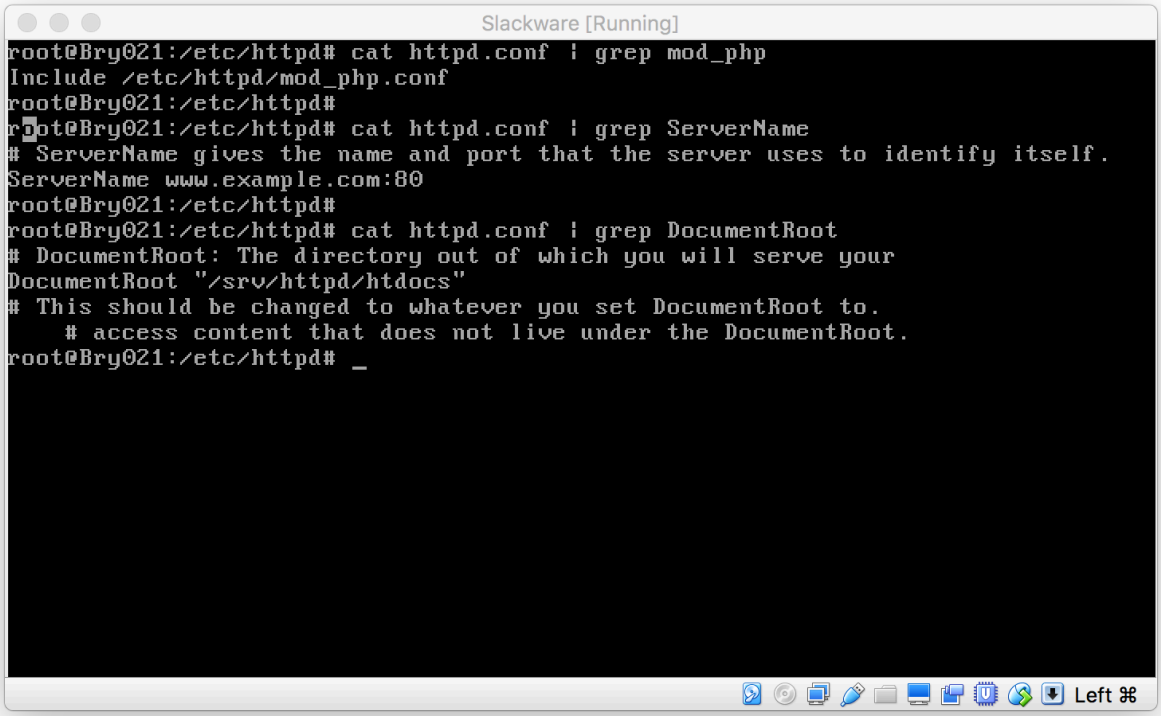
Lab 7: Apache HTTP server

Exercise 1. Configuring Apache

Apache HTTP server is configured by placing directives in plain text configuration files. The main configuration file is called **httpd.conf** located in **/etc/httpd.** Between other fields, it contains:

Field	Value	Description
Include	/etc/httpd/mod_php.conf	Module to interpret PHP code.
DocumentRoot	/srv/httpd/htdocs/	Folder where the html files live.
ServerName	www.example.com:80	Name and port that the server uses to identify itself.

