

# Lab1. Introduction to Linux

## environment

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## Objectives :

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After completing this lab, the student should be able to:

- Log into and use a Linux system
- Learn the Linux command basic structure
- Use basic Linux commands to get familiar with the Linux environment
- Get help information on Linux commands
- Identify some important Linux Files

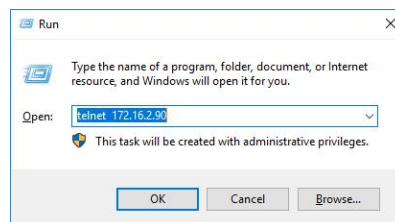


six hundred Linux distributions exist

## Logging in to Linux

Open the start menu from Windows

Type the following command in the search field: (*telnet 172.16.2.90*)



This should provide you with a terminal where you can enter your login name and password to access the Linux system. At the terminal prompt ( e.g. `[username@localhost ~]$` ) you can type your commands to interact with the system.

# Telnet

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Telnet is **a client-server protocol** based on character-oriented data exchange over **TCP connections**. Telnet enables remote control of computers **via text-based inputs and outputs**. For this reason, a client-server connection is established as a default via the TCP protocol and **port 23**, where the remote-controlled device acts as a server and waits for commands.

## Steps for installation on new system at home

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1. download last version of **VMware workstation (15 pro.)** or **VirtualBox** .( according to your windows version 32bit or 64 bit)
2. install **VMware workstation 15 pro**
3. download last version of ubuntu OS 19.04 (Last VERSION) .( according to your windows version 32bit or 64 bit)
4. From inside **VMware** workstation create a new virtual machine.

Follow the YouTube link

(<https://www.youtube.com/watch?v=QbmRXJJKsvs>)

# Steps for installation on new system at home

5. From OS ubuntu (inside Vmware), run the following command (under terminal)

**\$sudo apt install net-tools**

**\$sudo apt install telnetd**

**From windows:**

Active telnet client and server (**you can find it under windows features**) (just click tick )

Restart your machine

Now you can run command **telnet ip address** (192.168.X.X)

**Note ipconfig for windows, ifconfig for Linux**

## Linux Commands General Format

A Linux command may contain one or more of the following three categories specified in the following order:

**Command Option(s) Argument(s)**

a- Command name ( such as ls, cp, or finger )

**Type the command:**

**ls**

**Describe the result?** \_\_\_\_\_

b- Command options which indicate optional preferences on **how you want the command to run**. Those are usually specified using a - followed by a letter to specify the option(s) (e.g. **ls -al** where the ls command has two options **a (all)** and **l (long format)**)

## Continue commands:

Type the command:

`ls -a`

Describe the result now?

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Why did the files get listed in this case and not the previous case (**hint:** notice that all files names newly listed start with a dot (.)?)

Type the command:

`ls -al`

Describe the result?

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## Continue

c- Command Arguments which specify the parameters that you want your command to use while executing ( e.g. `ls -al /etc` where `/etc` is an argument to the `ls` command specifying that you want to list the files in the `/etc` directory).

Type the command:

`ls -al /etc`

Describe the result?

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To be able to display the result one line ( or one page at a time ), you need to filter that result using filtering commands like **more** or **less**.

Type the command:

`ls -al /etc | more.`

Press the space bar to get one page at a time.

Press Enter to get one line at a time.

Press letter 'q' to quit

## Continue

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An option ( as the name specifies ) is not needed to run a command, but arguments may sometimes be necessary to run certain commands (e.g. cp, rm, ...)

**Type the command:**

**cp**

**What happened?**

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Now type it with a source and destination file names (i.e. **cp srcfile destfile**).  
**What happened?** (Note: you can simply create a **srcfile** by running the following command before the **cp** command is run: **touch srcfile** ).

