

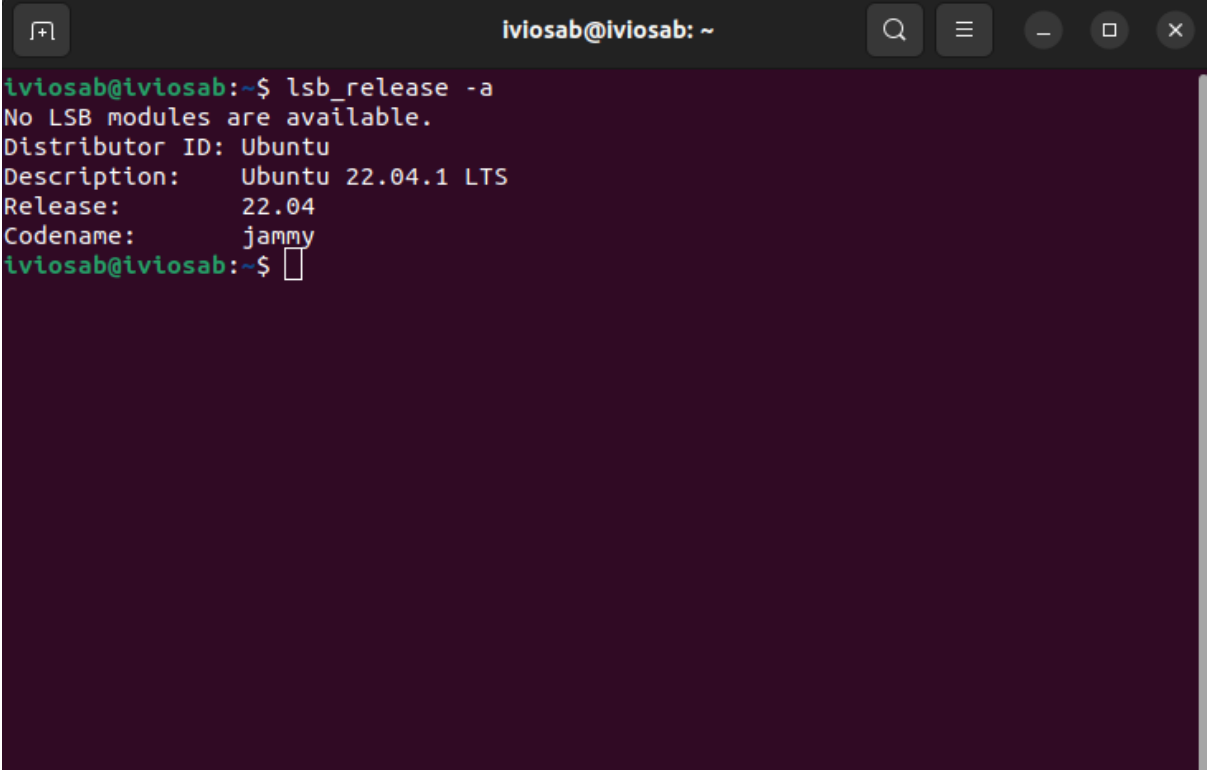
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**Group: B20-SD-01**

**Lab 1: Introduction to Linux**

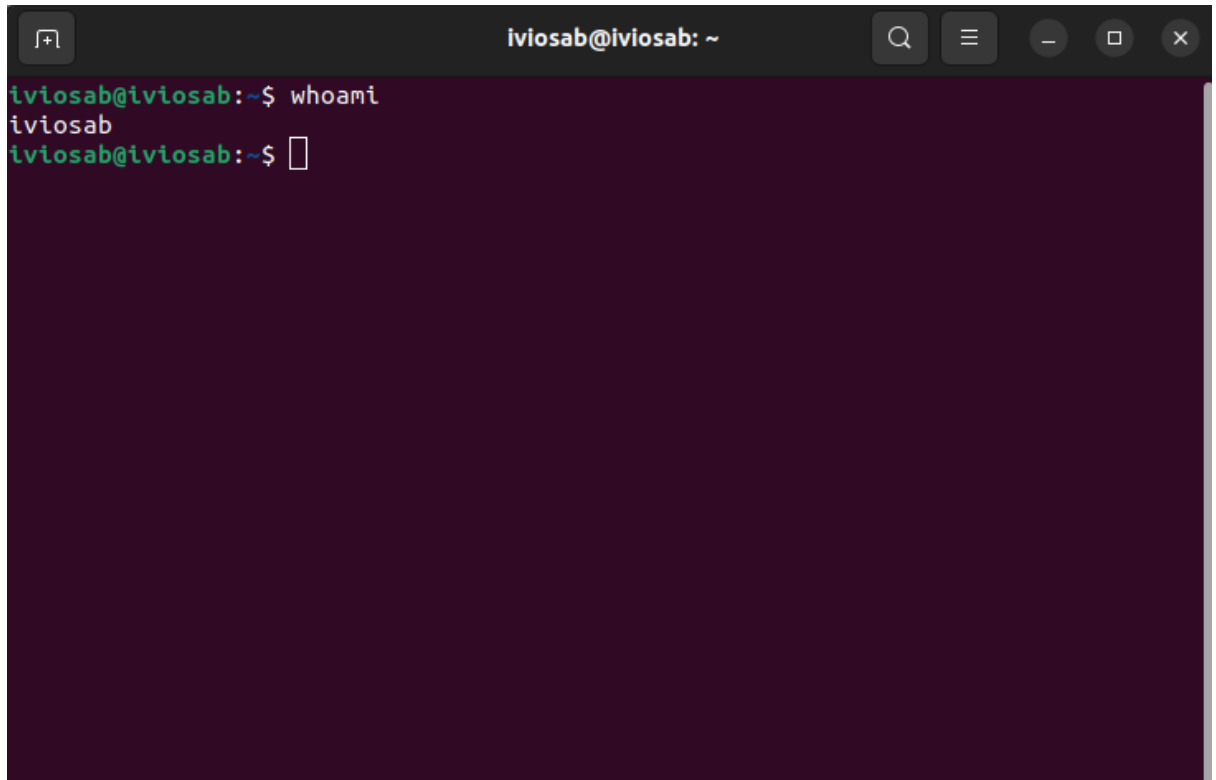
**Exercise 1 - Finding your way around Linux**