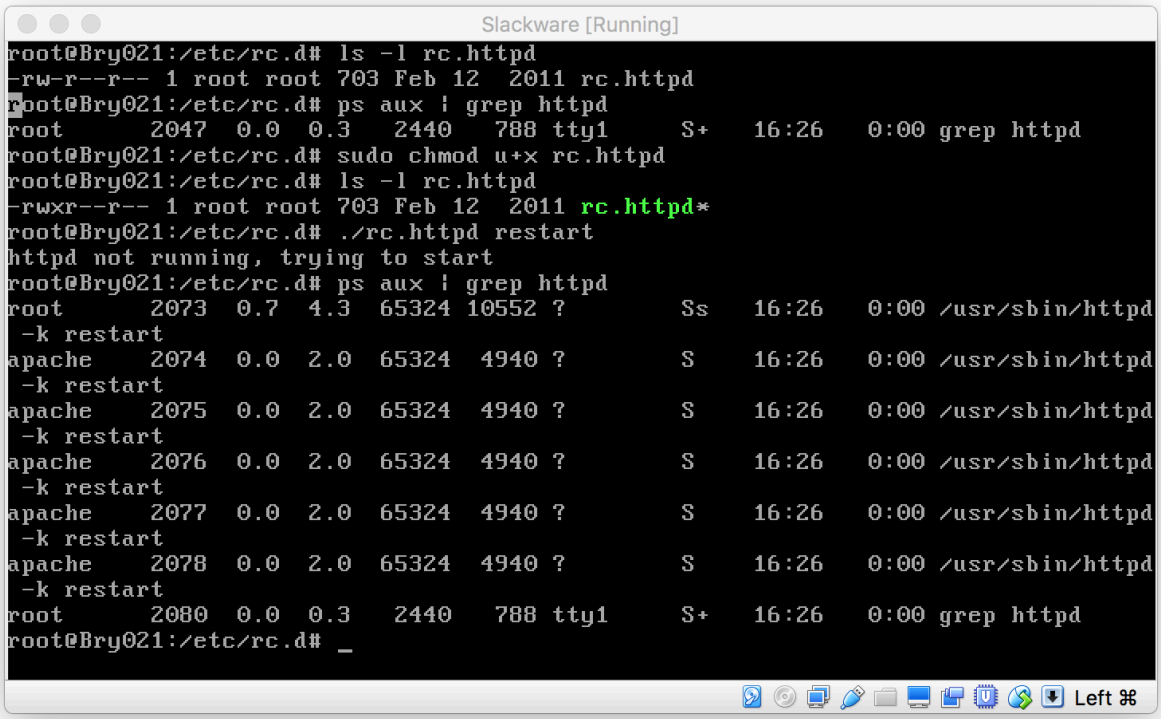
Let's see how it looks like in the Slackware VM. Let's find those key words in httpd.conf (mod_php, DocumentRoot and SeverName).



Exercise 2. Running Apache

2.1. Why do you need to restart httpd if you make changes to the configuration?

In order to enable the new changes, we need to go to the **/etc/rc.d/** directory and restart the service by calling **./rc.httpd**. Notice that the file permissions should be changed to u+x (executable by the use) as we saw in the Lab 3.



2.2. This question is about ps aux | grep httpd.

A. What does the command ps aux do? What about the command grep httpd?

B. What would you expect to see as the output of the command ps aux | grep httpd if httpd is running? How about if it is not running? Try both cases and note down the results.

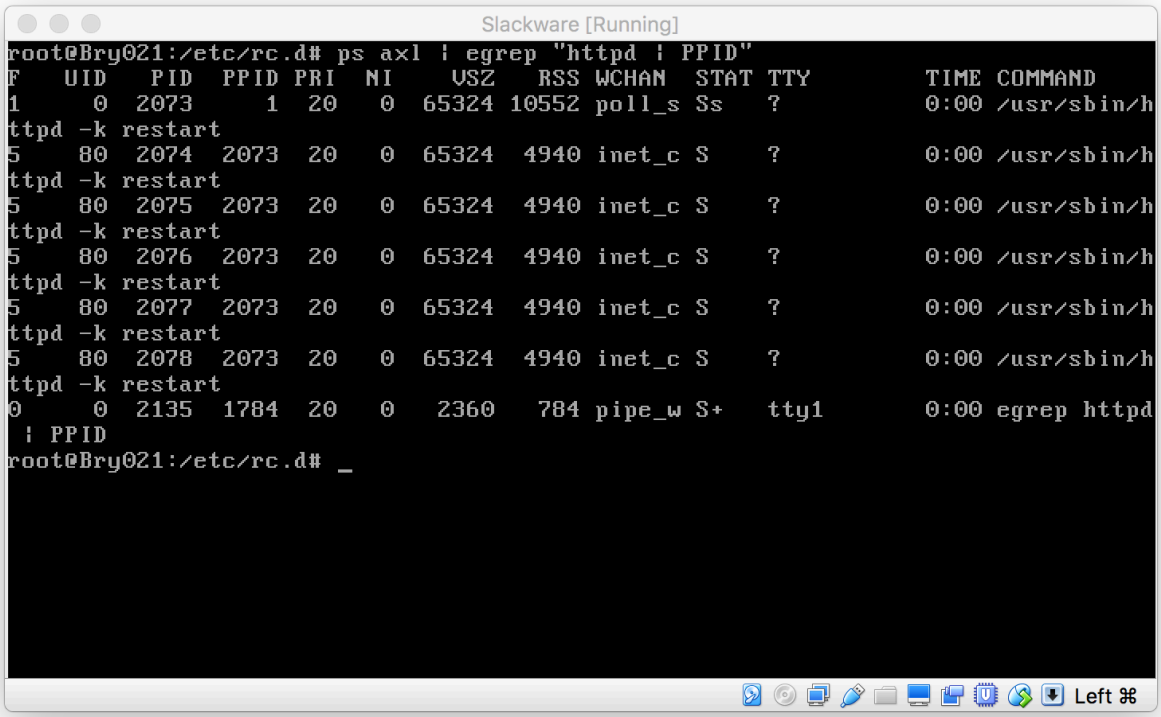
Answer A: The command **ps aux** shows the process for all users (a), process's user/owner (u) and also processes not attached to a terminal (x). The result is piped into the grep command that searches only for lines with **httpd** in it.

