
FLOSS
MANUALS

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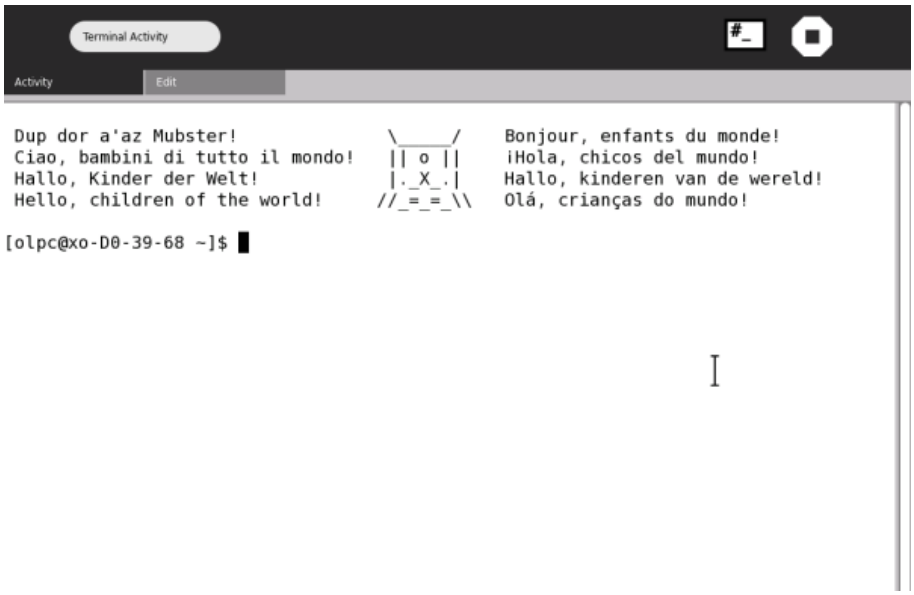
The Terminal

Most modern computers have two very different ways that you can interact with them: the **Graphical User Interface** (**GUI**) and the **Command Line Interface** (**CLI**).

Most users are familiar with GUIs. When you use your mouse to point and click on things, you are using a GUI. It is very likely that you have never used the other type of interface: the CLI. With a CLI, you use text to control functions and software on your computer.

If you really want a fast way to work on your computer to change configurations, install software, or work remotely on another computer, then the command line is often the most efficient way to do it.

A type of CLI is the **Terminal**. In the Sugar world we call this the **Terminal Activity**.



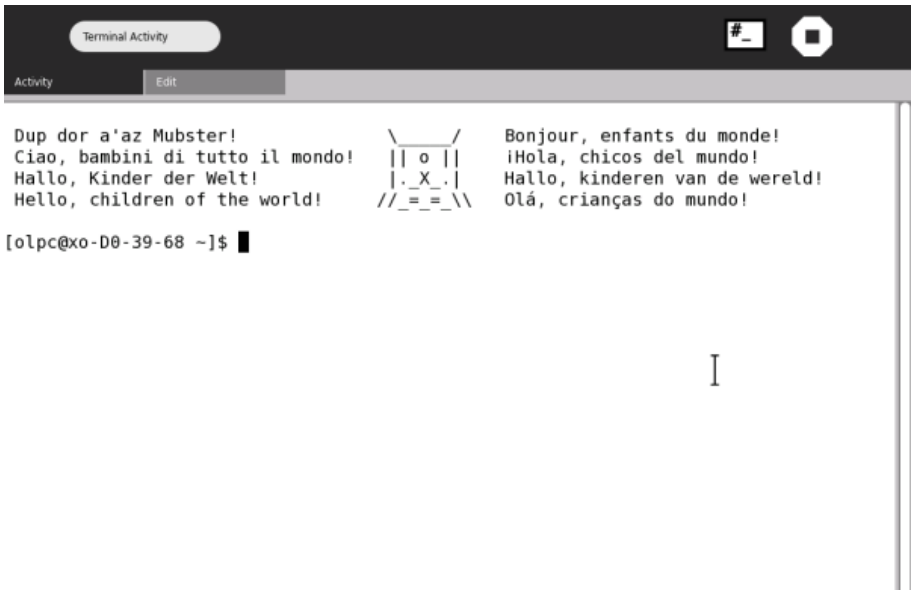
Starting the Terminal

Starting the Terminal Activity is easy and quick. You can do it either from your Home View or from the List View.