- Check the distribution of Linux you have just installed



```
ivosab@ivosab: ~  
ivosab@ivosab:~$ lsb_release -a  
No LSB modules are available.  
Distributor ID: Ubuntu  
Description:    Ubuntu 22.04.1 LTS  
Release:        22.04  
Codename:       jammy  
ivosab@ivosab:~$
```

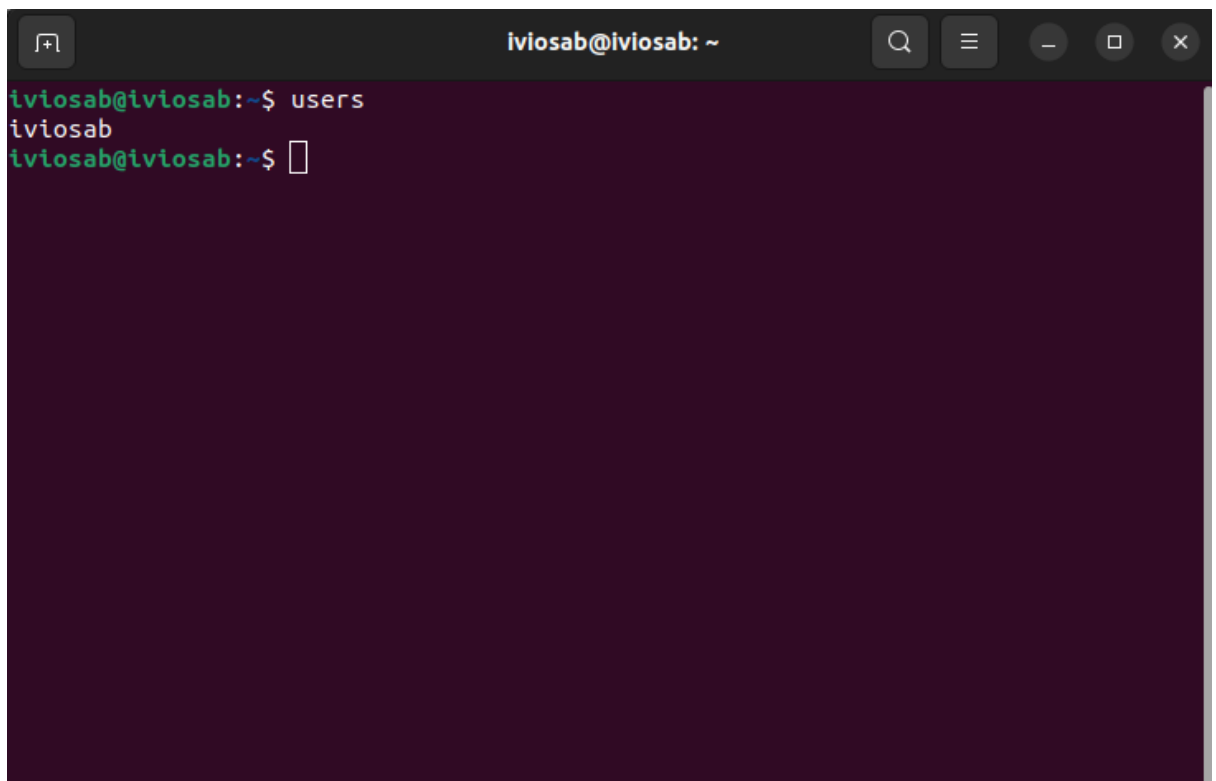
- Check the username of the user who is currently logged on to the local system



```
ivosab@ivosab: ~  
ivosab@ivosab:~$ whoami  
ivosab  
ivosab@ivosab:~$
```

A terminal window titled 'ivosab@ivosab: ~' with standard window controls. The command 'whoami' is entered and executed, returning the output 'ivosab'.

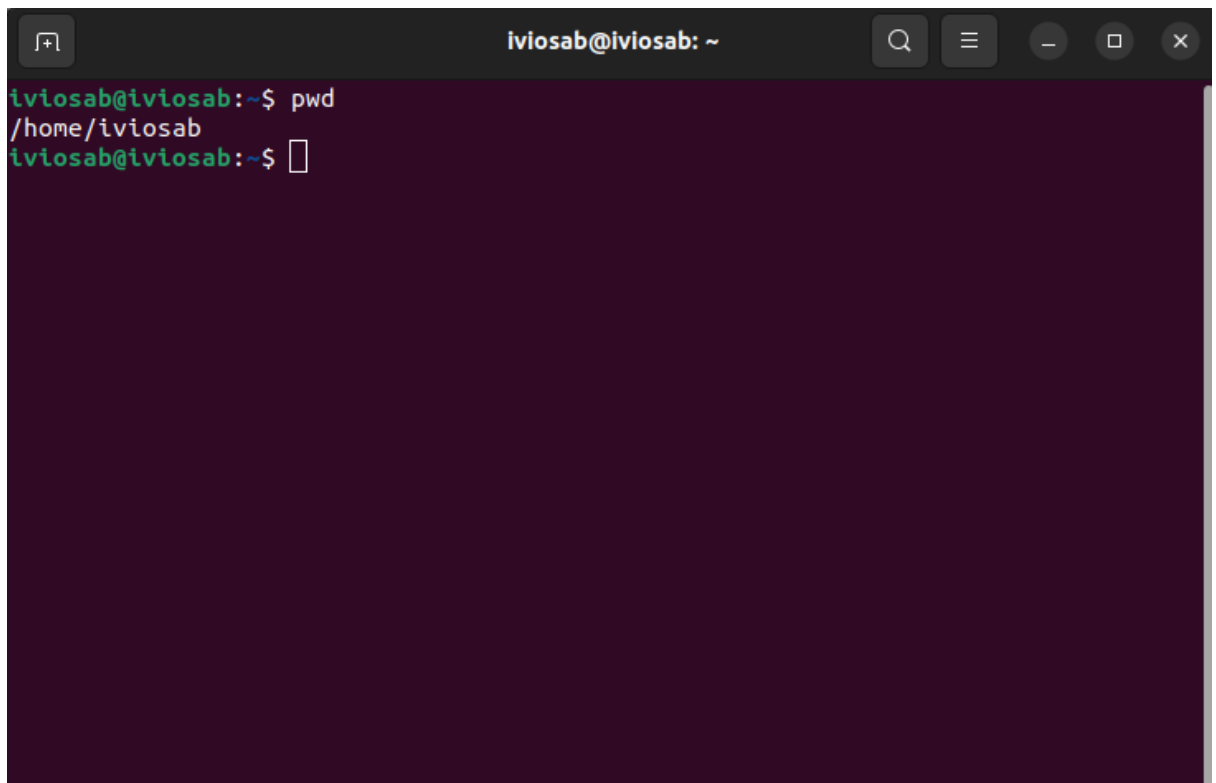
- View all currently logged in users



```
ivosab@ivosab: ~  
ivosab@ivosab:~$ users  
ivosab  
ivosab@ivosab:~$
```

