

ICDL Module 2

(Using a Computer and Managing Files)

using

Linux

Ubuntu Linux and the Gnome Desktop

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Module 2:
Using a Computer and Managing
Files
using Ubuntu and the Gnome Desktop

Section 1: Computer Environment

2.1.1 First Steps with the Computer

2.1.1.1 Start the computer.

- Press the **On/Off** switch on front of the computer.

This will initiate the **boot** process. During this process the **start-up routine** that is stored in the **ROM** of the computer will take control of the computer. One of the things this routine does is to read certain areas of the hard drive to search for the **operating system**. The start-up routine will then load the operating system into the **RAM** of the computer and pass over control to it.

Depending on how the computer has been configured, one of three things will happen:

1. The operating system will automatically load the **GUI (Graphical user interface)** and start this for a default user. The system will be available for immediate use.
2. The operating system will automatically load the GUI, but you will be prompted to enter a username and password. These will be given to you by who ever installed the system.
3. Only the text based operating system will load. In this case you will need to logon and then start the GUI. In this case you will see a black screen on which the prompt **Logon:** appears.

Suppose you have been given the username **GenUser** and password **V2wTkn7**. Remember that passwords are case sensitive. If you are given a password, you must enter it exactly as given.

Logon to the GUI

- When the logon window appears, type in your username and password exactly as given. When you type the password, for example **V2wTkn7**, a series of stars ********* will appear in the password window. This is so that no-one can read your password by looking over your shoulder.
- Click the **OK** button.



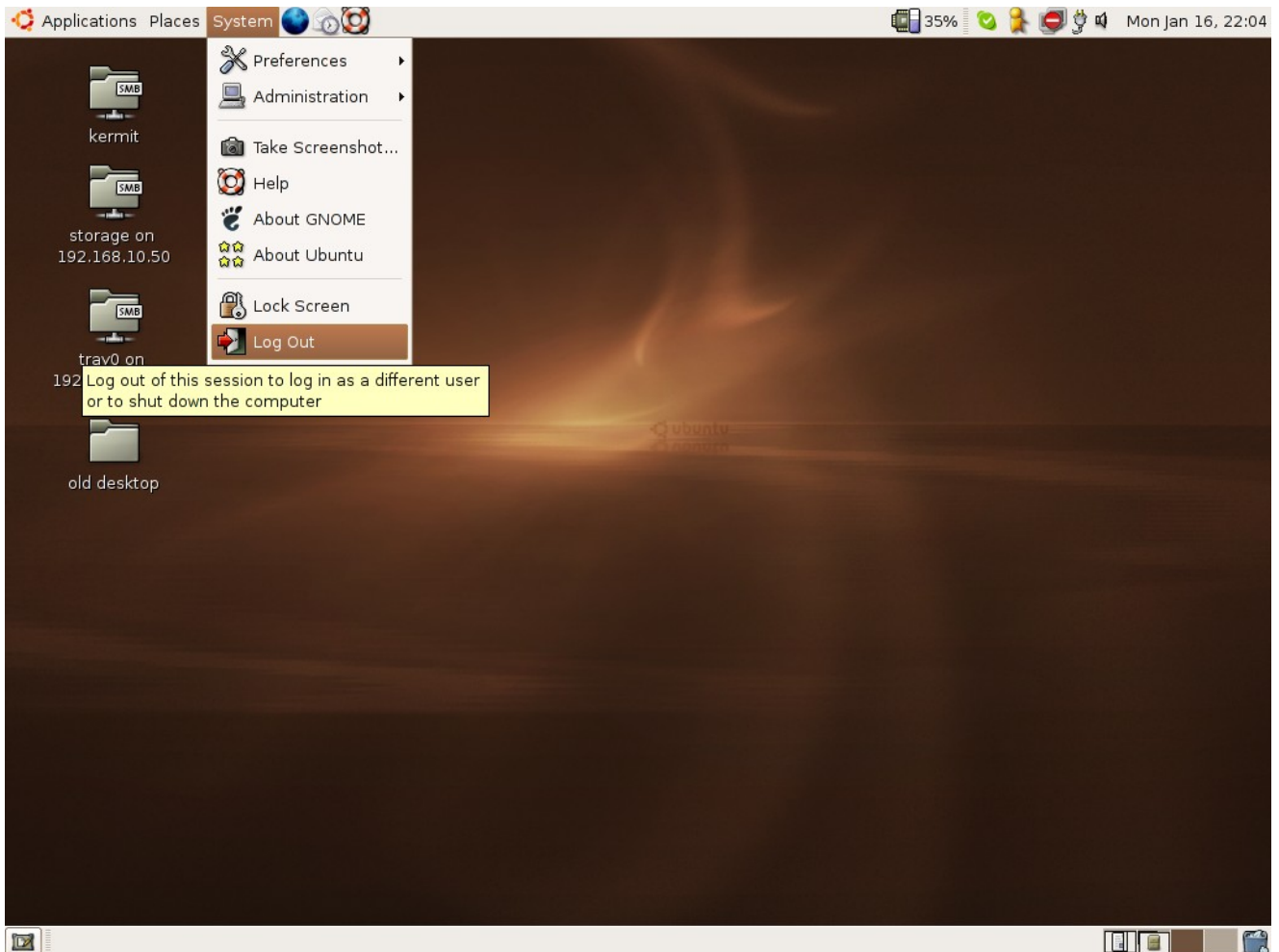
Unless you have a valid username and password, you will not be able to log on to the system. Speak to the administrator of your system if you cannot log on.



In Linux, there is a special user logon called **root** which has complete access to the system. When a user logs on as root, he or she can do anything on the machine. Even if you know the root password, do not log on as this user unless you are carrying out special administrative activities. For ordinary use, use a username that has more restricted access.


2.1.1.2 Shut down the computer using an appropriate routine.

- Click **System** in the menu bar at the top left of the screen.
- Click **Log Out** on the drop down menu.



- Click the **Shut Down** radio button in the dialogue which appears and click **OK**.



 Never just shutdown the computer by pressing the **On/Off** switch.

2.1.1.3 Restart the computer using an appropriate routine.

- Follow the same method as for shutting down the computer except for the last step in which you select **Restart computer**.

2.1.1.4 Shut down a non-responding application.

It may happen that an application freezes and will not respond to mouse clicks or keyboard commands.

- Give the application a while. It sometimes happens that a non-responding application *wakes up*.
- Click **Applications** on the menu bar.
- Click the following in sequence: **System Tools** then **System Monitor**.

Convention

For simplicity a sequence of menu options such as the above will be indicated as:

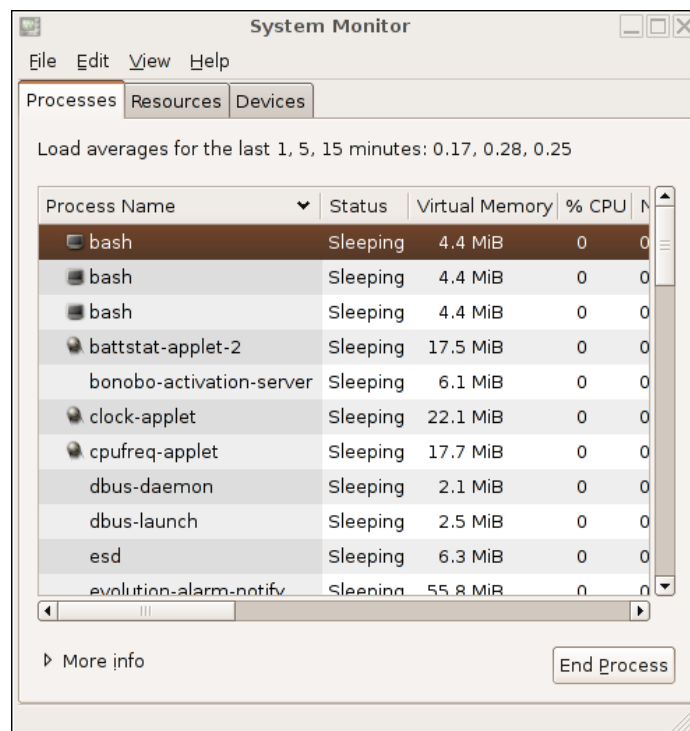
Applications >> System Tools >> System Monitor

Similarly, because we will be making extensive use of the **Menu bar** in an application, we will make use of the following convention in using the functions of the menu bar:

File >> Save


Will mean exactly the same as clicking **File** on the **Menu bar** and then clicking **Save** in the menu

- Click the **Processes** tab.



- Highlight the non-responding application.
- Click the **End Process** icon to shut down the application.
- When done, **File >> Quit** or press **Ctrl+Q**.

What to do if the entire system freezes

 If the entire system freezes, do not immediately switch off the system with the power switch. This could cause serious damage to the entire system. This is only a final resort. The most likely cause of a frozen system lies with the GUI.

- Wait a while. The system may *wake up* of its own accord.
- Press **Ctrl+Alt+Backspace**.

This will cause you to lose all unsaved work, but it will preserve the system itself.

2.1.2 Basic Information and Operations

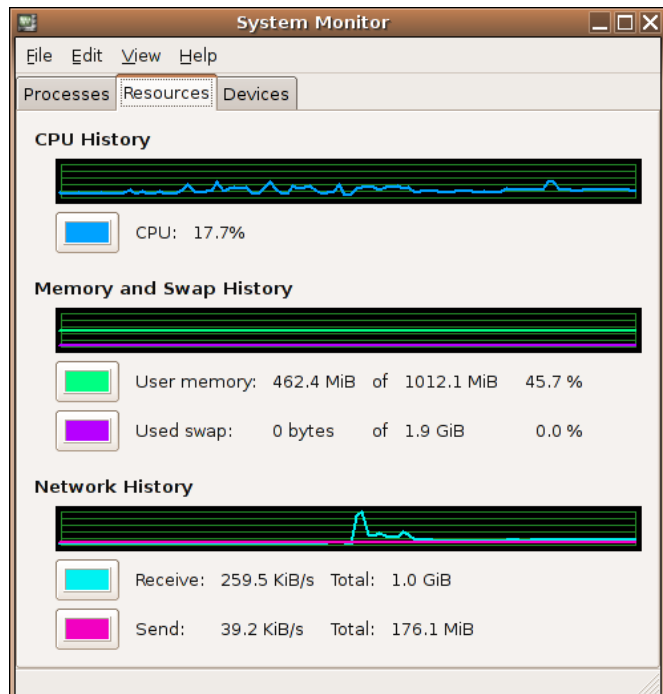
2.1.2.1 View the computer's basic system information: operating system and version number, installed RAM (random access memory).

View CPU usage information

- **Applications >> System Tools >> System Monitor**
- Click on the **Resources** tab.
- The **CPU History** graph indicates your CPU usage over the past minute.
- Click **File >> Quit** when done.

View RAM details

- Similarly, click **Applications >> System Tools >> System Monitor**
- Click on the **Resources** tab.
- The **Memory and Swap History** graph indicates your memory usage over the past minute and also indicates how much of your main memory and swap memory is being used.
- Click **File >> Quit** when done.



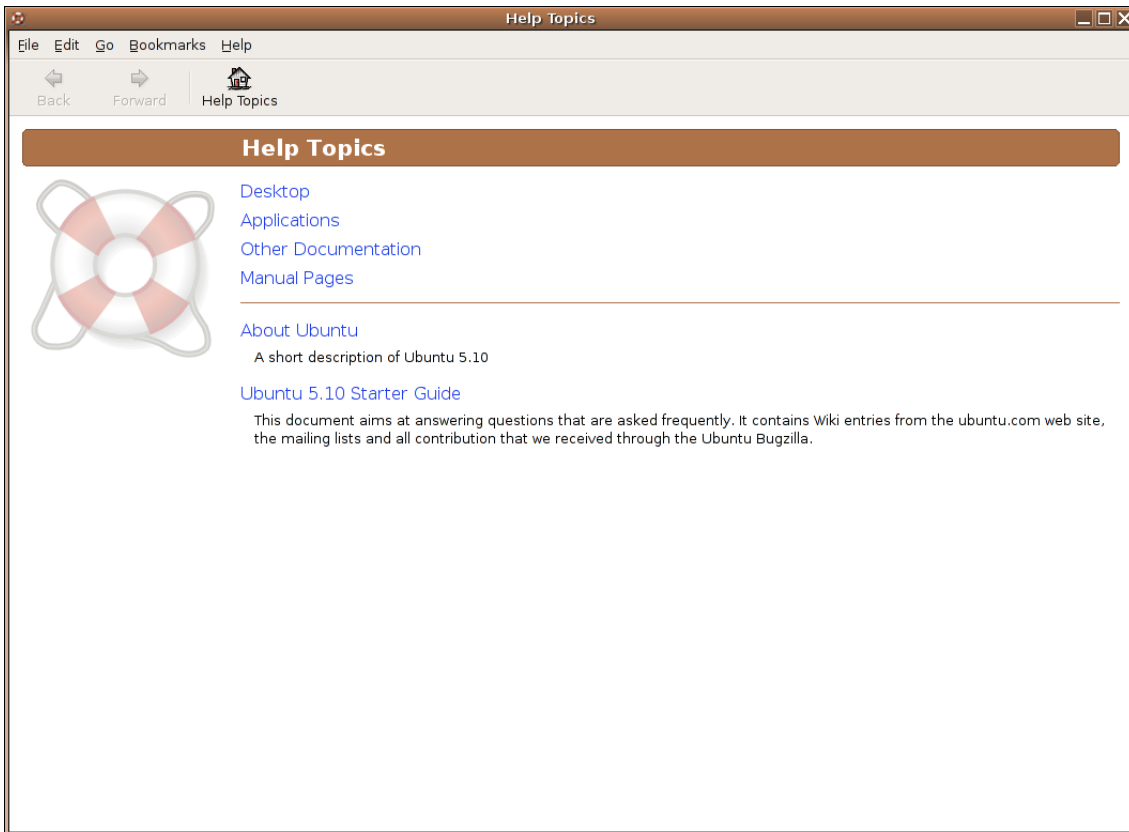
View operating system version information

This information can also be found in a number of places. For example:

- **System >> Help**


This displays the main help interface

2.1 Using a Computer and Managing Files: Computer Environment



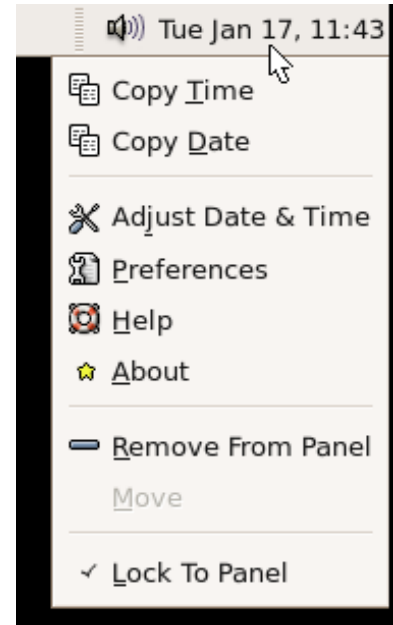
You can see from the help topics that we are using version 5.10 of the Ubuntu Linux Distribution, also codenamed the "Breezy Badger" release.

2.1.2.2 Change the computer's desktop configuration: date & time, volume settings, desktop display options (colour settings, screen pixel resolution, screen saver options).

 In order to carry out some of the changes to the system, you will need to know the root password.

Set date and time

- Right click on the date and time in the top right of the screen to display a **context menu**.
- Click on **Adjust Date & Time**
- Enter the root password when prompted.
- Adjust the date and time on the calendar and clock. Alternatively, if you are actively connected to the Internet, you may click on **Synchronize Now** to set the date and time using Internet time servers.
- Click **OK** when done.



An alternative method is to use:

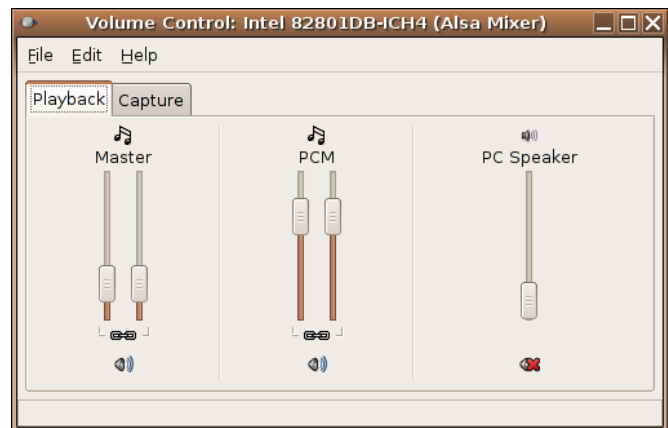
- **System >> Administration >> Time and Date.**

Set volume level

- Similar to setting the date and time, right click on the speaker icon in the top right of your screen to open up a context menu. Then click on **Open Volume Control**.
- Adjust the master volume level using the left-most slider.
- **File >> Quit** when done.

Get information on sound card

- **System >> Preferences >> Sound** (this will require entering your root password).

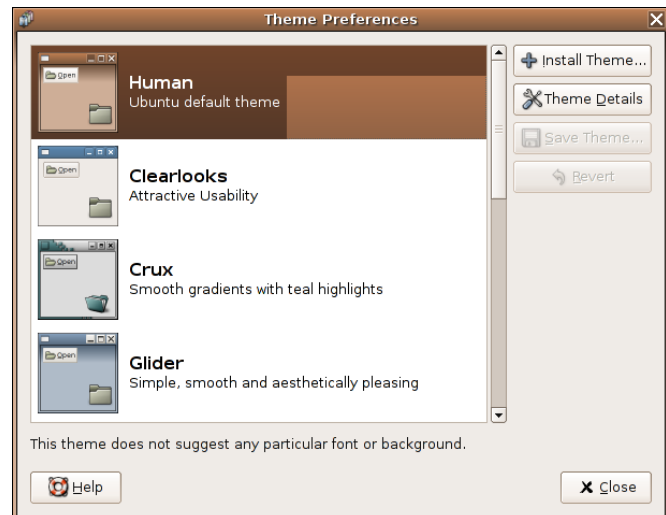


Set desktop options

Most aspects of the desktop are changed by clicking on the appropriate options in the **System >> Preferences** menu.

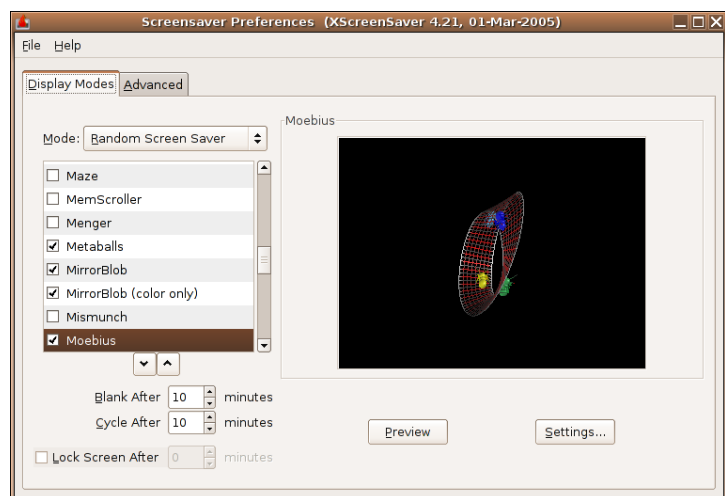
Change theme settings

- **System >> Preferences >> Theme**
- Select your preferred theme.
- Click on **Theme Details** to adjust individual theme components.
- Click **Close** when done.



