

Linux Class 2

Debian file system, superuser, editing text files, executing commands in the shell, configuring, installing and uninstalling packages.

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File system and users Introduction

Superuser

- In computing, the superuser is a special user account used for system administration. Depending on the operating system, the actual name of this account might be: root, administrator, admin or supervisor. In some cases the actual name is not significant, rather an authorization flag in the user's profile determines if administrative functions can be performed.
- In operating systems which have the concept of a superuser, it is generally recommended that most application work be done using an ordinary account which does not have the ability to make system-wide changes.

Taken from: <http://en.wikipedia.org/wiki/Superuser> 2014-02-16

root

- Root is where every thing starts in Linux systems is like the alpha of the system. Is the *“father directory” (root directory represented by /)* in the file system. And root is also the *“superuser”*.
- `ls /`
- `ls -la /`
- The root user can do almost anything in the Linux OS.

su - command to change the user

```
su -
```

```
su
```

```
su class
```

```
whoami
```

Difference between \$ and # symbol in the Linux terminal is that \$ is for not privileged users and # is for superuser.

System restat and shutdown

init run levels-command

- init 0 – Shutdown the computer.
- init 6 – Reboots the system.
- Homework A: What does the other init from 1 to 5 do? What is init run levels?

View Network Configuration

Ifconfig – Network Interface command

- ifconfig: the command shows the network interfaces configuration.

```
root@khs01sw10:~# ifconfig
eth0      Link encap:Ethernet  Hwaddr 08:00:27:a0:7e:72
inet addr:10.175.0.1 Bcast:10.175.1.255  Mask:255.255.254.0
lo Link...
(...)
root@khs01sw10:~#
```

Remote connections

ssh

- OpenSSH is a FREE version of the SSH connectivity tools that technical users of the Internet rely on. Users of telnet, rlogin, and ftp may not realize that their password is transmitted across the Internet unencrypted, but it is. OpenSSH encrypts all traffic (including passwords) to effectively eliminate eavesdropping, connection hijacking, and other attacks. Additionally, OpenSSH provides secure tunneling capabilities and several authentication methods, and supports all SSH protocol versions.

Taken from: <http://www.openssh.com/> 2014-02-16

- The Debian Official CD version comes with the ssh client installed by default. (that means you can use it to connect to ssh servers)
- The ssh server can also be installed from repository.

ssh in action

```
root@khs01wxl001:~# ssh root@10.175.0.1
```

```
root@10.175.0.1's password:
```

```
Linux khs01sw10 2.6.32-5-amd64 #1 SMP Mon Sep 23  
22:14:43 UTC 2013 x86_64
```

```
(...)
```

```
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to  
the extent
```

```
permitted by applicable law.
```

```
Last login: Mon Feb 17 15:50:11 2014 from 10.175.0.167
```

```
root@khs01sw10:~#
```

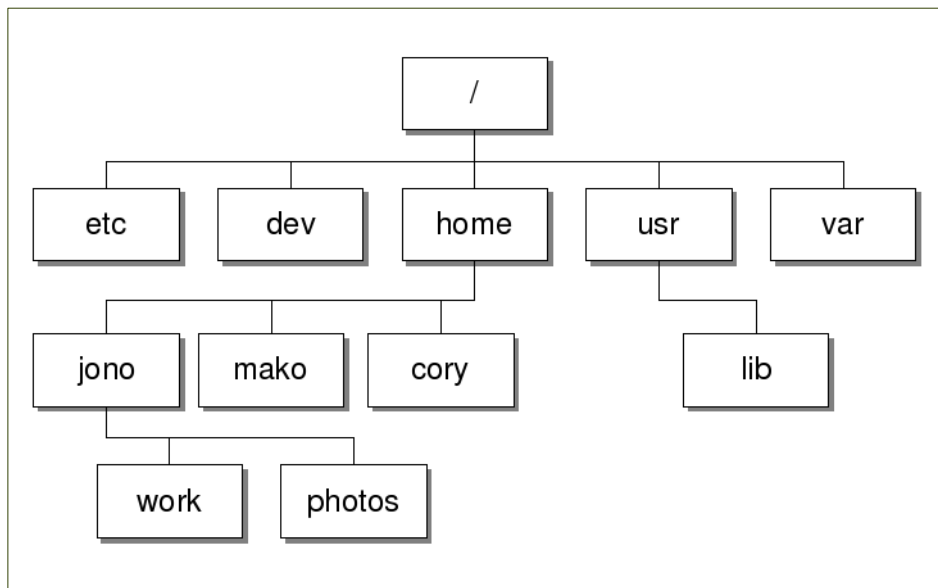
Organization of the root directory and HDDs in Linux