A terminal window titled 'ivosab@ivosab: ~' with standard window controls. The command 'users' is entered and executed, returning the output 'ivosab'.

- View the content of your current working directory



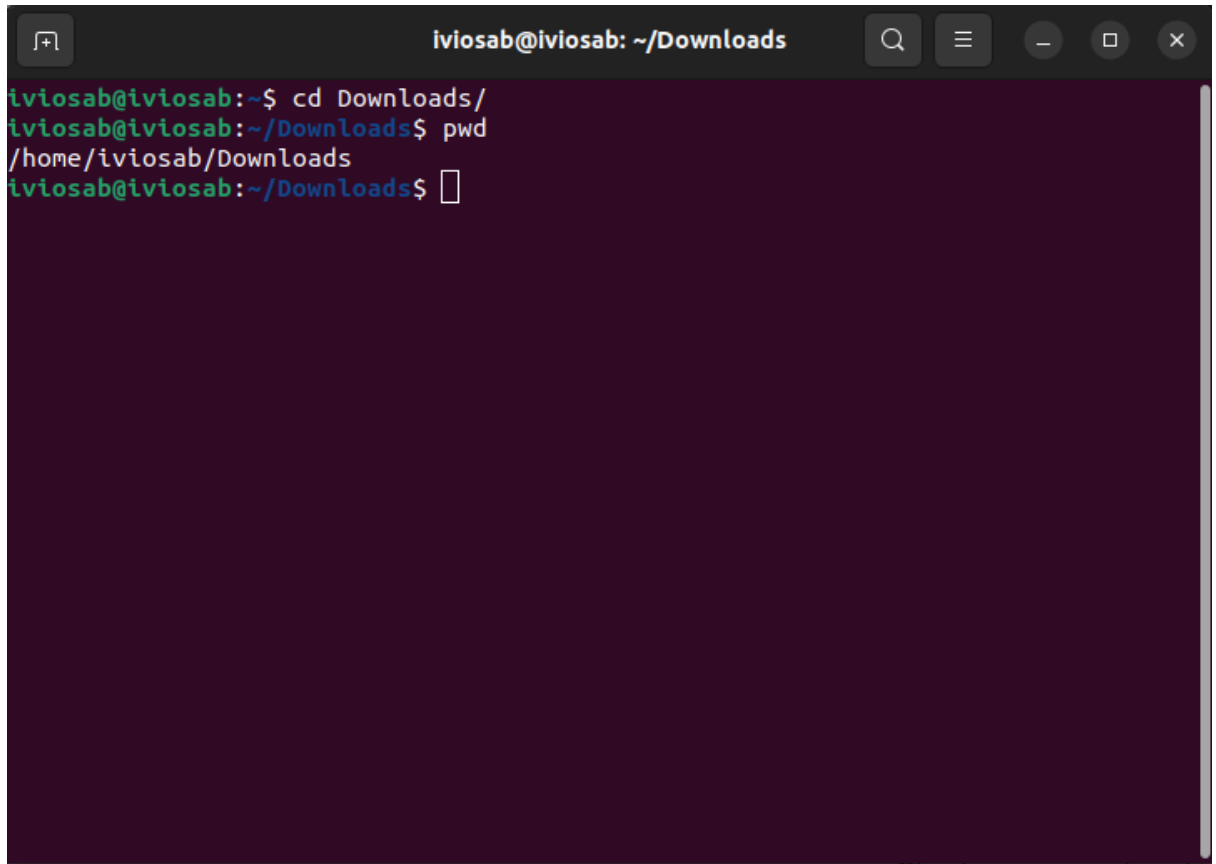
```
ivosab@ivosab: ~  
ivosab@ivosab:~$ pwd  
/home/ivosab  
ivosab@ivosab:~$
```

A terminal window with a dark background. The title bar shows 'ivosab@ivosab: ~' and standard window controls. The terminal text shows the user running 'pwd' and receiving the output '/home/ivosab'.

