

# Workshop 02 - Operating System Install

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# Workshop 02 - Operating System Install

Today we'll:

- Ensure your computer powers on
- Troubleshoot errors from [Power On Self Test \(POST\)](#)
- Boot to [Basic Input Output System \(BIOS\)](#), and
- Begin installing our [Operating System \(OS\)](#).

## Power On

- Ensure your case is closed/fits tightly
- Connect your keyboard and mouse
- Set-up your monitor, connect the VGA cable
- Connect power cables into the monitor and case last
- Try the power button!

If correctly assembled you'll see:

- Green power and hard drive LEDs flash
- Then power LED stays on and
- Fans start up (quietly)
- [BIOS](#) screen flashes

## Success!

Congratulations! Please assist others.

## Failure?

- Is it fully plugged in?
- Does the power switch click? (Try removing the front panel and press it directly.)
- Check power switch connection to the motherboard. (**Unplug the power lead**, open case and check the front panel power header is connected.)
- Check power cables from the PSU to the motherboard. (plugs only fit in one direction, so don't force them.)

## POST

The Power On Self Test (POST) checks your computer when it turns on. It is quick and only stops on errors.

If your computer turns on but doesn't pass POST, it tells you with lights and beeps.

Most errors are easily fixed.

## Two Beeps

BEEPS	Power LED	Probable Cause
2 beeps	Blinks red 2 times @ 1 Hz	Processor thermal shut down. Check air flow, fan operation, and CPU heatsink

- Is the fan cable plugged in and air guide installed correctly? Are heatsink screws tight?

## Three Beeps

3 beeps	Blinks red 3 times @ 1 Hz	Processor not installed. Install or reseal CPU.
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- Is your processor is sitting in the socket firmly? Are heatsink screws firmly tightened?

## Four Beeps

4 beeps	Blinks red 4 times @ 1 Hz	Power failure (power supply is overloaded). Check storage devices, expansion cards and/or system board (CPU power connector P3).
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- Is the CPU power connector connected?

## Five Beeps

5 beeps	Blinks red 5 times @ 1 Hz	Pre-video memory error. Incompatible or incorrectly seated RAM.
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- Is your RAM firmly clicked into place? Test RAM individually.

## Six/Seven/Eight Beeps

6 beeps	Blinks red 6 times @ 1 Hz	Pre-video graphics error. On system with integrated graphics, check/replace system board. On system with graphics card, check/replace graphics card.
7 beeps	Blinks red 7 times @ 1 Hz	PCA failure. Check/replace system board.
8 beeps	Blinks red 8 times @ 1 Hz	Invalid ROM (checksum error). Reflash ROM using CD or replace system board.

- Please ask for assistance (advanced).

## Nine Beeps

9 beeps	Blinks red 9 times @ 1 Hz	System powers on but fails to boot. Check power supply, CPU, system board.
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Check your PSU cable headers on the motherboard.

## Ten Beeps

10 beeps	Blinks red 10 times @ 1 Hz	Bad option card
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- Won't occur unless a PCI expansion card is installed. If installed, remove and reboot.

## Customising BIOS

After POST your computer will continue to boot by activating the Basic Input Output System (BIOS).

- The BIOS is firmware, and works between your computer's hardware and software.
- It's permanently attached to the hardware.
- A battery retains settings for up to 10 years.

BIOS will attempt to boot your computer and run checks. As your computer was recently disassembled, it may request information.

It may ask to confirm hardware changes:

```
4096 MB

Initializing Intel(R) Boot Agent GE v1.3.40
PXE 2.1 Build 088 (WfM 2.0)

The following configuration options were automatically updated:
Disk: 160 GB          ST3160318AS
  If you are running Unix, you need to configure your system
  using the Computer Setup Utility (F10).

F1: Save Changes          <F9=Boot Menu> <F10=Setup> <F12=Network>
```

to set the date and time:

```
4096 MB

162-System Options Not Set
Your system configuration has changed since your last boot. Addition
of a hard drive, etc., or loss of power to the Real Time Clock has occurred.
Pressing F1 will record the new configuration. If this message persists,
you may need to replace the onboard battery.

PXE 2.1 Build 088 (MfM 2.0)

The following configuration options were automatically updated:
Memory: 4096 MB
Disk: 160 GB          ST3160318AS
CD-ROM:              hp      DVD A  DH16AAL
If you are running Unix, you need to configure your system
using the Computer Setup Utility (F10).
CMOS checksum invalid, default values loaded

F1: Save Changes
```

and launch operating system from the internal hard drive.



```
Non-System disk or disk error  
replace and strike any key when ready  
-
```

Your hard drive was wiped, so it cannot continue to boot.

## System Configuration

Access 'System Configuration' so your computer can boot from USB to install our operating system. A well-timed keystroke is required. See keys on the 'splash' screen (bottom right):



- F9: Choose a device to boot from.



- F12: Force computer to boot from network card (advanced).

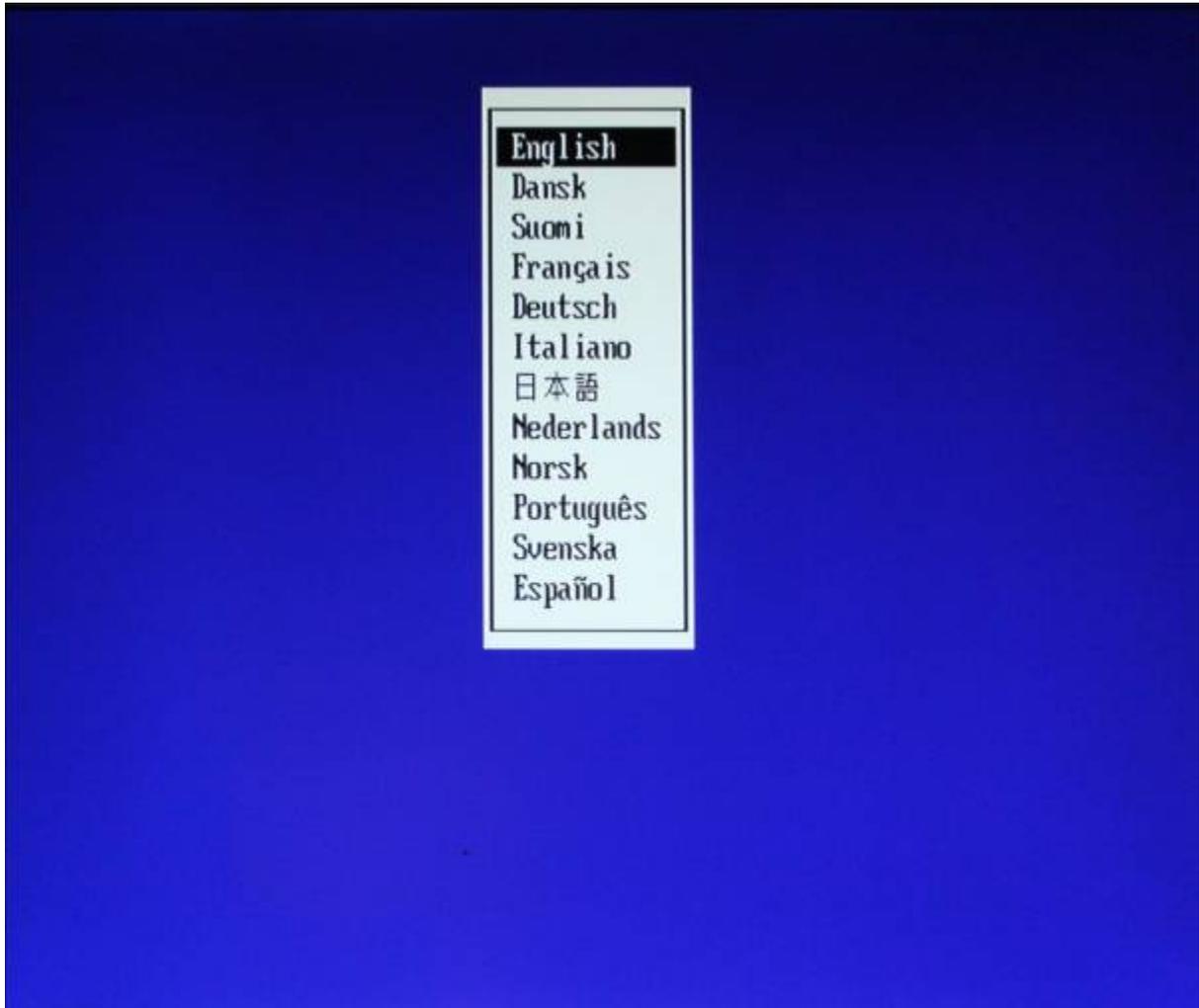
```
Intel(R) Boot Agent GE v1.3.48  
Copyright (C) 1997-2009, Intel Corporation  
  
Intel(R) Boot Agent PXE Base Code (PXE-2.1 build 088)  
Copyright (C) 1997-2009, Intel Corporation  
  
Initializing and establishing link..._
```