Change screen saver

- **System >> Preferences >> Screensaver.**
- Select the screen saver mode as well as the actual screensaver and set the time before the screen saver is displayed.
- If you wish, you may lock your screen after a certain number of minutes. This will require you entering your password before you can continue working. This will automatically protect your work should you leave your machine unattended for a period of time.
- Click **File >> Quit** when done.

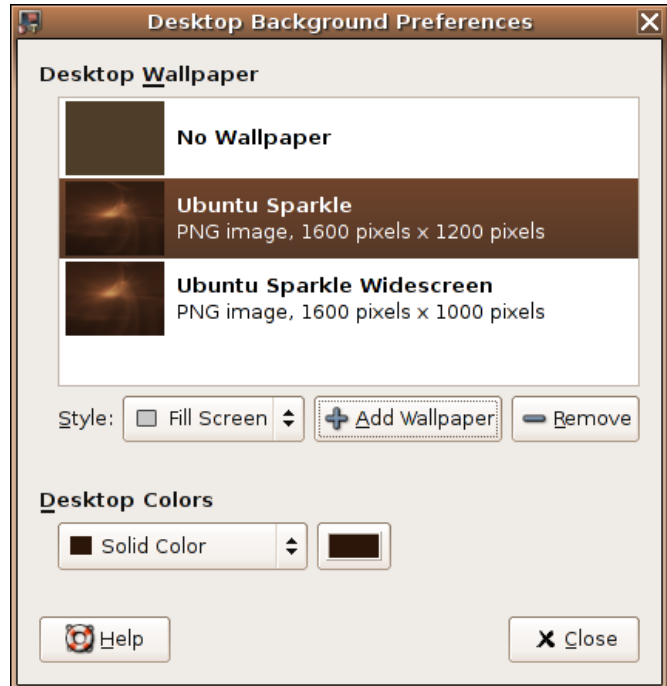


Disable the screen saver

- Select **Disable Screensaver** option from the **Mode** list.
- Click **File >> Quit**.

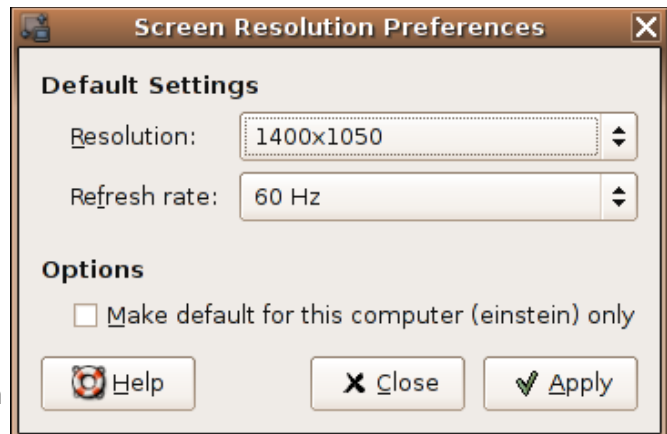
Set desktop background

- **System >> Preferences >> Desktop Background.**
- Configure the background as you wish it. You may also add a new background.
- Click **Close**.



Set screen pixel resolution

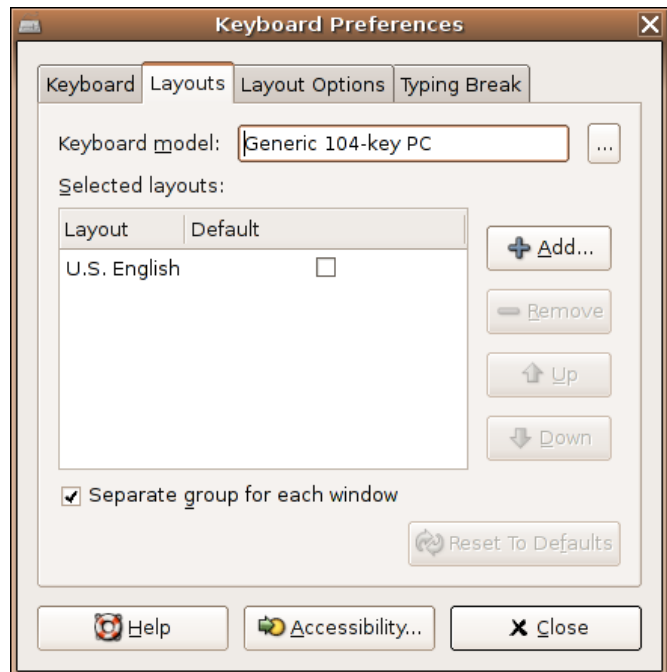
- **System >> Preferences >> Screen Resolution**
- Enter the root password when prompted and click **OK**.
- Select your chosen resolution from the **Resolution** drop down list.
- Select your refresh rate from the **Refresh Rate** drop down list.
- Click **Apply** when done.
- Confirm that your settings are corrected when prompted.



2.1.2.3 Set, change keyboard language.

The keyboard language defines the position of the various keys on the keyboard. For example, British, American and French keyboards all have different layouts. If some of the keys generate a different letter to that shown on the key itself, it could be that the keyboard language setting needs to be changed.

- **System >> Preferences >> Keyboard**
- Enter the root password when prompted and click **OK**.
- Click the **Layout** tab.
- Select the keyboard model and layout.
- Click **Close** when done.

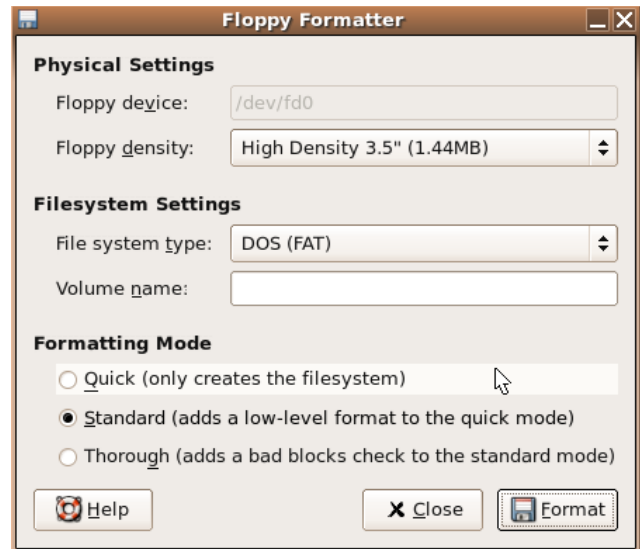


2.1.2.4 Format removable disk media: diskette, Zip disk.

Before data can be saved on a disk, it has to be prepared. The process of preparing a disk to store files is called formatting. If a disk has been previously formatted, formatting a second time will result in the loss of any data that may have been stored on it.

Format a floppy disk

- Make sure the disk you wish to format does not contain any data you will need.
- Insert the diskette into the diskette drive.
- **Applications >> System Tools >> Floppy Formatter**
- Select the **File system**.
If you use **DOS**, you will be able to share the disk with Windows users. If you use **EXT2**, you will only be able to share it with Linux users.
- Give the diskette a label. This is the electronic label that the formatting process attaches to the disk.
- If the disk has been formatted previously, you can select **Quick format**. This makes use of the previous format to speed up the process.
- Click **Format**.




Once the disk has been formatted, you can save files to it.

Format a diskette using a terminal

An alternative method of formatting a floppy disk is to open a terminal and type in the appropriate command.

Terminal windows give you access to the full power of Linux. The GUI simplifies the process of executing much of the power of Linux. Typing in the actual commands at the command prompt allows you to execute all the variations of Linux commands. The following example illustrates how to use the command line.

 When you use a **terminal** to enter commands, you must press the **Enter** key at the end of each line. Further commands are case sensitive. If a command does not work, check that you are typing the command exactly as required. For example, **mkfs** is correct but **Mkfs** and **MKFS** will not work.

- Insert the floppy disk to be formatted.
- **Applications >> Accessories >> Terminal**
- Type in the following command exactly as shown and press **Enter**:
/sbin/mkfs.msdos /dev/fd0

```
[david@Linux1 david]$ /sbin/mkfs.msdos /dev/fd0
mkfs.msdos 2.9 (15 May 2003)
[david@Linux1 david]$ █
```

If you wish to format the diskette in Linux format, you would use: **/sbin/mkfs.ext2 /dev/fd0**. In this case you would not be able to share the disk with Windows users.

Format a zip disk for use in Linux only

In order to format a zip disk, you would need to use a **terminal**.

- Insert the zip disk to be formatted.
- **Applications >> Accessories >> Terminal**
- Type in the following command exactly as shown and press **Enter**: `/sbin/mkfs.ext2 /dev/sd0`

This will format the zip disk in ext2 format. This disk can only be shared with Linux users.

Format a zip disk to share with Windows users

If you wish to share the zip disk with both Linux and Windows users, you will need to use the **vfat** file system.

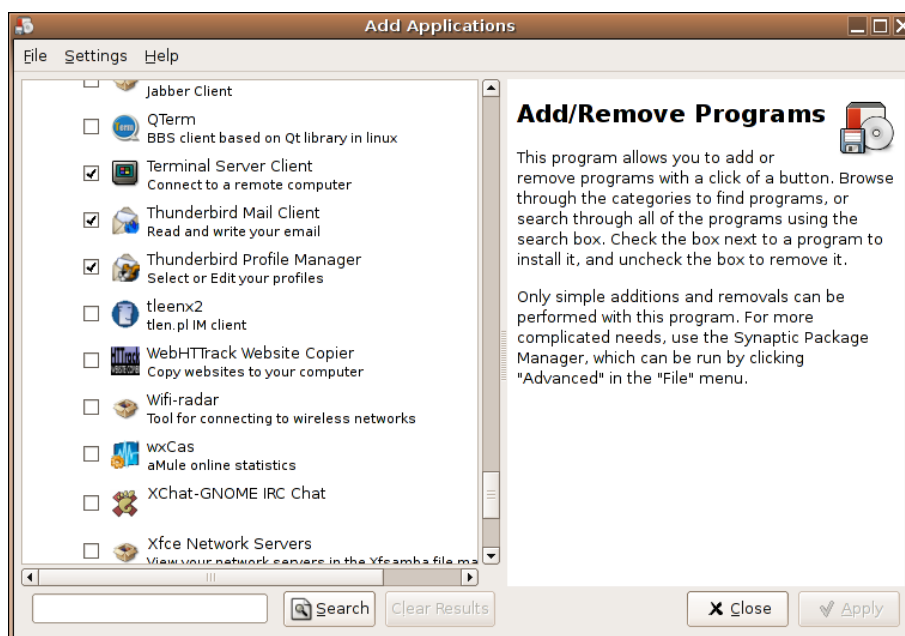
- Insert the zip disk to be formatted.
- **Start Applications >> Terminals >> Konsole**.
- Type in the following command exactly as shown and press **Enter**: `/sbin/mkfs.vfat /dev/sd0`

2.1.2.5 Install, uninstall a software application.

Install applications from distribution CD's and Internet repositories

Ubuntu Linux maintains a database of applications and their locations. Initially these are applications that are stored on the distribution CD. Depending on the particular installation, only certain of these may be installed on a given system. Ubuntu, however also maintains a larger database of applications which can be installed should you have an Internet connection. The following example illustrates how to install Mozilla Thunderbird (the mail client used in Module 7)

- **System >> Administration >> Add Applications**
- Enter the root password when prompted.



- Click **Internet** to expand the tree of available Internet related applications.
- Click on **More Programs** to open the tree of further available Internet related applications
- Scroll down until you see **Thunderbird Mail Client** and click the tick box alongside its name to select it for installation.
- A window may appear warning you of **dependencies**. A dependency refers to other software which needs to be installed on the machine before the application can be installed.
- Click **Close**. A tick will then appear next to **Thunderbird Mail Client**.
- Click **Apply**. You will be prompted to confirm the software installation, click **Apply** again.
- If prompted, insert the Ubuntu install CD and click **OK**.
- When the installation has completed a notification window will appear. Click **Close**. Another window will appear confirming that an application has been installed. Click **OK**.
- Click **File >> Quit** to close **Add Programs**.
- Verify that the application has been installed. In this case use:
Applications >> Internet >> Thunderbird Mail Client.

Install applications from a CD with an install program

You may get an application as part of a CD or through a download across the Internet. In some cases these applications are distributed with an **install** file. Double clicking on this in a **file manager** will initiate an automated installation process. You would simply sit back and wait for the entire process to complete.

Install an application using the File Manager

The following illustration assumes the application is located on a CD.

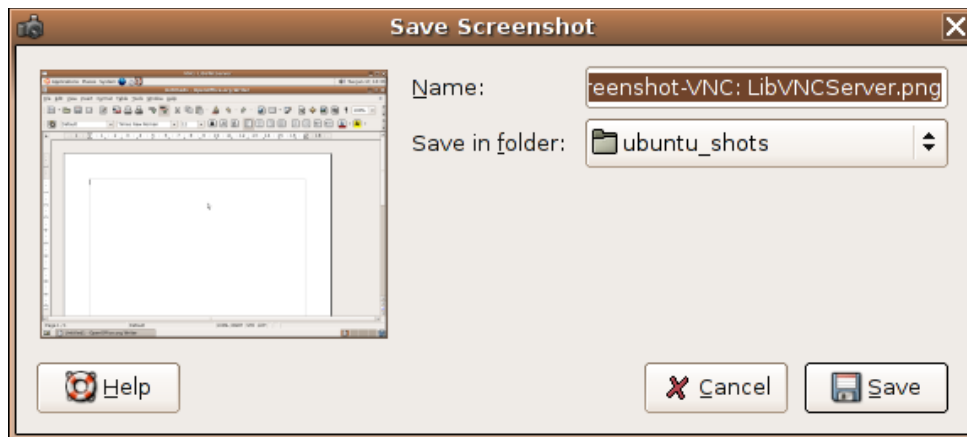
- Double click on the **CD-ROM** icon on the desktop.
- Locate the directory in which the application installation file is located. (This process will be explained fully in the section 2.3.2 on directories.
- Double click on the application.

Uninstall an application

Uninstalling applications is exactly the reverse process of installing them using **System >> Administration >> Add Applications**.

- **System >> Administration >> Add Applications**
- Enter the root password when prompted.
- Locate the software using the browser tree.
- Uncheck the tick box next to the software name
- Click **Apply**.

2.1.2.6 Use keyboard print screen facility and paste contents into a document.



You can take a snapshot of the screen you are working on and use it in a document.

- Press the **Print Screen** button on the keyboard. It may be abbreviated to **Prt Scr** or similar.

This activates the **Save Screenshot** dialogue which saves a capture of your screen.

- Fill in an appropriate name for the screenshot.
- Select the appropriate folder for saving it to.
- Click **Save**. The screenshot will be saved in **png** format.

The image can now be inserted into a document in the same way you would insert any graphics file by opening the document and doing the following:

- Click on **Insert >> Picture >> From file**.
- Browse to the directory / folder containing the file.
- Click the filename of the graphic you wish to insert and click **Open** or simply double click on it

This will insert the graphic into the document at the current cursor position.

2.1.2.7 Use available Help functions.

Ubuntu comes with numerous manuals in electronic form.

- **System >> Help**.
- Click on **Desktop** to expand the desktop help
- Click on **User Guide** to expand the help for the Gnome desktop.
- Browse the guide by navigating the tree browser on the left.

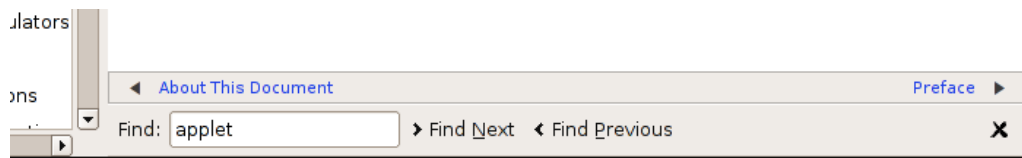
2.1 Using a Computer and Managing Files: Computer Environment



Search in the current topic

The search function only allows you to scan the currently displayed topic.

- **Edit >> Find** or press **Ctrl+F**.
- Enter the text you wish to find.
- Click **Find Next**.



The first occurrence will be highlighted in the text of the help. Click **Find Next** to find the next occurrence.

Using Help as a tutorial

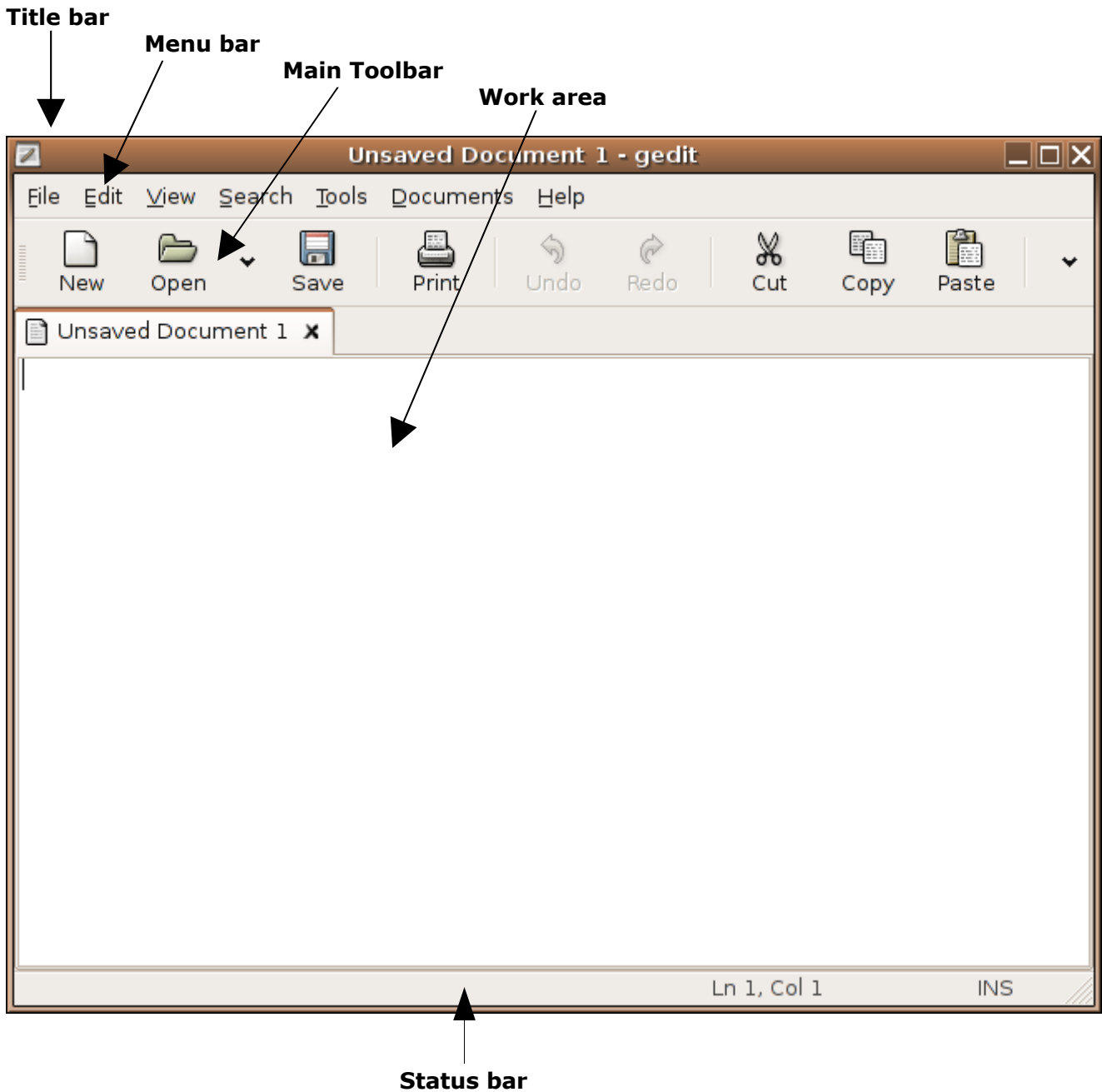
Become as familiar as possible with the help system. These notes will provide you with an introduction to Ubuntu Linux using the Gnome desktop. When you have worked through a section in these notes, you could read what the Gnome help system has to say on the topic. If you wish to become an expert, you will need to read further and discover the full power of Ubuntu Linux and Gnome. The help system is the best place to start.