- List the content of your current directory

```
ivosab@ivosab: ~  
ivosab@ivosab:~$ la -la  
total 164  
drwxr-x--- 29 iviosab iviosab 4096 авг 31 13:29 .  
drwxr-xr-x  3 root    root    4096 июл  3 01:11 ..  
-rw-rw-r--  1 iviosab iviosab  104 июл 16 00:42 .appport-ignore.xml  
-rw-----  1 iviosab iviosab 13340 сен  3 18:00 .bash_history  
-rw-r--r--  1 iviosab iviosab  220 июл  3 01:11 .bash_logout  
-rw-r--r--  1 iviosab iviosab  3968 июл  3 02:09 .bashrc  
drwx----- 31 iviosab iviosab 4096 сен  4 15:49 .cache  
drwxrwxr-x  3 iviosab iviosab 4096 июл  4 08:30 CLionProjects  
drwx----- 27 iviosab iviosab 4096 сен  4 15:49 .config  
drwxr-xr-x  3 iviosab iviosab 4096 сен  3 01:43 Desktop  
drwxr-xr-x  2 iviosab iviosab 4096 июл  3 01:18 Documents  
drwxr-xr-x  9 iviosab iviosab 4096 сен  4 20:46 Downloads  
drwxr-xr-x  2 iviosab iviosab 4096 июл  3 01:24 .fontconfig  
-rw-rw-r--  1 iviosab iviosab   52 июл  3 02:16 .gitconfig  
drwx-----  2 iviosab iviosab 4096 авг 29 11:08 .gnupg  
drwxrwxr-x  3 iviosab iviosab 4096 авг 29 22:17 .ipython  
drwxrwxr-x  4 iviosab iviosab 4096 июл  4 08:28 .java  
-rw-----  1 iviosab iviosab   20 авг 29 20:26 .lessht  
drwx-----  5 iviosab iviosab 4096 авг 12 08:03 .local  
drwx-----  3 iviosab iviosab 4096 июл 20 03:46 .mozilla  
drwxr-xr-x  2 iviosab iviosab 4096 июл  3 01:18 Music  
drwxrwxr-x  5 iviosab iviosab 4096 июл 15 23:49 .npm  
drwxrwxr-x  5 iviosab iviosab 4096 июл  3 02:10 .nvm  
drwxr-xr-x  3 iviosab iviosab 4096 июл  4 08:59 Pictures  
drwx-----  3 iviosab iviosab 4096 июл  3 01:33 .pki  
drwxrwxr-x  3 iviosab iviosab 4096 авг  5 21:54 Postman  
-rw-r--r--  1 iviosab iviosab   807 июл  3 01:11 .profile  
drwxr-xr-x  2 iviosab iviosab 4096 июл  3 01:18 Public  
-rw-----  1 iviosab iviosab   19 авг 31 13:29 .python_history  
drwxrwxr-x  2 iviosab iviosab 4096 авг 30 12:14 seaborn-data  
drwx-----  7 iviosab iviosab 4096 июл  4 08:28 snap  
drwx-----  2 iviosab iviosab 4096 июл  3 01:25 .ssh  
-rw-r--r--  1 iviosab iviosab    0 июл  3 01:32 .sudo_as_admin_successful  
drwxr-xr-x  2 iviosab iviosab 4096 июл  3 01:18 Templates  
drwx-----  6 iviosab iviosab 4096 июл 20 03:46 .thunderbird  
drwxr-xr-x  2 iviosab iviosab 4096 июл  3 01:18 Videos  
-rw-----  1 iviosab iviosab 1681 июл 28 20:13 .viminfo  
drwxrwxr-x  3 iviosab iviosab 4096 июл  4 07:30 .vscode  
drwx-----  7 iviosab iviosab 4096 сен  4 15:43 .zoom  
ivosab@ivosab:~$
```

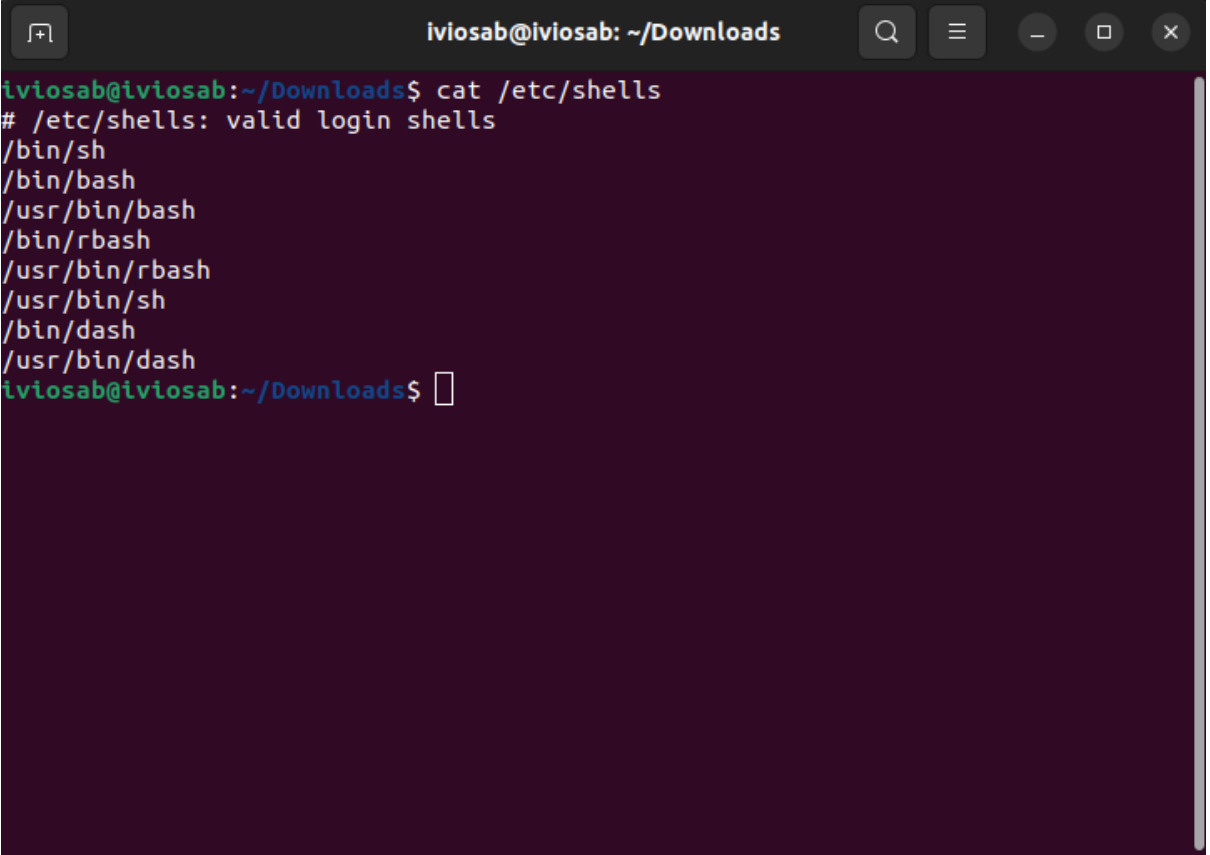
- Navigate to another directory
- Check your current working directory again.



```
ivosab@ivosab: ~/Downloads
ivosab@ivosab:~$ cd Downloads/
ivosab@ivosab:~/Downloads$ pwd
/home/ivosab/Downloads
ivosab@ivosab:~/Downloads$
```