- F10: BIOS set-up. ***On your next reboot, press and hold F10.***



### BIOS Set up

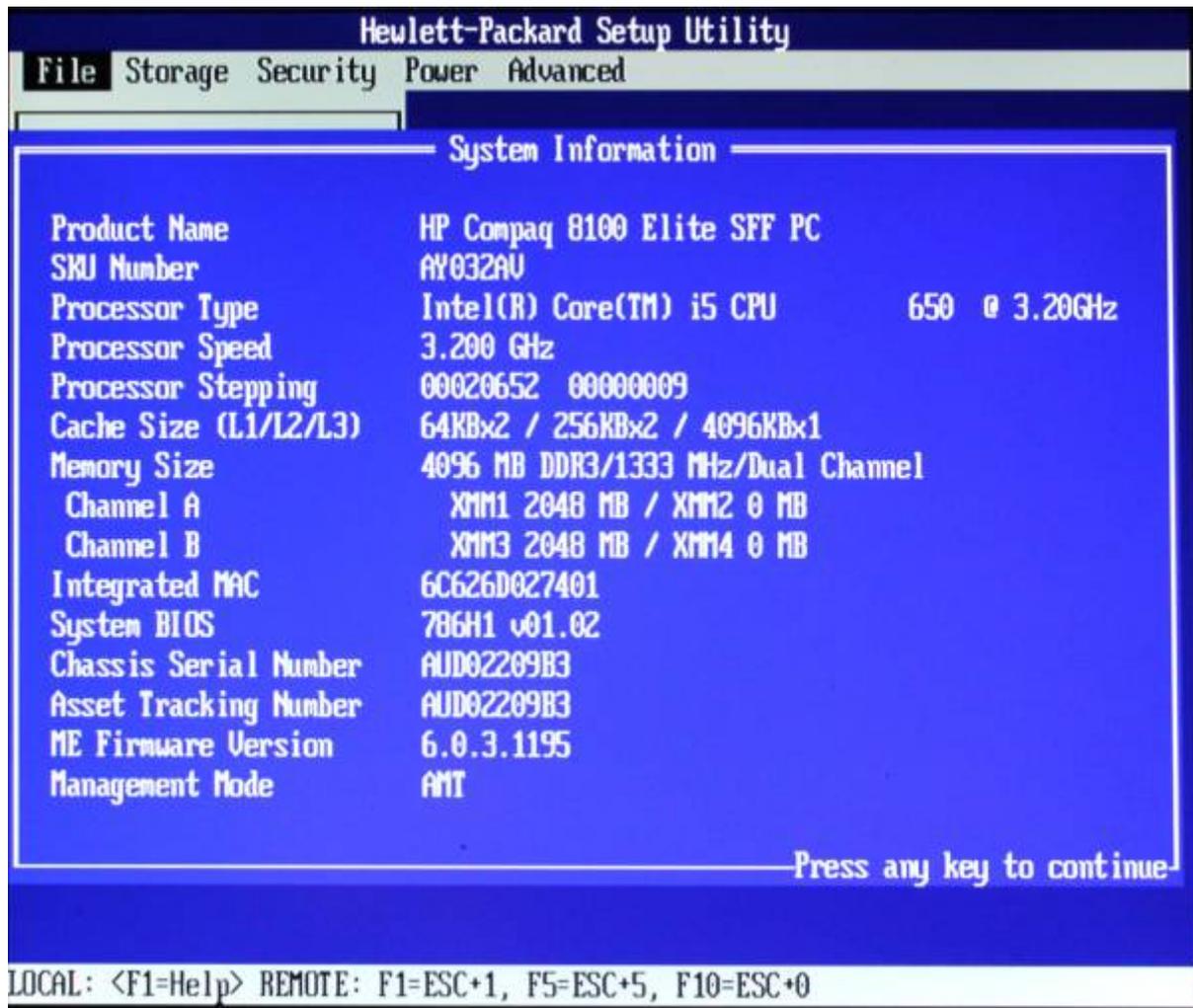
Select language:



Select 'System Information' from 'File' menu.



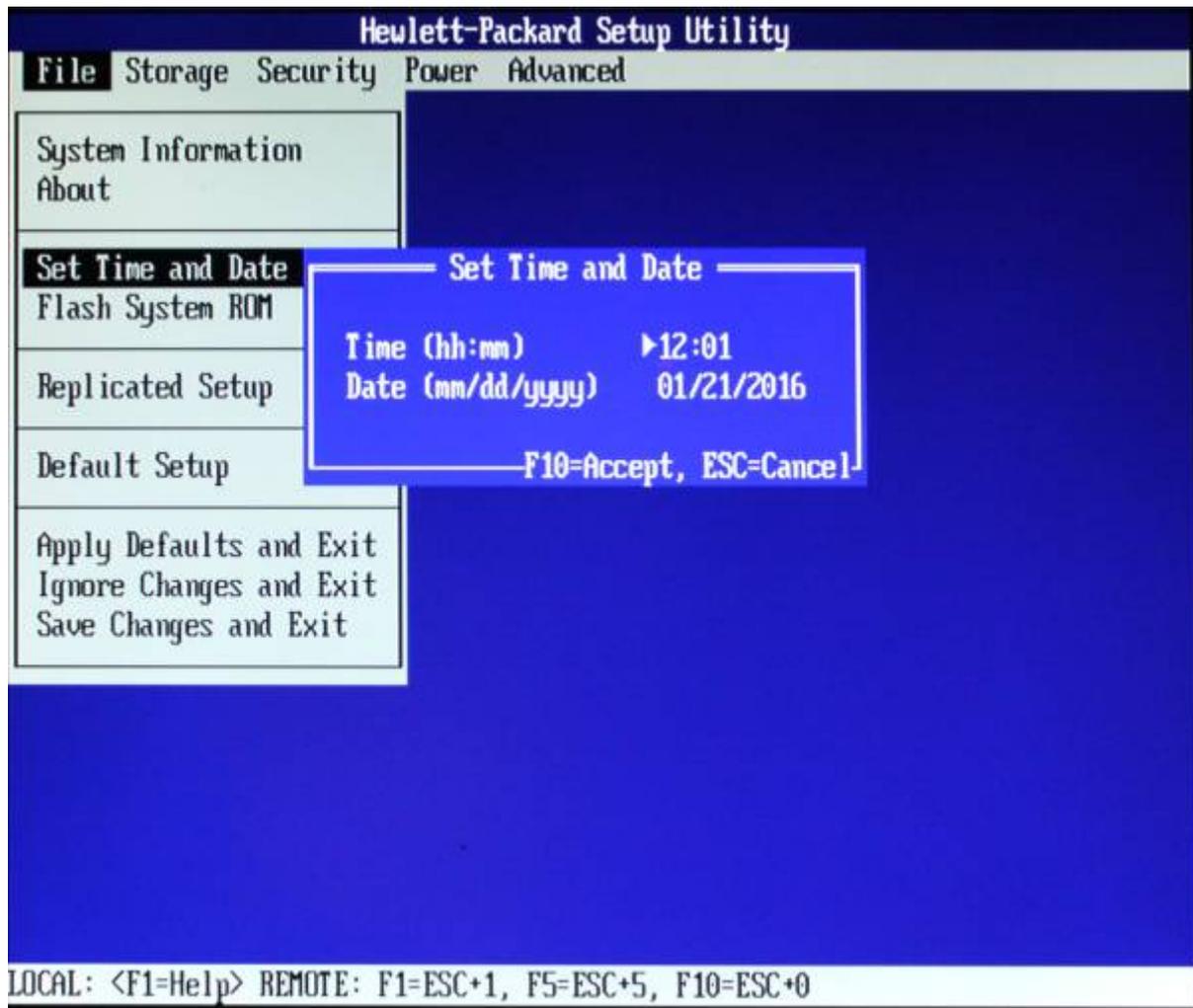
This displays information about the computer's components.



See Processor information from Workshop 01? See hardware without opening the case. Exit with any key.

