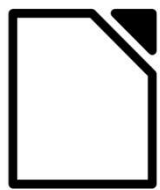


Working with Ubuntu

Bok, Jong Soon
javaexpert@nate.com
<https://github.com/swacademy/Ubuntu>

Office Suites

- Windows : Microsoft Office, LibreOffice
- Apple OS X : iWork, Microsoft Office, LibreOffice
- Linux : LibreOffice, KOffice, GNOME Office, Kexi
- The most popular suite is the LibreOffice(formerly OpenOffice).

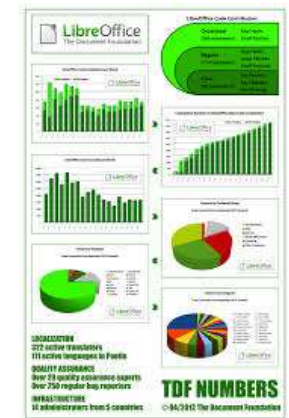


LibreOffice
The Document Foundation

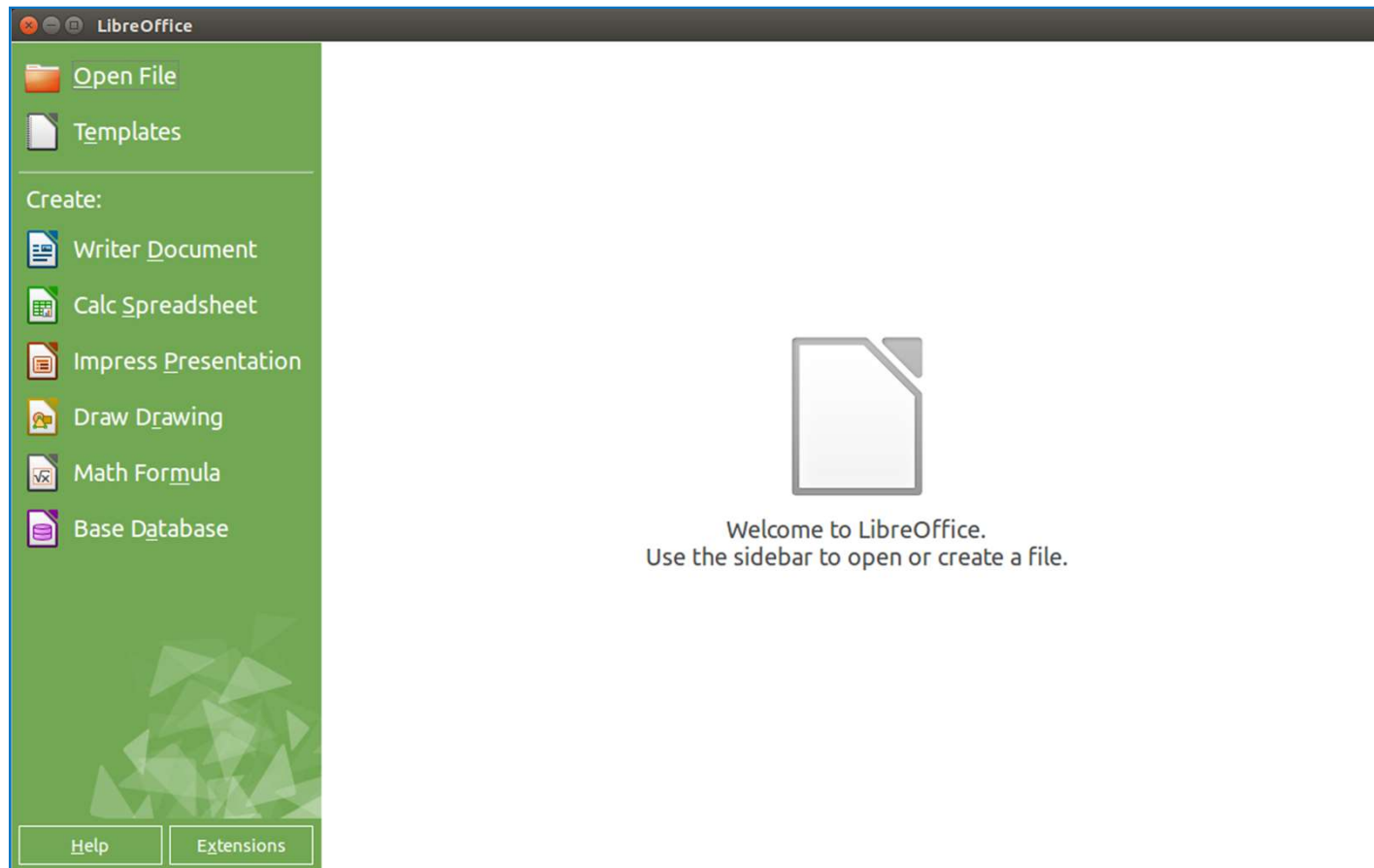


Office Suites (Cont.)

- Included :
 - Writer : word processor
 - Calc : spreadsheet
 - Impress : presentation manager
 - Draw : drawing program
 - Base : database
 - Math : equation editor
- In Ubuntu, is installed by default.
- Note that *Base* is not installed by default and it can be installed through *Ubuntu Software Center*.