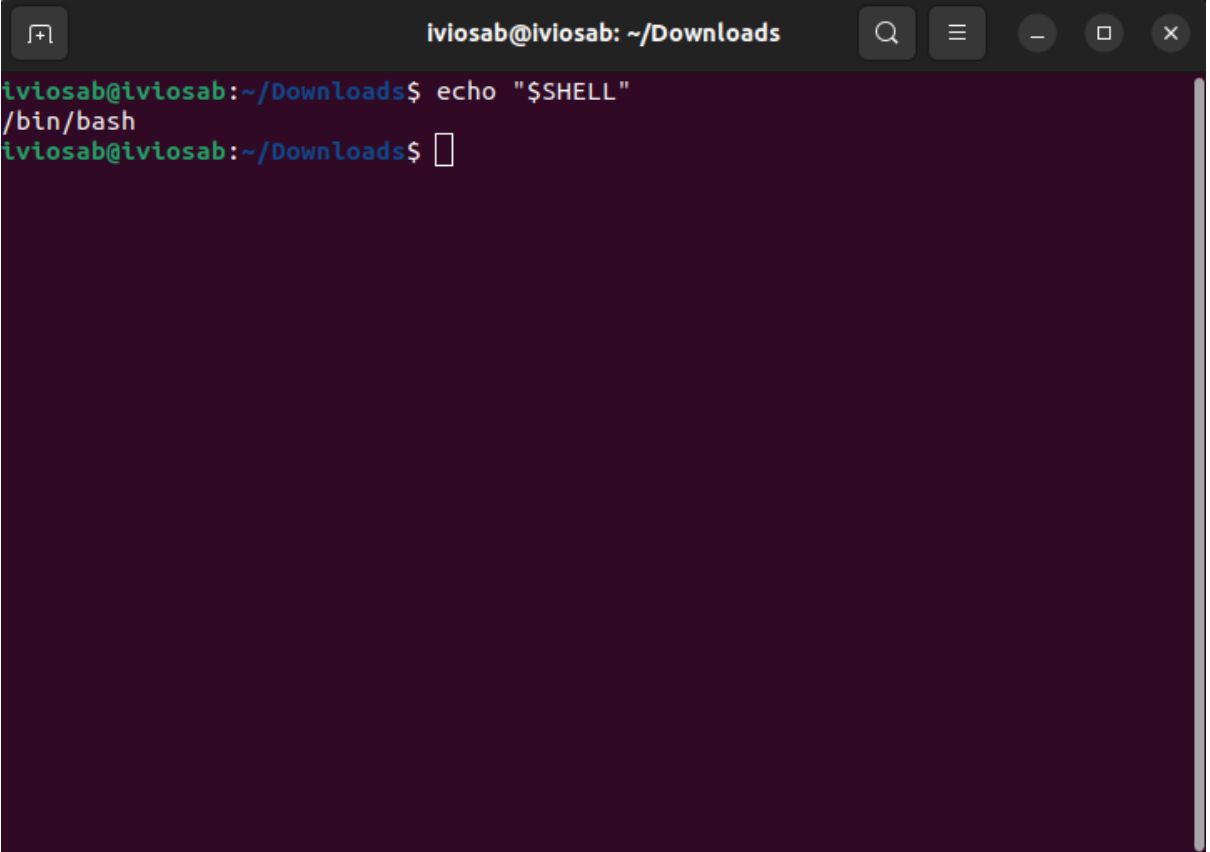
The image shows a terminal window with a dark background. The title bar at the top reads "ivosab@ivosab: ~/Downloads". The terminal content shows a sequence of commands: first, "cd Downloads/" is entered, changing the current directory. Then, "pwd" is entered, and the output is "/home/ivosab/Downloads". The prompt returns to "ivosab@ivosab:~/Downloads\$".