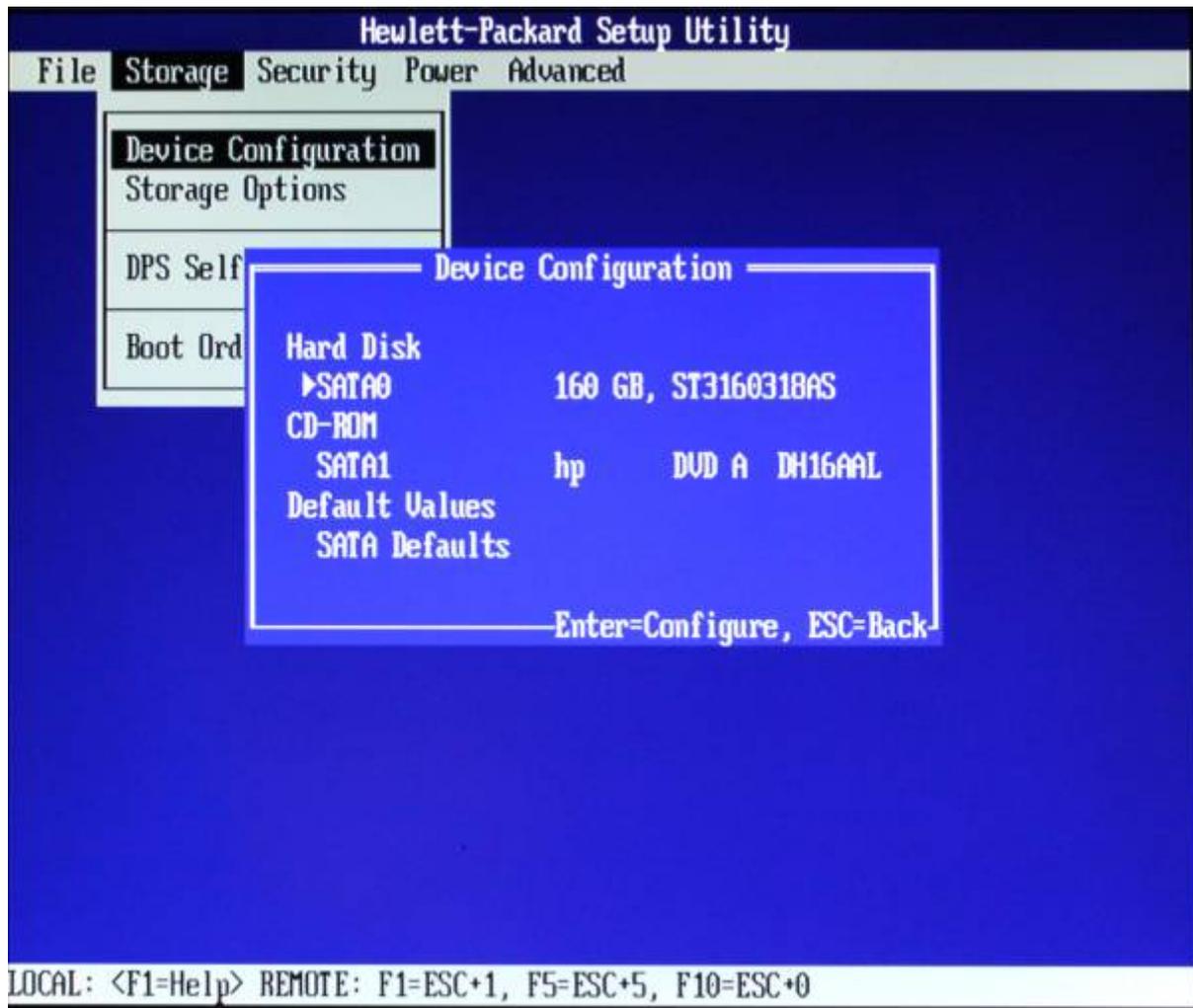
```
Hewlett-Packard Setup Utility
File Storage Security Power Advanced
System Information
Product Name      HP Compaq 8100 Elite SFF PC
SKU Number       AY032AU
Processor Type    Intel(R) Core(TM) i5 CPU      650 @ 3.20GHz
Processor Speed   3.200 GHz
Processor Stepping 00020652 00000009
Cache Size (L1/L2/L3) 64KBx2 / 256KBx2 / 4096KBx1
Memory Size      4096 MB DDR3/1333 MHz/Dual Channel
Channel A        XMM1 2048 MB / XMM2 0 MB
Channel B        XMM3 2048 MB / XMM4 0 MB
Integrated MAC    6C626D027401
System BIOS       786H1 v01.02
Chassis Serial Number AUD02209B3
Asset Tracking Number AUD02209B3
ME Firmware Version 6.0.3.1195
Management Mode   AMT
Press any key to continue
LOCAL: <F1=Help> REMOTE: F1=ESC+1, F5=ESC+5, F10=ESC+0
```

Set Time/Date

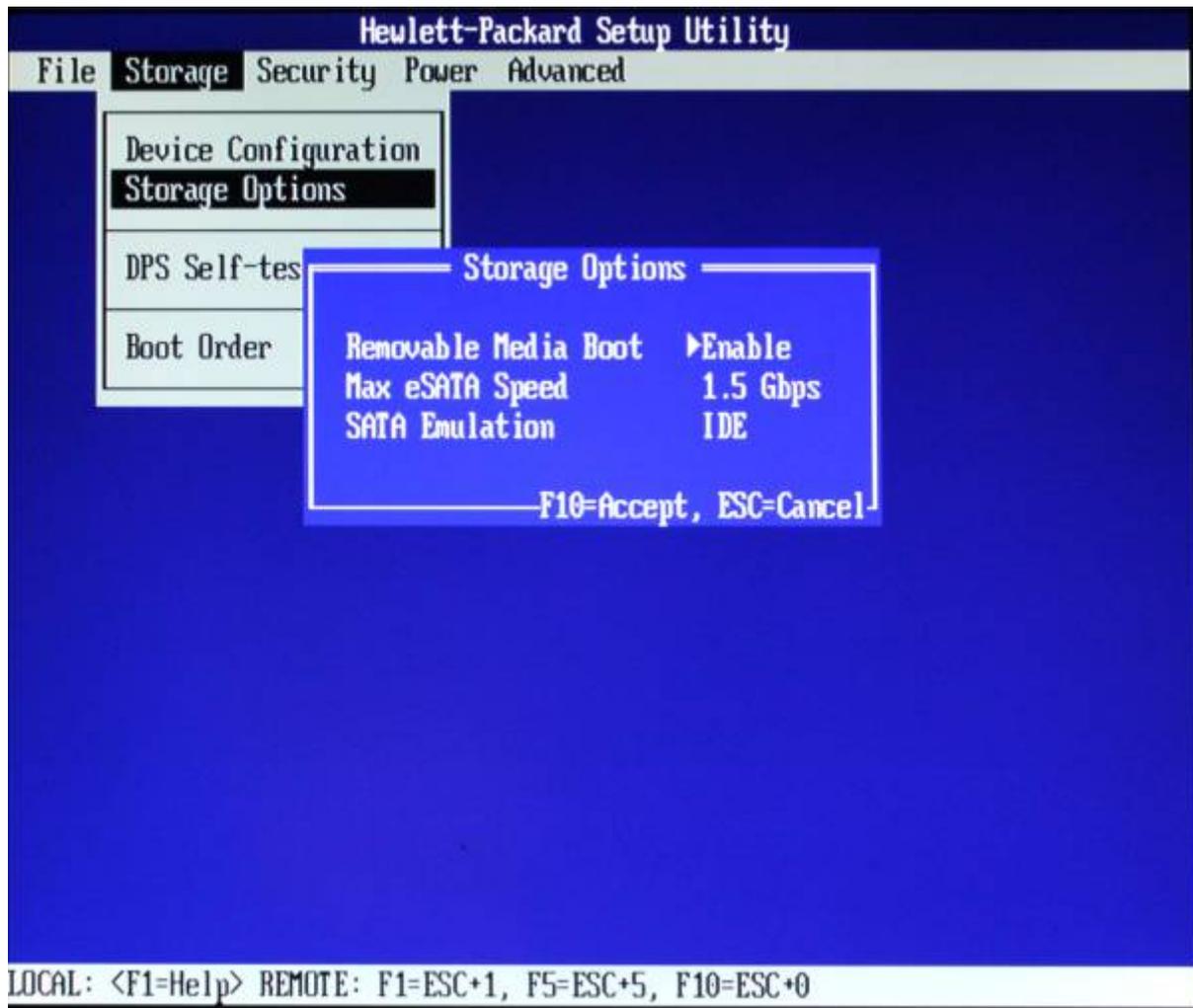


Select 'Storage', then 'Device Configuration'.

Recognise your hard disk and DVD drive?



Exit and select 'Storage Options'. Enable 'Removable Media Boot' to allow booting from USB.



Exit and select 'Boot Order' to see available options.



We'll boot from USB, so move USB to the top.



Disable network booting if unneeded.



Confirm with F10 and exit Boot Order.

Return to 'File' menu. Select 'Save Changes and Exit'.



Confirm with F10. Your computer and boot process will restart, looking for the USB.