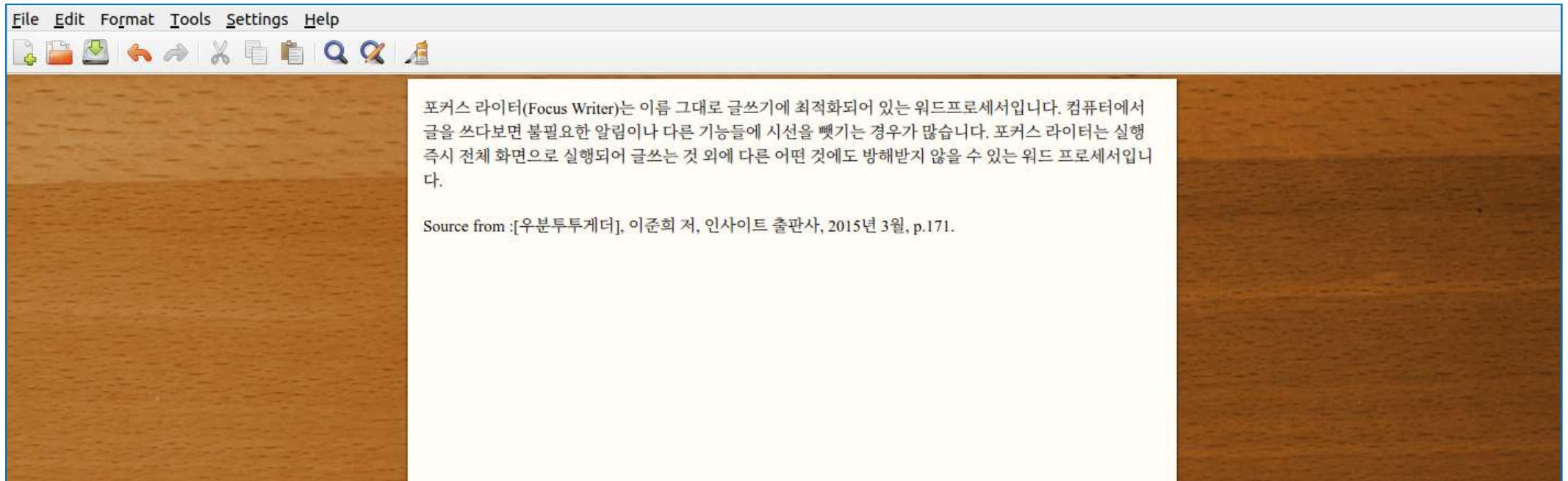


Office Suites (Cont.)



Lab 1 : Installation FocusWriter on Ubuntu 20.04 LTS

FocusWriter



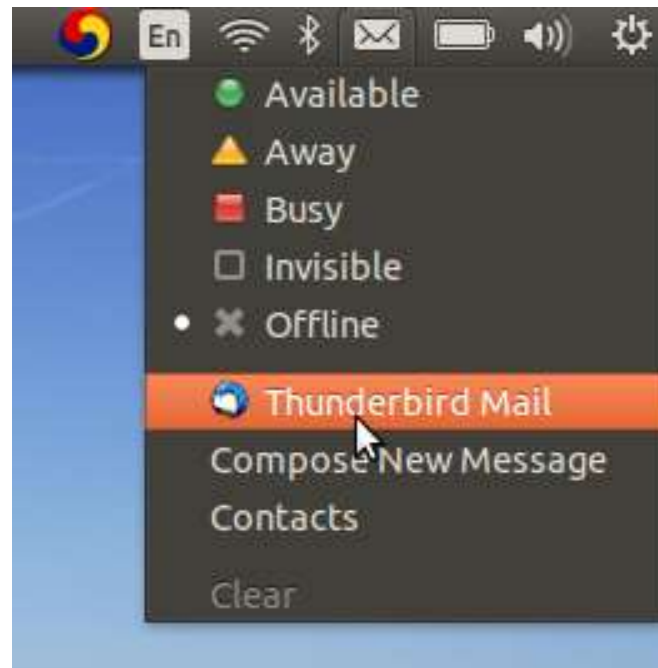
Email Applications

- Windows : Microsoft Outlook, Mozilla Thunderbird
- Apple OS X : Mail.app, Microsoft Outlook, Mozilla Thunderbird
- Linux : Mozilla Thunderbird, Evolution, KMail
- Very popular email application is Mozilla Thunderbird.
- In Ubuntu, *Thunderbird* is the default email application.