The options without a leading dash are the BSD style (Berkeley) while those with a leading dash are AT&T Unix style. Nonetheless, Linux developed a third version which support both styles and adds the option that begins with double dashes.

Answer B: Actually if the HTTP service is running, we can see six processes belonging to the root (USER) with some resources in the system (%CPU, %MEM, VSZ(KiB), RSS(KiB)) and:

- its IDs go from 2073 to 2078 (PID)
- there is no specific terminal where the processes are attached to (TTY = ?)
- there are in a interruptible sleep state (STAT = S)
- all started at 16:26 with no cumulative CPU time (START, TIME)
- started by the command **/usr/sbin/httpd -k restart** (COMMAND)

2.3. By executing ps axl | egrep “httpd | PPID" find the process ID of the parent httpd process



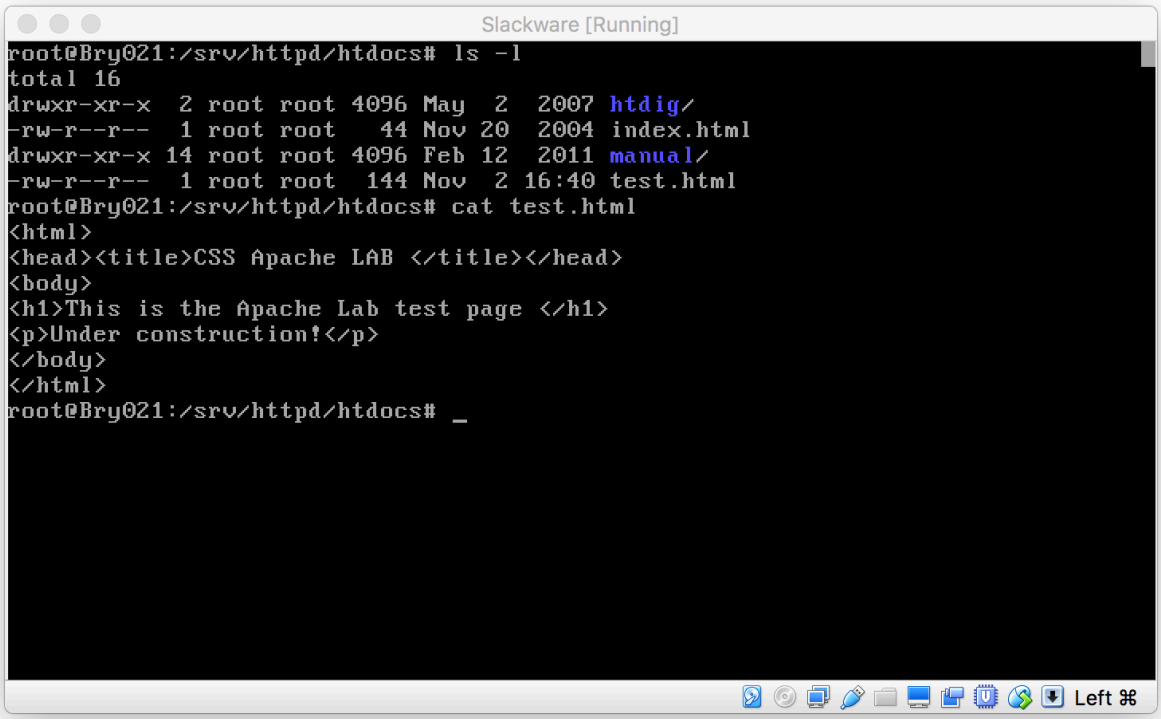
The columns PID and PPID (Parent PID) are shown in this exercise. The process 2073 is the parent (PPID) and is also a session leader (STAT = Ss) for the processes 2074 : 2078.