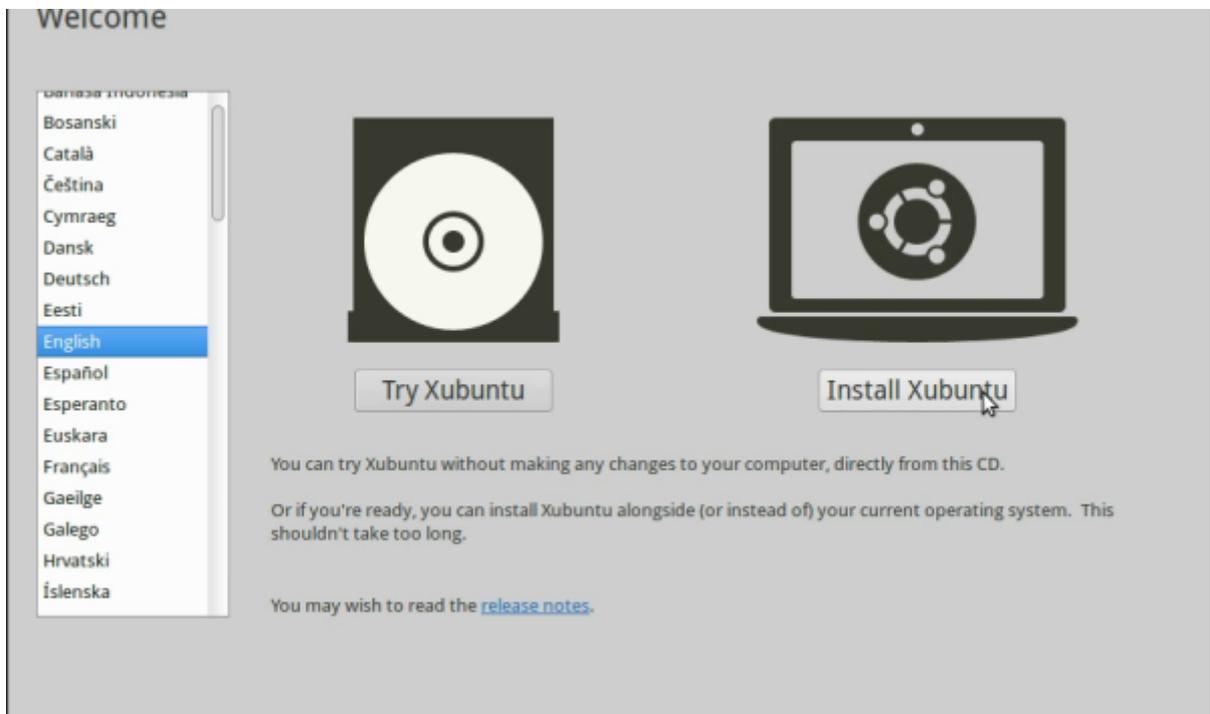
## Boot From USB

You'll be given a USB containing a Xubuntu Live System and Installer. (A Live System lets you boot/use your computer from USB). We'll use this to install the Operating System (OS).

Insert USB and restart the computer (ctrl-alt-delete).



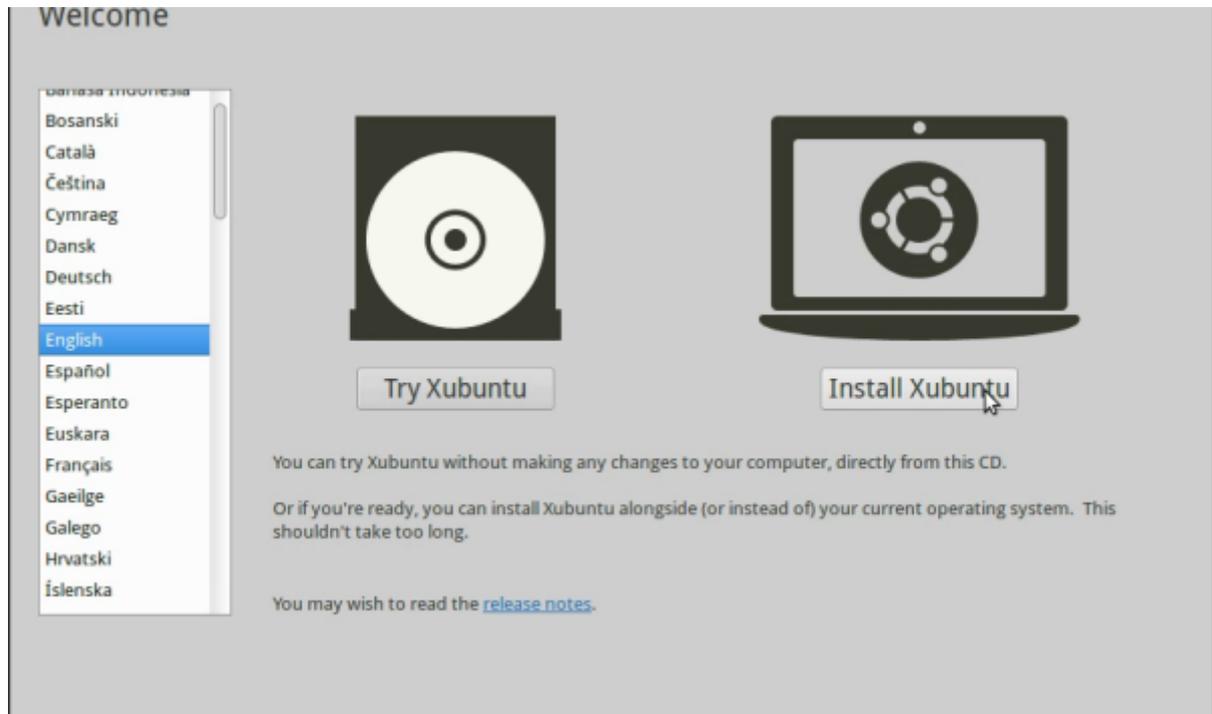
If successful, it should show a desktop environment with the Install Dialogue open.



If not, check your BIOS settings and ask for assistance.

## Install Xubuntu

Choose English, then 'Install Xubuntu'.



### Keyboard Layout

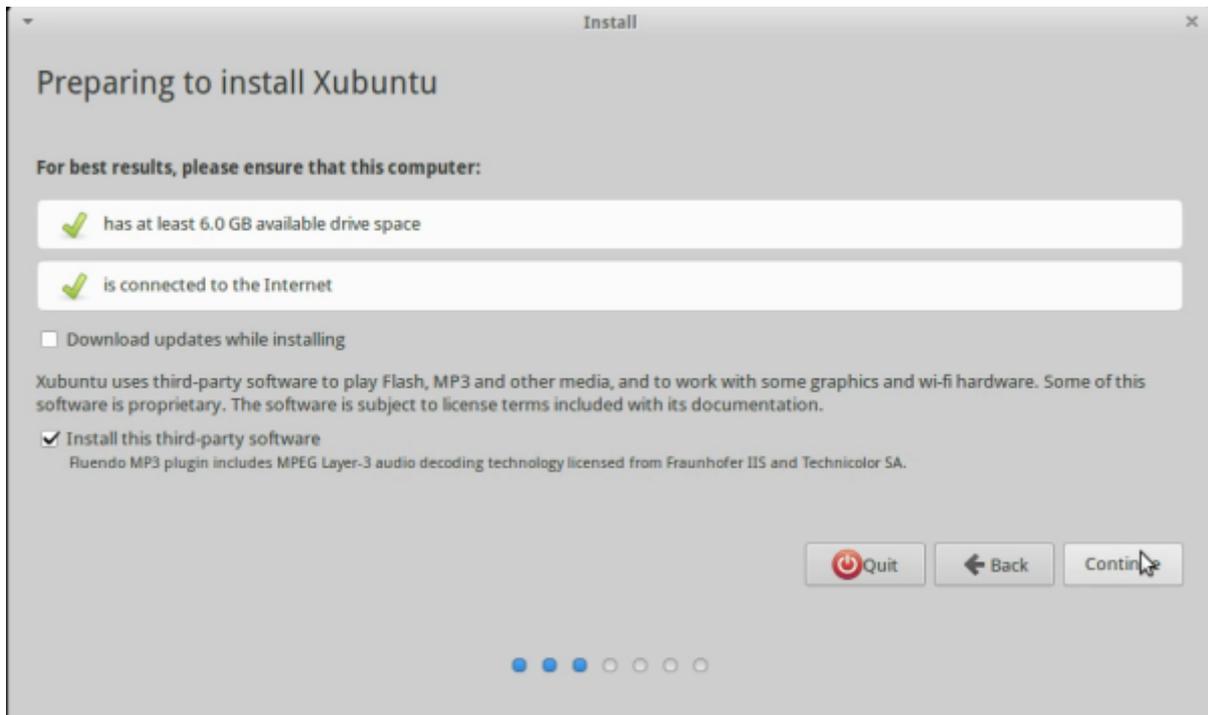
Choose the correct keyboard layout. (Use 'Detect Keyboard Layout' if unsure.)