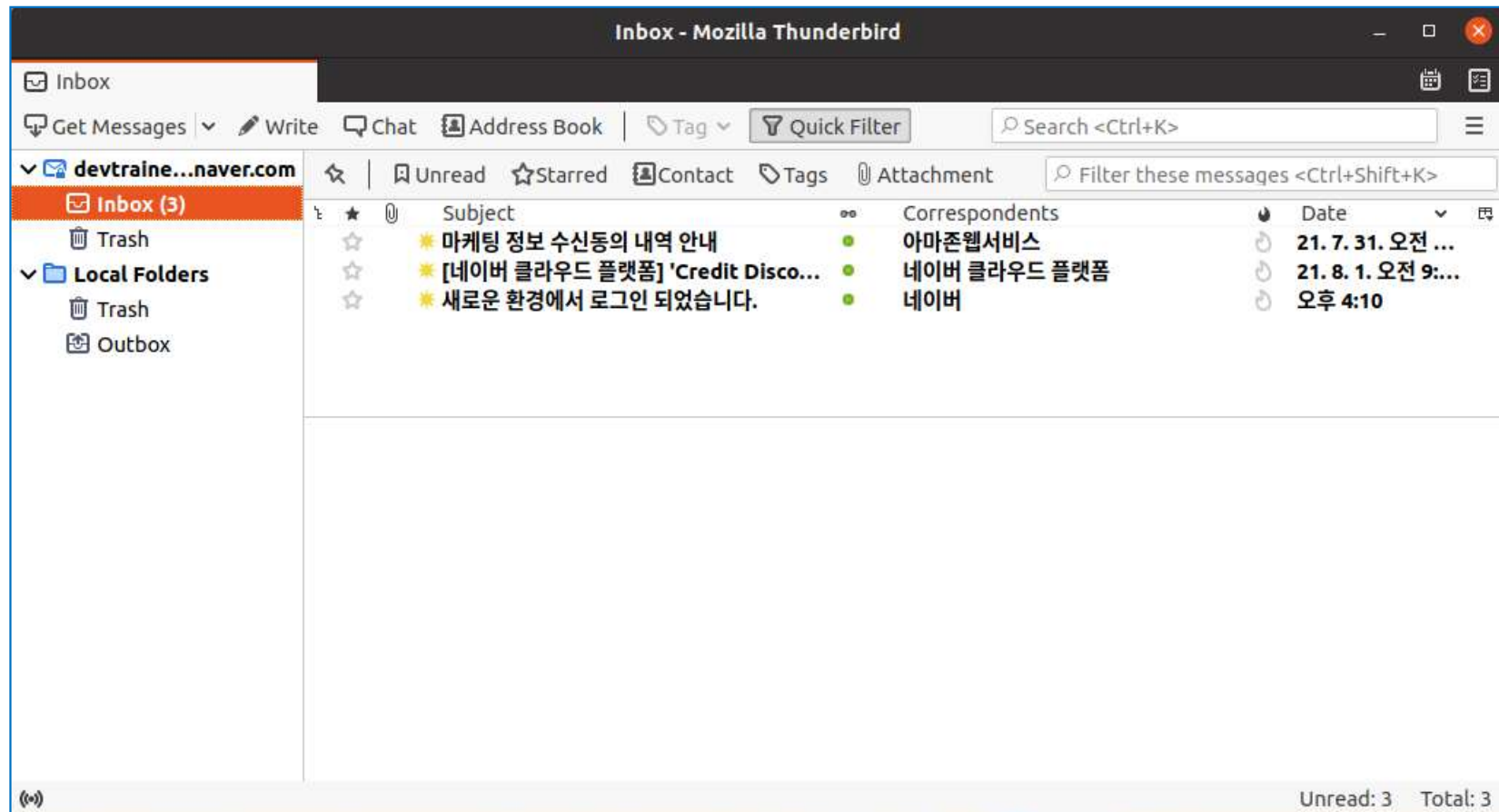


Thunderbird

- Is an email client developed by Mozilla and is easy to setup and use.
- It is free, fast, and comes packed full of useful features.



Thunderbird (Cont.)