Exercise 3. Creating HTML files

3.1. What is special about index.htm and index.html files?

3.2. Find out the permissions and file-group ownership of index.html.

3.2. Create a new file called test.html. What do you expect to see if you opened test.html?



Answer 3.1: The file index.html is the common name used for the default page shown if no other page is specified when a visitor requests a site. Besides index.html, there are other default page names that some site uses, including index.htm, default.html or home.html

Answer 3.2: The file index.html belongs the root and has the permissions 644 (see previous screen-shot). That means that only the owner can modify its content. Effectively as we don't want that any user can modify our site.

Answer 3.3: In the file test.html (see previous screenshot) there is a header and a body. The message in the header is going to be displayed on the top of the window. In the body we can write with different styles: <h1> is used for the title and <p> for every paragraph.

Exercise 4. Viewing HTML files

4.1. Explain the difference between CLI and GUI.

A computer that is only using the CLI (command line interface) takes a lot less of the computer's resources than GUI (graphic user interface). Video, mouse and other drivers need to be loaded, taking additional resources.

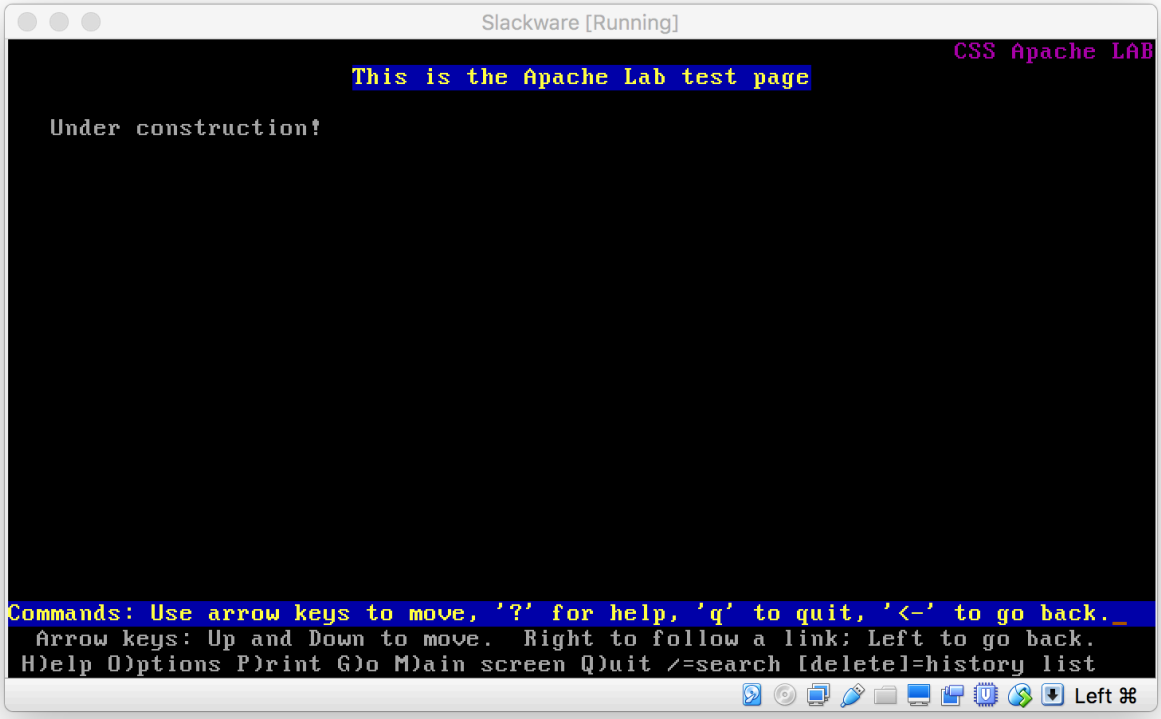
4.2. What is special about the IP address 127.0.0.1?