### Wireless

Choose whether to connect to wireless. We'll select 'I don't want to connect to a wifi network right now' for now.

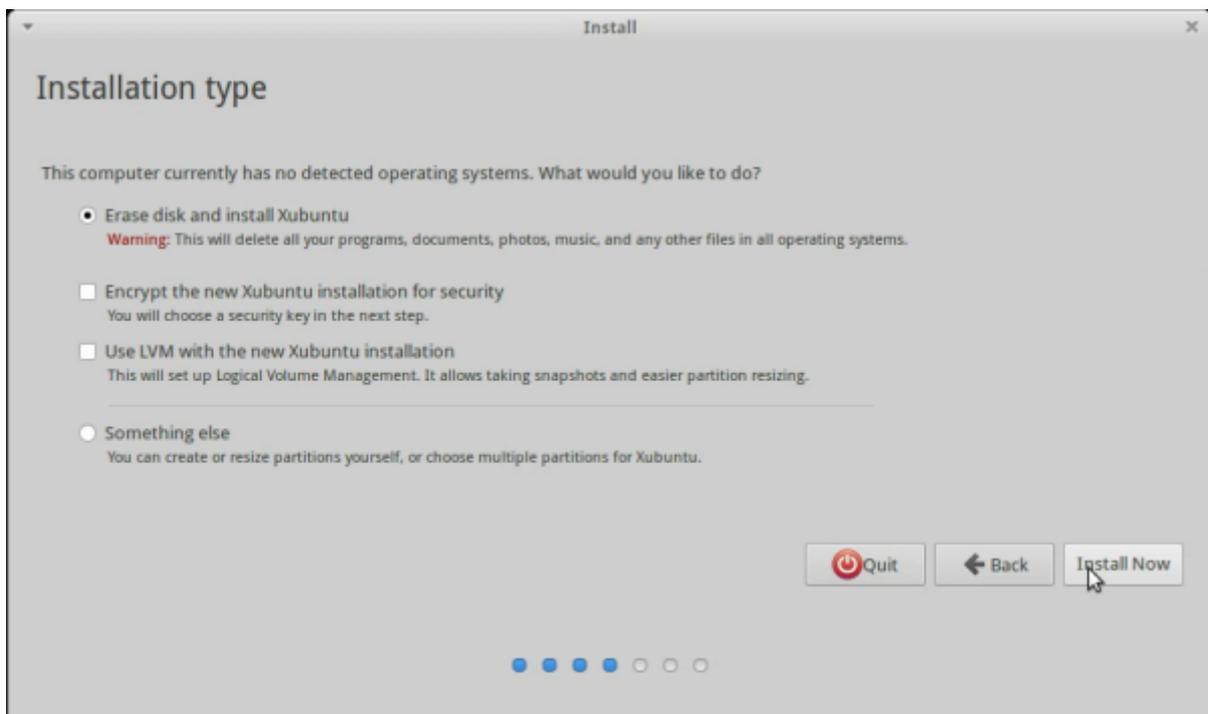
### Third Party Software

Select 'Install third-party software' (this lets us use proprietary software types, such as MP3s.)



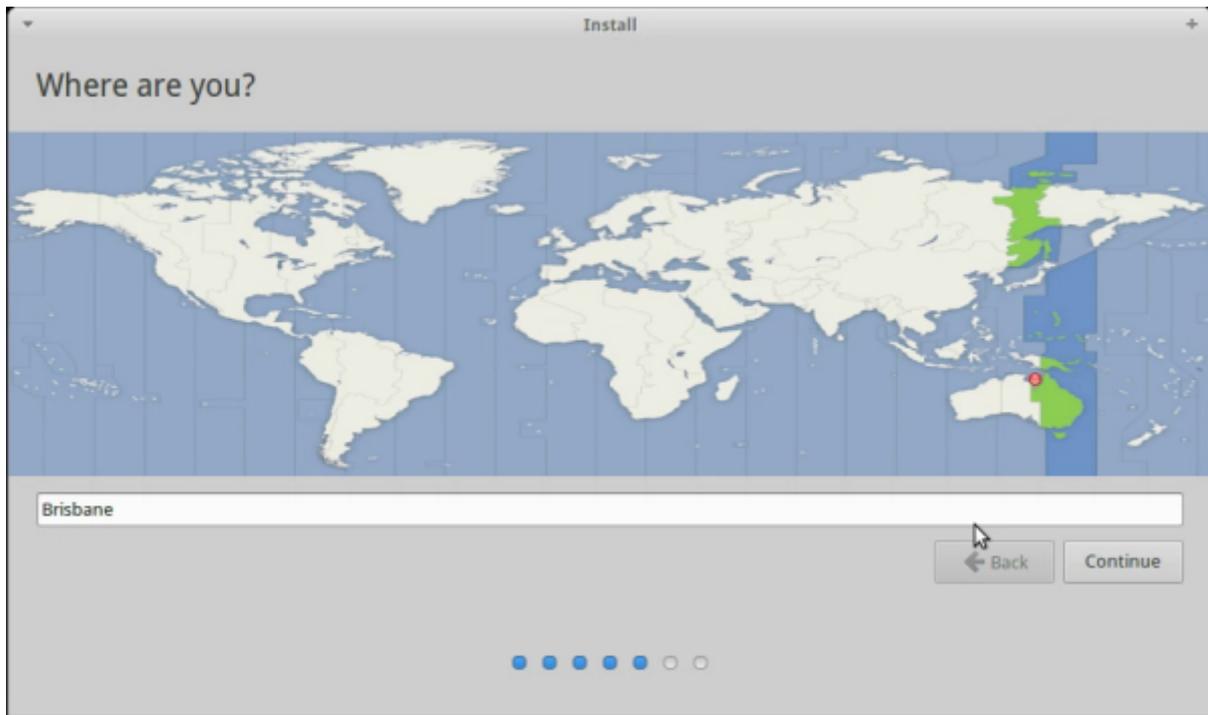
## Installation Type

Select your hard disk, chose 'Erase and install', then 'Install now'.



## Where are You?

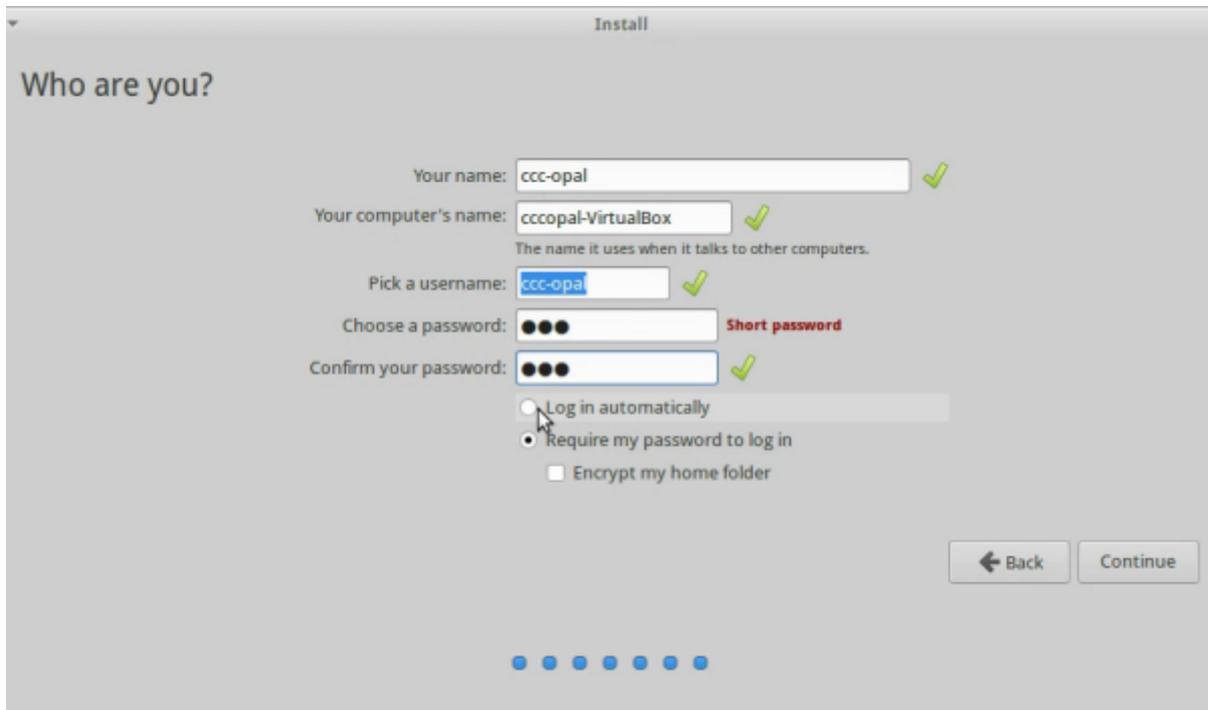
Set your computer location (Brisbane), then continue.