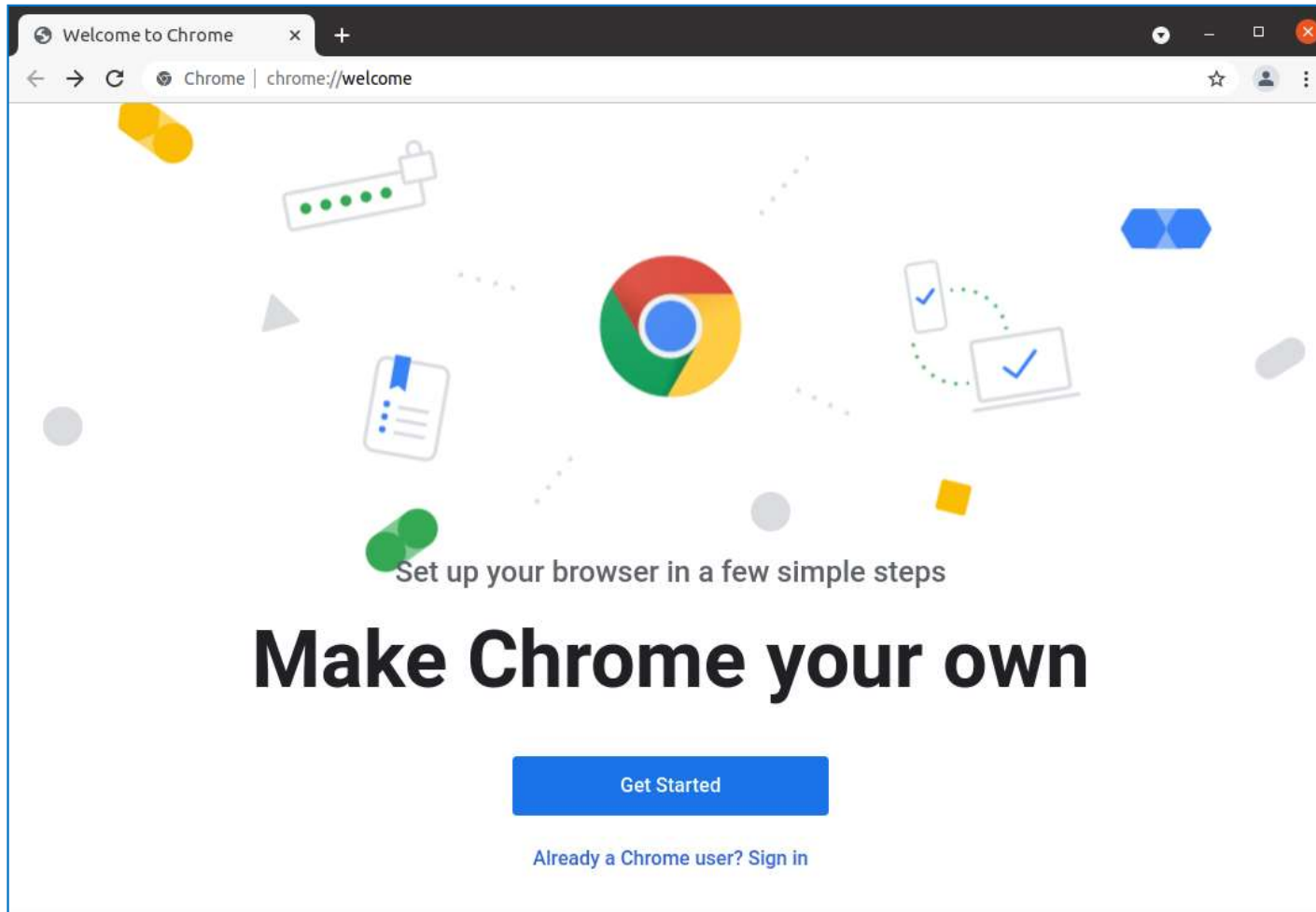
Lab 2 : Configuration Thunderbird

Web Browser

- Windows : Microsoft Internet Explorer, Opera, Mozilla Firefox, Opera, Chromium, Google Chrome, Apple Safari
- Apple OS X : Safari, Mozilla Firefox, Chromium, Opera, Google Chrome
- Linux: Mozilla Firefox, Opera, Google Chrome, Chromium, Epiphany
- The most popular web browsers can be installed directly from the *Ubuntu Software Center*.



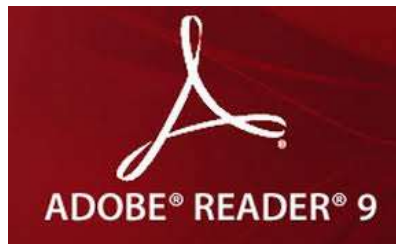
Web Browser (Cont.)



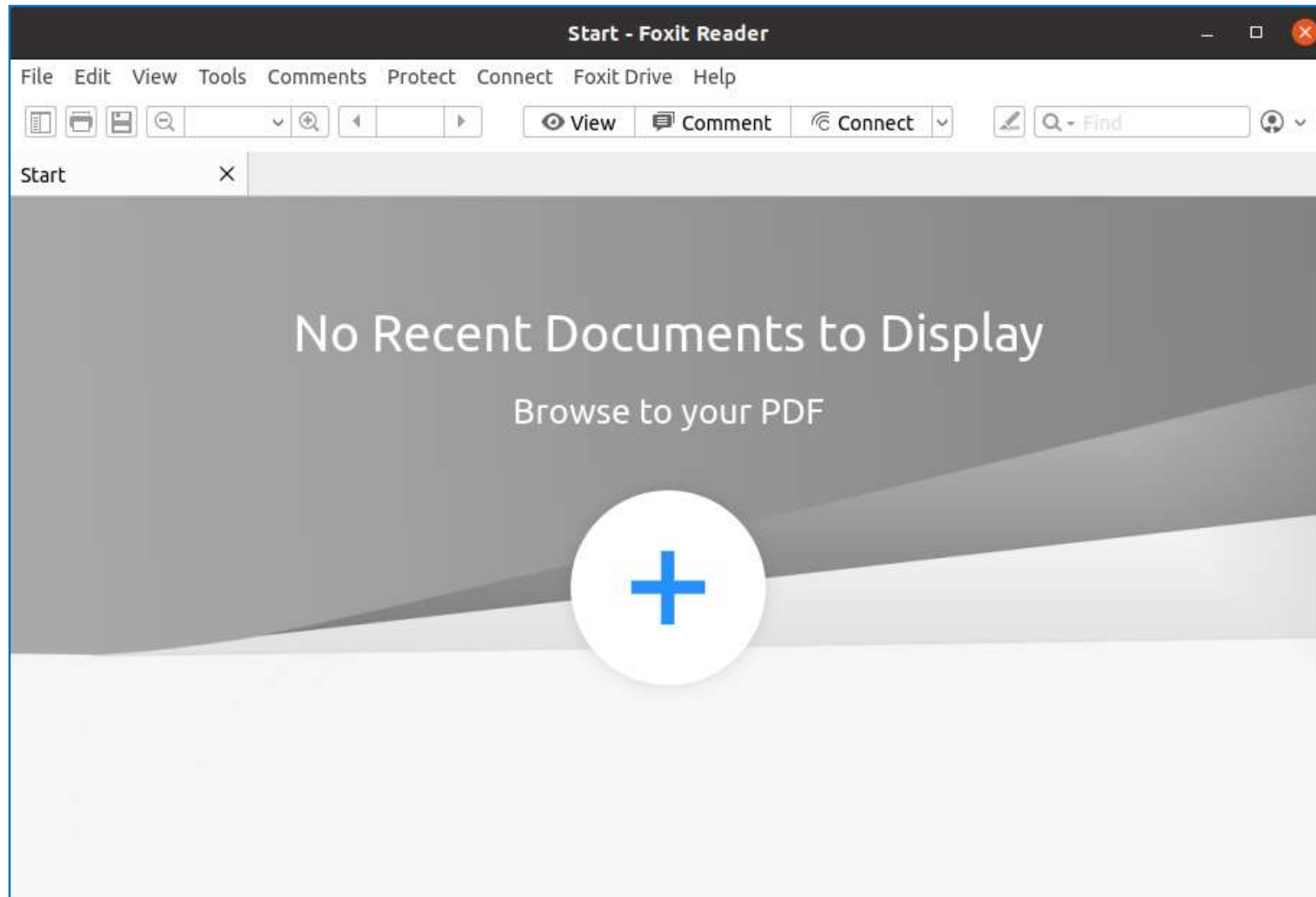
Lab 3 : Installation Google Chrome on Ubuntu 20.04 LTS