2.1.3 Text Editing

2.1.3.1 Launch a text editing application. Open, create a file.

- Click on **Applications >> Accessories >> Text Editor**

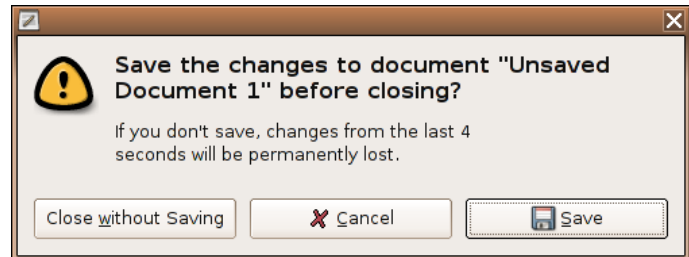
The Gnome Editor (Gedit) will now display. There are other editors available, but we will use Gedit for now. The components of the screen are shown below.



Close Gedit

- **File >> Quit.**

This will close all open documents and exit Gedit. If you have made any modifications to open documents, Gedit will remind you that the document has not been saved and ask you whether you wish to save it or discard changes. It will also give you the option of cancelling the **Quit** operation.



Open a file

One of the advantages that text editors provide for us is the facility to save our work and recall it at a later time. We can then print our work or make further changes (edit). In addition, we are able to create many versions of the same document, each of which can be saved on our hard drive under an appropriate name.

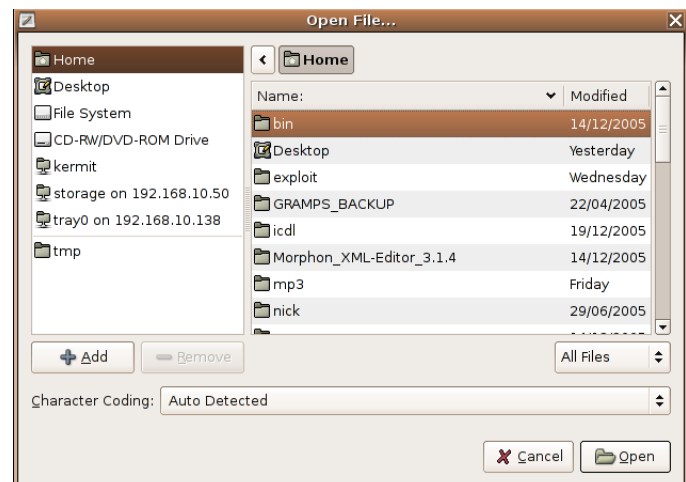
To open a document:

- **File >> Open.**

The **Open** dialogue will appear. In general, this will point to your home directory.

In this case, the **Open** dialogue is pointing to the directory /home/thomas.

- If necessary, navigate to the desired directory.
- Highlight the file you wish to open.
- Click **Open**.
- If you want to open a file located on your floppy or flash media or somewhere else on the file system, choose the correct device from the pane on the left.



Terminology

We will use the terms document and file interchangeably.

Create a new document

To create a new document from scratch:

- **File >> New**

This will display a blank screen in which you can create a document. This document will be based on default settings. Default settings are ones which are set up for you automatically.

2.1.3.2 Save the file to a location on a drive.

When you work with a document on your computer, the working form resides in the computer's RAM. This is temporary memory used for your current activities. Since RAM is volatile, when the computer is switched off, everything that is in RAM is automatically lost. In order to keep your work you will need to transfer the contents of RAM to your hard disk. This process is called **saving**.

When you save a document, you give it a name and you specify where it is to be stored.

Save an existing document

If you have opened a document and made some changes, the process of saving it is very simple:

- **File >> Save.**

This will change the contents of the stored version so that it is identical to the version that is displayed on your screen. In this case, the previous version on disk is overwritten.

If you use **File >> Save** in a newly created document, Gedit will automatically assume that you wish to use **File >> Save as**.

Save a new document

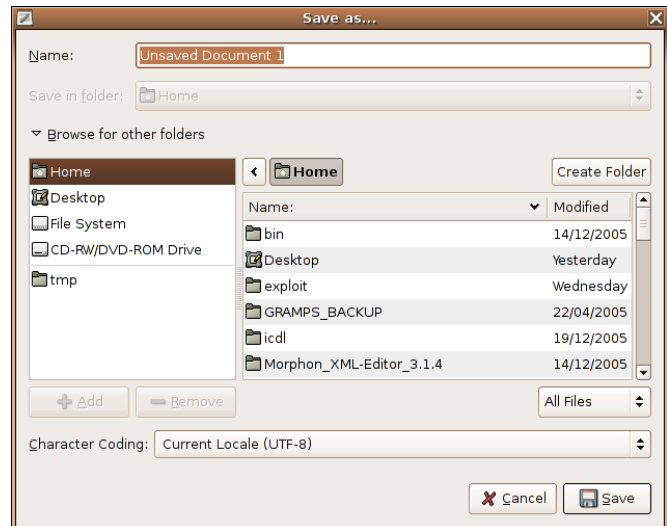
When you create a document from scratch, there is no version stored on disk. To save the file to disk:

- **File >> Save as.**

The **Save As** dialogue will appear. Click on **Browse for other folders** to expand the dialogue. In general, this will point to your home directory. It is very similar in appearance and functionality to the **Open** dialogue.

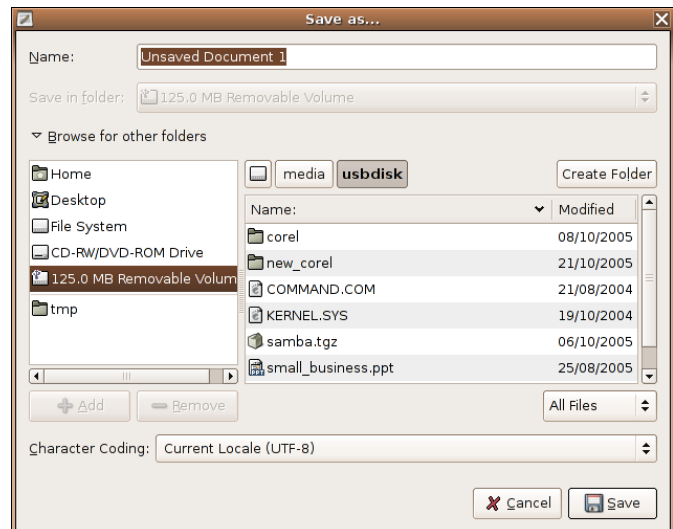
- If necessary, navigate to the directory in which you wish to save the file.
- Enter a file name into the Name text box.
- Click **Save**.

For the moment we will not be concerned with all the options in the **Save as** dialogue.



If you have a **removable drive** inserted in the computer and wish to save to that drive rather than your home folder, **double click** on the removable drive which should be listed on the left window. This will open your removable drive directory.

- If necessary, navigate to the sub directory in which you wish to save the file.
- Enter a file name into the Name text box.
- Click **Save**.



2.1.3.3 Close the text editing application.

- **File >> Quit.**

Module 2:
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Section 2: Desktop

Terminology

GUI (Graphical User Interface): A GUI is a system that allows the user to interact with the operating system through clicking on icons on the screen. Icons are graphical representations of operating system functions. At its heart, Linux is a text based system. This requires you to type commands out in full. GUIs were developed to simplify the use of Linux for the desktop user. As you become expert in the use of Linux, you will need to become familiar with the text based system. This is not, however, the objective of these notes.

Distributions: A distribution is a bundled set of CDs which include the heart of the Linux operating system, known as the **kernel**, together with a set of applications. Each distribution in turn implements Linux slightly differently.

Desktop: The desktop is the actual GUI itself. There are a number of different desktop systems. The most popular are Gnome and KDE. The actual implementation of a desktop varies from distribution to distribution. Gnome used with the Ubuntu Linux distribution will differ somewhat from when used with any other distributions. These notes are based on Gnome running under Ubuntu Linux 5.10.

2.2.1 Work with Icons

2.2.1.1 Recognize common desktop icons such as those representing: files, directories / folders, applications, printers, recycle bin / wastebasket.

The adjacent screen illustrates a number of icons on the desktop.

CD-ROM, DVD-ROM and **Floppy** give you direct access to these devices (only DVD-ROM illustrated)

Directories (folders) are presented by a directory icon as illustrated by **Ubuntu Shots**.

Home is a shortcut to your home directory. When new users are added to the system, Linux creates home directories for them. As users do not have rights to other users' directories, the home directory provides a private location for the storage of files. The one exception is **root** who has complete access to the system.

Files can also be saved to the desktop. This will be explained in section 2.2.1.4. The desktop is a useful place to save work in progress as you then have immediate access. Files are represented by an appropriate application icon. In the example, `mod2_ubuntu.odt` is an OpenOffice.org Writer file.

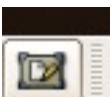
There are also desktop icons representing **applications** such as a **word processing** or **spreadsheet** application and other icons that represent **printers** or network locations. In the example, **storage on 192.168.10.50** represents a network file storage location.

Trash is a storage location where files are placed after they have been deleted. If trash has not been emptied, you can recover files you have deleted. Unlike many other operating systems and other distributions of Linux, Ubuntu does not place a trash icon on your desktop but rather in the bottom right of your screen:



In this case, the icon indicates that there are items in the trash.

Show Desktop is a useful button which minimises all your applications and shows your desktop. To maximise an application again, simply click on its icon on the status bar.



Icons can also represent applications applications, in the example below there is an icon which launches the **Mozilla Firefox Web Browser**, an icon which launches the **Thunderbird Mail Client** as well as an icon which opens the **Printing** dialogue.



2.2.1.2 Select and move desktop icons.

You can move icons to a different position on the screen by dragging them. This allows you to group related icons in clusters.

- Click on a icon to select it.
- Hold down the left mouse button and drag the icon to its new position.
- Release the left mouse button.

2.2.1.3 Open a file, directory/folder, application from the desktop.

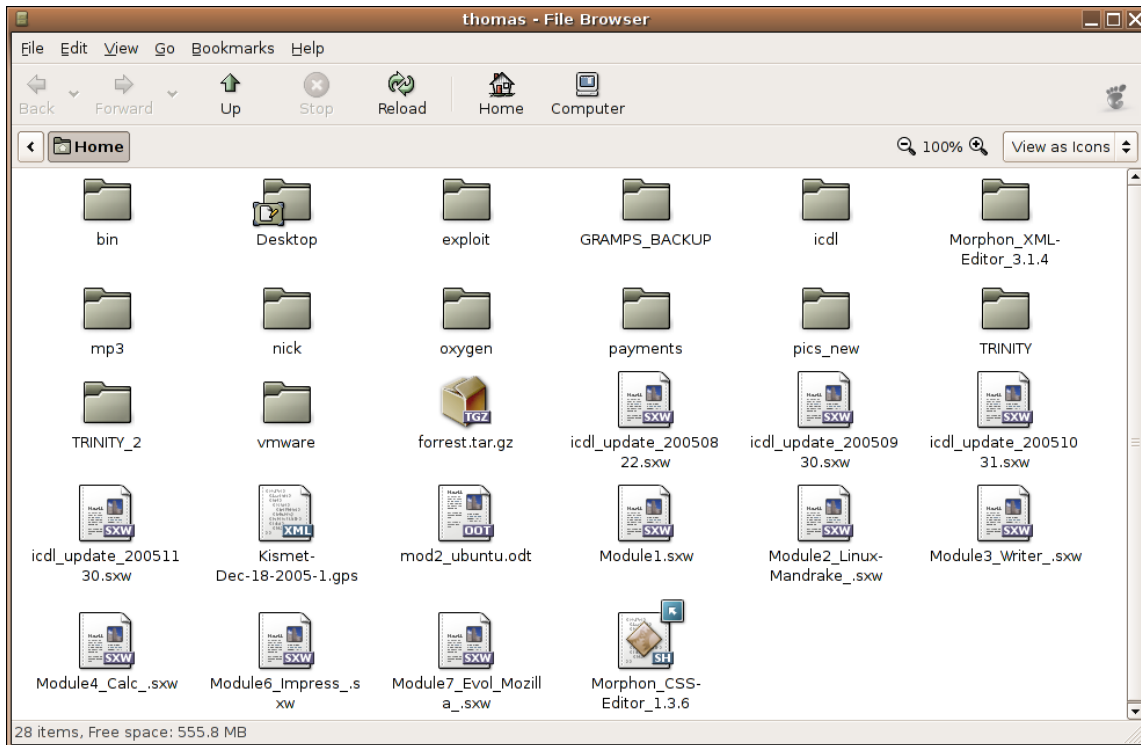
Open a directory from the desktop

A **directory** is a location in which files are stored. You may visualise a directory as a drawer of a filing cabinet in which ordinary files are stored. Just as you would label the drawers of a filing cabinet, you give each directory an appropriate name. In many ways a hard disk drive is very much like a room containing many filing cabinets.

A directory may contain files of any type. It may also contain other directories. Directories which are located inside other directories are called sub-directories.

- Click on **Places >> Home Folder**. This will open up the file browser and display the contents of your home directory.

2.2 Using a Computer and Managing Files: Desktop



Notice that this directory contains a number of files and other directories.

Open an application from the desktop

- Double click on an application icon on the desktop such as the icon representing OpenOffice.org.

This will open the application and you will then have to use the application's Open command to access the file.

A shorter method would be to double click on a file associated with an application which will open the file in the appropriate application. For example, if you wished to open the spreadsheet called sales.ods, you would normally have to load Calc, then use File >> Open and locate the file. If you had saved it to the desktop, double clicking on the icon would open Calc and then load the spreadsheet.

2.2.1.4 Create a desktop shortcut icon, desktop menu alias.

Save a file to the desktop

Suppose you are working on a file in Writer called costs.odt and you wish to save it to the desktop.

- In Writer, **File >> Save as**.
- Select the sub-directory called **Desktop** in your home directory.
- Click **Save**.

Create a shortcut to a menu item

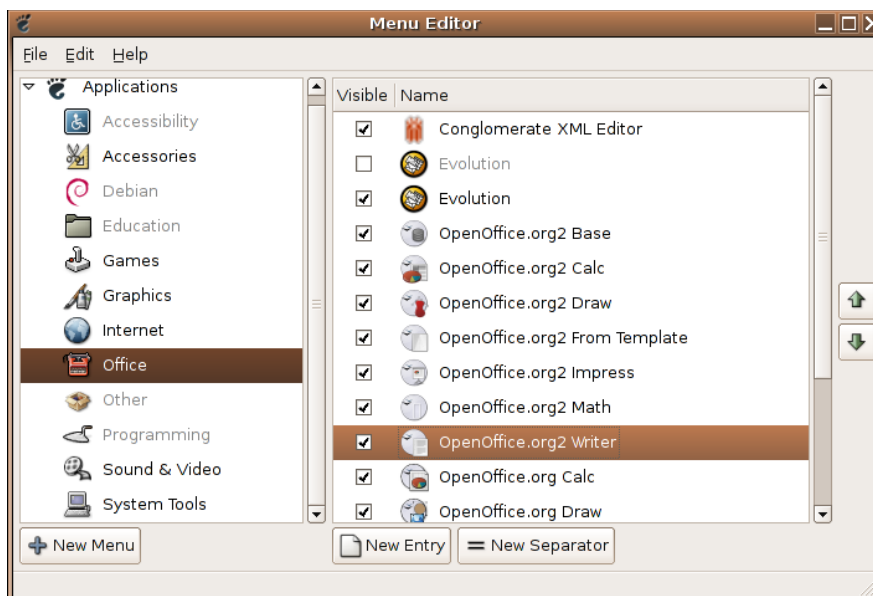
Suppose you use Writer and Calc on a regular basis. Instead of accessing them through the menu system, you can place shortcut icons on the desktop. The easiest way of doing this is by dragging the application from the menu onto the desktop. This doesn't copy the application to your desktop, but rather creates an application launcher on your desktop. In the example, we will create an application launcher for OpenOffice.org Writer on your desktop.

- Ensure that your desktop is visible. You may do this by closing any active applications.
- Browse the menu by clicking on **Applications >> Office**.
- Place the cursor over OpenOffice.org2 Writer and click and hold the left mouse button.
- Drag the icon onto your desktop and release the left mouse button.
- An application launcher icon will be created on your desktop.
- Start the application by double-clicking the icon.

Determine the command name of an application

Suppose you wish to determine the command to run Calc.

- Click on **Applications >> System Tools >> Applications Menu Editor**.
- Scroll down to the **Office** entry and click on it to expand.
- Right click on the **OpenOffice.org2 Writer** entry and click on **Properties**.

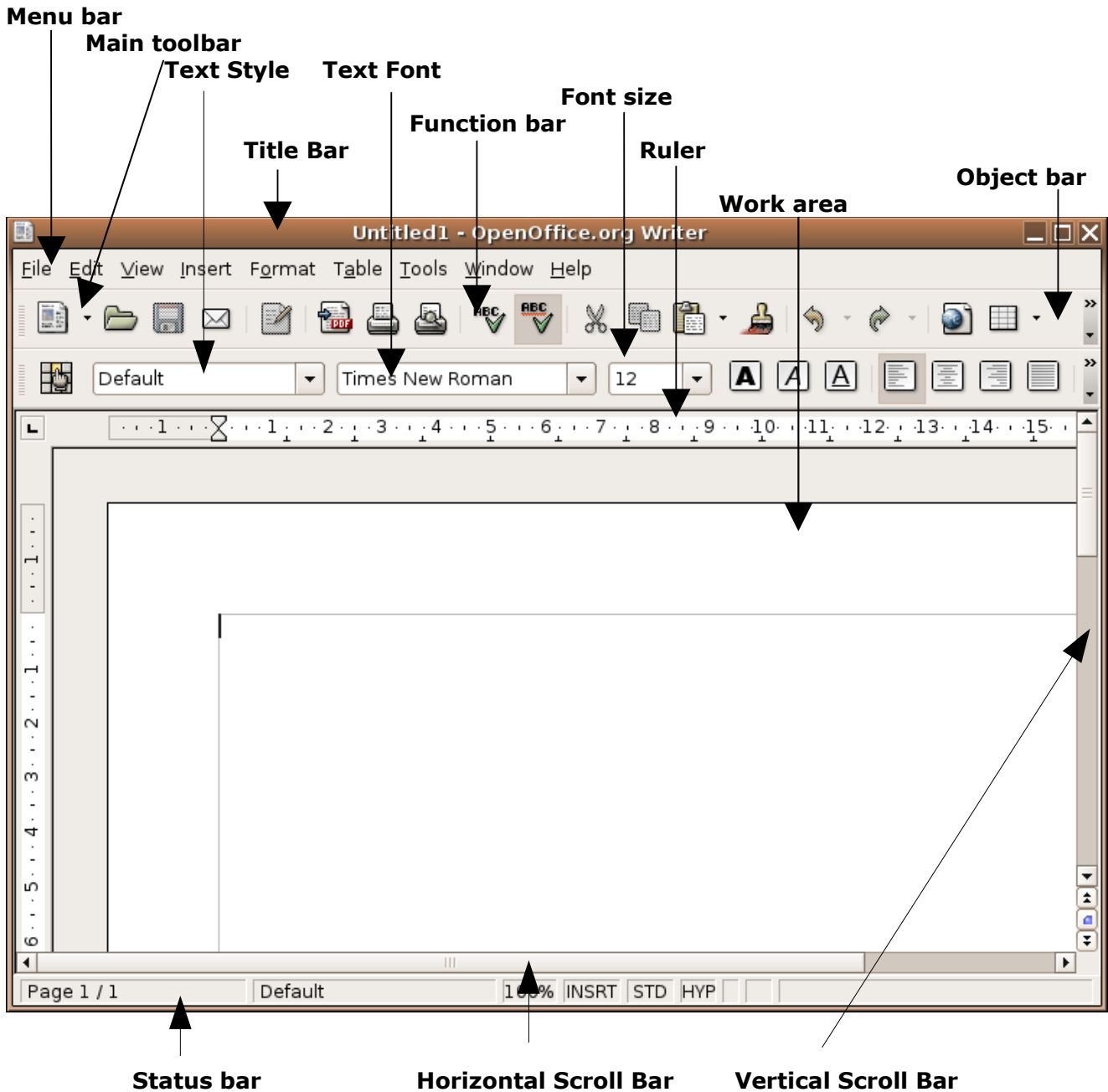


- Read off the **Command**. In this case it is **office2 -writer**.