## Your Details

Provide your details and create a **memorable** password. Select 'log in automatically', then continue.

Your system will now install.



## Complete Installation

When complete, remove your USB and restart. **Enter BIOS again and change your first boot device to internal hard disk.**

## SDLW Network Setup

Let's quickly set up our local SDLW network. We'll use it to update/install software without internet.

The facilitator laptop acts as a server to store your needed files. Your facilitator will show you this.

## Break Time

## The Operating System

An Operating System (OS) looks after:

- Booting
- Controlling [peripherals](#)
- Providing a [graphical user interface](#) (GUI) and [desktop environment](#)
- Managing system resources - like the Central Process Unit (CPU) and the [\(GPU\)](#).
- Interacting with/storing files
- Communicating over networks

We just installed Xubuntu - a 'flavour' of Ubuntu based on Linux, a Free and Open Source OS.

## Navigating Xubuntu

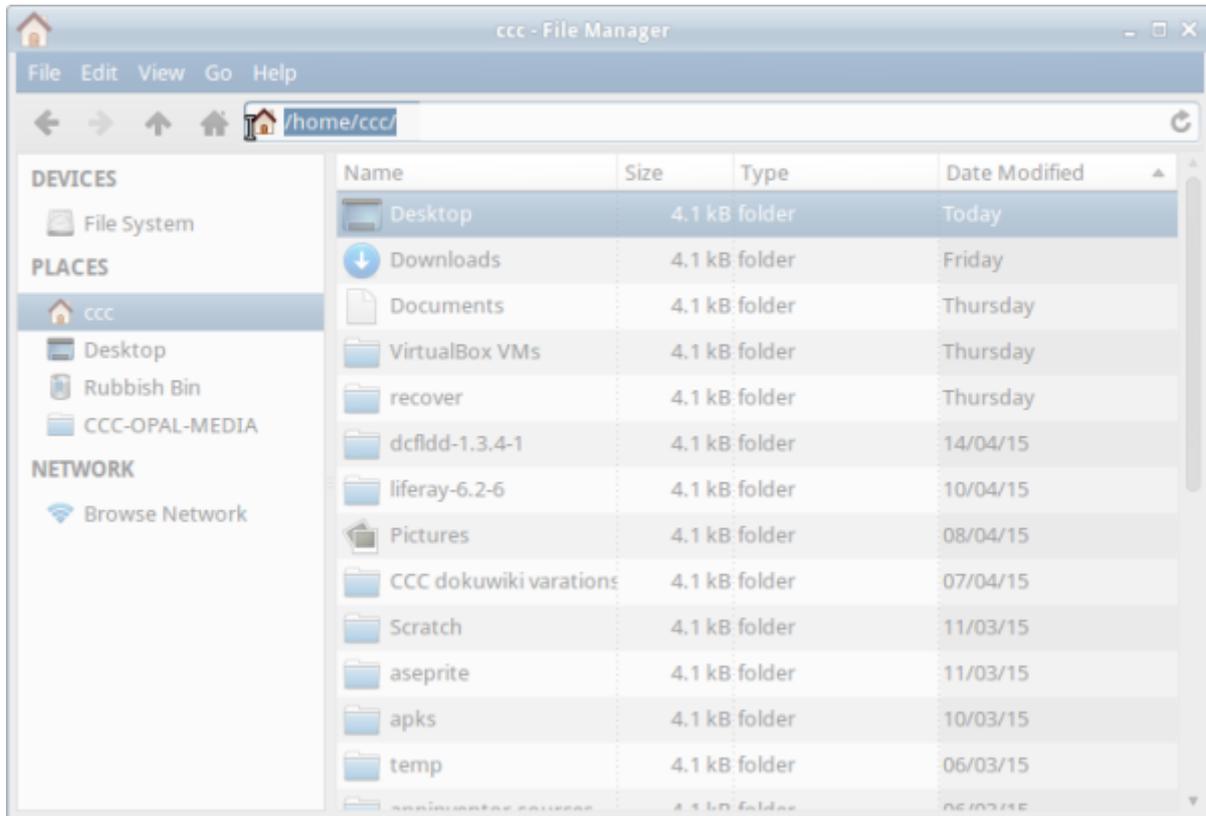
Launch Xubuntu.

In the top left you can access the whisker menu, (like Windows start menu).

Here you can access pre-installed programs and desktop settings.

## The File Manager

The File Manager helps us navigate your system's files and folders. Select it from the whisker menu.

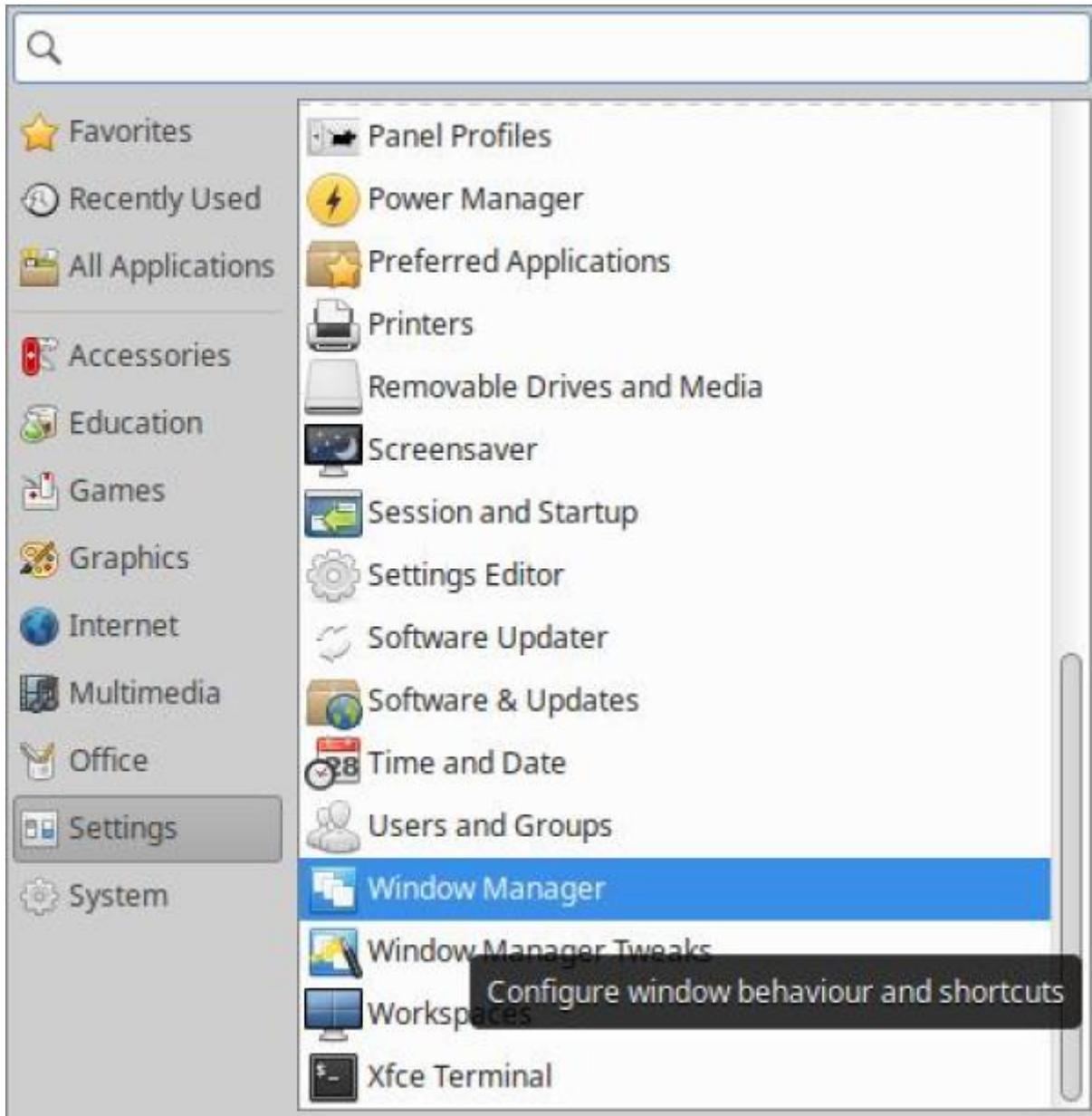


It will default to your home folder. Note your file location within the computer in the top bar.