The address 127.0.0.1 is a loop-back address. The term is generally used to describe methods of routing electronic signals, data streams, or other flows of items, from their originating facility quickly back to the same source entity without intentional processing. This is primarily intended as a means of testing the transmission or transportation infrastructure.

In terms of IP addresses this means that any communications to that address never leave your NIC card so that you always have a connection. This allows you to test client/server systems with both parts running on the same machine.

4.3. View the HTML file in lynx

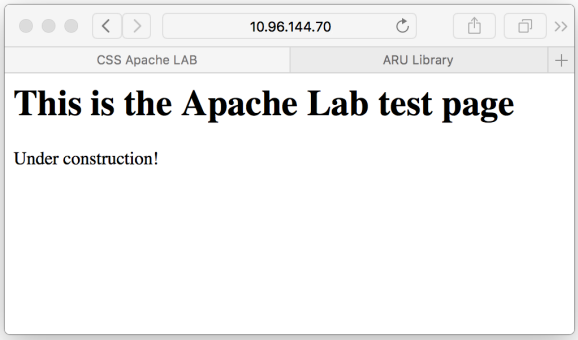
Software testers use lynx to test web pages for accessibility issues. Also some people do not like so many images and flash material on the web pages, they prefer using lynx.



 # lynx localhost/test.html

4.4. Find out the IP address of the VM, then view the file using your host machine by opening a web browser and navigating to http://*replace_with_ip_address* /test.html.

The url accessible by my host machine is http://10.96.144.70/test.html. Notice that VBox/VMWare uses private IP addresses for their guest machines (APIPA protocol).



Exercise 5. Creating PHP files

5.1. What does phpinfo(); do?

If PHP is installed on your server that line of code will print out a heap of detailed information about the configuration of PHP you have available. If it is not installed the page will be returned blank.

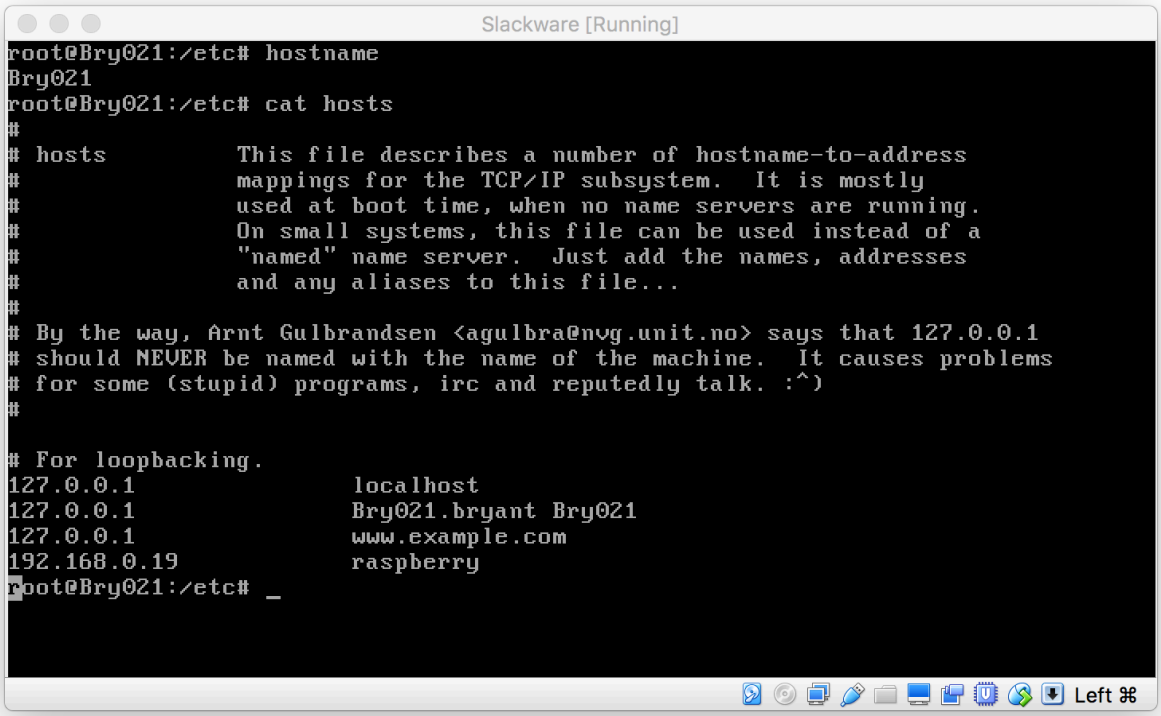
5.2. Load the file in the browser by executing lynx 127.0.0.1/nse.php

The file nse.php just call the function phpinfo()

Exercise 6. Adding an entry to the hosts file.