2.2.2 Work with Windows

2.2.2.1 Identify the different parts of a window: title bar, menu bar, toolbar, status bar, scroll bar.

The following screen uses OpenOffice.org2 Writer to illustrate the main components of an application window.



2.2 Using a Computer and Managing Files: Desktop

The **Title bar** is where you can see the name of the application that is open. In this case OpenOffice.org. You will notice in the screen above the words Untitled 1 appear before the name of the application. This means that there is an unsaved document open. Once the document has been saved and has been given a name then the name will appear instead of Untitled 1.

The **Main toolbar** is where you'll find all the icons for common application functions. These include icons to **Open**, **Save** and **Print** your document.

The **Text style** window allows you to assign pre-defined text styles to text; this is called **styling**. The advantage of **styling** is that should you wish to change the format of a particular text style later on in your document, you only need to modify the pre-defined text style and then all instances of that style throughout the document will be modified.

The **Text font** window allows you to select which font you wish to work with. Simply click on the drop down box to get a list of all the fonts available on the system. The names of these fonts will be displayed in the actual font, so you can preview the font before selecting it.

Use the **Text size** window to select the size of font you wish to use. Simply click on the drop down box to get a list of font sizes. Should none of them be appropriate for you, you can also manually enter your desired font size into the box.

The **Function bar** is where you'll find icons which represent important functions of the application you are busy using. In this example, the **Function bar** has icons for **Cutting**, **Copying**, **Pasting**, etc., all of which are important text editing functions.

The **Object bar** is where further tool bars and custom functions may be inserted.

The **Ruler** is there to help you get an idea of the size of your page. It allows you to better visualise the printed page and properly align columns, margins, etc.

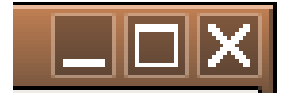
The **Work area** is your actual workspace. This is where you type and manipulate text.

The **Status bar** provides useful information about your current document, includes the total number of pages and which page you are currently working on. The information displayed in the status bar will differ from application to application.

The **Horizontal** and **Vertical scroll bars** allow you to scroll your page either horizontally or vertically. Often you will be working on a page that is too big to fit on your physical screen. Use these **scroll bars** to move the visible part of the document.

2.2.2.2 Collapse, expand, resize, move, close a window.

The icons relating to these functions are located in the top right hand corner of the screen.



Collapse a window

- The first is the **Minimize** button. This collapses the current window.
- An icon is displayed with the application's name in the **panel** at the bottom of the screen.



- To restore the application window, click on the application icon in the **panel**.

Close a window

- Click the **Close** icon.



Resize a window

- Click the **Cascade windows** icon.
This displays the window so that it only occupies part of the screen.
- Hover the mouse over one of the corners on the window.
This will display a resize handle.
- Hold down the left mouse button and drag the corner to resize the window.
- Release the mouse button when you have the desired size for the window.
- Hover the mouse over one of the sides of the window.
This will also display a resize handle. However these handles limit your movement either vertically or horizontally.




Move a window

- Click and hold down the left mouse button on the **Title** of the window. This is the brown area at the top of the window.
- Drag the window to the new position.
- Release the mouse button.

Maximise a window

- Click the **Maximize window** icon.
This icon will only be available if the window has been cascaded.

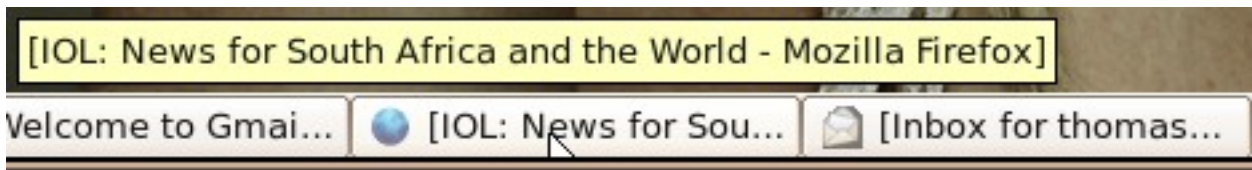


 You cannot resize or move a window that has been maximized.

2.2.2.3 Switch between open windows.

Where you have multiple open windows, each will be displayed as an icon on the **panel** at the bottom of the screen. Each icon will have a title. Usually the title is too long to be displayed in full.

- Hover the mouse over the icon to display the full title.



- Click on an icon to switch to that application.

Where there are several windows open at once, Gnome will try to group these. In the example below, Firefox has four windows associated with it.

- Click on the icon containing multiple windows and select the window you wish to open.




Open another desktop

Gnome goes one step further. You may open up to four different desktops at the same time. In each of these you may be doing a completely different type of work. The different desktops are also accessed from the **panel**.

- Click the second desktop icon to display a completely fresh desktop. You can operate in this desktop independently of what you are doing in desktop 1.



 The icons for open applications will be displayed in the panel irrespective of the desktop you are currently working in. If you click on one of these, you will automatically be taken to the desktop in which the window is open.

Module 2:
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Section 3: Managing Files

2.3.1 Concepts

2.3.1.1 Understand how an operating system shows drives, folders, files in a hierarchical structure.

To understand the concept of a directory, consider an analogy of an office block containing a number of offices. Each office has a name. Inside each office there are a number of filing cabinets, each of which is named. Files are stored in the filing cabinets. Each file also has a name.

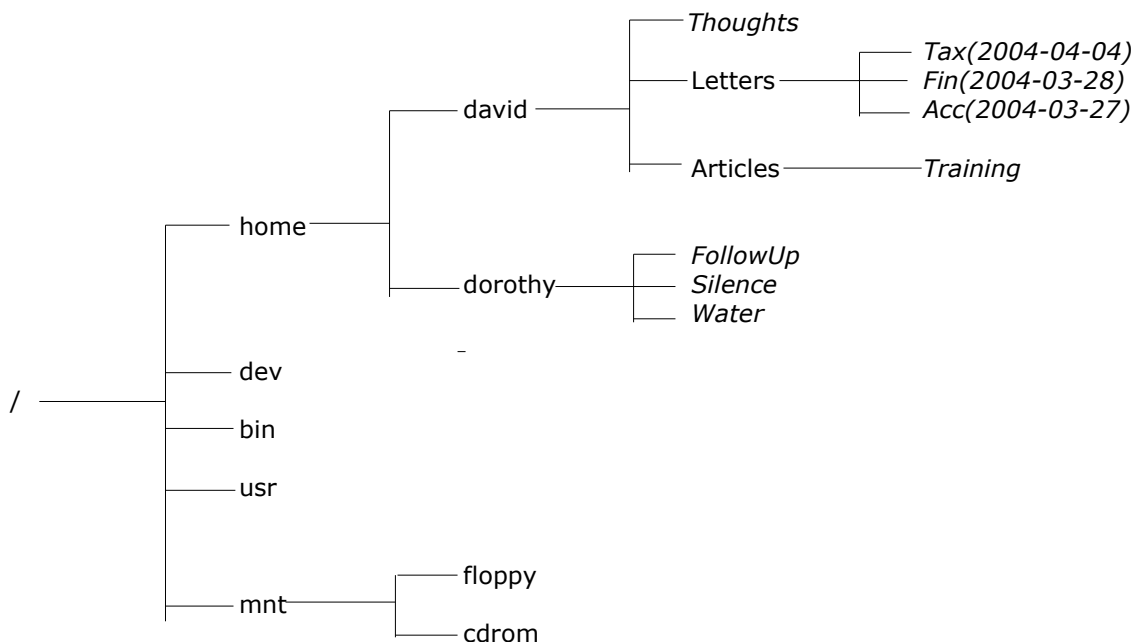
Suppose a file called Lombard is located in the Staff cabinet of the Administration office. This could be described in a shorthand form as `/Administration/Staff/Lombard`.

In the same way `/Stores/Suppliers/Kumar` would indicate a file called Kumar in the Suppliers filing cabinet in the Stores office.

Directories on a computer system are similar to the offices and filing cabinets. A **directory** is a container that can contain files or other directories. A directory located inside another directory is called a **sub-directory**. Sometimes the word **folder** is used in place of the word directory. One difference between the analogy and a computer system is that in the former case we are dealing physical objects whereas in the latter we are dealing with a more abstract structure.

Directories, sub-directories and files are arranged in a hierarchical structure called a **tree**. A typical computer will contain many thousands of files stored in many directories. Each directory contains files that are related in some way. The starting point of the tree is called the **root**. Do not confuse this usage of the word with the special user that has complete control over the system. `root` is designated by the `/` symbol. This symbol is also used to separate the different levels of the hierarchy.

A directory structure may contain many levels of sub-directories. The following diagram illustrates part of a Linux system directory structure. Files are shown in *Italic* font.



The full description of the location of a file is called is **path**. If we wish to describe a file fully, we need to include its path. An example from the previous diagram would be: `/home/david/letters/Tax(2004-04-04)`.



Linux names are case sensitive. Hence the three names tax, Tax and TAX are all different as far as Linux is concerned. Using the wrong case for letters is a common source of errors.



If you have worked with Windows, the Linux directory structure may seem confusing at first. Each system has a single directory system. Drives are located within branches of the structure rather than the structure starting with a drive. Linux goes much further and includes devices such as ports and printers within the directory structure. This follows from the fact that Linux treats files and devices in the same way.

The process of adding components to the Linux directory hierarchy is called **mounting** and removing them is called **unmounting**.

The **home** directory is of special importance in Linux. When a new user is added to the system, Linux creates a sub-directory of the same name in home. For example, if the user **dorothy** is added, Linux will create the directory **/home/dorothy** at the same time. This sub-directory is known as the user's **home directory**. Each user will create a further series of sub-directories in which he / she will store files.

Each user's home directory is private to that user. Apart from the **owner** of the home directory, the only other user that normally has access to it is the root user.

Each user can access his/her home directory by clicking on **Places >> Home Folder**.

2.3.1.2 Know that the devices used by an operating system to store files and folders are the hard disk, diskette, CD-ROM, network drives.

For long term storage, files are stored on various secondary memory devices. These include hard disks, floppy disks, CD-ROMs, DVDs, Zip disks, and flash memory.

A **diskette** comprises a plastic flexible disk enclosed inside a tough plastic cover. At one end is a window. When the diskette is placed inside a diskette drive, the window is pushed to the side. The read-record head inside the drive makes contact with the magnetic disk.

Diskettes are slow and have a low capacity (1,44 Mb). Since they are cheap, they still tend to be commonly used for storing small amounts of data. Another advantage is that they can be used over and over again. Unfortunately, many are not very good quality and data can become corrupted and unusable. Because of this they are not suited to backup purposes. The disks can become corrupt through many causes including disk, heat, magnetism or moisture.

A **zip disk** is a removable magnetic disk which fits into a special zip drive. The surface is coated with a special scratch resistant material which makes a zip disk a very robust storage device. It comes in a number of capacities: 100, 250 and 750 Mb.

A **flash disk** is another type of large mobile storage. This is often also called a flash disk or memory stick. This is a solid state device (no moving parts) that connects to the computer via the USB port. It provides a very fast and reliable method of storing data externally.

The cost of flash disks have dropped significantly over the past few years, and the size of available disks has increased tremendously. **Flash disks** are quickly becoming the standard for mobile storage, replacing more expensive devices such as the Zip disk.

A **CD ROM** uses optical technology. When data is written, small pits are burned into the surface using a highly focussed laser beam. These are read by another laser beam. There are two types of CD ROM used for storage. The CD-R disks can only be written to once. Once data has been

written to part of the surface, this part can no longer be used. CD-RW disks are designed so that one set of data can overwrite another. This allows the disks to be re-used many times.

CD ROM provides a reliable and storage medium for backing up and storing data. The speed is greater than that of a diskette but slower than that of a hard drive. Writing to a CD ROM is a much slower process than reading it. The capacity of a CD ROM is 640 Mb. It is sometimes possible to store about 700 Mb on a disk.

The **DVD (Digital Versatile Disk)** is a development of the storage technology of the CD ROM. Using newer storage methods and higher quality media, a DVD can store about 4 Gb of data. This is enough to store a full length film. As with CD ROM's, both DVD-R and DVD-RW disks are available.

A **hard disk drive** can be **internal** or **external**. An internal drive is housed inside the main unit and is connected directly to the motherboard of the computer. An external drive is housed inside a special caddy which connects to the computer through one of its ports. Most now use the USB or firewire ports to achieve maximum performance.

An external hard drive is a good backup medium and allows large quantities of data to be stored. Since the same drive can be connected at different times to different computers, these drives provide a useful way of transferring data between computers that are not connected through a network. As they are electromechanical devices, they are subject to mechanical failure if not handled with care. The small 2½" drives used in laptops make excellent external hard drives since they are constructed to be moved around.

Modern hard drives have capacities from 40 Gb to 300 Gb. They are also relatively cheap in terms of the storage capacity they offer.

Although we can think of directories as containers for files and sub-directories, these are logical structures rather than physical areas on a disk. The actual method of physically storing files on disk and organising them in directories is a very technical topic. From a user's perspective, the important thing is to understand directories as providing a logical method of grouping related files together in one place.

Where computers are connected together through a network, each user will see the disk drives on other computers as part of his/her own directory tree. In fact, if the user has not set up the system, he/she will not necessarily even be aware of the physical location of different parts of the directory tree.

One of the strengths of Linux is that it fully integrates a network into a single system. All your storage devices are accessed via the filesystem as though they are directories on the filesystem.

2.3.2 Directories/Folders

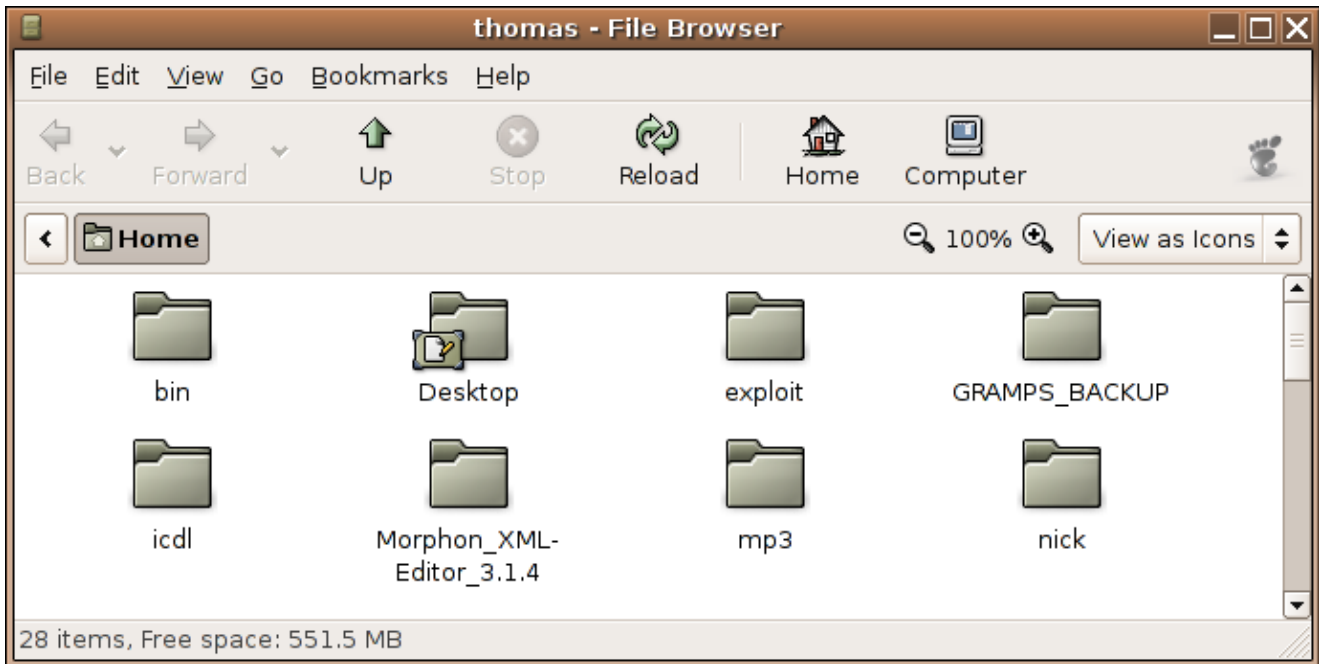
2.3.2.1 Navigate to a file, folder on a drive.

Browse using the Home Folder

- Click on **Places >> Home Folder** to browser your home folder

After clicking this icon, the file browser will open with your home directory displayed.

2.3 Using a Computer and Managing Files: Managing Files

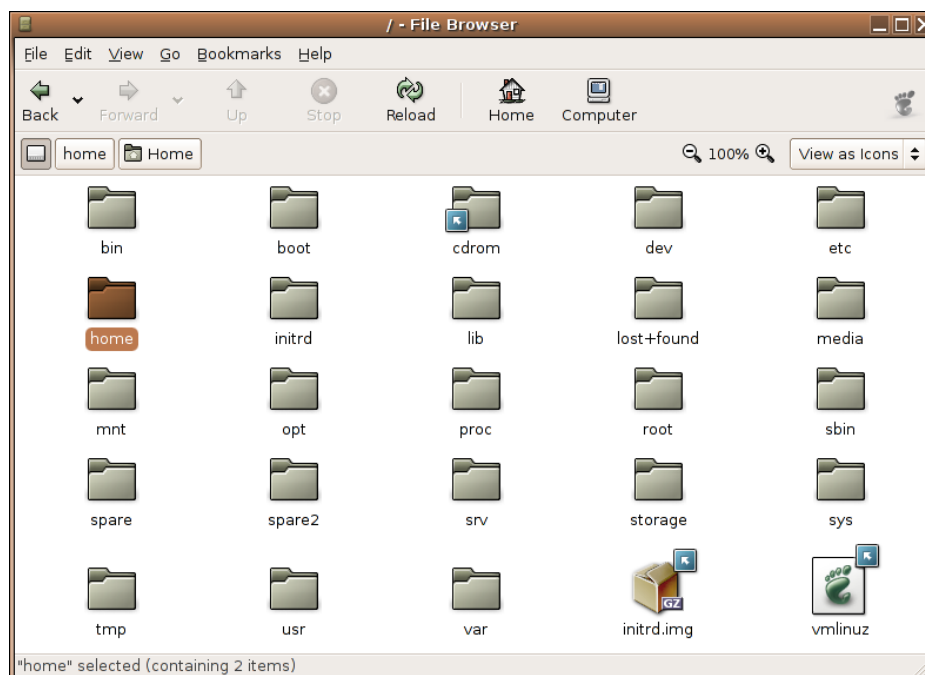


The **Desktop** sub-directory is created automatically at the same time as the **home** directory. Files that are saved to this sub-directory will be displayed as icons on the desktop.