## Getting Familiar with Linux Environment

Try the following commands to familiarize yourself with Linux:

1- **who** (displays information about who is logged in to the system at this time)\_\_\_

2- **finger username** ( you may select any user name from the who command output)

**finger guest1**

try finger command without argument /user name

**What is displayed? How do you think the system knows all that information?**

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3- **finger**

4- **w** ( displays **what (w)** the users are doing on the system)

\*\*To be able to communicate with another user try the command:

**5- write username**

**Type your message**

**Type ctrl-d to stop and exit (What is the disruption from this command? )**

## Cont..

Such commands as [write and talk](#) may be **distracting** for users on the receiving end. Linux gives the user the ability to allow or deny such commands from disrupting his/her work.

To do this a user uses the **mesg** command as follows:

**mesg n** ( prevents others from sending messages using commands like write)

**mesg y** ( allows other users to send messages)

**mesg** (displays whether messages are allowed (y=yes) or denied (n=no))

## Help on Commands

There are several methods to get help on a Linux system. One of the most useful is the man (manual) pages. To get detailed information about a command type:

**man command name ( e.g. man ls)**

This will provide you with information on the syntax of the command and a short description. It will also present the different options that may be used with that command. **The man command uses the less command** (similar to the more command) for displaying information. This means you can use the space-bar (one page at a time), Enter (one line at a time), and q (quit) to browse the given information.

## Command Cont...

The man pages are divided [into sections](#). Each section gives information about the command in a different context as shown below:

### Try the command:

#### man passwd

Gives information about **passwd** as a command ( section 1 of the man pages) used to change your password. **Read through it and use it to set a new password to your account.**

Did it work? \_\_\_\_\_.

### Try the command:

**man 5 passwd** ( 5 is section 5 of the man pages)

This will give you information about **passwd** as a file on the system.

When you browse through the man pages of any command make sure you check out the section which provides you with the names of related commands to the one your exploring.

The names of the commands are usually specified as:

command name(section number) (e.g. **passwd(5)** - meaning **passwd** in section 5 of the man pages)

## Using the man pages do the following:

1- Find what the command **du (disk usage)** is used for with the options **-h** and **-s**;

**du command:** \_\_\_\_\_.

**-h:** \_\_\_\_\_.

**-s:** \_\_\_\_\_.

2- What is the **clear** and **history** commands used for? Try it.

\_\_\_\_\_.

3- List any two new commands that you haven't seen before and find out what they do. Hint: check the directories **/usr/bin** and **/usr/sbin**.

**Command 1:** \_\_\_\_\_.

Function of command: \_\_\_\_\_.

**Command 2:** \_\_\_\_\_.

Function of command: \_\_\_\_\_.

\_\_\_\_\_.



# Important Linux Files

There are two important Linux files that contain information regarding user and group data. The first is **/etc/passwd** and the second is **/etc/group**.

**/etc/passwd file:**

**Type the command:**

**more /etc/passwd**

( hit the space bar until you see a line that starts with your user name )

The line will be similar to something like:

**u1112233:x:520:66:Ahmad\_Hamdan:/home/students/comp311/u1112233:/bin/bash**  
*use the man pages ( section 5 for passwd to see what the fields in this line represent).*

**u1112233:**\_\_\_\_\_.

**x:**\_\_\_\_\_.

**520:**\_\_\_\_\_.

**66:**\_\_\_\_\_.

**Ahmad\_Hamdan:**\_\_\_\_\_.

**/home/students/comp311/u1112233:**\_\_\_\_\_.

**/bin/bash:**\_\_\_\_\_.

## /etc/group file:

**Type the command:**

**more /etc/group**

You will find lines similar to the following:

**students:x:66:ahmad,u123456**

*Use the man pages ( section 5 for group to see what the fields in this line represent)*

**students:**\_\_\_\_\_.

**x:**\_\_\_\_\_.

**66:**\_\_\_\_\_.

**Ahmad,u123456:**\_\_\_\_\_.

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**Home Work:**

**Try to under stand the following commands (try to use different options)**

**1-useradd , -e,-s,-g, (these are root permissions)**

**2-userdel , -f,-r (these are root permissions)**