Starting from Your Home View

If you have added the **Terminal Activity** to your Home View, then just click on it to start.

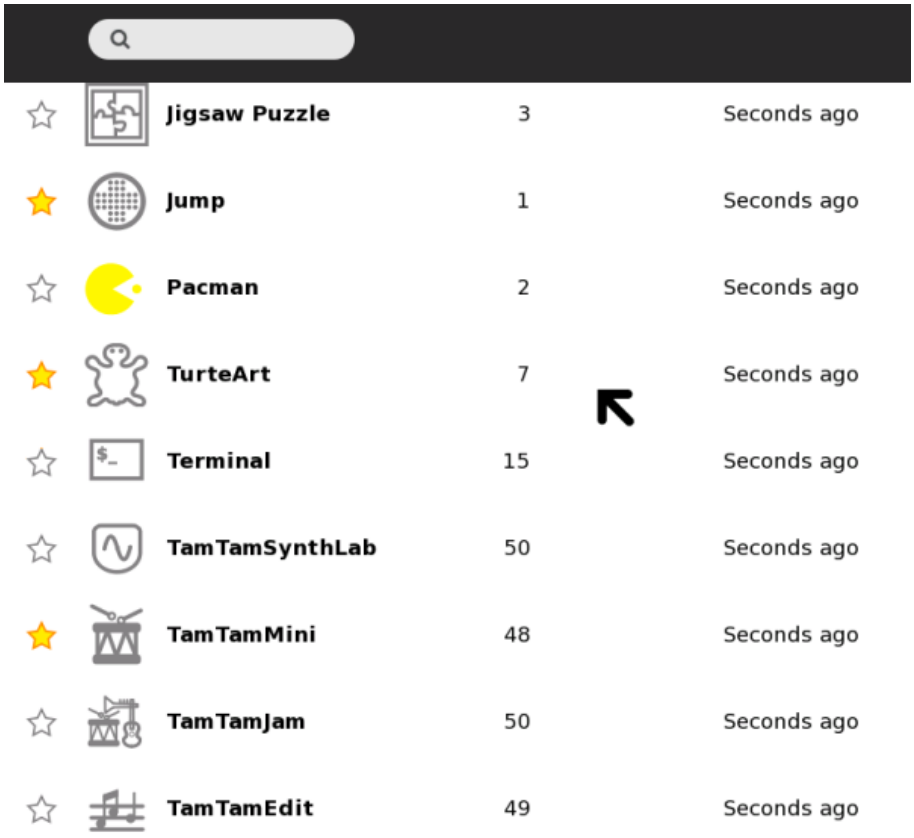
The **terminal** will then open.



Starting from List View

If the terminal is not added to your home page, you must start it from the **List View**. You can access the List View from the Home View by clicking on its icon :

This will show you a list of Activities :

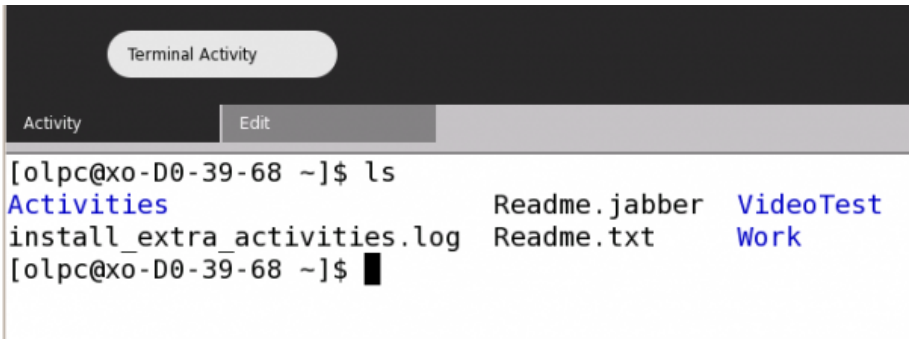


If you scroll down the list (use the scroll bar on the right) you will see the Terminal Activity listed. The colored stars you see mark the Activities that are on your Home View. The colorless stars are Activities that are not on the Home View. You can now either click on the star next to the Terminal Activity to add it to your home page, or you can simply click on the icon and the Terminal Activity will start.