The navigation icons are displayed on the left of the toolbar. The **Up** icon displays the directory one up in the hierarchy. This is also known as the **parent** of the current directory. It is one step closer to the **root** of the system.



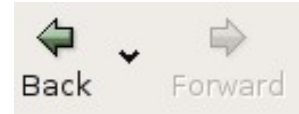
- Click **Up** twice. This will display the **root** of the system. This is the starting point of the entire directory system.



2.3 Using a Computer and Managing Files: Managing Files

Although you can see files and directories, you will not be able to manipulate them or delete them. You are only able to work with directories and files to which you have access. Normally these are only files located in your home directory and its sub-directory. The **root user** is however able to give you access rights to files and directories outside your home directory.

The **Back** and **Forward** icons allow you to trace your steps back and forward through the directories you have visited during your current session.

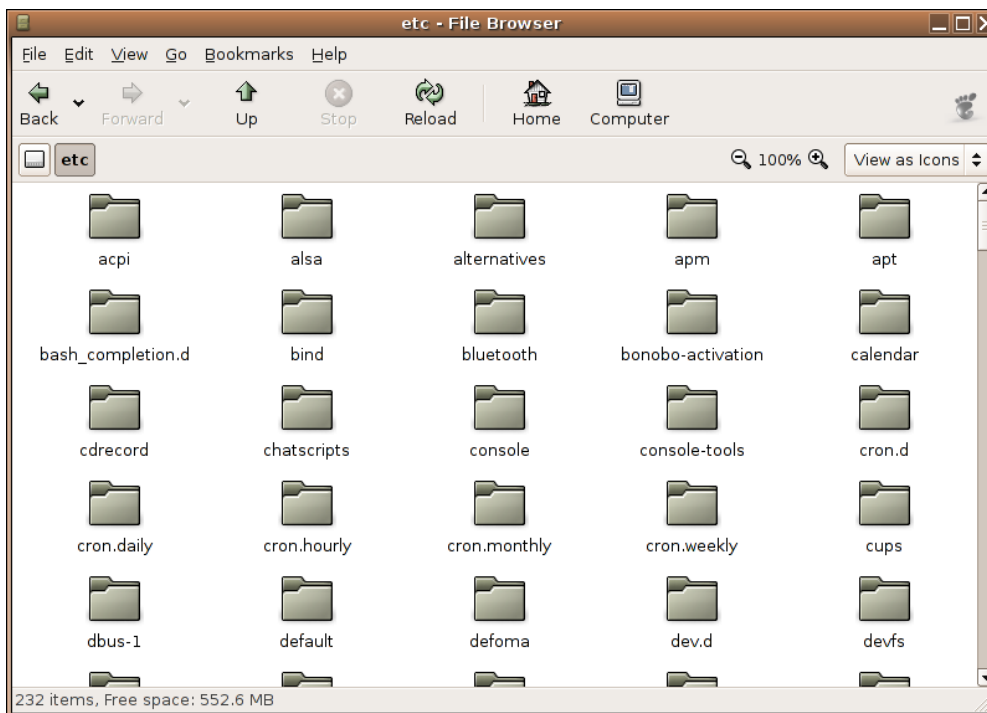


To return to the **home** directory at any stage, press the **Home** icon.



To move to a new directory, double click on the icon in the main pane.

- Double click on the **etc** directory.

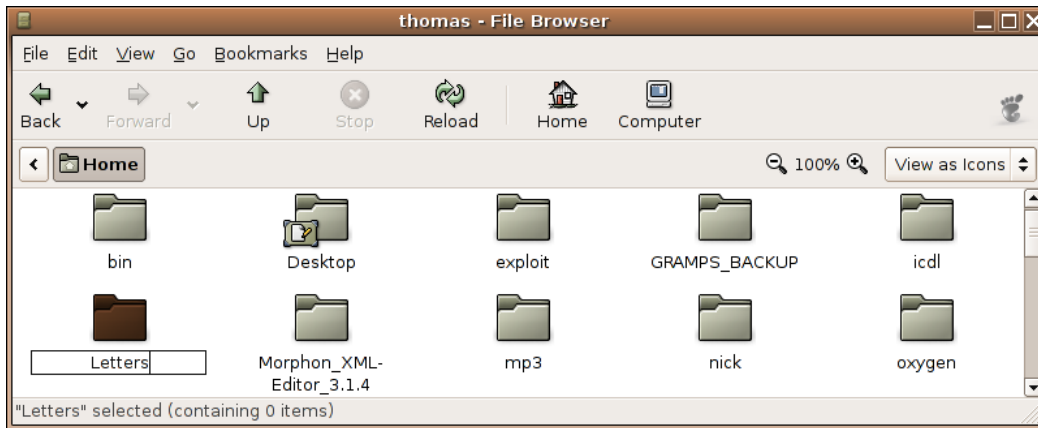


2.3.2.2 Create a directory / folder and a further sub-directory / sub-folder.

The following example illustrates how to create directories and sub-directories in your home directory.

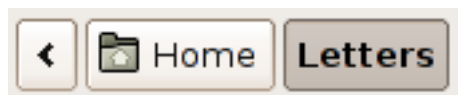
- Click the **Home** icon.
- **File >> Create Folder** or press **Shift+Ctrl+N**.
- Enter the name for the new directory, **Letters**.

2.3 Using a Computer and Managing Files: Managing Files



- Press **Enter**.
- Double click on the **Letters** icon in the main pane.

Notice that **Letters** is now displayed in the **Location Bar** now reflect the new directory.

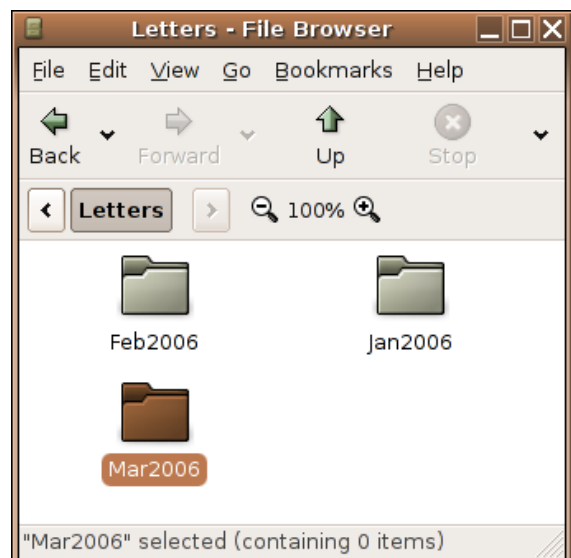


- **File >> New Folder** or press **Shift+Ctrl+N**.
- Enter a name for the new sub-directory, **Jan2006**.
- In the same way create directories called **Feb2006** and **Mar2006**.

These new directories will be displayed as icons.

You could, if you wish, enter these sub-directories and create another level of sub-directories within each.

- Work out a meaningful directory structure for your own needs.
- Create this structure using the method that has just been described.

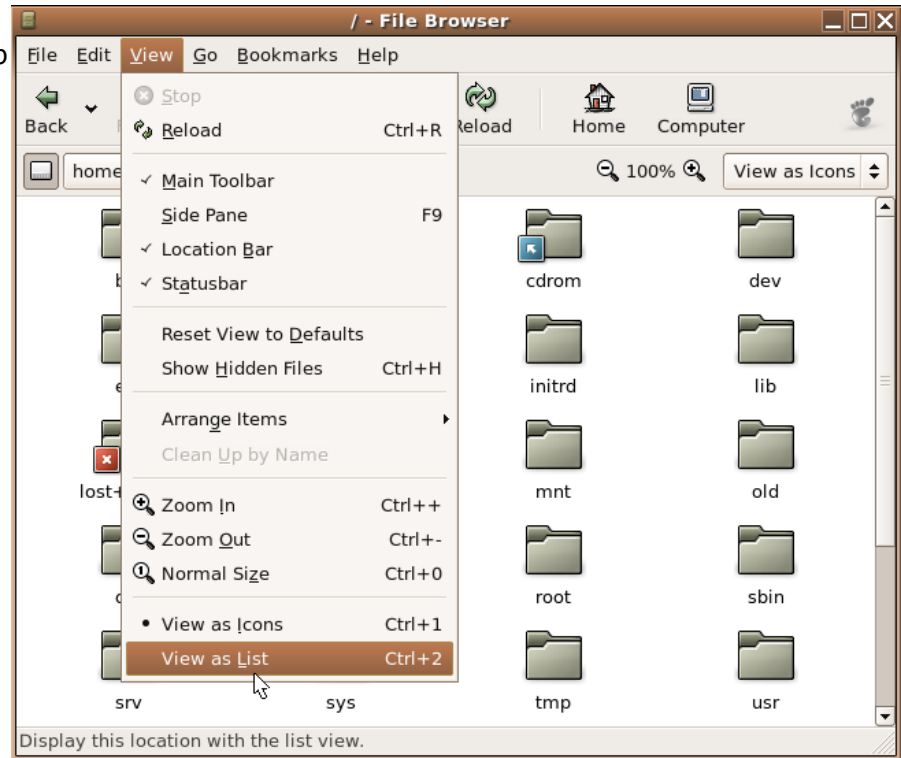


2.3.2.3 Open a window to display directory/folder name, size, location on drive.

Change View Mode

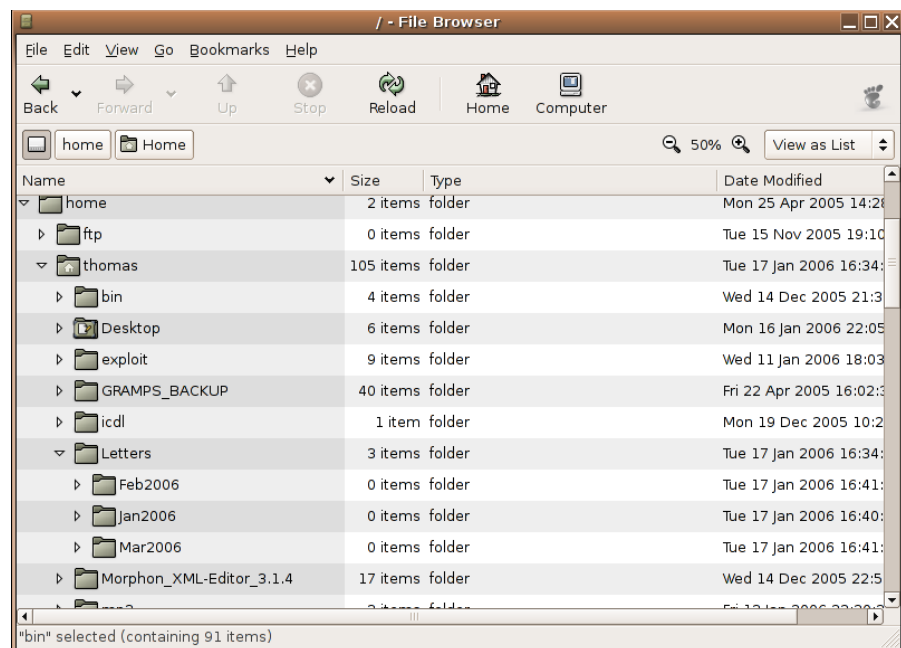
The default view in Gnome file manager displays only icons. There are other possible views on a directory.

- Click on **Home** and move up to the **root** level.
- **View >> View as List**



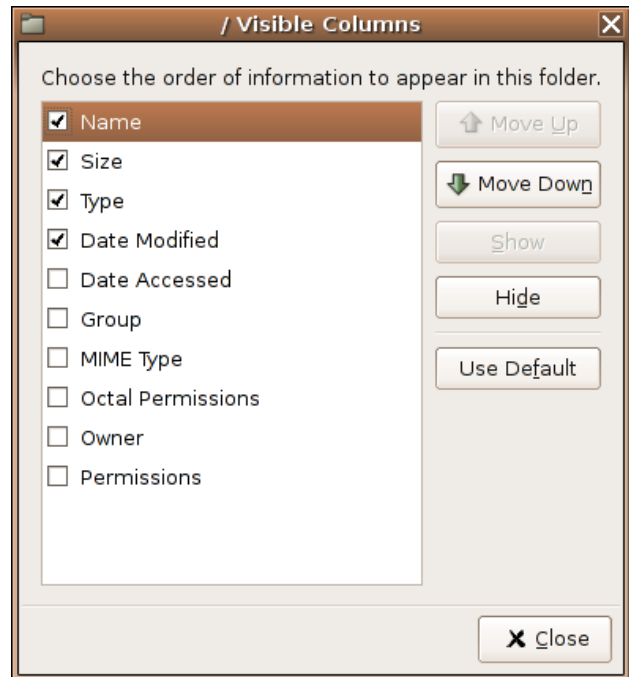
- Click on **Home** to expand the directory so that its contents will be displayed.
- Click on your own **home directory**.
- Click on the **Letters** sub-directory.

You should see a display similar to the one on the adjacent screen.

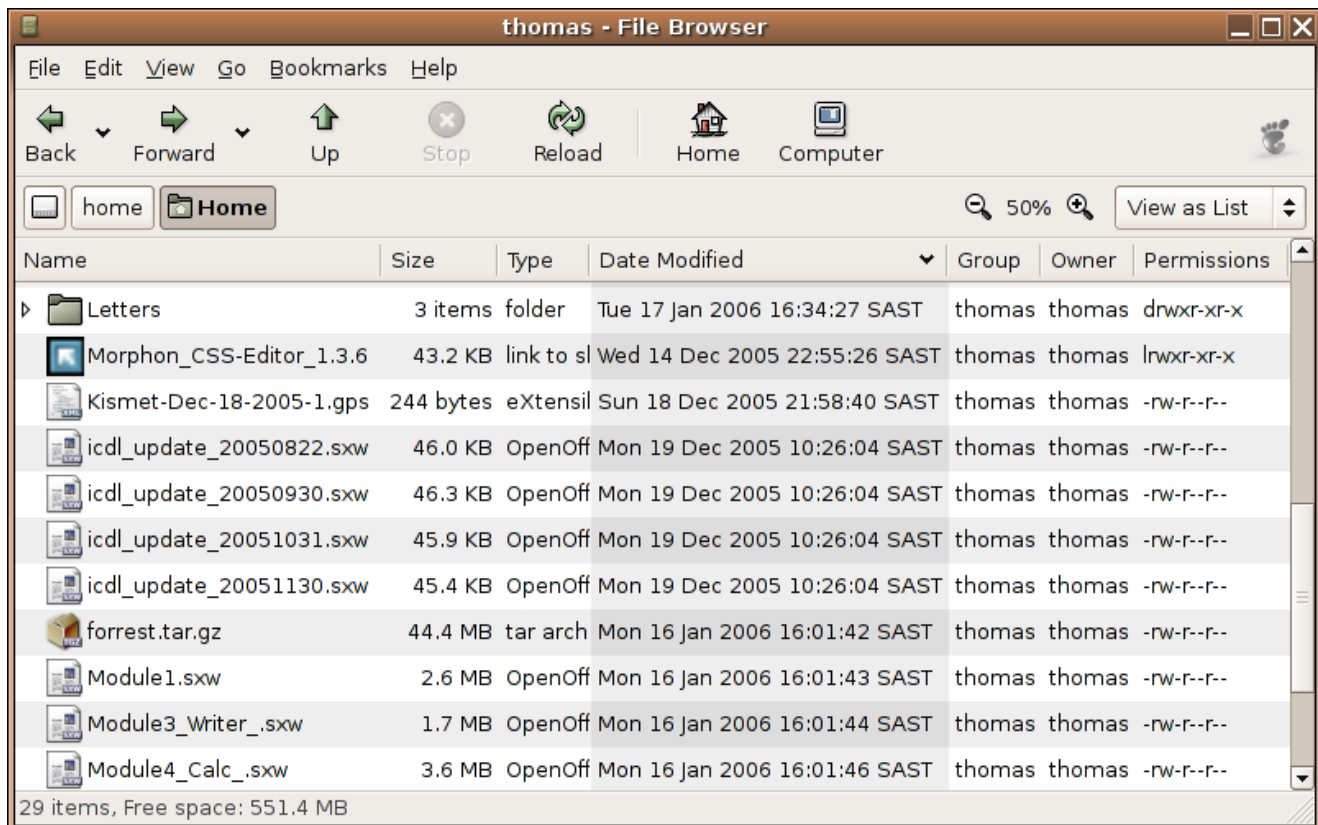


2.3 Using a Computer and Managing Files: Managing Files

- To add more detail columns, click on **View >> Visible Columns**.
- Add **Owner, Group and Permissions**.
- Click **Close**



The following screen illustrates a directory containing detail on a number of different types of files:



This screen gives you full information on each file. The first four columns provide the basic information on **file name, size, File Type** and when the file was last **Modified**. With regard to the **Modified** column, it is important that your clock and calendar settings are correct. If not, the information in this column will be useless.

Permissions: The permissions column provides information on **access rights** to the files and directories. Access rights refer to the permissions users have to perform various actions on files and directories.

Each file has an **owner** and a **group** associated with it. A group is a set of users collected together under a single group name. The permissions consists of three sets of three characters. The first three refer to the access rights of the owner, the second three of the group and the third set to all other users.

rwX means read, write and execute rights.

r-x means read and execute rights only, not write rights.

r-- means read only rights, not write or execute rights.

--x means execute rights only, not read or write rights.

--- means no rights at all.

If a file has permissions given by **rwXr-xr--** this means that the owner has **rwX** (read, write and execute) rights, the group has **r-x** (read and execute only) rights and all other users have **r--** (read only) rights.

The **owner** and **group** associated with a file or directory are specified in the next two columns.

Owners, groups and permissions can be changed by users who have the necessary access rights to the files or directories.

2.3.3 Working with Files

2.3.3.1 Recognise common file types: word processing files, spreadsheet files, database files, presentation files, image files, audio files, video files, compressed files, temporary files.

One way of recognising different types of files is to use the **List View** in **Gnome File Manager** as illustrated in the previous section. Files can also be recognised by the **extension** on the file name. This is the part of the file name that follows the final period. The following table illustrates some common file names and examples of each.