- View all shells installed on the machine



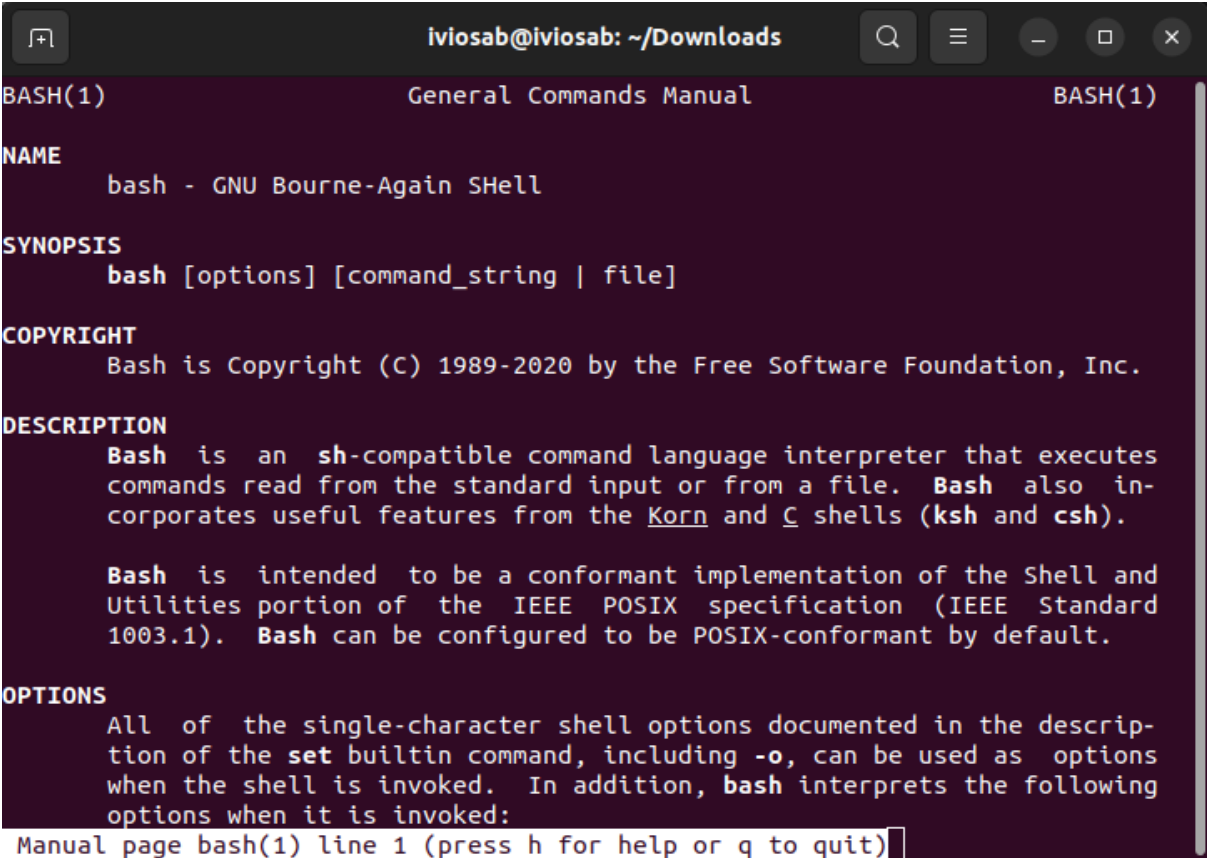
```
ivosab@ivosab: ~/Downloads
ivosab@ivosab:~/Downloads$ cat /etc/shells
# /etc/shells: valid login shells
/bin/sh
/bin/bash
/usr/bin/bash
/bin/rbash
/usr/bin/rbash
/usr/bin/sh
/bin/dash
/usr/bin/dash
ivosab@ivosab:~/Downloads$
```

- View the shell you are currently using



```
ivosab@ivosab: ~/Downloads
ivosab@ivosab:~/Downloads$ echo "$SHELL"
/bin/bash
ivosab@ivosab:~/Downloads$
```

- Learn to read manuals with the man command. Read the manual of the bash shell.



```
ivosab@ivosab: ~/Downloads
BASH(1)                                General Commands Manual                                BASH(1)

NAME
    bash - GNU Bourne-Again SHell

SYNOPSIS
    bash [options] [command_string | file]

COPYRIGHT
    Bash is Copyright (C) 1989-2020 by the Free Software Foundation, Inc.

DESCRIPTION
    Bash is an sh-compatible command language interpreter that executes
    commands read from the standard input or from a file. Bash also in-
    corporates useful features from the Korn and C shells (ksh and csh).

    Bash is intended to be a conformant implementation of the Shell and
    Utilities portion of the IEEE POSIX specification (IEEE Standard
    1003.1). Bash can be configured to be POSIX-conformant by default.

OPTIONS
    All of the single-character shell options documented in the descrip-
    tion of the set builtin command, including -o, can be used as options
    when the shell is invoked. In addition, bash interprets the following
    options when it is invoked:

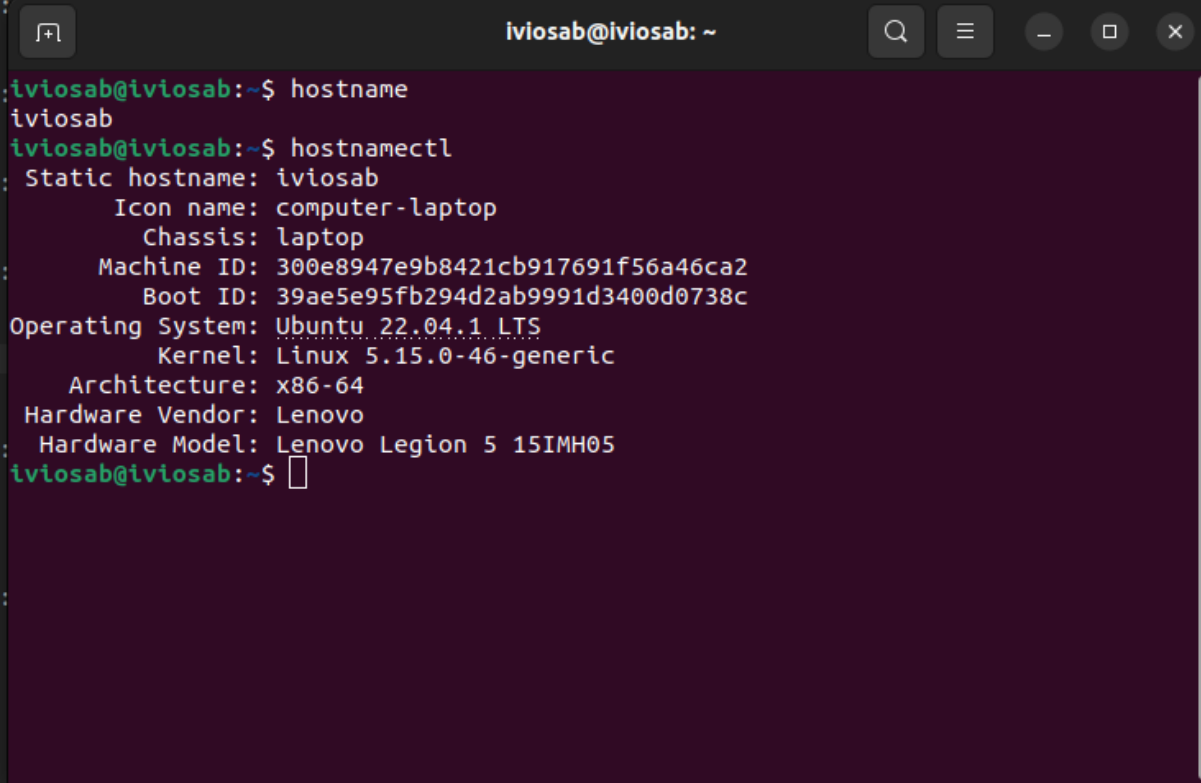
Manual page bash(1) line 1 (press h for help or q to quit)
```