Entering Commands

Using the **Terminal Activity** is quite simple - you just need to type **commands** and press **Enter**. The trick is knowing what to type and the basic structure of a command.

Lets look at entering a simple command into the **terminal** and then we will look at the structure of commands. Open the Terminal Activity and simply type the 'ls' command and press Enter :



You will see something similar to the image above. 'ls' is the command that lists files and directories. So the output of 'ls' is a list of all the files and folders in the directory you are currently in.

Parameters

Next we move on to controlling commands a little bit more by asking them to do more specific actions. We do this by sending more specific requests to the commands - these are known as parameters and they are simply extra information that refine the commands actions.

The 'ls' command has several of these parameters you can use. The 'a' parameter, for example, means list *all* files and folders. To use this parameter we would type this :

```
ls -a
```

In the terminal you would then see something like this :

There are probably a few things you are wondering. Firstly - wasn't the 'ls' command by itself meant to show all files and folders? Well, 'ls' only lists items that are not hidden. If you use the 'a' parameter then you will see all the 'hidden files' as well. Secondly you might wonder how you know what parameters are available for each command. Unfortunately in some installations of Sugar you do not have access to two very nice commands - 'man' and 'info'. These two commands would help a great deal because they are short manuals on all commands installed. The next best thing is to type the name of your command follwed by '--help'. With the 'ls' command we would type this :

```
ls --help
```

and the output would be information about the available parameters. Unfortunately there is often too much information to display and so it scrolls though the terminal window too quickly to read. If this is the case you need to combine the command with a 'more' command like this :

```
ls --help | more
```

In the above example you would have as much information as can be displayed in the terminal window at one time. Then you press the 'space bar' and you will see the next 'page' of information etc.

Basic Commands

The **Terminal Activity** is the most powerful method of interacting with **Sugar**. However if you are not used to it then knowing some basics can help. The best strategy is to start using some simple commands. Don't attempt to do all your work from the command line straight away. Learn a few commands, use them and add to your understanding of what they can do over time.

Below are some basic commands that you could try starting with. Don't try and learn all of these at once. Just choose a few and practice them.

- ls
- cd
- mkdir
- mv
- rm
- ping
- cp
- pwd
- more
- date
- top
- cat

So, lets have a look at each. Feel free to experiment with these commands. Be a little careful as it is possible to do some damage to your computer if you are too casual. If there is a possibility one of the commands can accidentally create havoc then I will make a note to warn you.

ls

the **ls** command is the 'list' command. You can use this to list the contents of any directory you are in. Try typing this command in a terminal window and see what you get. Now, one feature of commands is that you can add various parameters to them. This is quite a simple thing to do, and refines the way you use the command. Usually these parameters are added to the command by typing a ' - ' directly after the command and then the parameter names or abbreviations. For example if I type the following:

```
ls -l
```

Then I am *passing* the **l** parameter to the **ls** command. The **l** parameter is short for 'long list'. This format gives more information than just typing the **ls** command by itself... Try the two out and compare the difference.

You might well ask 'how do I know what the parameters are for each command?' This information can be found by using the help command for 'ls' :

```
ls --help
```

For the **ls** command I suggest you get familiar with the formats using **ls** by itself, as well as **ls -al**, and **ls -l**

cd

cd is the most common command used to navigate the file-system on your computer. **cd** stands for **Change Directory**. Try it out by typing **ls** to get a list of all the files and folders in the directory you are currently in. Now try typing **cd** followed by the name of one of the files in the list, for example if there was a file called 'me.txt' I could type:

```
cd me.txt
```

This will give an error! Why? Because you can't change to a directory if it is a file. It's good to try this so that you understand that you can't do any damage by making a mistake with **cd**. To change to a directory you type **cd** followed by the name of a directory you want to navigate to. If there was a directory called **src** we would type:

```
cd src
```

If that was successful then the terminal won't throw up an error. Try it with a real directory on your computer. If you fail it will be because either you don't have permissions to enter the directory, you misspelled the directory name, or the directory simply doesn't exist.