Extension	Example	Description
odt	jamaica.odt	A Writer text file.
sxw	jamaica.sxw	
ods	populationSA.ods	A Calc spreadsheet file.
sxc	populationSA.sxc	
ott	invoice.ott	A template file that can be used as the basis for creating Writer text files.
stw	invoice.stw	
odp	client.odp	An Impress presentation.
sti	client.sti	
odb	subscribers.odb	A Base database
pdf	contract.pdf	A picture document format file. This format allows a file to be sent in a format that can only be read and not edited. To read such a file you would need a pdf reader.
htm, html	index.htm	Htm and html files are files that can be read using a web browser.
txt	notes.txt	A text file containing pure text without any formatting.
rtf	plans.rtf	A rich text format file. This is a format that can be used for exchanging files between different types of system.
doc	jamaica.doc	A Microsoft Word document.
xls	populationSA.xls	A Microsoft Excel spreadsheet file.
ppt, pps	client.ppt	A Microsoft PowerPoint presentation file.

2.3 Using a Computer and Managing Files: Managing Files

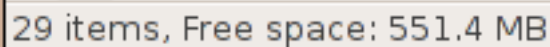
mdb	vendors.mdb	A Microsoft Access database file.
zip	install.zip	A compressed file in zip format.
gz	install.gz	A compressed file in gzip format.
tar	oo-137.i586.tar	A tarball file. tar files are used for creating installation packages.
deb	00-137.i586.deb	An Ubuntu Package Manager File. deb files are used for installing new pieces of software.
png	sky.png	A common format for storing graphic images.
jpg, jpeg	sky.jpg	A common format for storing graphic images.
tif	sky.tif	A common format for storing graphic images.
gif	sky.gif	A common format for storing graphic images.
wav	trumpet.wav	An audio file
au	trumpet.au	An audio file
mpg	concert.mpg	A video file
avi	concert.avi	A video file
tmp	ws0001.tmp	A temporary file

Extensions are a Windows concept and are not actually needed in Linux. They are however useful in providing information for users about the contents or format of files.

2.3.3.2 Count the number of files, files of a particular type, in a folder (including any files in sub-folders).

Count total number of files and sub-directories in a directory

When you access a directory with the Gnome file manager, the status bar at the bottom indicates the number of files and directories in the current directory and the number of free hard disk space available.

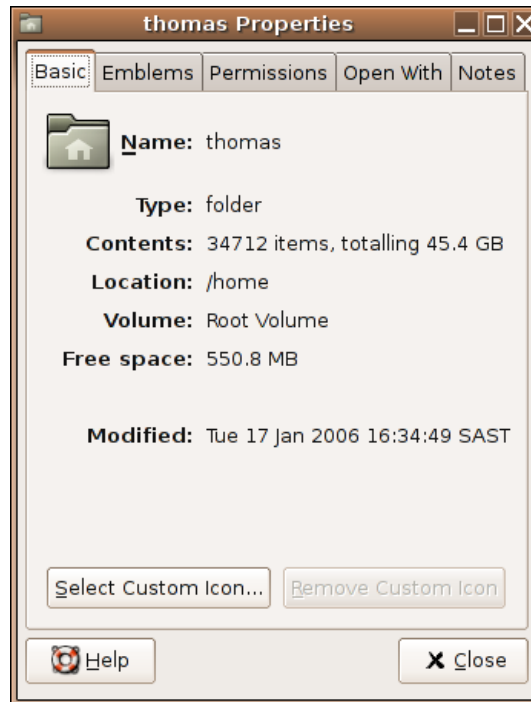


29 items, Free space: 551.4 MB

However, these figures only count what is in the current directory and not what is in the sub-directories.

To get full information on a directory and its sub-directories:

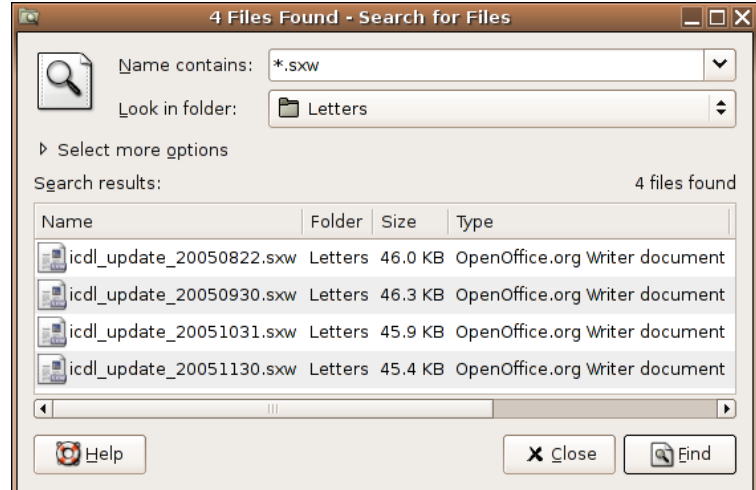
- Click **Home**.
- Right click on the directory for which you want to retrieve full information.
- Click **Properties**
- Ensure the **Basic** tab is selected.
- The total number of items and total size is displayed on the **Contents** line:



Count files of a particular type

Suppose you wish to find the total number of files ending in **swx** in the sub-directory **Letters** in your **home directory**.

- Click **Places >> Search for Files**.
- Using **Look in folder** browse to the **Letters** sub-directory in your home directory.
- Enter ***.swx** in the **Name contains** text box.
This means the files and directories can start with any number of letters but must end with the extension **.swx**. If you had entered ***swx**, the files located would only need to end in swx regardless of whether it is the extension or not.
- Click **Find**.



The files that satisfy the search specification will be displayed together with their location. The number of files found are is indicated just above the search results.

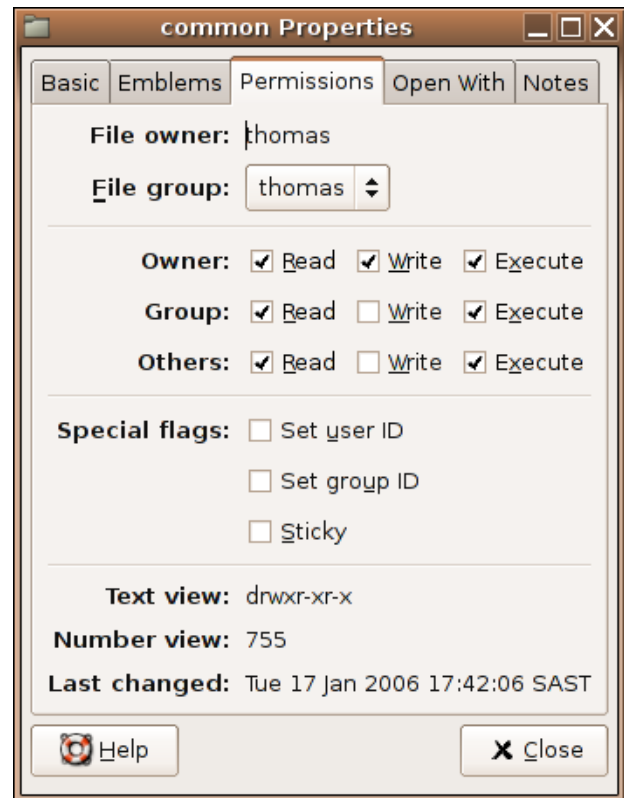
2.3.3.3 Change file status: read-only / locked, read-write.

The permissions associated with files and directories in section 2.3.2.3. If you are the owner of a file, you can change these permissions.

Change permissions on a directory

In this example you will create a sub-directory in your home directory called **Common**. You will then give users access to change the contents of this directory.

- Click **Home** or **Places >> Home Folder**.
- **File >> Create Folder**.
- Create a directory called **common**.
- Right click on **common** and select **Properties** in the **context menu**.
- Click the **Permissions** tab.
- Make sure that **Read, Write** and **Execute** are checked for all three classes.
- Click **Close**.



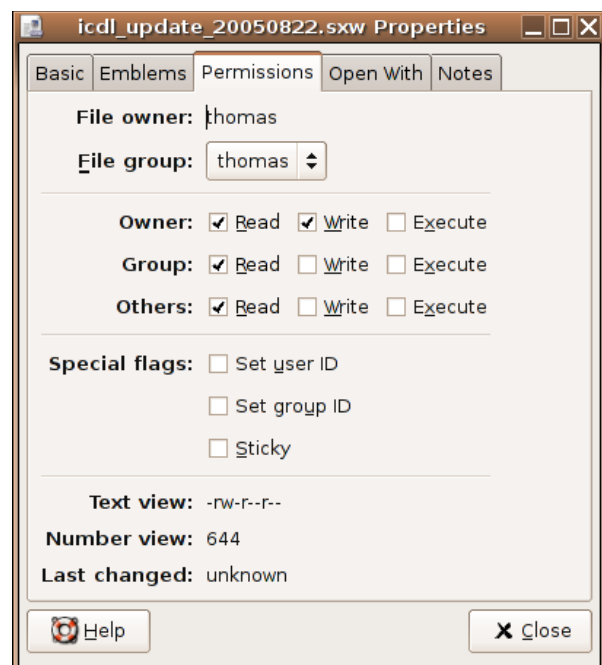
Change permissions on a file

By default, Ubuntu locks access to files so that they cannot be changed by anyone other than the owner or members of the group.

- Open the Gnome file manager and locate the file whose permissions you wish to view or change.
- Right click on the file and select **Properties** in the **Context menu**.
- Click the **Permissions** tab.

The current permissions will be checked.

- Add or remove check marks to set the desired permissions.
- Click **Close**.



2.3.3.4 Sort files by name, size, type, date modified.

Files can be sorted by name, type, size and date by clicking on the titles at the top of the pane.

- Open the Gnome File Manager and access the directory you wish to sort.
- Ensure that **View as List** is selected
- Click on **Name**. This will sort the files in ascending alphabetic order by name.
- Click on **Name** a second time. This will now sort the files in descending order of name.

When you sort files, the directories will appear ahead of the files. Directories and files will be sorted separately.

- Click **Date Modified**. This will sort the files in date order starting with the most recent.
- Click **Date Modified** a second time. This will now sort them with the oldest appearing first.
- Click **Size**. This will sort the files in order of size with the largest at the top.
- Click **Size** a second time. This will sort them in the reverse order of size.
- Click **Type**. This will sort the files alphabetically by type.
- Click **Type** a second time. This will sort them by type in the reverse order.

2.3.3.5 Understand the importance of maintaining correct file extensions when re-naming files.

The part of a file name following the final period (full stop) is called the file extension. This often has a special significance which will be lost if it is changed. For example, the system will recognise that a file having a pdf extension can be opened with a pdf reader or that a file with a png extension is a graphic image.

Some files in Linux may have more than one period. Each of these separates a different part of the file name which may be of special significance to the application that will open it. If you do change a file name, only change the part that is to the left of the first period.

For example, in the file name **kdbg-1.2.8-2.i686.deb**, the deb extension means that this is a file containing installation files that can be managed with the **Debian Package Manager**. The **i686** component means that this package is designed to run on a **Pentium** processor. Changing either of these would cause problems if you tried to install the package from the file.

2.3.3.6 Re-name files, directories/folders.

Rename a file

- In a Gnome file manager window, right click on the icon of the file you wish to display a context menu and click **Rename** or press **F2** or click on the label below the icon.
- This will open a small window around the name of the file.
- Edit the name. Keep in mind the need to preserve the extension.
- Click outside of the name when done.



Rename a directory

The process is the same as that for a file.



2.3.4 Duplicate, Move

2.3.4.1 Select a file, directory / folder individually or as a group of adjacent, non-adjacent files, directories / folders.

Before you can perform actions on files such as move, copy or delete you need to select (highlight) them.

Select a single file or directory

- Click on the icon of the file or directory. A brown highlight will appear round the name.

Select a group of adjacent files or directories

- Click on the icon of the first file in the list.
- Hold down the **Shift** key and click on the icon of last file in the list. All the files between the two will also be selected.

Select a group of non-adjacent files or directories

- Click on the icon of the first file in the list.
- Hold down the **Ctrl** key and click on the icons of each of the files you wish to select.

2.3.4.2 Duplicate files, directories / folders between directories / folders and between drives.

- Open the Gnome file manager and select the files or directories you wish to duplicate. These can include both directories and files.
- **Edit >> Copy.**
- Navigate to the directory in which to wish to duplicate the files and directories.
- **Edit >> Paste.**

2.3.4.3 Move files, directories/folders between directories/folders and drives.

- Open the Gnome file manager and select the files or directories you wish to move. These can include both directories and files.
- **Edit >> Cut.**
- Navigate to the directory in which to wish to duplicate the files and directories.
- **Edit >> Paste.**

2.3.4.4 Understand why making a 'backup' copy of files to a removable storage device is important.

There are many things that can cause loss of files. These include:

- Mechanical failure of a hard drive.
- Damage to the system due to natural disasters such as fire, floods and earth movement.
- Theft of the system.
- Corruption of data due to computer viruses.
- Deliberate corruption or deletion of data through criminal activity.

In order to protect data, it is important that copies of important files are made and kept in a separate location so that if loss occurs to the main system, data can be recovered from the copies. Copies of important files are referred to as **backups**.

2.3.5 Delete, Restore

2.3.5.1 Delete files, directories / folders to the recycle bin / wastebasket.

- Select (highlight) the files you wish to delete.
- Click **Edit >> Move to Trash** or press the **Delete** key.

2.3.5.2 Restore files, directories / folders from the recycle bin / wastebasket / trash.

- Click on the **Trash** icon in the bottom right of your screen.
- Select the files you wish to restore.
- **Edit >> Cut.**
- Navigate to the folder in which you wish to restore the files.
- **Edit >> Paste.**

2.3.5.3 Empty the recycle bin/wastebasket.

With time **Trash** will accumulate hundreds of files. Rather than waste space, empty **Trash** on a regular basis.

- Right click on the **Trash** icon on the bottom right of your screen
- Click **Empty Trash** in the **context menu**.

2.3.6 Searching

2.3.6.1 Use the Find tool to locate a file, directory / folder.

- **Places >> Search for Files**
- Click the **Name / Location** tab.
- Adjust the **Look Folder** selection by browsing to the directory in which you wish to search.
- By default it searches through all sub-directories within the selected directory.
- Enter the name of the file in the **Name Contains** text box.
- Click **Find**.

In searching for files, the wildcard character, *, plays a very useful role. * represents any number of characters.

For example:

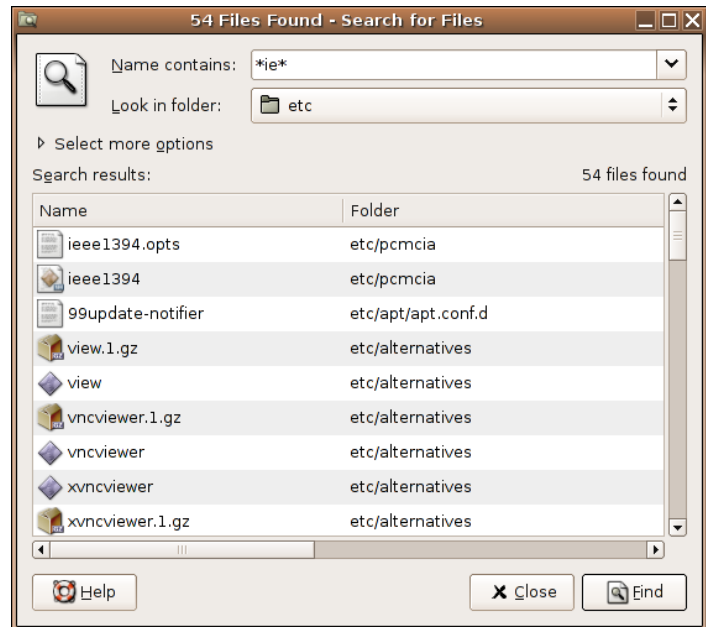
- **doc*** means any file with a name beginning with the letters **doc**.
- ***doc** means any file with a name ending with the letters **doc**.
- ***doc*** means any file containing the letters **doc** in its name.

A specific example

- **Places >> Search for Files**
- Click the button next to the **Look in Folder** label to browse to **/etc**
- Enter ***ie*** into the **Name Contains** text box.
- Click **Find**.

All the files which have the letters **ie** in their file names will be displayed together with their locations. The number of files that satisfy the search criterion will be displayed on the top right of the search results.

- Click **Close** when done.



2.3.6.2 Search for files by content, date modified, date created, size, wildcards.

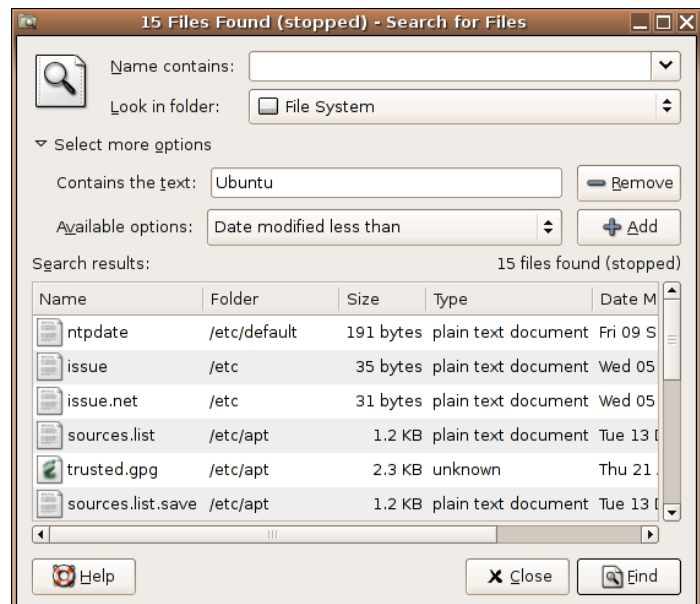
Search for a file containing text

The previous example searched for a file containing text in its file name. It is also possible for the **Find** to look inside files for text.

- **Places >> Search for Files**
- Click the **Name Contains** text box and clear any contents otherwise the search will be limited to looking only in files whose names satisfy this criterion.
- Click the button next to the **Look in Folder** label to browse to the directory in which you wish to search.
- Click **Select more options**
- Click the **Contents** tab.
- Type text that you are searching for in the **Contains the text** window.
- Click **Find**.

The adjacent screen illustrates the results of such a search.

- Click **Close** when done.

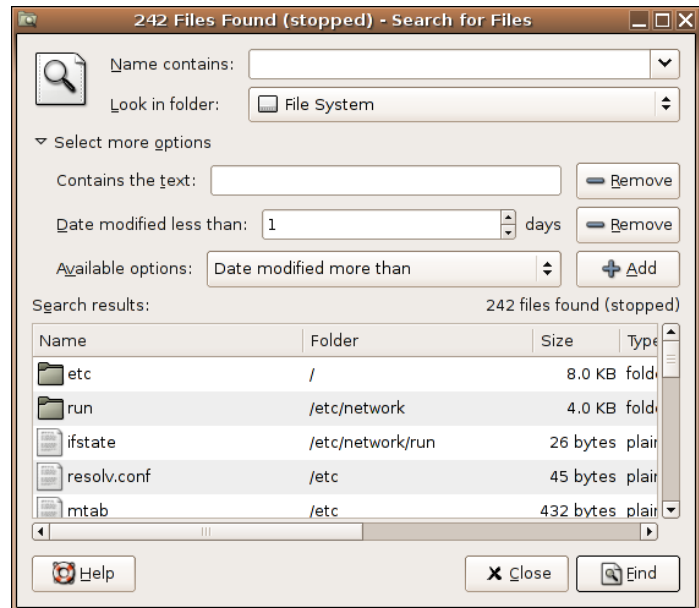


Use wildcards in a search

This was covered in the previous section.