PDF Readers

- Windows : Adobe Acrobat Reader, Foxit Reader
- Apple OS X : Adobe Acrobat Reader
- Linux: Evince, Adobe Reader, Okular, Foxit Reader
- The default reader is a *Evince* that user-friendly and minimalistic reader.



Foxit Reader



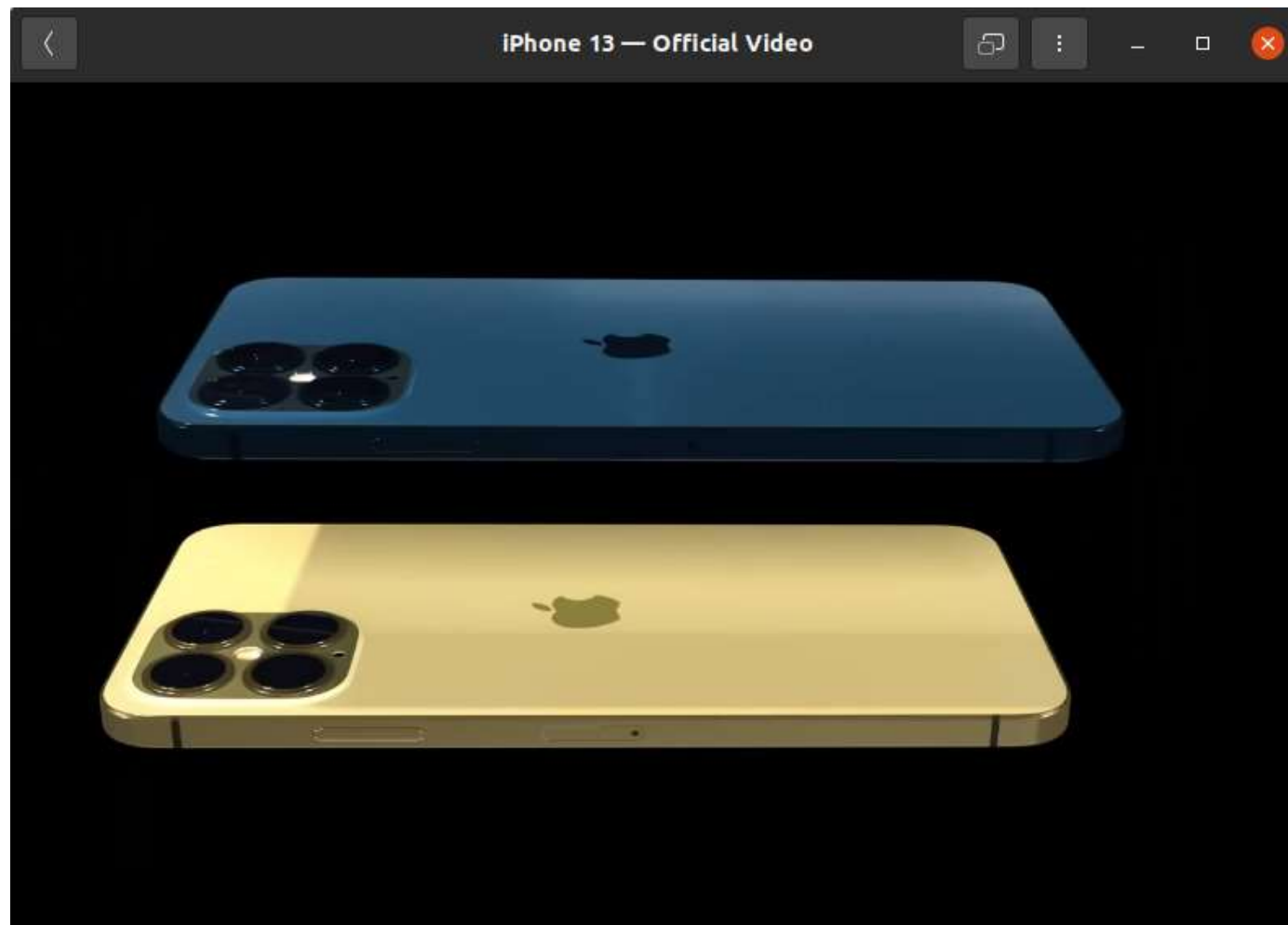
Lab 4 : Installation Foxit Reader on Ubuntu 20.04 LTS