mkdir

This is the command you used to create a directory and is short for **Make Directory**. To use this, simply type the name of the directory you want to create after the **mkdir** command as so:

```
mkdir bleep
```

The above command will create a directory in the current directory called **bleep**. If a directory with this name already existed, we will get an error but fortunately the computer won't overwrite the existing directory.

pwd

If you get lost and don't know where you are in the file system you can always type **pwd** and it will tell you where you are. p-w-d means 'present-working-directory' - this command gives you the location or *absolute path* of where you are. For example, if I am in my **adam** home directory, the output of the **pwd** command will be:

```
/home/adam
```

Experiment with changing directories with **cd** then typing **pwd** to see where you are.

mv

This command is short for **Move**. It is as it sounds in that **mv** allows you to move files around on the computer. To use **mv** you must first type the command, followed by the file you want to move and then the place where you want to move the file to. For example, if I wanted to move a file "me.txt" from my current directory to the "/usr/bin" directory I would type the following :

```
mv me.txt /usr/bin
```

Note: I don't have to type the filename in the path name where I want to move the file unless I also wish to change the name of the file. If for example while I was moving 'me.txt' I wanted to change the filename to "you.txt" I would type:

```
mv me.txt /usr/bin/you.txt
```

If I just wanted to rename the file and not move it I could use **mv** by typing this:

```
mv me.txt you.txt
```

Note that when you use **mv** you are *moving* the file not copying it. Be a bit careful because you can overwrite files accidentally, if for example I moved one file to an existing file with the same name, then target file wll be overwritten.

rm

rm a command you should be **very** careful about using. **rm** is short for **Remove**, and is the command you use to delete a file or directory. To use this command type **rm** followed by the name of the file you wish to destroy for good. To remove a directory you can use the same command with the parameter **-R** like so:

```
rm –R directoryname
```

Where *directoryname* is the name of the directory you wish to delete. You can also use **rmdir** for this. Be EXTREMELY careful when using these commands, if used unwisely it could be the end of your operating system.

cp

This is short for copy. Use it like **mv** , the only difference is that it leaves the original file where it was while also creating a copy.

ping

Not usually included in the top 10 commands you need to know but its handy if you need to know if you are online. **ping** sends a request to any computer on the net, if that computer gets the request it will respond. Type **ping** followed by a URL that you know, for example it might be a good idea to try the following:

```
ping www.cnn.com
```

If that computer gets the request you will get some information coming back through the terminal... this will keep scrolling so to stop it type **ctrl** and **c**.

If you get no response from ping then you are probably offline. However, some machines online don't answer ping requests for security and other reasons, so make sure you really know that the machine you are pinging does reply to these requests. Some internet connections won't allow ping.

more

more is used if you want to control the overly verbose output of any command to the terminal. If for example, I am in a directory which contains 1000 files and I type **ls** the output of the command won't fit nicely into my little terminal window so it will go scrolling past faster than is useful. To slow it down so I can read the output try this :

```
ls | more
```

If I used this in my 1000 file directory I get one page at a time of output and pressing the **space-bar** shows the next page. Pressing **q** quits more. Ok, so you might be wondering what the funny straight line is in the above command... well, this is known as the **pipe** command.

Pipe allows you to combine commands together to control the kind of output you get, usually its used to refine a command (which is what the command parameters also do). So, when you get really fluent with these commands you can write things that look more like equations but are really efficient ways of using standard commands... **pipe** will be central to enhancing your efficiency.

date

This command tells you the time and date as it is set on your computer.

cat

Cat displays the contents of files in your terminal window. You must type the name of the file you wish to display after 'cat'. For example if I want to see the contents of the file 'README' I would type :

```
cat README
```

If that file is too big to have its contents diaplsyed in the terminal I might use it in combination with the 'more' command like this :

```
cat | more
```

top

The 'top' command tells you what operations on your computer are using memory and your cpu. Its really only useful if you wish to see if there is an Activity or command using slowing down your computer. The output of 'top' will continue running until you press 'q'.

Keyboard Commands

There are several keyboard tricks that are good to know when using the Terminal Activity. These save time and work regardless of the commands you are using.

CTRL L

If you been doing a lot in your terminal and the terminal window is full of text you can press CTRL on the keyboard and 'l' (lower case 'L') simultaneously and the termianl window will be cleared of text leaving you with a nice clear terminal.