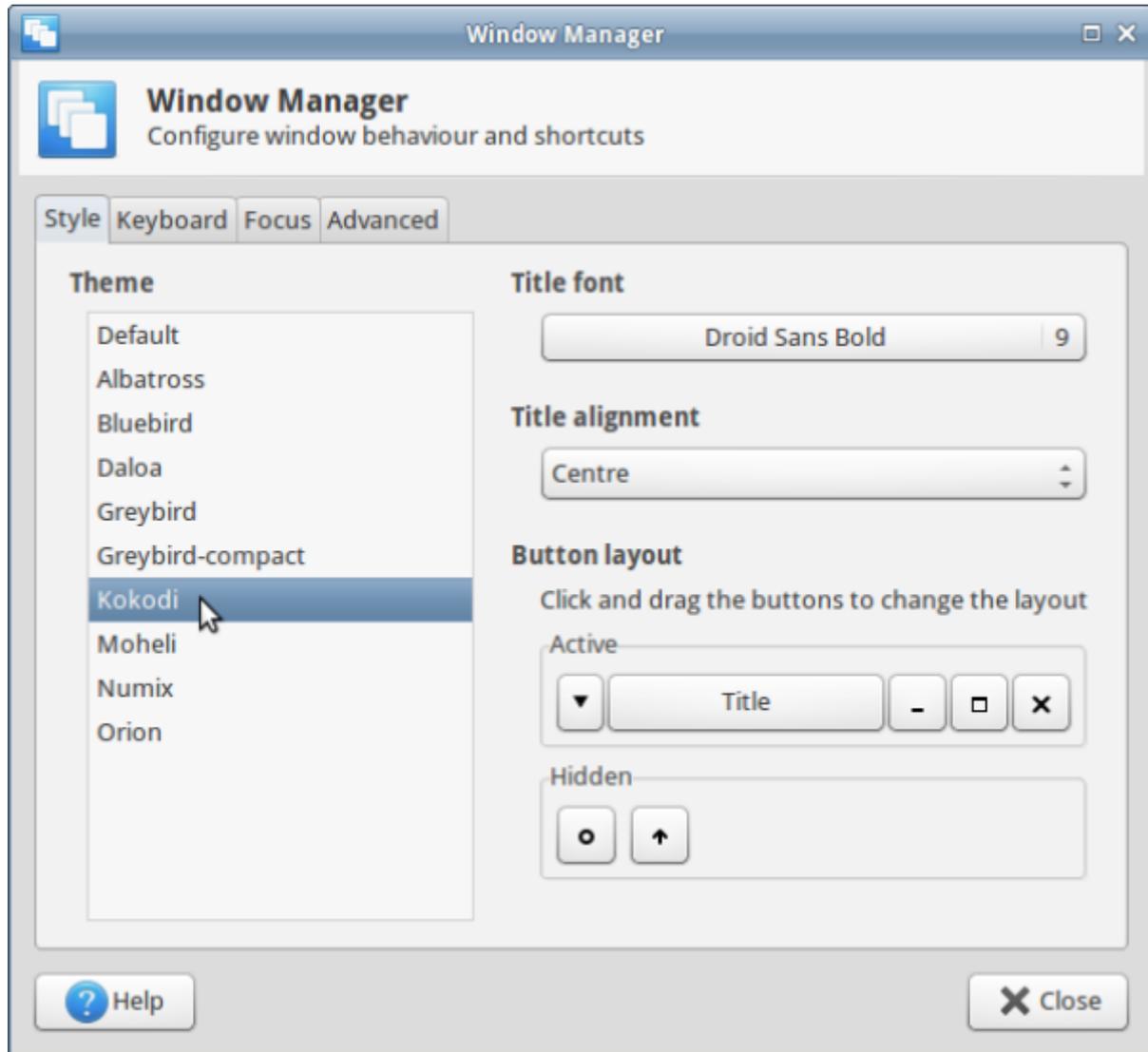


## Customising your Desktop

You can customise your desktop - eg, by right clicking image files (Connect your phone to drag one over) to 'set as desktop background'. You can also change theme. In the whisker menu, select 'settings' and select 'window manager'.

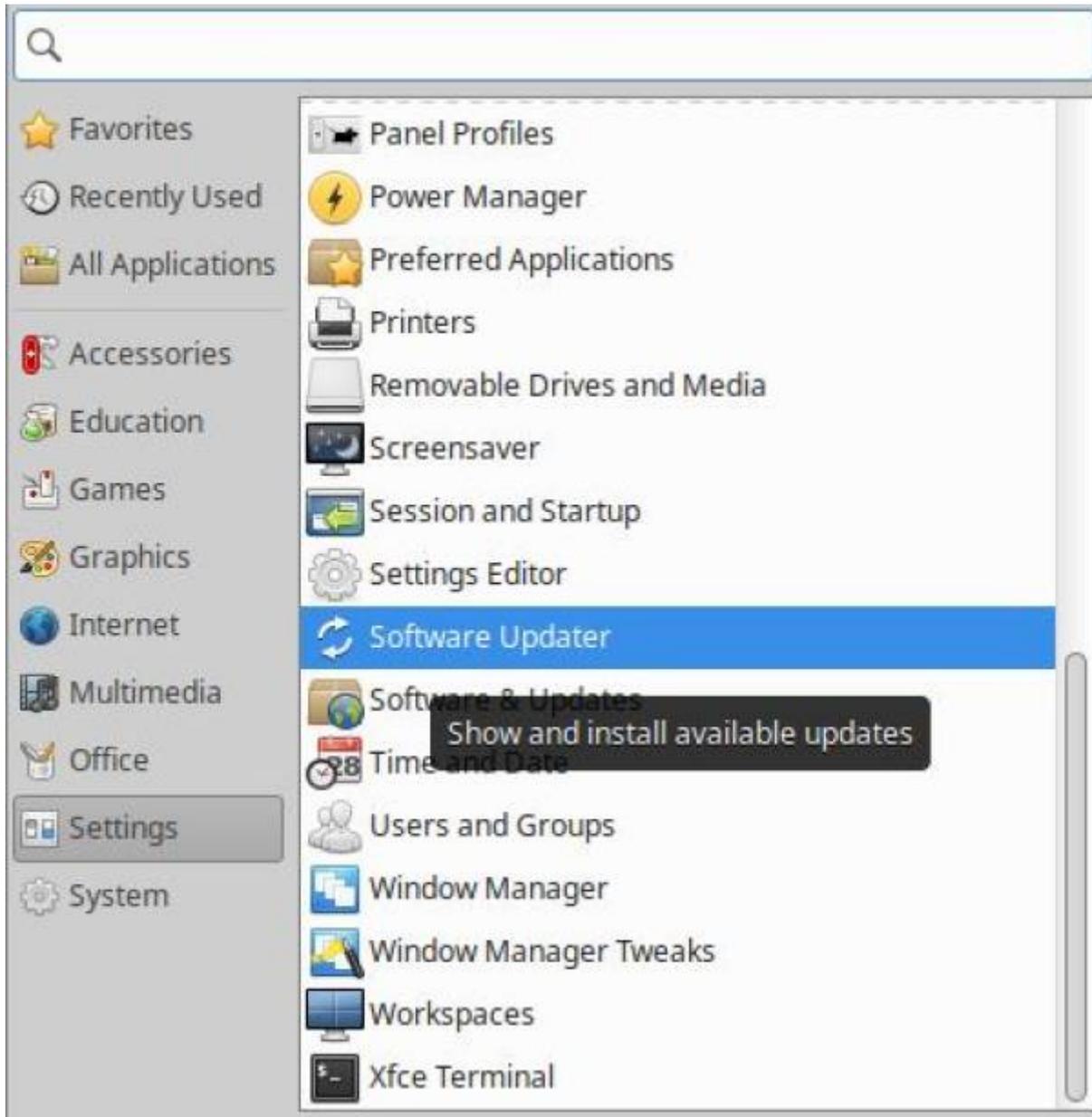


Select 'kokodi' - it has larger window handles for easier resizing.