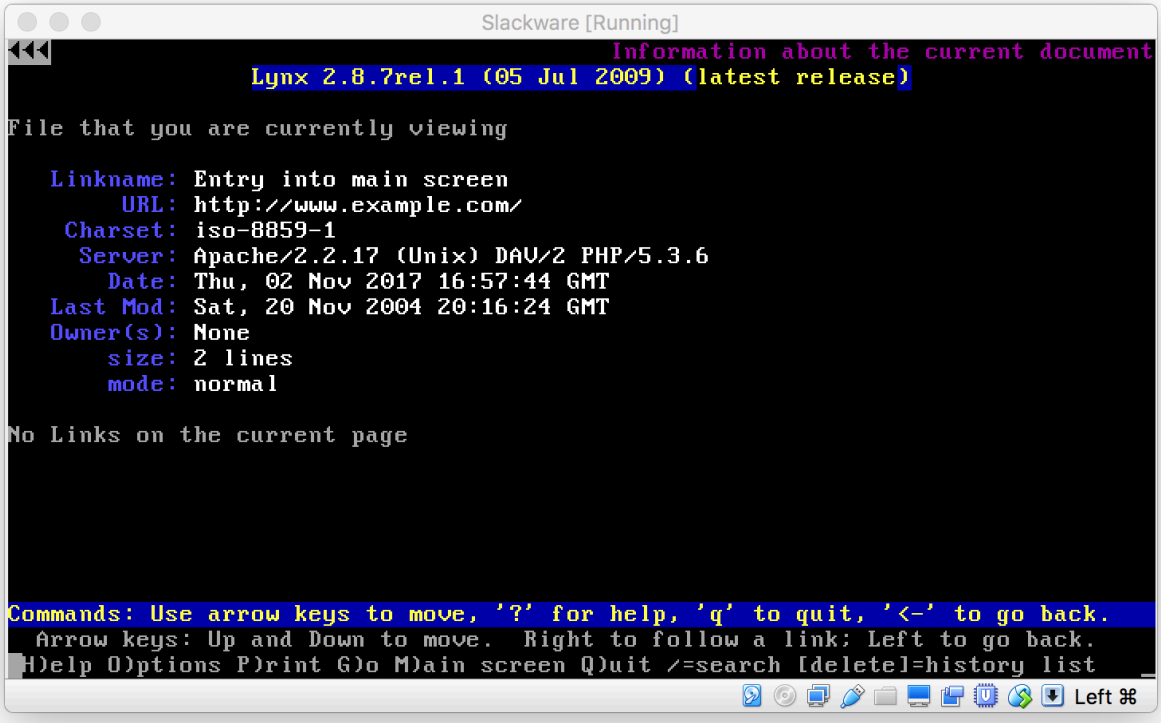
The **hosts** file maps a hostname to an IP address on the local machine. It's static and does nothing to do with the DNS service.

Earlier in the lab, we noted down the default value of **ServerName** from the Apache configuration file (www.example.com).



lynx **www.example.com**

Does it work? Press the [=] button and take a screenshot.



Exercise .7. Optional

1. You now have both an index.html file and an index.php file in the same directory. Which file will load when you execute the command lynx 127.0.0.1? How can you change this?

2. Apache provides authentication and authorisation capabilities, The following steps will enable the **DocumentRoot** directory to be password-protected using username **user** and password **password**.

- First, we need to create a password file. This will create a file called **.htpasswd** in **/var/www/**. Open and view the file – you should see an entry for user **user** with an encrypted pass- word.

- Open **httpd.conf**, find the line: <Directory "/srv/httpd/htdocs">

- Save the file, restart httpd and execute the command lynx 127.0.0.1