CTRL C

If for any reason you are finding that a command you are using seems to be stuck or is taking too long you can use CTRL and 'c' (pressed simultaneously) and this will halt the command. This means your command will be stopped before finishing so make sure you really want to do this before trying it.

TAB Complete

If you want to save some time typing out long commands you can always use the TAB key. This is called 'Tab completion'. If you have partly typed a command try pressing the Tab key. If there are no other commands that start with the same sequence of letters then the complete command will be automatically displayed in the terminal. Try for example typing half of the 'help' command like this :

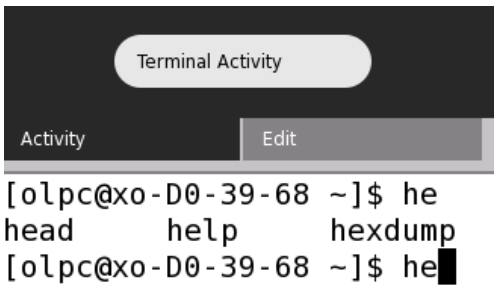
```
hel
```

followed by pressing Tab. You will see the terminal will display 'help'. This is because the terminal 'knows' that there are no other commands starting with 'hel' so it assists you by completing the full command name when you press Tab.

If there is more than one command that starts with the letters you have typed then pressing Tab once will do nothing. Try, for example, typing :

```
he
```

followed by the Tab key. Nothing happens. Now try the same thing but press Tab and quickly follow it by pressing Tab again. In this case you will see all the other commands displayed that start with 'he' like so :



You can now see the other commands starting with these same letters and you can either choose one by typing out the wole command, or you can type some more letters of the command you want and finish it with Tab complete.

File Structure

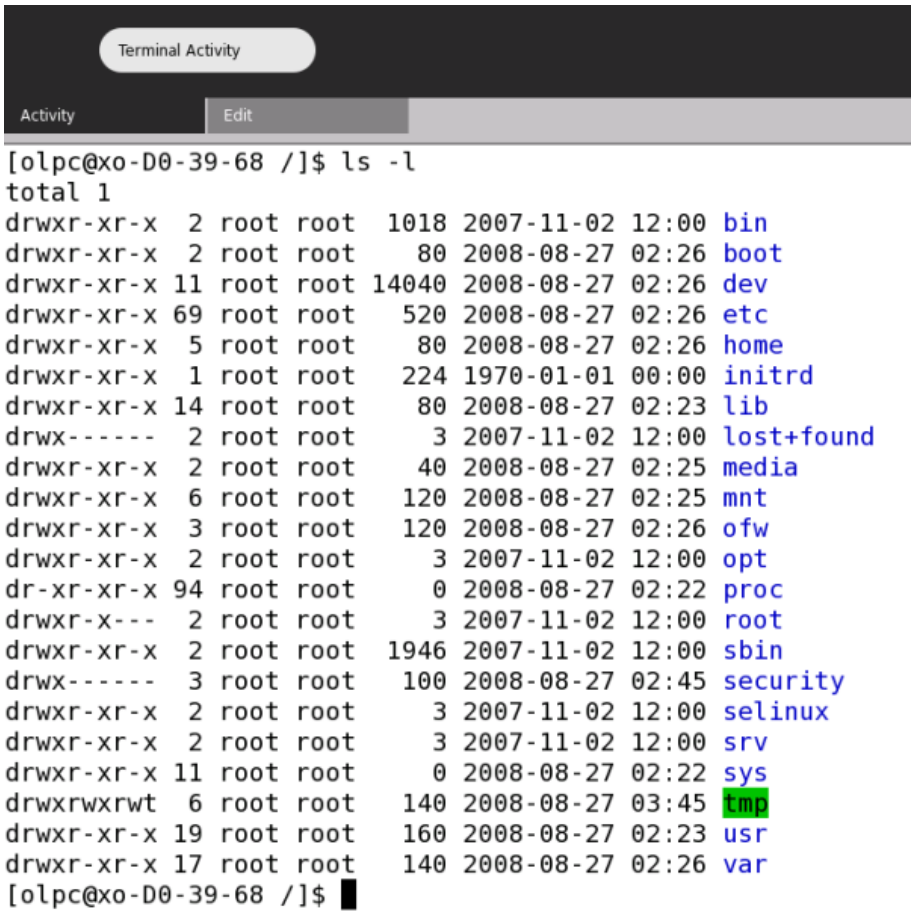
If you open your Terminal Activity and type the following (followed by pressing the 'return' button):

```
cd /
```