Multimedia Players

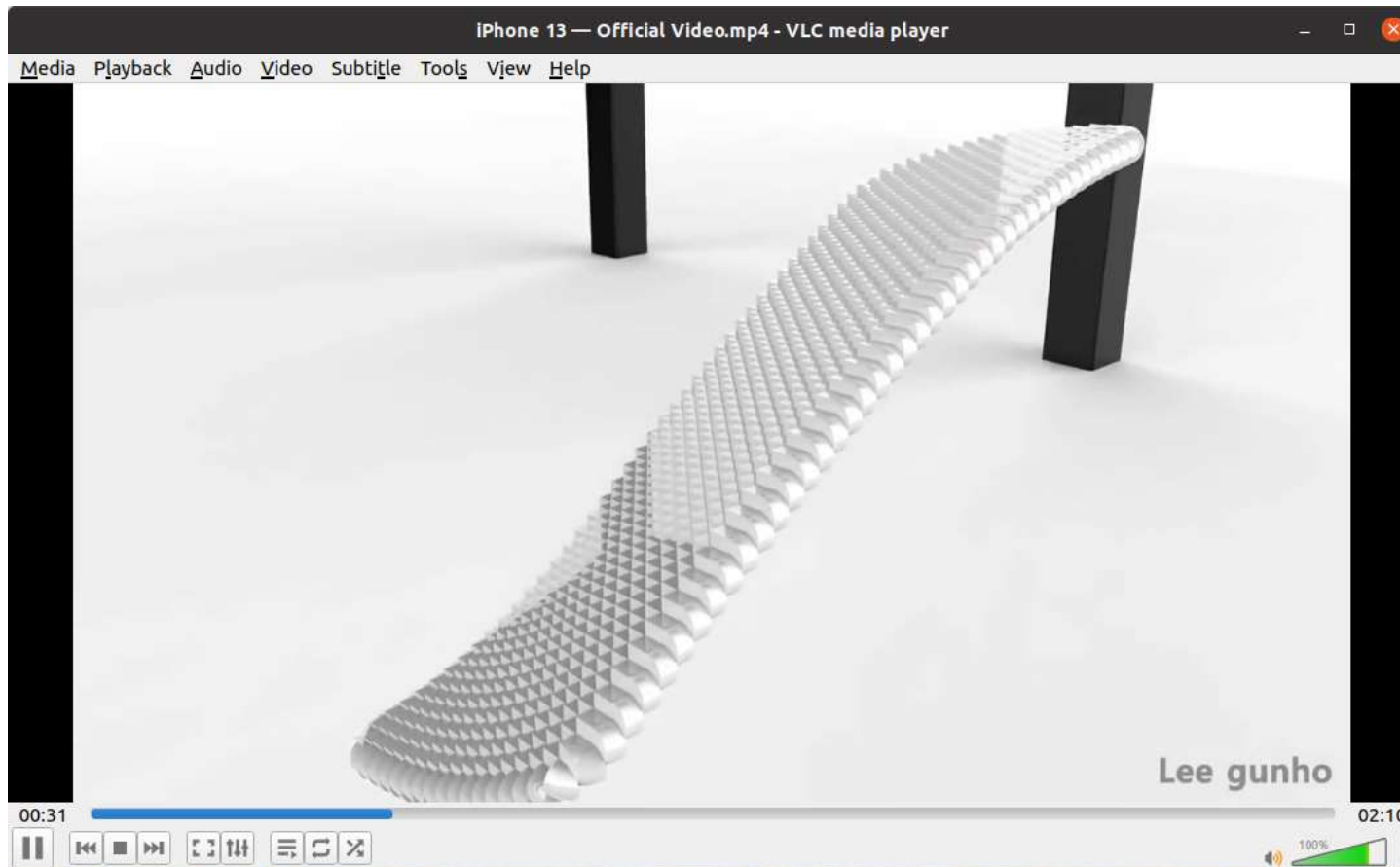
- Windows : Windows Media Player, VLC
- Apple OS X : Quicktime, VLC
- Linux : Totem, VLC, MPlayer, Kaffeine
- VLC is a perennial favorite among videophiles.
- In Ubuntu, *Totem* is the default media player.



Totem



VLC



Lab 5 : Installation VLC on Ubuntu 20.04 LTS

Music Players and Podcatchers

- Windows : Windows Media Player, iTunes
- Apple OS X : iTunes
- Linux : Rhythmbox, Banshee, Amarok, Audacity, Miro
- In Ubuntu, *Rhythmbox* is installed by default.