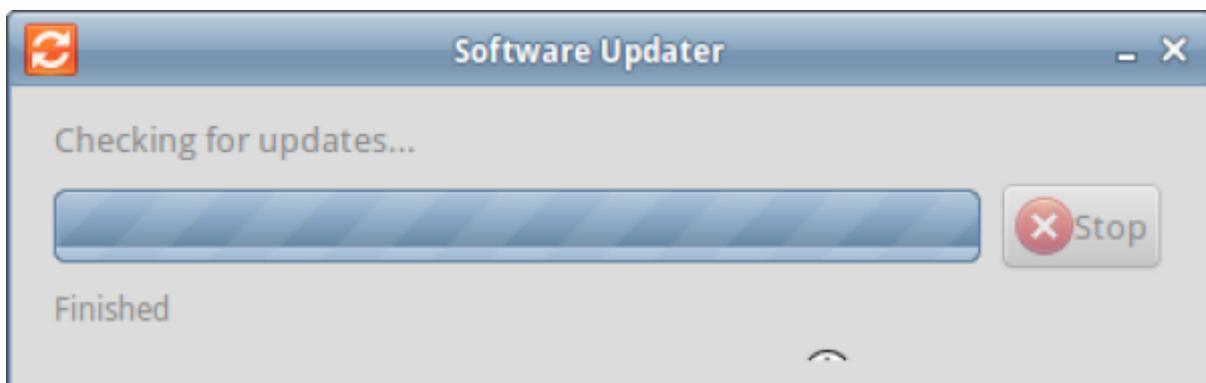


## Updates

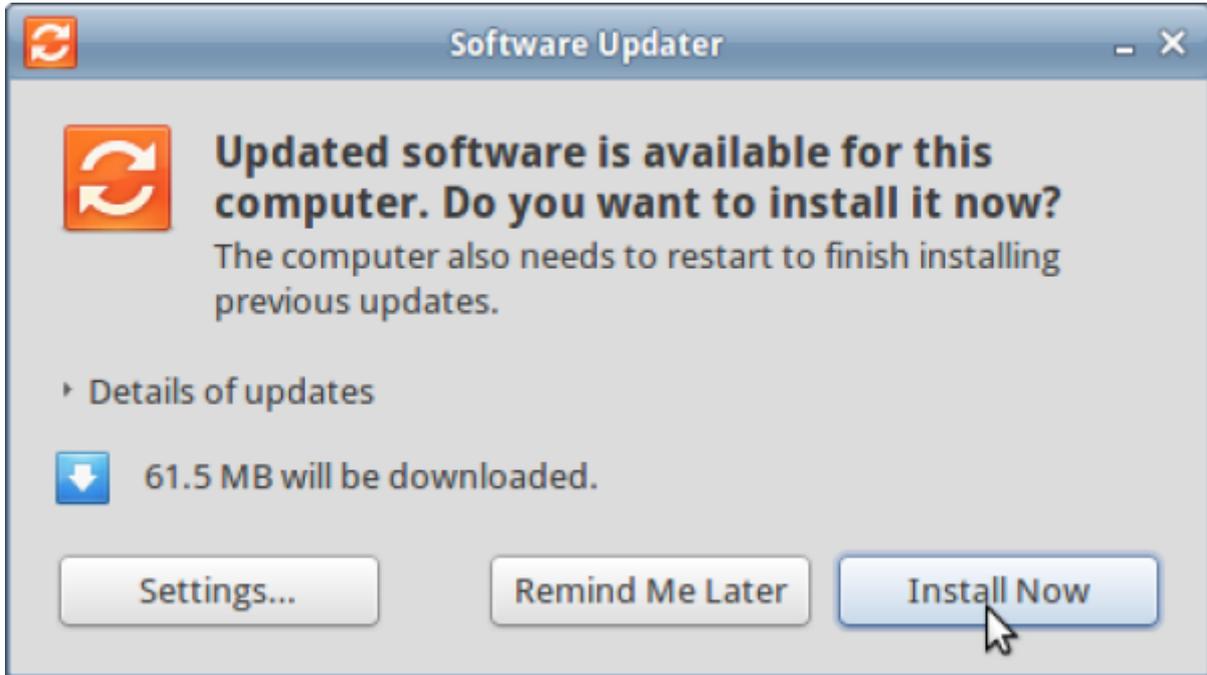
Choose 'Settings' from the whisker menu and select 'Software Updater'.



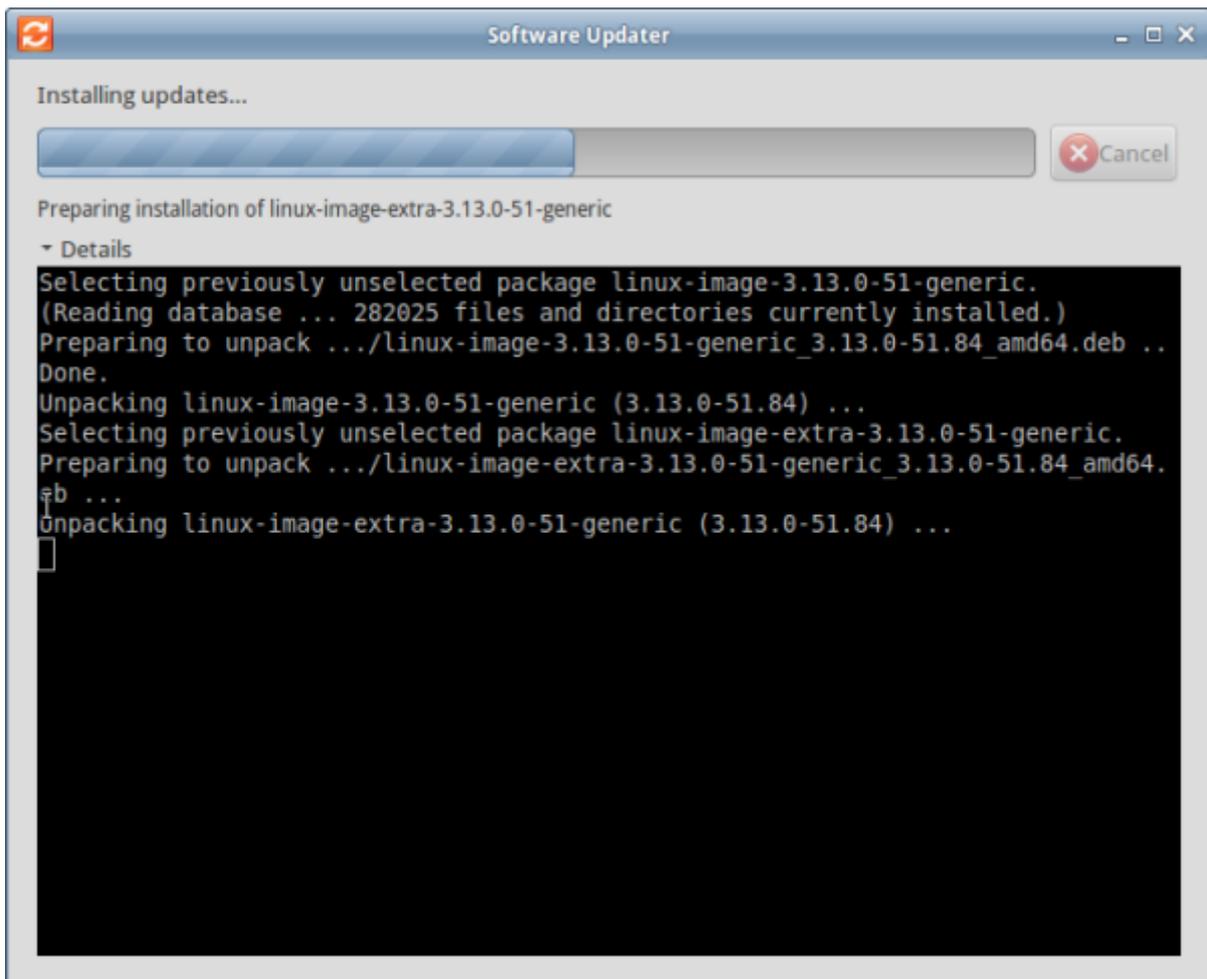
It will check for updates from the SDLW laptop.



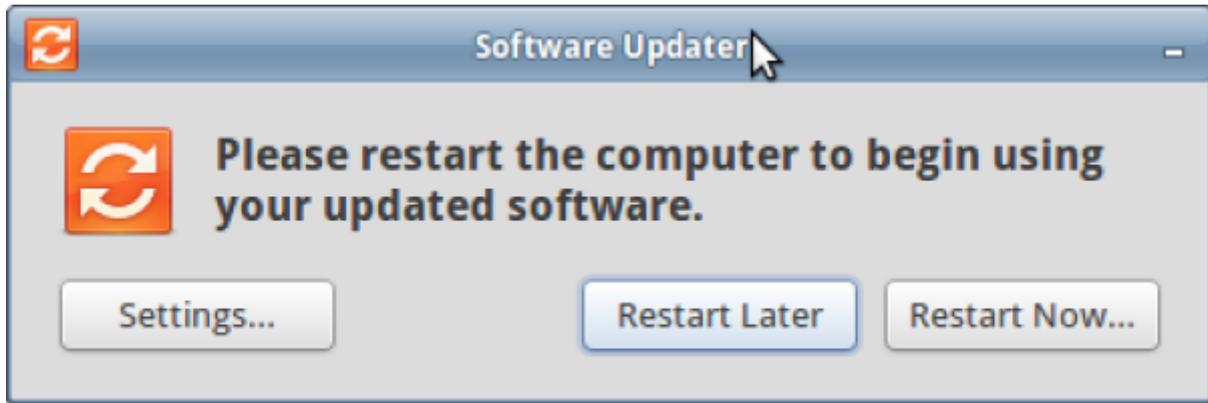
Don't worry if some updates are missing - click 'install now'.



Enter your password - your system will update.



Restart your computer before the next workshop.



[Workshop 03 - Productivity and System Tools](#)