You will be placed in the top directory of your computer. If you then type:

```
ls -l
```

You will see something similar to this:



The above listing is what is known as the Sugar File Structure. Each name on the far right represents a directory, and each directory has a specific purpose. The **lib** directory, for example contains code libraries that the software on your system uses. For now you only need to be concerned with one directory: the **home** directory. This directory contains folders that have names corresponding to each user of the machine. If you log in as "adam" for example then you will be logged into a directory in the "home" directory with the same name as your username (i.e., "adam" in this example).

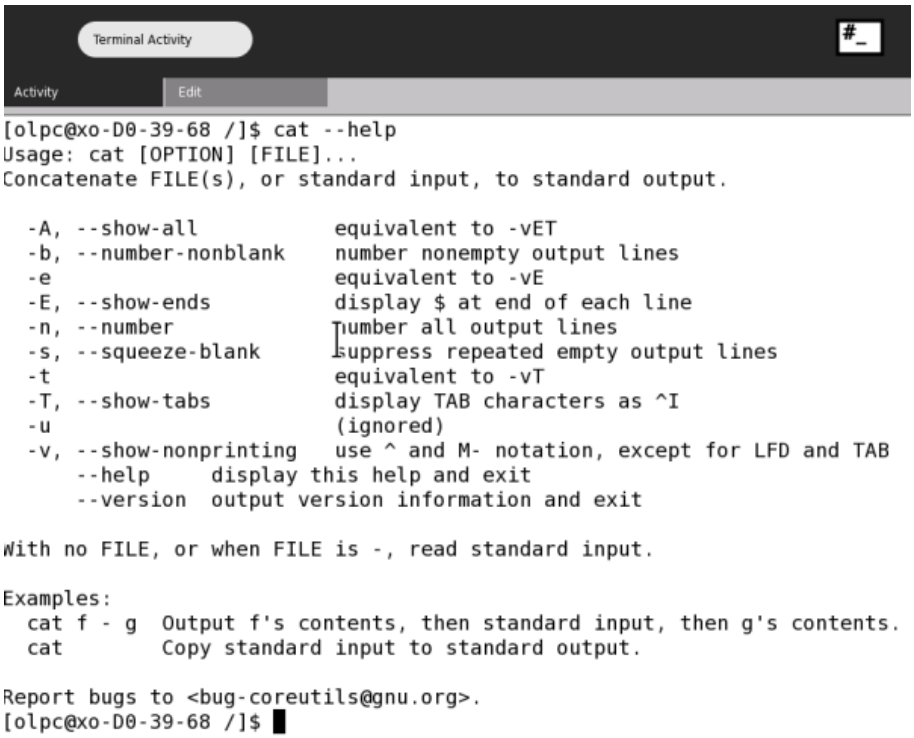
The other important thing to know is taht Sugar is mostly comprised of text files, so you can change almost every part of Sugar - how it looks and works - by just editing the appropriate text file.

Getting Help on Commands

To learn more about a command you can often tyoe the command followed by either '-h' or '--help'. If I wish to learn more about the 'cat' command I would type this :

```
cat --help
```

This would output the following :



The information displayed tells you how to use the'cat' command. At the top you can see that the help displays the basic pattern for using the command. This is noted by the 'Usage: cat [OPTION] [FILE] ...

This means that you should use the command by typing 'cat' and then the parameters you wish to use (OPTION) and then the name of the file you wish 'cat' to perform its operations on.

Then there is a short description of what the command does, in this case it says "Concatenate FILES(s), or standard input to standard output". Sounds a bit mysterious and I am afraid this kind of information is not always very easy to understand. In this case it means that the command can be used to either join ('concatenate') files or output a file referenced in the parameter ('standard input') to the terminal display ('standard output').