Banshee

Banshee Media Player

Idle

Search your music

Now Playing
Play Queue
File System Queue 1

Libraries

- Music 207
- Audiobooks
- Videos
- Podcasts
- Radio

Online Media

- Amazon MP3 Store
- Miro Guide
- Internet Archive
- Last.fm

Devices

- Apple iPhone
 - Music

All Artists (14)

- Aaliyah
- Aaliyah Ultimate
- Adele
- Alicia Keys
- Amy Winehouse
- Angie Stone
- Anthony Hamilton
- Benassi Bros
- Benassi Bros Feat. Dh...
- Benassi Bros Feat. Sa...
- Beyonce
- Bevoncé

All Albums (22)

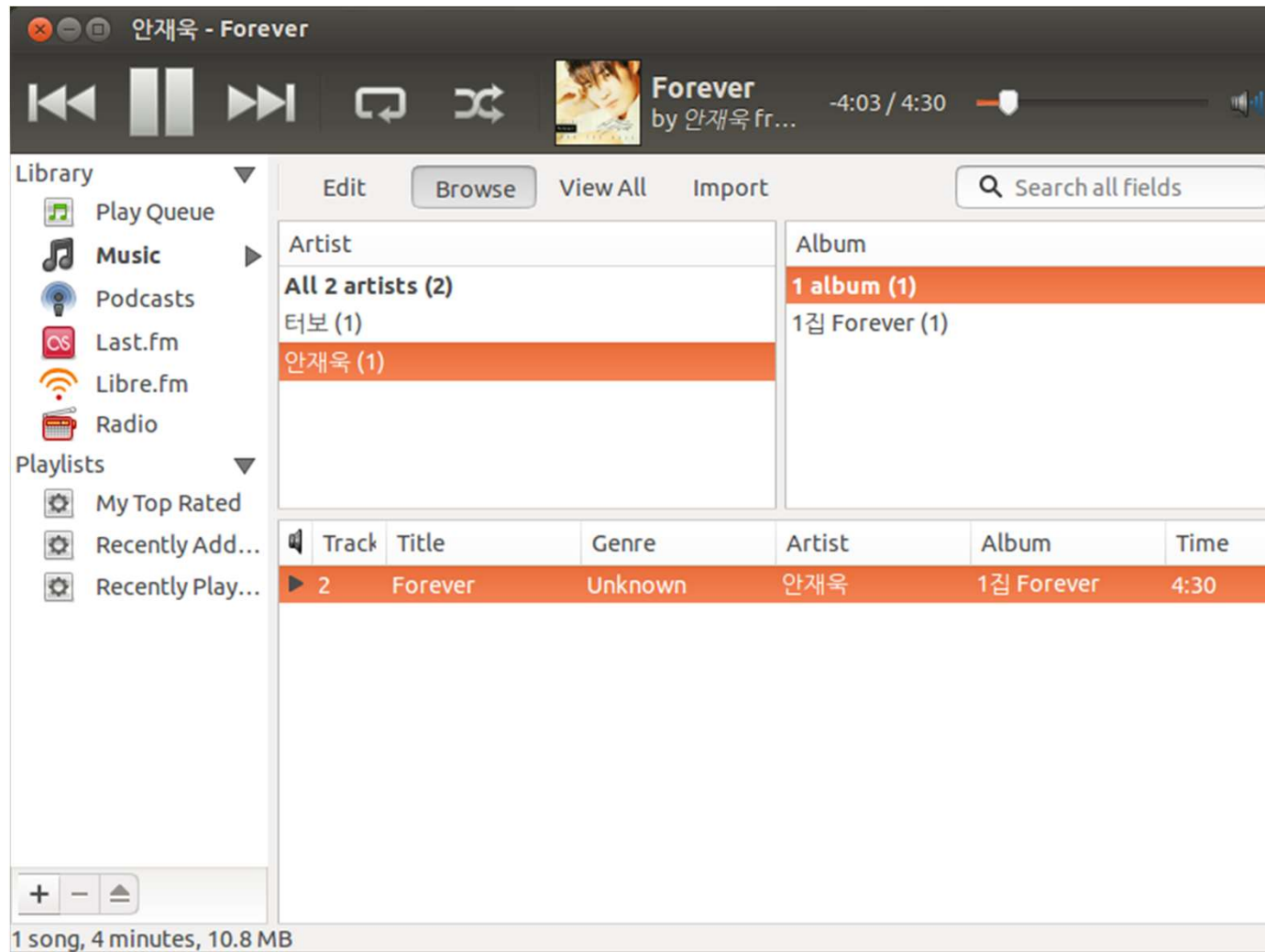
- 19 Adele
- 19-Deluxe-Edi... Adele
- 21 Adele
- 4 Beyonce
- 4 Beyoncé
- 4 Beyonce - (Ft...
- Aaliyah Utima... Aaliyah
- Aaliyah Utima... Aaliyah
- Ain't Nobody ... Anthony Ham...
- As I Am Alicia Keys
- back to black Amy Winehouse
- B'Day Beyoncé
- Best Of Benassi Bros
- Best Of Benassi Bros ...
- Best Of Benassi Bros ...
- Best Of Benassi Bros.
- Frank Amy Winehouse