File system organization

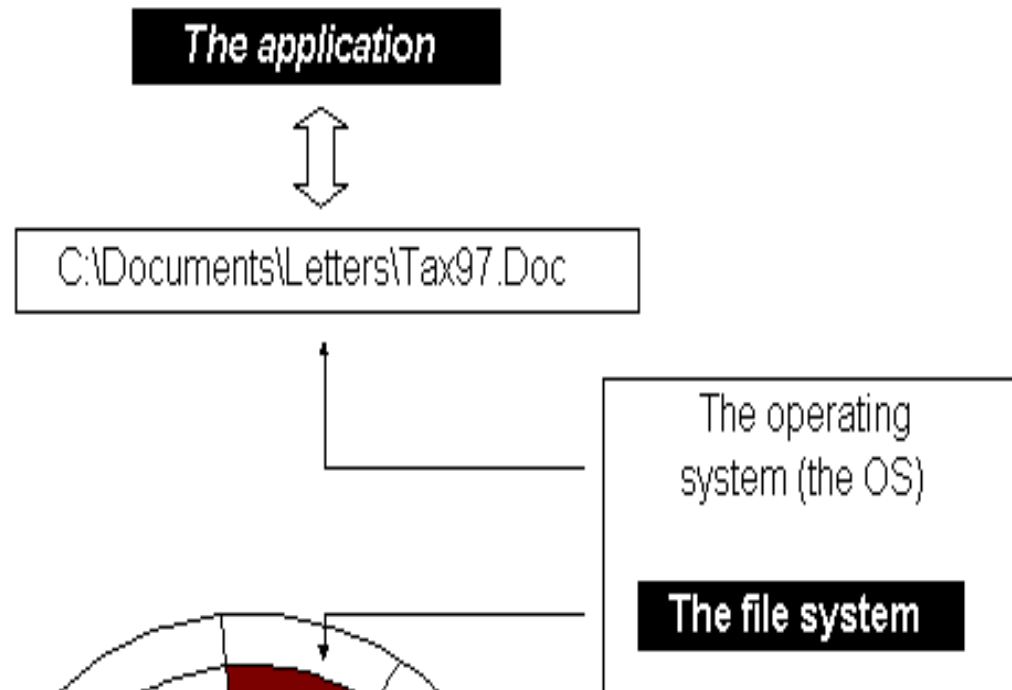
The main two differences are:

- The drives are mounted in a folder.
- The directories are organized following FHS Conventions.

Linux FS



Windows FS



C, D, E...

Homework B - Mount command

- # mount
- Research about how else can we use the mount command

File system structure

Filesystem Hierarchy Standard

- The Filesystem Hierarchy Standard (FHS) defines the directory structure and directory contents in Unix and Unix-like operating systems, maintained by the Linux Foundation. The current version is 2.3, announced on 29 January 2004.[1]
- Taken from: http://en.wikipedia.org/wiki/Filesystem_Hierarchy_Standard on 2014-02-16.

Main directories that we will use along the classes (Use ls command)

/etc – Configuration files for most of the softwares eg: ssh, network.

/home – users folder except for the root user eg: class, abel.

/var -variable data eg: databases, caches, logs.

Homework C: Where is the root user folder?

Editing files with Nano

- nano – shell text editor.
- vi – shell text editor.
- gedit – Graphic text editor.
- To edit a file: \$
nano /path/to/file.

Nano internal commands:

CTRL + x: closes the file.

CTRL + o: saves.

CTRL + c: cursor position.

CTRL + k: cuts from nano.

CTRL + y: paste to nano
from nano.

Exercise 1: Create a text file called class1 in /home/class.

Write some content and practice the commands from last slide.

Repository

- Commonly refers to a storage location, often for safety or preservation.
- Many software publishers and other organizations maintain servers on the Internet for this purpose, either free of charge or for a subscription fee.
- Repositories may be solely for particular programs, such as CPAN for the Perl programming language, or for an entire operating system.
- Operators of such repositories typically provide a package management system, tools intended to search for, install and otherwise manipulate software packages from the repositories.

Repository

- For example, many Linux distributions use Advanced Packaging Tool (APT), commonly found in Debian based distributions, or yum found in Red Hat based distributions.
- There are also multiple independent package management systems, such as pacman, used in Arch Linux and equo, found in Sabayon Linux.