## Questions to answer

**Q1:** What is your machine hostname? How did you check it?

**Answer:**

ivosab, by using "hostname" command or "hostnamectl" for more information other than only the hostname



```
ivosab@ivosab: ~  
ivosab@ivosab:~$ hostname  
ivosab  
ivosab@ivosab:~$ hostnamectl  
Static hostname: ivosab  
Icon name: computer-laptop  
Chassis: laptop  
Machine ID: 300e8947e9b8421cb917691f56a46ca2  
Boot ID: 39ae5e95fb294d2ab9991d3400d0738c  
Operating System: Ubuntu 22.04.1 LTS  
Kernel: Linux 5.15.0-46-generic  
Architecture: x86-64  
Hardware Vendor: Lenovo  
Hardware Model: Lenovo Legion 5 15IMH05  
ivosab@ivosab:~$
```

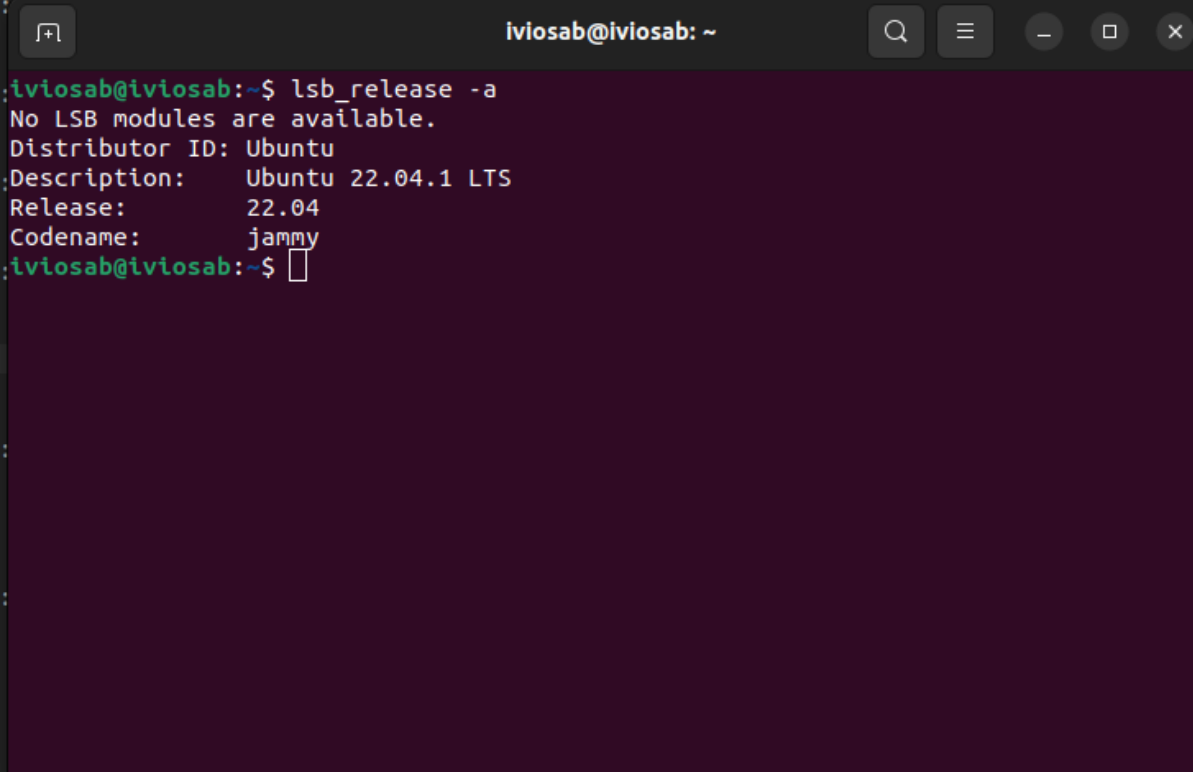


**Q2: What distribution of Linux did you install, and what is the version?**

**Answer:**

Ubuntu, version 22.04

You can view information about the OS with `lsb_release`.



```
ivosab@ivosab: ~  
ivosab@ivosab:~$ lsb_release -a  
No LSB modules are available.  
Distributor ID: Ubuntu  
Description:    Ubuntu 22.04.1 LTS  
Release:        22.04  
Codename:       jammy  
ivosab@ivosab:~$
```

**Q3: What is the root directory on your machine?**

**Answer:**

/root which is represented as / and can be accessed by "cd /". it is the top-most directory in the hierarchy.

A terminal window titled 'ivosab@ivosab: /' with standard window controls. The user performs the following sequence of commands:

- `ivosab@ivosab:~$ ls` → Lists contents of the home directory: `CLionProjects Documents Music Postman seaborn-data Templates Desktop Downloads Pictures Public snap Videos`.
- `ivosab@ivosab:~$ cd ..` → Moves to the parent directory.
- `ivosab@ivosab:/home$ ls` → Lists contents of /home: `ivosab`.
- `ivosab@ivosab:/home$ cd ..` → Moves to the parent directory.
- `ivosab@ivosab:/$ ls` → Lists contents of the root directory: `bin dev lib libx32 mnt root snap sys var boot etc lib32 lost+found opt run srv tmp cdrom home lib64 media proc sbin swapfile usr`.
- `ivosab@ivosab:/$ cd ..` → Attempts to move to the parent of root.
- `ivosab@ivosab:/$ ls` → Lists contents of the root directory again.
- `ivosab@ivosab:/$ cd home/ivosab/` → Moves back to the home directory.
- `ivosab@ivosab:~$ ls` → Lists contents of the home directory again.
- `ivosab@ivosab:~$ cd /` → Moves to the root directory.
- `ivosab@ivosab:/$ ls` → Lists contents of the root directory again.
- `ivosab@ivosab:/$` → The prompt is shown with a cursor.

