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## Activity 1 Linux

## 1 – What Is The Shell?

When we speak of the command line, we are really referring to the *shell*. The shell is a program that takes keyboard commands and passes them to the operating system to carry out. Almost all Linux distributions supply a shell program from the GNU Project called bash. The name “bash” is an acronym for “Bourne Again SHell”, a reference to the fact bash is an enhanced replacement for sh, the original Unix shell program written by Steve Bourne.

### Terminal Emulators

When using a graphical user interface, we need another program called a *terminal emula- tor* to interact with the shell. If we look through our desktop menus, we will probably find one. KDE uses konsole and GNOME uses gnome-terminal, though it's likely called simply “terminal” on our menu. There are a number of other terminal emulators available for Linux, but they all basically do the same thing; give us access to the shell. You will probably develop a preference for one or another based on the number of bells and whistles it has.

### Your First Keystrokes

So let's get started. Launch the terminal emulator! Once it comes up, we should see some- thing like this:

[me@linuxbox ~]$

This is called a *shell prompt* and it will appear whenever the shell is ready to accept in- put. While it may vary in appearance somewhat depending on the distribution, it will usu- ally include your *username@machinename*, followed by the current working directory (more about that in a little bit) and a dollar sign.

If the last character of the prompt is a pound sign (“#”) rather than a dollar sign, the ter- minal session has *superuser* privileges. This means either we are logged in as the root user or we selected a terminal emulator that provides superuser (administrative) privi-

Your First Keystrokes

leges.

Assuming that things are good so far, let's try some typing. Enter some gibberish at the prompt like so:

[me@linuxbox ~]$ **kaekfjaeifj**

Since this command makes no sense, the shell will tell us so and give us another chance:

bash: kaekfjaeifj: command not found [me@linuxbox ~]$

#### Command History

If we press the up-arrow key, we will see that the previous command “kaekfjaeifj” reap- pears after the prompt. This is called *command history*. Most Linux distributions remem- ber the last 500 commands by default. Press the down-arrow key and the previous com- mand disappears.

#### Cursor Movement

Recall the previous command with the up-arrow key again. Now try the left and right-ar- row keys. See how we can position the cursor anywhere on the command line? This makes editing commands easy.

**A Few Words About Mice And Focus**

While the shell is all about the keyboard, you can also use a mouse with your ter- minal emulator. There is a mechanism built into the X Window System (the un- derlying engine that makes the GUI go) that supports a quick copy and paste tech- nique. If you highlight some text by holding down the left mouse button and drag- ging the mouse over it (or double clicking on a word), it is copied into a buffer maintained by X. Pressing the middle mouse button will cause the text to be pasted at the cursor location. Try it.

**Note**: Don't be tempted to use Ctrl-c and Ctrl-v to perform copy and paste inside a terminal window. They don't work. These control codes have different meanings to the shell and were assigned many years before Microsoft Windows.

Your graphical desktop environment (most likely KDE or GNOME), in an effort to behave like Windows, probably has its *focus policy* set to “click to focus.” This means for a window to get focus (become active) you need to click on it. This is contrary to the traditional X behavior of “focus follows mouse” which means that a window gets focus just by passing the mouse over it. The window will not come to the foreground until you click on it but it will be able to receive input. Setting the focus policy to “focus follows mouse” will make the copy and paste technique even more useful. Give it a try if you can (some desktop environments such as Ubuntu's Unity no longer support it). I think if you give it a chance you will pre- fer it. You will find this setting in the configuration program for your window manager.

### Try Some Simple Commands

Now that we have learned to type, let's try a few simple commands. The first one is

date. This command displays the current time and date.

[me@linuxbox ~]$ **date**

Thu Oct 25 13:51:54 EDT 2007

A related command is cal which, by default, displays a calendar of the current month.

|  |  |  |  |
| --- | --- | --- | --- |
|  | October | 2007 |  |
| Su | Mo Tu We | Th Fr | Sa |
|  | 1 2 3 | 4 5 | 6 |
| 7 | 8 9 10 | 11 12 | 13 |
| 14 | 15 16 17 | 18 19 | 20 |
| 21 | 22 23 24 | 25 26 | 27 |
| 28 | 29 30 31 |  |  |

To see the current amount of free space on your disk drives, enter df:

[me@linuxbox ~]$ **cal**

[me@linuxbox ~]$ **df**

Filesystem 1K-blocks

Used Available Use% Mounted on

|  |  |  |
| --- | --- | --- |
| /dev/sda2 | 15115452 | 5012392 9949716 34% / |
| /dev/sda5 | 59631908 | 26545424 30008432 47% /home |
| /dev/sda1 | 147764 | 17370 122765 13% /boot |