Then we have a list of parameters that you can use with the command and a short description of what they do. At the end is two examples of a 'typical' use of 'cat'.

vi

Sugar has a built in text editor that you can use with the **Terminal Activity**. This editor is called **vi** and is used in many other types of **operating system** such as **Linux**. Lets have a quick look at vi : type **vi** in the terminal and you will see something like this:

This is vim running *inside* the terminal. You can use vim as a text editor so that you don't need to open any other Activities to read or write most documents.

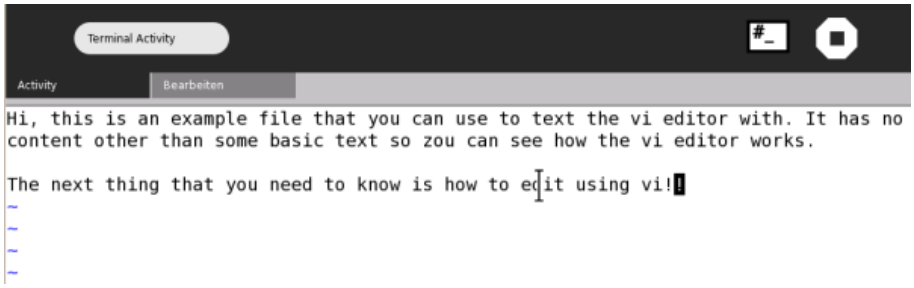
Open a Text File

To open a file with **vi** it is best if you type the name of the file you wish to open after the vi command, so that vim opens with the file already loaded. For example if we wanted to read the text file called "MyExample.txt" in the same directory we are currently working in then just type:

```
vi MyExample.txt
```

Note : If you the type the above and the file 'MyExample.txt' does not exist then vi opens a new (blank) document.

If we assume there is a file called 'MyExample.txt' then the above command will open vi with the file loaded as so:



Simple Commands

Now, I am imagining vi is quite a bit different to any text editor you have used before, so perhaps some explanation is needed. First, since vi works onthe command line there are not menus then you click on to make things happen. Instead you must use the keyboard to type commands that vi will understand. There are many commands you can use to work on the file and most of them are executed by just typing a single letter, or they are in the format:

```
: command
```

Where 'command' is the name of the command you wish to use. The commands are all designated by shortcuts. An 'i' , for example, is short for 'insert'. The following is a table of vi commands you should know:

command	action
i (only used in read-only mode)	insert text
:w (only used in read-only mode)	write changes to file
u (only used in read-only mode)	undo changes
:q (only used in read-only mode)	quit vim

vi always opens a file initially in read-only mode. This means that when you first open the file you cannot change the file. It is in this mode that you type the commands. At anytime you can press the 'esc' (escape) key to return to read only mode.

Lets look at some examples. First we open a file as we did in the above example :

```
vi MyExample.txt
```

This will open the "MyExample.txt" file as explained above, or creates a new (blank) file if it did not already exist.

You can scroll up and down the file using the up and down arrows on your keyboard.

To insert new content or change the existing content of the file in vi you need to type :

```
i
```

This will put me in the insertion mode and now anything I type will appear in the document itself. When I have finished making the changes I may wish to save the file. I would then press the "esc" key followed by :

```
:w
```

This will write the file with the new changes. I then need to quit from vi so I press the escape key followed by :

```
:q
```

Now find a file and experiment. If you haven't used something like vim before then it might take some getting used to, so spend some time working out for yourself how vi works before you really need to use it.

Combining Commands

You can combine commands using the **Terminal Activity**. There are many situations where this is very useful. For example, if you were to use 'ls' the output to the terminal would be a list of all the files and folders in the directory you are currently in. If this is a very long list then the names of the files and folders will flash past so quick you cannot read them. So we can combine the 'ls' command with another command so that we see the list of names one 'page' at a time. To do this we combine the 'ls' command with the 'more' command like this :

```
ls | more
```

Now the list of file and folder names will fill up the display area in the terminal but stop when the terminal window is full. It will then wait for you to press the 'space bar' to display the next 'page'.

Combining commands is done using the vertical line that you see in the example command. This must always go between the commands you wish to combine. This line is known as the 'pipe' and in the above example we would say that we "pipe ls through more". That is to say, the output of the 'ls' command is feed through the 'more' command.

You can actually string many commands together in this way. However its good to remember that this does not always work!

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