**Q4: What is the difference between `/bin/bash` and `/bin/sh`?**

**Answer:**

Implementation-wise there are too many differences to name, because bash is essentially a superset of sh.

But basically:

Bash is sh, but with more features and better syntax. While on the other hand sh is just scripting in any shell. On most systems `/bin/sh` is a symbolic link and will not invoke sh.

In ubuntu `/bin/sh` used to link to bash but now it links to another shell called dash.

**Q5: Read the manual for `bash`. List three options and describe what they do.**

**Answer:**

- x Print commands and their arguments as they are executed.
- v Print shell input lines as they are read.
- l Make bash act as if it had been invoked as a login shell. A login shell is one whose first character of argument zero is a -, or one started with the `--login` option.

**Q6: Write five (5) Linux distributions you want to try. Write short notes on their purposes.**

**Answer:**

- 1- mint: it minimizes the learning curve when switching from windows to linux, thanks to its simple ui and ease of use.
- 2- redhat: used for diverse purposes for the development and operation of software and hardware and it is known for its reliability and fast speed
- 3- OpenSUSE: offers a stable environment for its users and works well with almost all of the best Linux desktop apps.
- 4- fedora: it has great graphical tools and useful software for office work
- 5- CentOS: it runs faster than other distros thanks to its lightweight and reliable software

**Q7: What is the POSIX standard?**

**Answer:**

POSIX is a family of standards, used to clarify and make uniform the application programming interface.

The reason behind it is to be able to port programs easily among UNIX derivatives.

**Q8: What are the advantages of the POSIX standard?**

**Answer:**

With POSIX you are not dependent on any one entity to have thought of a comprehensive and robust set of application APIs. The POSIX standard is powerful and feature rich.

Having a rich and well proven set of APIs will speed up development time, which, in turn, reduces engineering costs.

**Q9: Write the differences between Slackware and Debian.**

**Answer:**

The packaging system is pretty much the biggest difference between Debian and Slackware, and is also what makes Debian superior.

It's much easier managing packages with dpkg and apt than the way slackware does it.

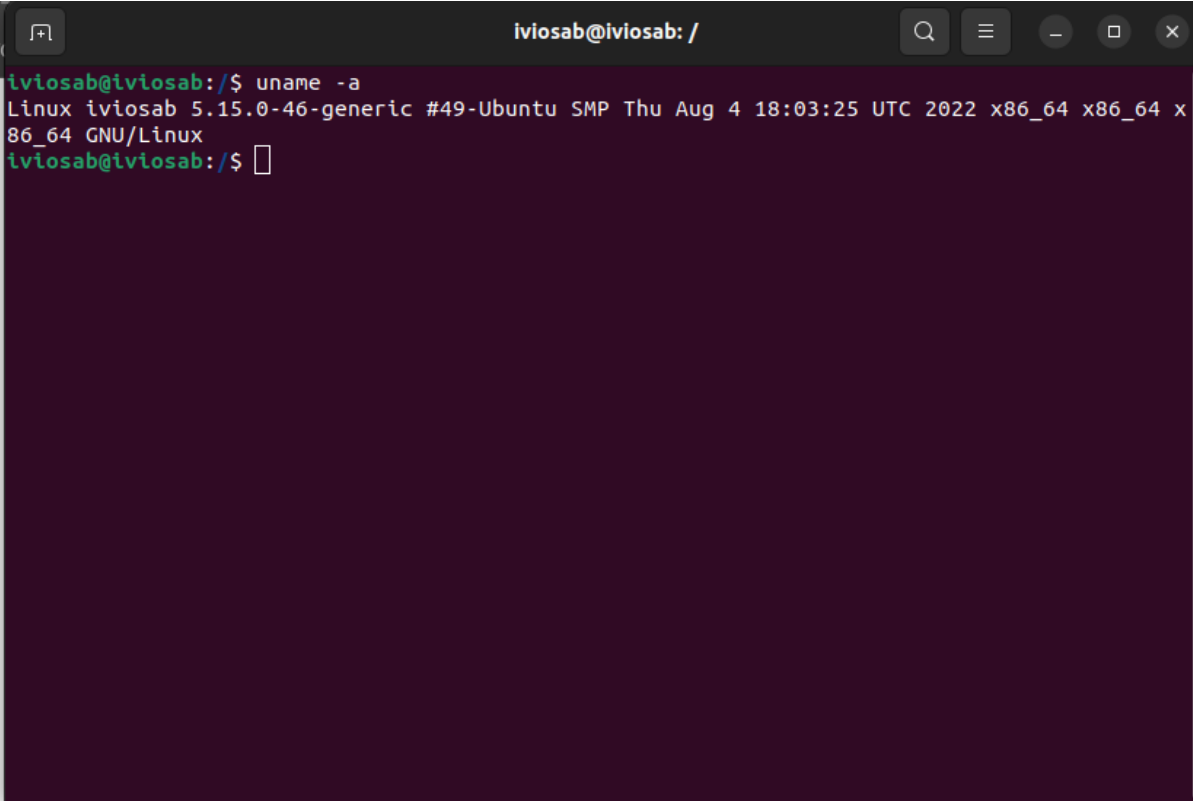
But on the other hand Slackware gives a lot more control to the user.

**Q10: Explain all the details of the output from the command `uname -a`.**

**Answer:**

It displays the operating system name as well as the system node, operating system release, operating system version, hardware name, processor type and hardware platform

**note:** processor type and hardware platform are not portable and omitted if they're unknown.

A terminal window with a dark purple background. The title bar shows 'ivosab@ivosab: /'. The terminal content shows the command 'ivosab@ivosab:/\$ uname -a' and its output: 'Linux ivosab 5.15.0-46-generic #49-Ubuntu SMP Thu Aug 4 18:03:25 UTC 2022 x86\_64 x86\_64 x86\_64 GNU/Linux'. The prompt 'ivosab@ivosab:/\$' is followed by a cursor. At the bottom right, there is a small status bar that says 'man bash'.