http://www.xkcd.com/>

ubuntu

A Few Links



Pardus - <http://www.pardus.org.tr/>

Ubuntu - <http://www.ubuntu.com/>

LKD (Linux Kullanıcıları Derneği)
<http://www.linux.org.tr/>

Linux Belgelendirme Grubu
<http://www.belgeler.org/>

Özgürlük İçin, Pardus
<http://www.ozgurlukicin.com/>

All Distros: Distrowatch
<http://distrowatch.com/>



Thanks!

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