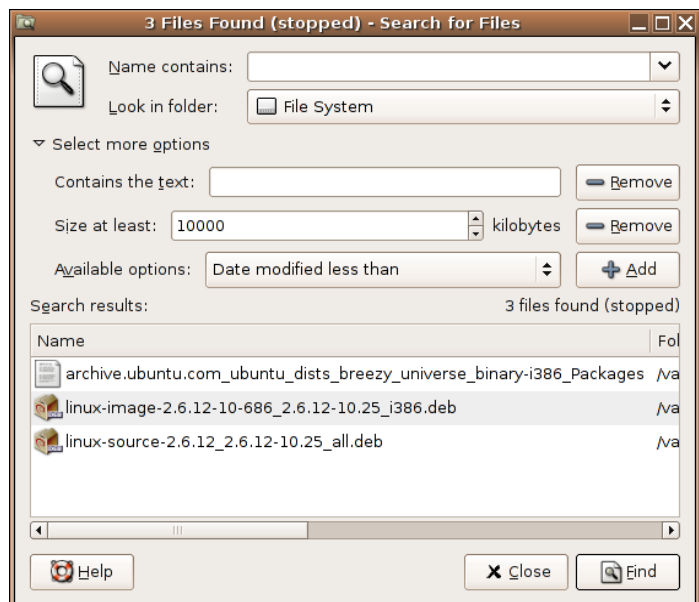
Search for files by date

- **Places >> Search for Files**
- Click the **Name Contains** text box and clear any contents otherwise the search will be limited to looking only in files whose names satisfy this criterion.
- Click the button next to the **Look in Folder** label to browse to the directory in which you wish to search.
- Click **Select more options**
- Clear any contents in **Contains the Text** window.
- Under **Available Options** select **Date modified less than** and click **Add**. Enter the number of days in the added field.
- Similarly, add any further **Available Options**.
- Click **Find**.
- Click **Close** when done.



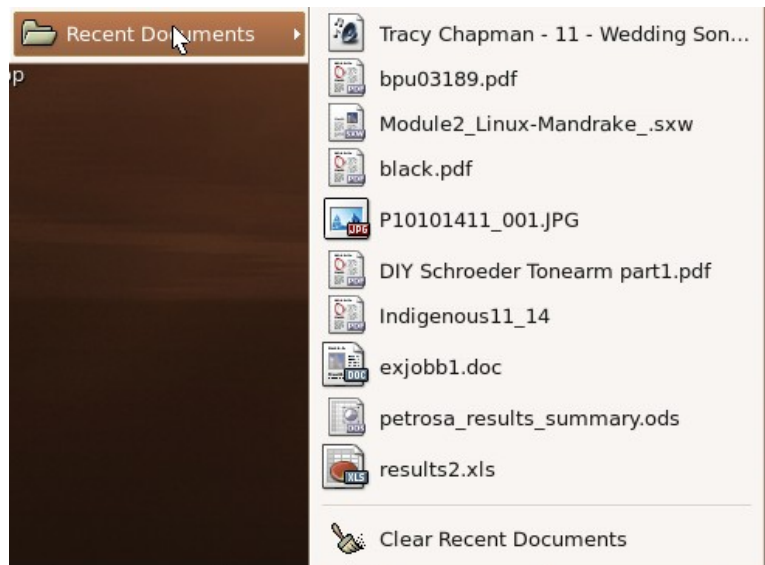
Search for files by size

- **Places >> Search for Files**
- Click the **Name Contains** text box and clear any contents otherwise the search will be limited to looking only in files whose names satisfy this criterion.
- Click the button next to the **Look in Folder** label to browse to the directory in which you wish to search.
- Click **Select more options**
- Clear any contents in **Contains the Text** window.
- Under **Available Options** select **Size at least** and click **Add**. Enter the minimum size of the file in kilobytes.
- Click **Find**.
- Click **Close** when done.



2.3.6.3 View list of recently used files.

- Click on **Places >> Recent Documents**
- A list will open with all your recently accessed documents. To open one of the documents, simply click on it's icon.
- To clear the list click on **Clear Recent Documents**.



2.3.7 Compressing Files

2.3.7.1 Understand what file compression means.

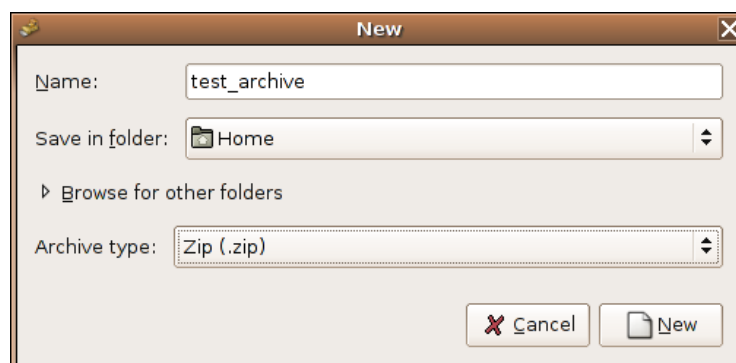
Each file has a size associated with it. Roughly speaking the amount of space a file occupies of disk is about the same as its file size. In reality, it takes up somewhat more space than this. When files are stored on a CD or transmitted across the Internet, it is important to the amount of disk space they occupy. Special algorithms (methods) have been developed to compress files into smaller sizes.

Sometimes a number of files are compressed into a single file while at other times a single file may be compressed. A compressed file can be recognised by it's extension. The most common formats are **zip**, **rar**, **gz**, **rpm** and **tar**.

There are numerous utilities that enable you to work with compressed files. The next two examples will illustrate the use of the **Gnome Archive Manager**.

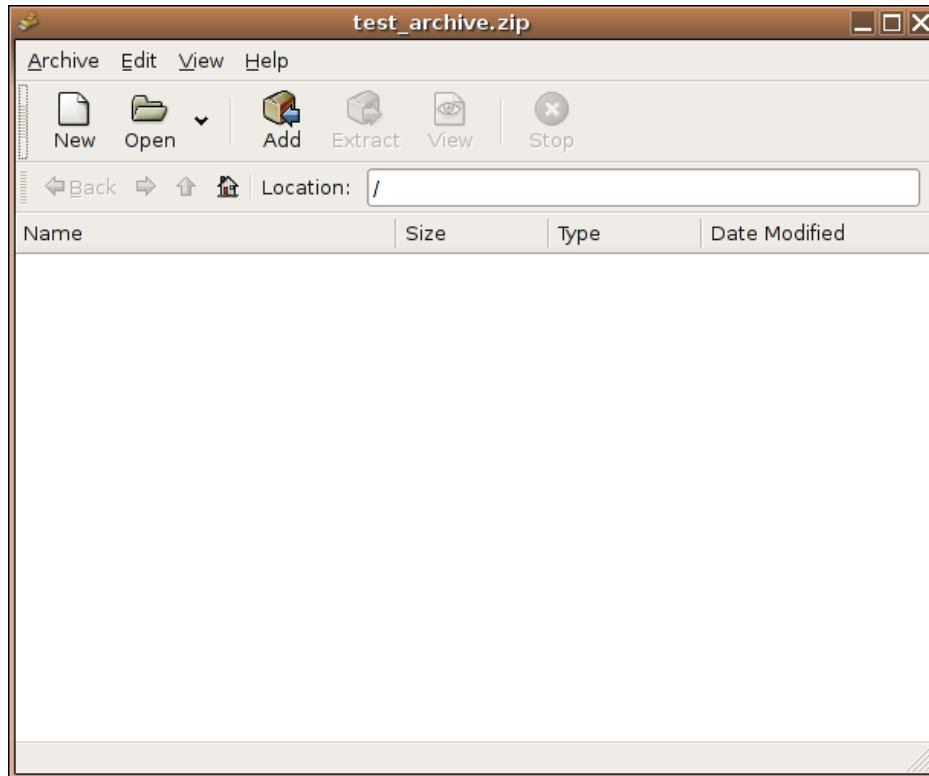
2.3.7.2 Compress files in a folder on a drive.

- Click **Applications >> Accessories >> Archive Manager**.
- Click **Archive >> New** or simply click on the **New** icon.



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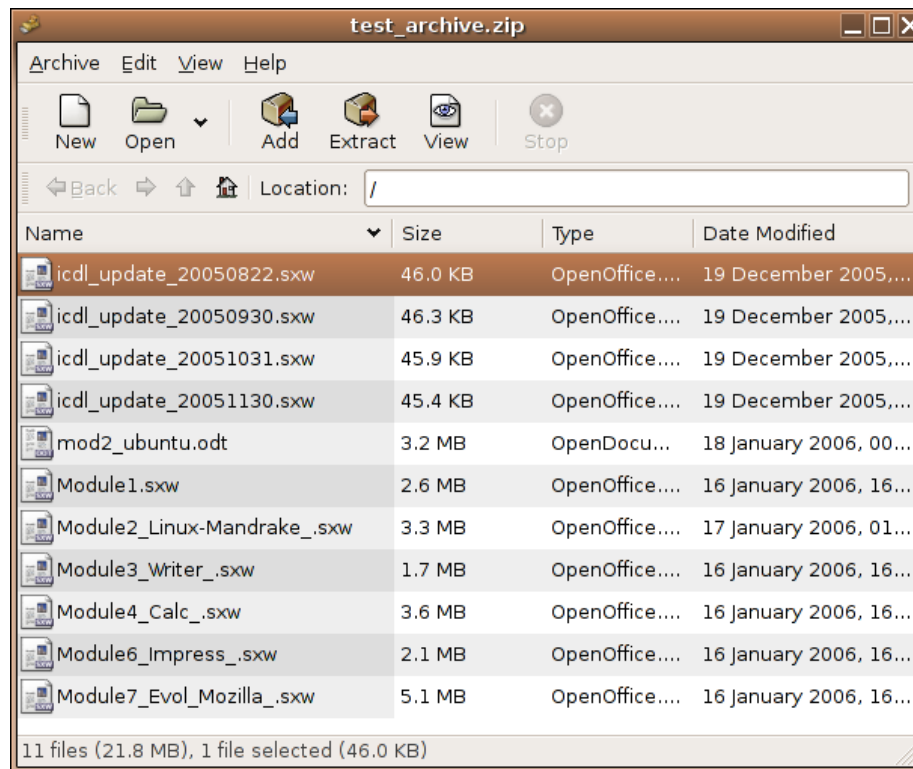
- In the **Name** text box, enter the name of the archive you wish to create.
- Click the button next to **Save in folder** and browse to the directory in which you wish to save the archive. To save to a floppy disk, navigate to **/media/floppy**.
- From the **Archive type** drop down list, select the type of archive you would like to create.
- Click **New** to return to the **Archive Manager** interface.



- Click **Edit >> Add Files** or click the **Add** icon.
- Navigate to the directory in which the file is located and double click on the file. Alternatively, if you wish to select more than one file from a directory, select them as you would select multiple files and click **OK**.
- Repeat until all the files have been added.
- **Edit >> Add a Folder** if you wish to select entire directories.
- If you wish to delete a file, right click on it and select **Delete** in the **context menu**.



At this point your screen will look something like the following:



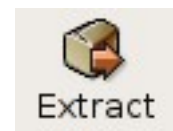
- **Archive >> Close** or **Archive >> Quit** will automatically save the archive. **Close** closes the current archive but leaves the **Archive Manager** interface displayed. **Quit** closes both the current archive and the application.

Add files to an existing archive

- **Applications >> Accessories >> Archive Manager**
- **Archive >> Open** or click on the **Open** icon.
- Browse to the archive you wish to open, select it and click **OK**. The files contained in the archive will be listed.
- **Edit >> Add File** or **Edit >> Add a Folder** to add additional files to the archive.
- To save the archive under a new name use **Archive >> Save as**. Otherwise use **Archive >> Close** or **Archive >> Quit**.

2.3.7.3 Extract compressed files from a location on a drive.

- **Applications >> Accessories >> Archive Manager**
- **Archive >> Open**.
- Navigate to the archive you wish to open, select it and click **OK**. The files contained in the archive will be listed.
- **Edit >> Extract**.
- Browse to the directory in which you wish to extract the files.
- Click **Extract**.
- Close **Archive Manager** by clicking **Archive >> Quit**.
- Using the **Gnome file manager** navigate to the target directory to verify that the files have been extracted.



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Section 4: Viruses

2.4.1 Concepts

2.4.1.1 Know what a virus is and what the effects of a virus might be.

A **computer virus** is a program that is deliberately created to cause annoyance or alter or delete data. Some viruses cause computer systems to slow down to the point where they are not usable. One of the features of viruses is that they are designed to replicate and spread.

Although viruses are not yet a serious problem for Linux based computers, this could change at any time. Everyday more and more viruses are created. Even though you may be using Linux, it is important to be well aware of the dangers and take the necessary precautions.

Trojan: A Trojan (or Trojan horse) is a virus that hides itself inside another legitimate program. When the program is used, the virus is released and can begin its work of replication and annoyance or damage.

Worm: A Worm is a program that replicates itself over and over in the computer's memory until the computer can barely function. One of the signs of invasion by a worm is the slowness of computers.

Time bomb: A time bomb is a virus which lies dormant until a certain date or time or for a period of time. At this date or time, the virus suddenly becomes active and carries out whatever task it is programmed to do. This can include the deletion of everything on the hard drive.

Logic bombs: A logic bomb is similar to a time bomb, except that instead of becoming active at a certain time, it becomes active when a particular activity happens. For example, instead of formatting a diskette, the virus causes the hard drive to be formatted.

Macro-viruses: Macro-viruses make use of a special customisation feature in applications called macros. Macros allow you to create mini-programs to carry out certain tasks in your applications.

2.4.1.2 Understand some of the ways a virus can be transmitted onto a computer.

Viruses are spread in a number of ways:

- Downloads from the Internet.
- Pirated software.
- Exchange of diskettes.
- In attachments to emails and in emails themselves.
- In documents. Macro-virus, described above, can be hidden in ordinary documents, spreadsheets and presentations.

Virus may be embedded in these applications. Once they are downloaded and the applications then executed, the virus loads itself into your computers memory and infects other programs on your computer. These viruses may then also perform such unwanted activities such as sending out virus-containing emails to people in your address book. Some viruses even shutdown your computer and prevent the operating system from loading again.

It is therefore very important that you only install software and open files from credible sources. If you are unsure of something downloaded from the Internet or received in an email, it would be best not to open or execute it.

2.4.1.3 Understand the advantages of a virus-scanning application.

Anti-virus software

Anti-virus software scans files for pieces of code, called **signatures**, which it recognises as part of a virus. A signature is a distinctive series of commands which are only found in the virus concerned. Scanning therefore involves analysing programming code in search of signatures embedded in legitimate programs.

Updating anti-virus software mostly involves updating the signatures file. This should be done on as frequent a basis as possible. This is even more the case when you receive files regularly from outside sources. The actual anti-virus program itself will be updated from time to time. These updates will include additional features and improved methods of scanning.

It is important to keep in mind that no anti-virus software is perfect. It is only as good as the techniques it uses for detecting viruses and the currency of the signature file. There is always the chance that a virus will go undetected. However, a good anti-virus system installed on your system is essential and will usually detect most viruses.

Updating the anti-viruses software and scanning the contents of a computer on a regular basis will provide you with a good measure of protection should your computer become infected. Good anti-virus software can also block viruses from entering the system.

Other measures

There are a number of measures you can take to protect yourself from viruses:

- Install good anti-virus software and update it on a regular basis, for example at least once a month but preferably once a week. But always remember, anti-virus software is not perfect. It cannot be the only measure you take.
- Scan all diskettes before reading them.
- Enable the auto-protection feature on the anti-virus software to scan emails.
- Be wary of emails from unknown sources, particularly if they contain attachments. Some very careful users delete emails they are unsure of without opening them.
- Use an Internet Service Provider that scans emails before delivery.
- Do not download software from unknown Internet sites.
- Be careful of using diskettes from unknown sources.
- Do not install pirated software.

2.4.1.4 Understand what 'disinfecting' files means.

When a virus is detected, the software will attempt to remove the virus. This is called **cleaning** or **disinfecting**. Disinfecting involves removing the code of the virus from the file it is attached to.

It sometimes happens that the system can detect the virus but not get rid of it. In this case, you will usually be given the option of **deleting** or **quarantining** the infected file. When a file is quarantined, it is made unusable and so unable to spread the virus. A future update of the software may be able to remove the virus. If it can the quarantine is removed.

2.4.2 Handling Viruses

2.4.2.1 Use a virus scanning application to scan specific drives, folders, files.

Because viruses are still uncommon on Linux systems, there has not been a great deal of development of anti-virus software. There are some projects to develop Open Source anti-virus software, the most popular of which is **Clam Anti-Virus**.

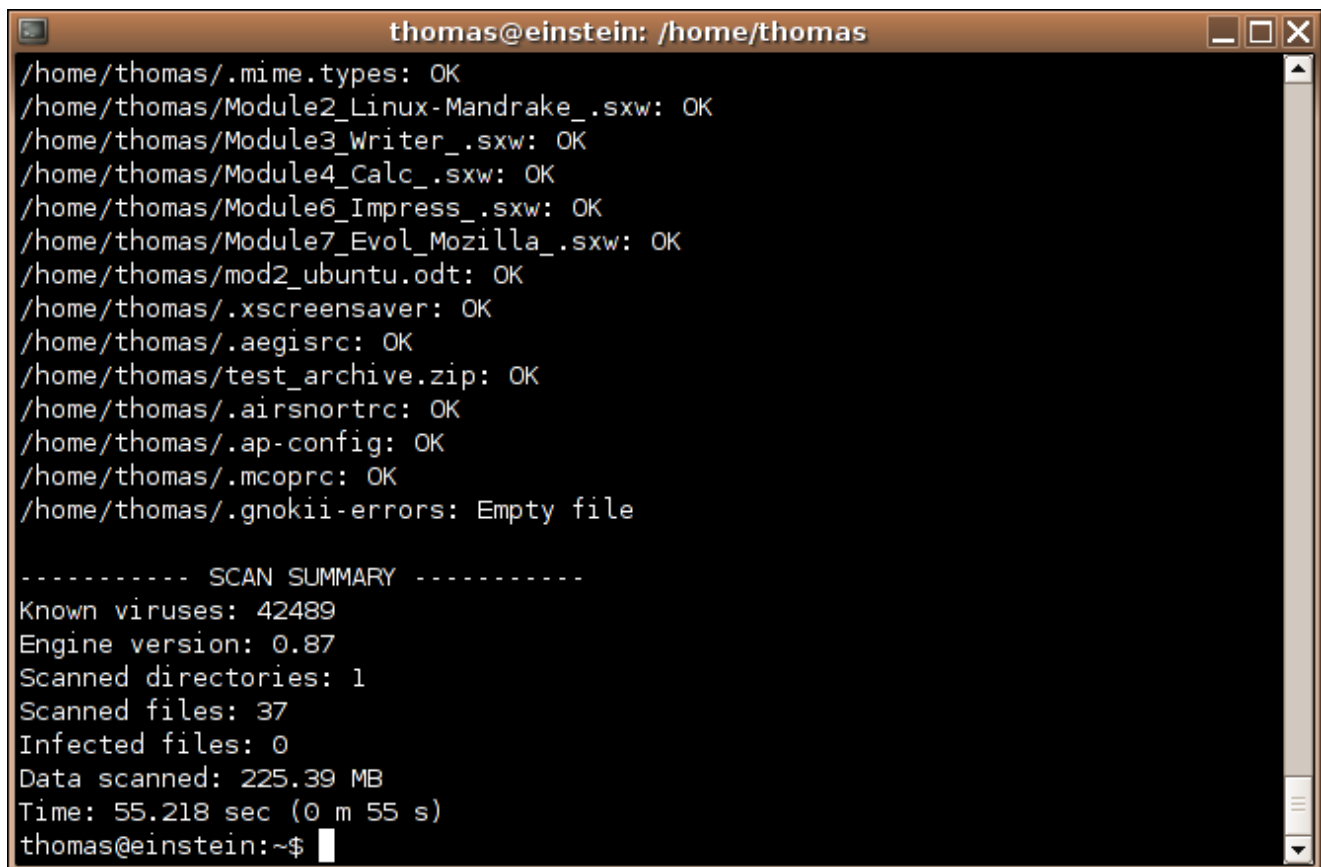
The following example illustrates how to use a text based system to scan for infected files on your system. This system uses Clam Anti-virus for Linux which is freely available to anyone. To use Clam you will need to open a terminal window and manually type in commands. When you have typed a command, press the **Enter** key to carry it out.