Try Some Simple Commands

tmpfs 256856 0 256856 0% /dev/shm

Likewise, to display the amount of free memory, enter the free command.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| [me@linuxbox ~]$ **free** | | | | | | |
|  | total | used | free | shared | buffers | cached |
| Mem: | 513712 | 503976 | 9736 | 0 | 5312 | 122916 |
| -/+ buffers/cache: 375748 137964  Swap: 1052248 104712 947536 | | | | | | |

### Ending A Terminal Session

We can end a terminal session by either closing the terminal emulator window, or by en- tering the exit command at the shell prompt:

[me@linuxbox ~]$ **exit**

**The Console Behind The Curtain**

Even if we have no terminal emulator running, several terminal sessions continue to run behind the graphical desktop. Called *virtual terminals* or *virtual consoles*, these sessions can be accessed on most Linux distributions by pressing Ctrl- Alt-F1 through Ctrl-Alt-F6. When a session is accessed, it presents a login prompt into which we can enter our username and password. To switch from one virtual console to another, press Alt and F1-F6. To return to the graphical desk- top, press Alt-F7.

### Summing Up

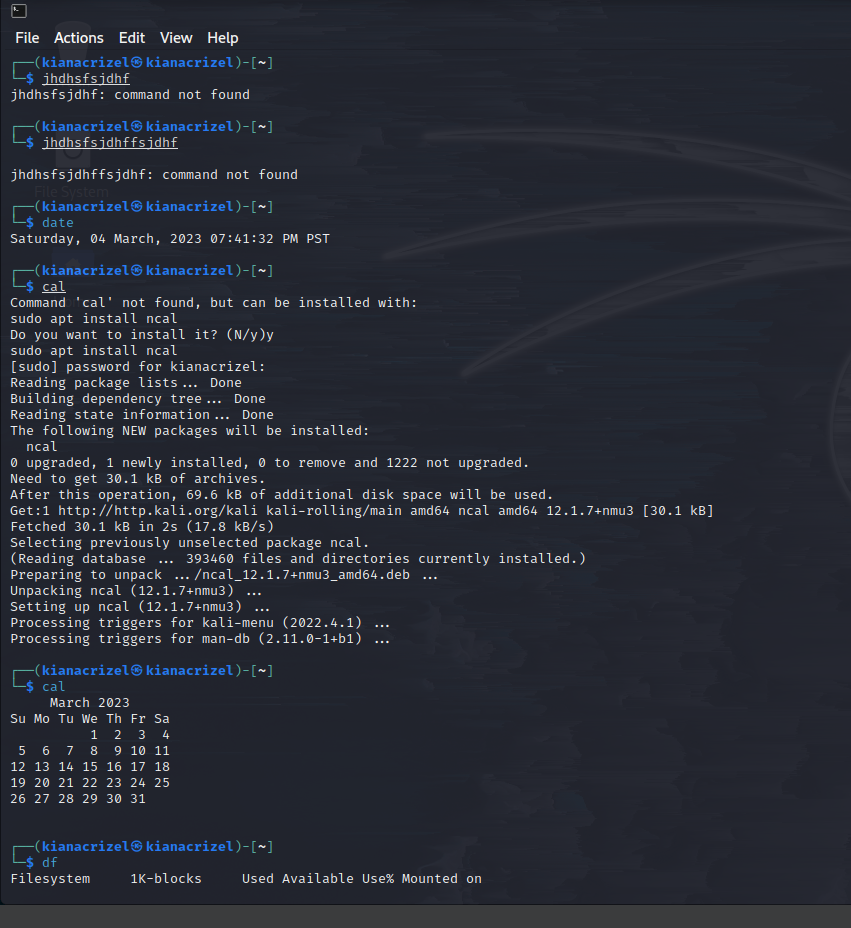
As we begin our journey, we are introduced to the shell and see the command line for the first time and learn how to start and end a terminal session. We also see how to issue some simple commands and perform a little light command line editing. That wasn't so scary was it?

### Further Reading

* To learn more about Steve Bourne, father of the Bourne Shell, see this Wikipedia article:

<http://en.wikipedia.org/wiki/Steve_Bourne>

* Here is an article about the concept of shells in computing: <http://en.wikipedia.org/wiki/Shell_(computing)>



Graphical user interface, text

Description automatically generated