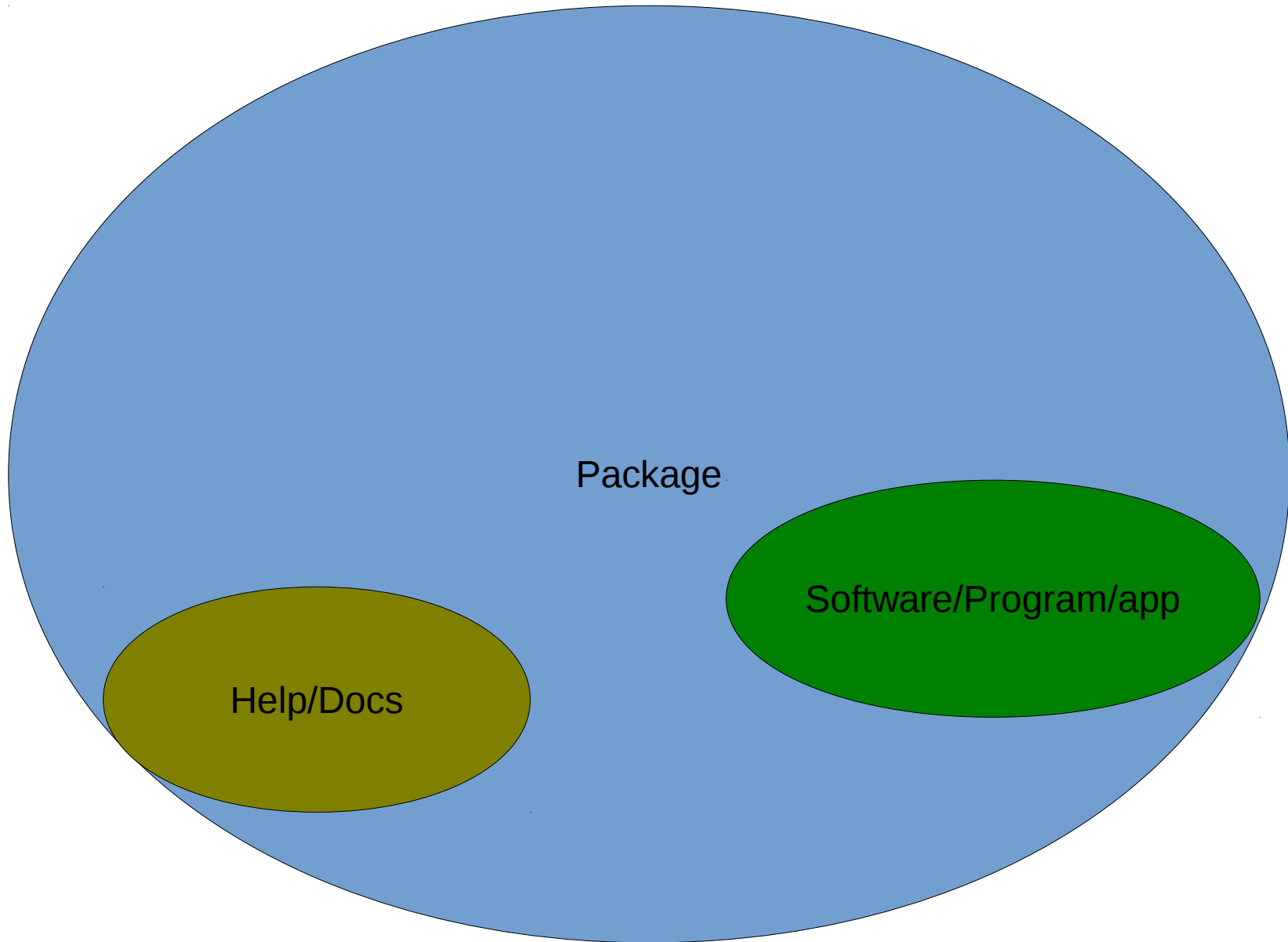
Taken from: <http://en.wikipedia.org/wiki/Repository> 2014-02-16.

Package

A package format is a type of archive containing files and additional metadata found on packages. [1] While the archive file format itself is unchanged, package formats additionally specify the contents, such as requiring a manifest file or certain directory layout.

The term is particularly used on Unix systems, and there are several formats available, both for Linux distributions and BSD systems, though the concept also includes pkg files on Mac OS X, MSI files on Windows, JAR files for Java, among others.

Softwares are a type of package



Debian Package Management

- Apt-get - package manager
- aptitude – higher level package manager.

- aptitude install ssh
- aptitude install mc

- Homework C -
What is the difference between:

- aptitude update
- aptitude install
- aptitude upgrade

How do you remove a package?

How can you search for a package?

Thank You!