- Click **Applications >> Accessories >> Terminal**.
- Type the command: **clamscan** followed by the file or directory you wish to disinfect and press **Enter**.

Examples are:

clamscan /home/thomas	which will scan all files in the directory /home/thomas if thomas is a directory. If it is a file it will only scan that file.
clamscan -r /home/thomas	recursively scan all files and folders in the /home/thomas directory.
clamscan /media/floppy	scans the diskette in the diskette drive

The screen below illustrates an example of the printout from such a scan.



```
thomas@einstein: /home/thomas
/home/thomas/.mime.types: OK
/home/thomas/Module2_Linux-Mandrake_.sxw: OK
/home/thomas/Module3_Writer_.sxw: OK
/home/thomas/Module4_Calc_.sxw: OK
/home/thomas/Module6_Impress_.sxw: OK
/home/thomas/Module7_Evol_Mozilla_.sxw: OK
/home/thomas/mod2_ubuntu.odt: OK
/home/thomas/.xscreensaver: OK
/home/thomas/.aegisrc: OK
/home/thomas/test_archive.zip: OK
/home/thomas/.airsnortrc: OK
/home/thomas/.ap-config: OK
/home/thomas/.mccoprc: OK
/home/thomas/.gnokii-errors: Empty file

----- SCAN SUMMARY -----
Known viruses: 42489
Engine version: 0.87
Scanned directories: 1
Scanned files: 37
Infected files: 0
Data scanned: 225.39 MB
Time: 55.218 sec (0 m 55 s)
thomas@einstein:~$
```

Other options are:

clamscan --remove /home/thomas	scans the directory and removes infected files.
clamscan -i /home/thomas	scans the directory and only lists infected files.

- Click the **Exit** icon in the top right hand corner of the screen when done or press **Ctrl+D**.

2.4.2.2 Understand why virus-scanning software needs to be updated regularly.

As viruses are created on an on-going basis, these need to be analysed continuously by the developers of anti-virus software. Not only do the developers need to be able to extract the signature of the virus, but they also need to analyse how the virus acts and how it can be removed from the program. These changes then need to be incorporated into the anti-virus software.

Users in turn need to download these changes and update their software. The longer the period between updates, the more vulnerable computer systems are to the action of new viruses. Updates are often made available on a daily basis by developers.

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using Ubuntu and the Gnome Desktop

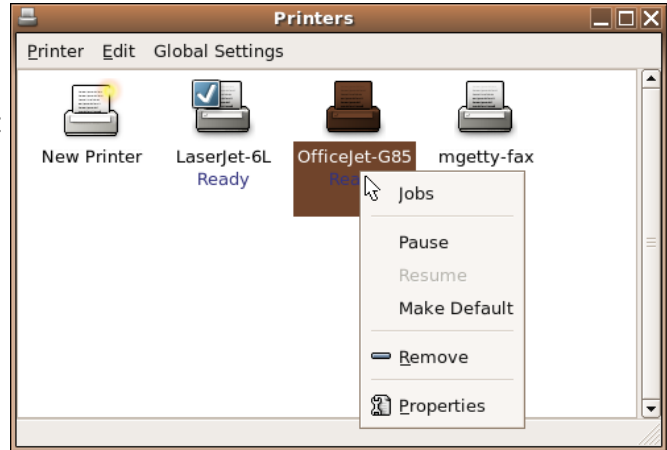
Section 5: Print Management

2.5.1 Setup

2.5.1.1 Change the default printer from an installed printer list.

Suppose you have more than one printer available to print to. The **default printer** is the printer that will automatically be offered to you when you wish to print. Other printers have to be specifically selected.

- Click **System >> Administration >> Printing.**
- Right click on the printer you wish to make the default and from the context menu, select **Make Default.**
- Click **Printer >> Quit** or **press Ctrl+Q.**

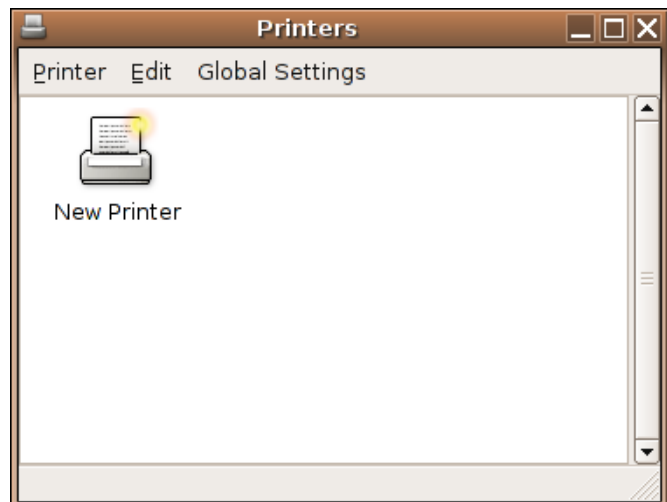


2.5.1.2 Install a new printer on the computer.

Install a new printer using autodetect

The following explanation applies when no printers have yet been installed on the computer.

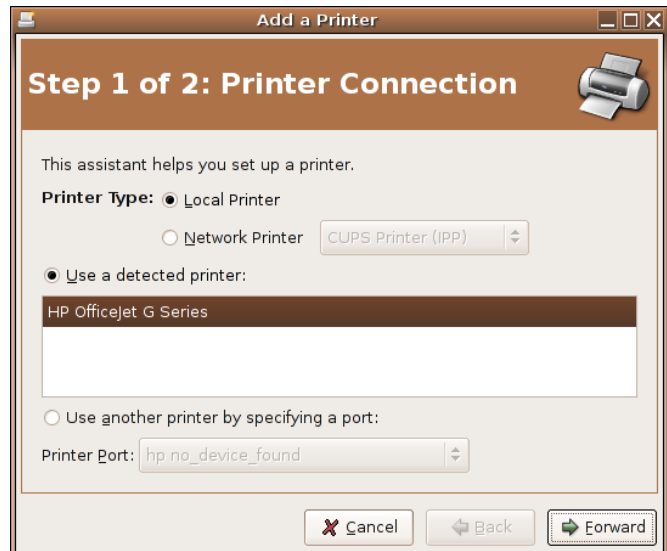
- Connect the printer to the computer using either a parallel port or a USB port.
- Make sure the power is connected to the printer and both the power switch at the power point and the power switch on the computer are both turned on.
- Click **System >> Administration >> Printing.**
- Select **New Printer**



2.3 Using a Computer and Managing Files: Print Management

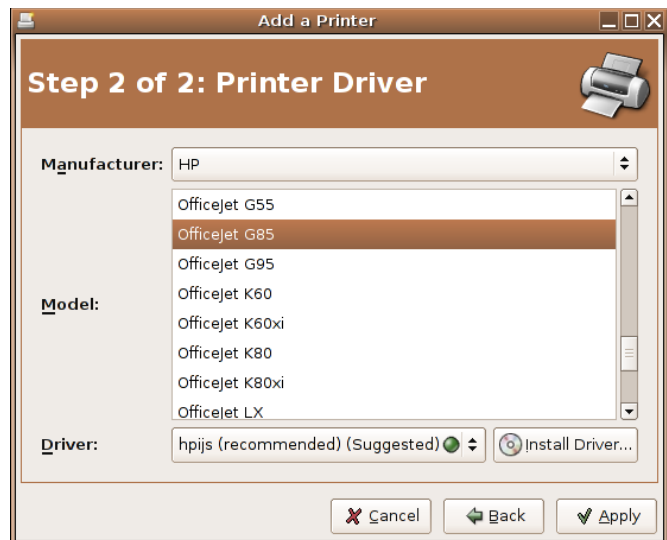
If the system detects the printer, it will list it under **Use a detected printer**

- Click **Yes**.
- Click **Forward** to continue.



Next you will be prompted to confirm the model of the printer.

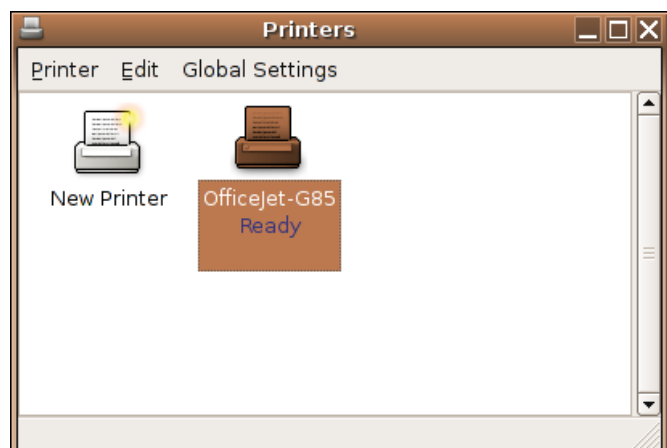
- Select the appropriate printer from the **Manufacturer** and **Model** windows (should it not be detected correctly).
- Click **Apply** to finish.



When the installation is complete, the screen shown on the adjacent screen will be displayed.

Install additional printers

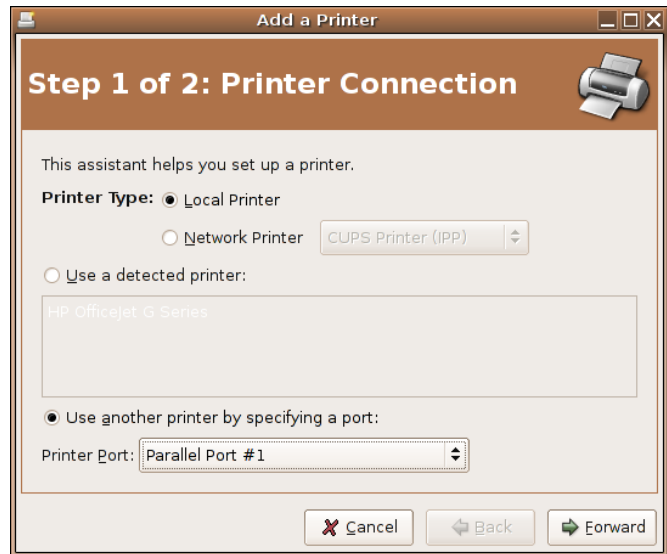
- Click **New Printer**.
- You will be given the option of autodetecting printers or of manually installing printers. If you select the autodetect option, the process will be the same as that just described.



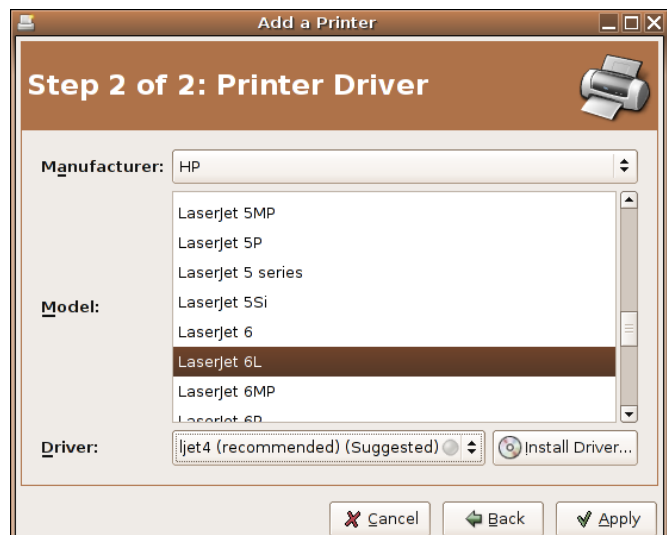
2.3 Using a Computer and Managing Files: Print Management

The following explanation assumes that you will install a printer not attached to the computer. If at any stage you do connect this printer, you will be able to use it immediately.

- Ensure that **Local Printer** is selected for a printer connected directly to your computer.
- Rather than using the detected printer, select **Use another printer by specifying a port** and select the appropriate port from the drop-down list.
- Click **Forward** to continue.



- Select the appropriate **Manufacturer** and **Model** from the selection boxes.
- Click **Apply** to finalise installation.

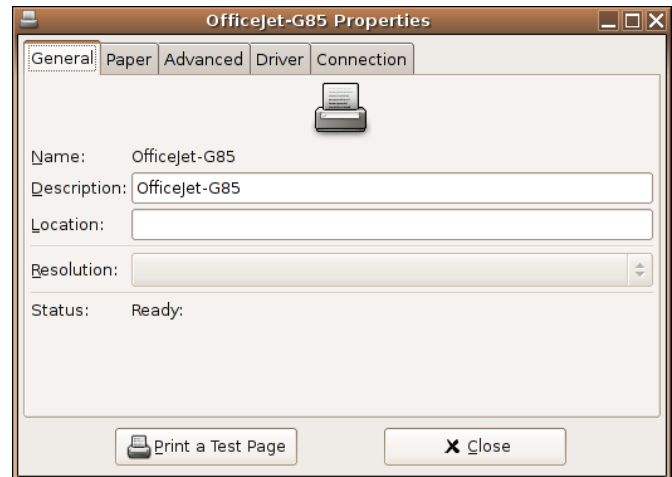


- Your new printer will be listed in the **Printers** window.



2.3 Using a Computer and Managing Files: Print Management

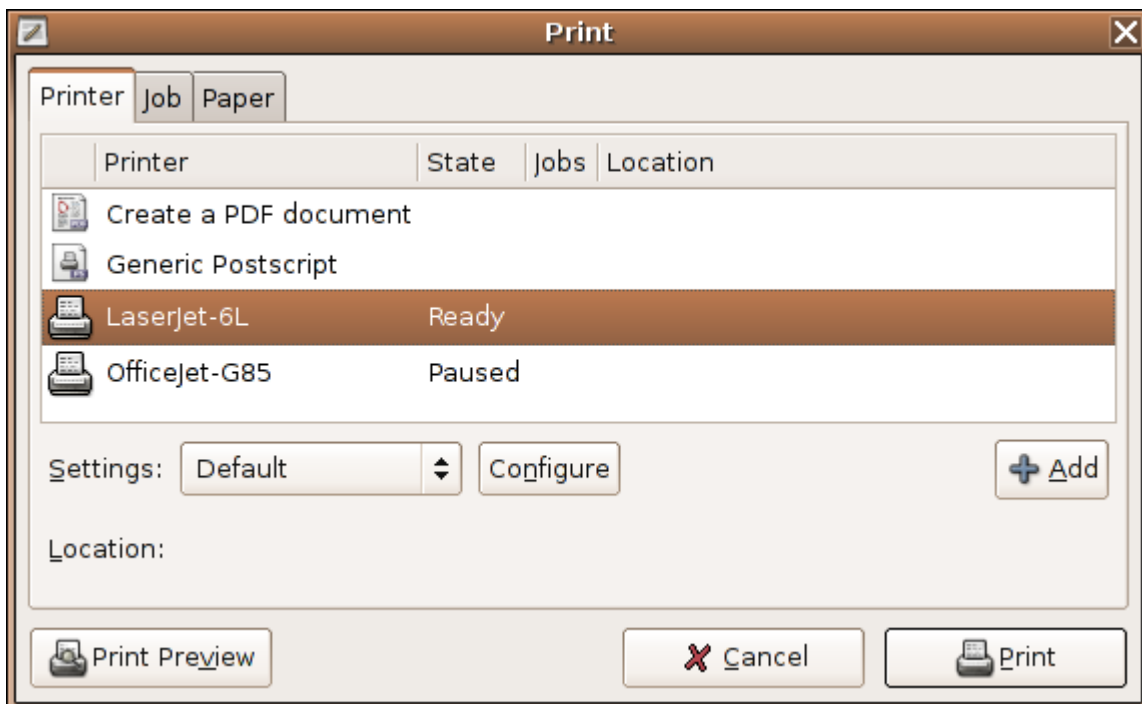
- To print a test page, right click on your new printer and select **Properties** on the context menu
- Click the button that says **Print a Test Page**
- Click the button that says **Print a Test Page** to print a test page. The system will confirm that a test page has been sent to the printer.
- Various other printer settings can also be adjusted in this window.
- Click **Close** when done.



2.5.2 Print Outputs

2.5.2.1 Print a document from a text editing application.

- Open up Gnome Edit by clicking on **Applications >> Accessories >> Text Editor**
- Type some sample text.
- Print the text by clicking **File >> Print**. This opens the **Print Dialogue**
- Select the appropriate printer on the **Printer** tab.



Adjust properties on the **Job** and **Paper** tabs if necessary.

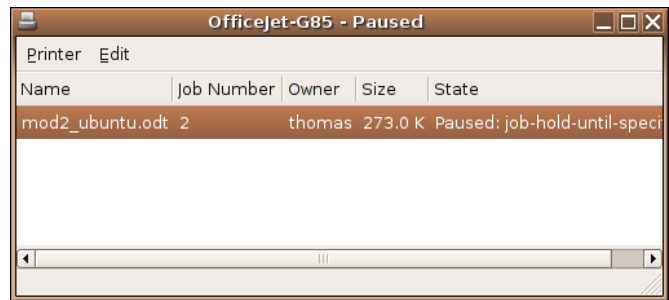
- Click **Print**.

2.5.2.2 View a print job's progress using a desktop print manager.

- Start **Applications >> Configuration >> KDE >> Peripherals >> Printers**.
- Highlight the printer you wish to view.
- Click the **Jobs** tab.

The progress of the print job will be displayed in the pane below.

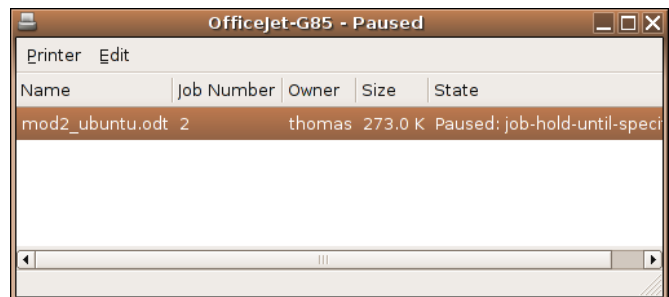
- Click **Close** to exit this window.



2.5.2.3 Pause, re-start, delete a print job using a desktop print manager.

Pause printing

- Click **System >> Administration >> Printing**
- Double click on the appropriate printer.
- Right click on the job to display a context menu.
- Click **Pause**.



Resume printing

- Right click on the paused print job.
- Click **Resume**.

Delete a job

- Right click on the print job.
- Press **Cancel**.