Name	Artist	Album	Time
1 One In A Million	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:33
2 If Your Girl Only Knew	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:52
3 Hot Like Fire	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:25
4 The One I Gave My Heart To	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:32
5 Got To Give It Up	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:42
6 4 Page Letter	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:54
7 We Need A Resolution-Feat. Timbaland	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:04
8 Rock The Boat	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:36
9 More Than A Woman	Aaliyah Ultimate	Aaliyah Ultimate Cd1	3:51
10 I Care 4 U	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:36
11 Try Again	Aaliyah Ultimate	Aaliyah Ultimate Cd1	4:46
12 Back And Forth	Aaliyah Ultimate	Aaliyah Ultimate Cd1	3:52

207 songs - 13.7 hours - 1.4 GB

Repeat All

Rhythmbox



CD / DVD Burning

- Windows : Nero Burning ROM, InfraRecorder
- Apple OS X : Burn, Toast Titanium
- Linux : Brasero, K3b, Gnome-baker
- *Brasero* is a default burner application in Ubuntu.

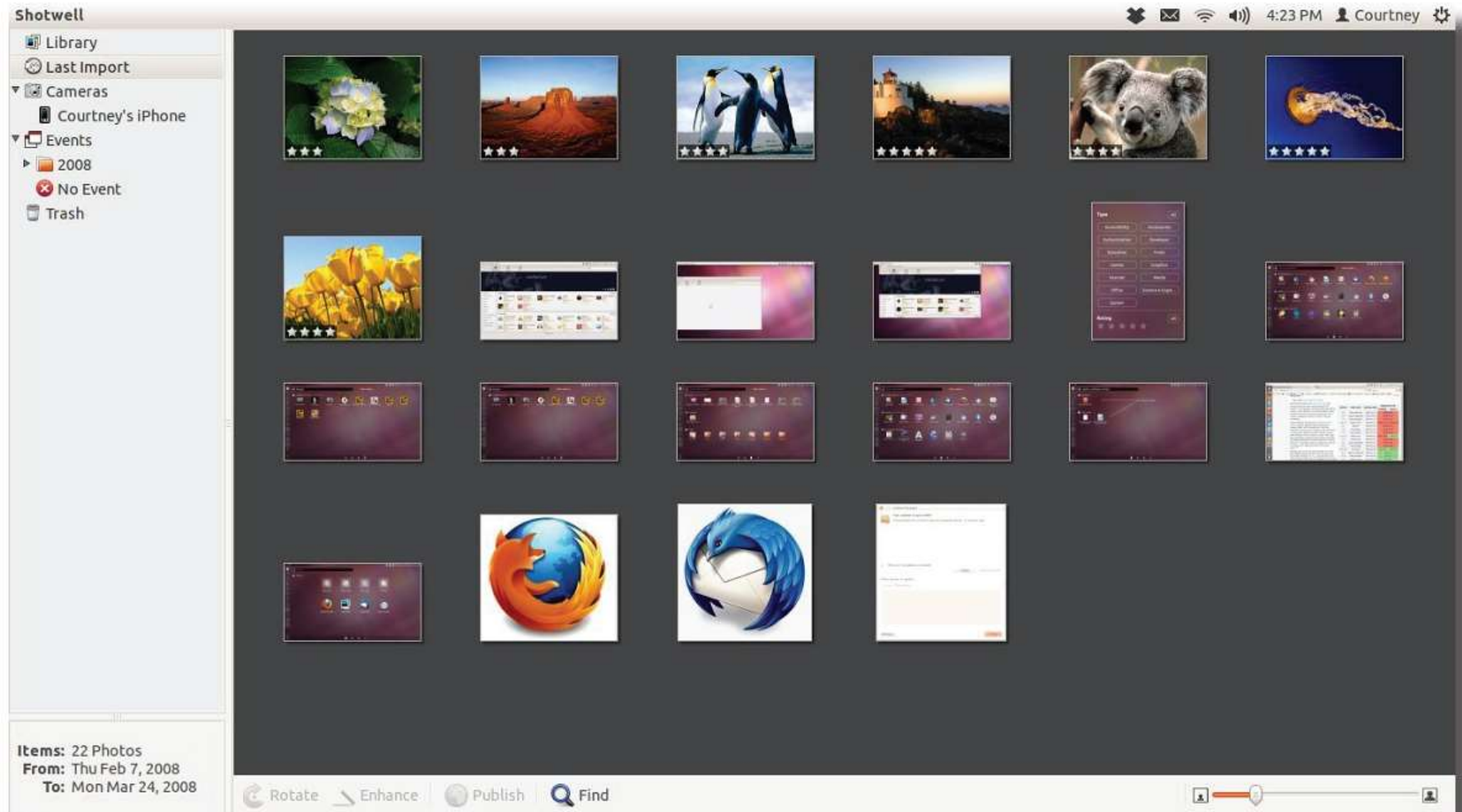


Photo Management

- Windows : Microsoft Office Picture Manager, Picasa
- Apple OS X : Aperture, Picasa
- Linux : Shotwell, gThumb, Gwenview, F-Spot
- In Ubuntu, *Shotwell* is a default photo manager.



Shotwell

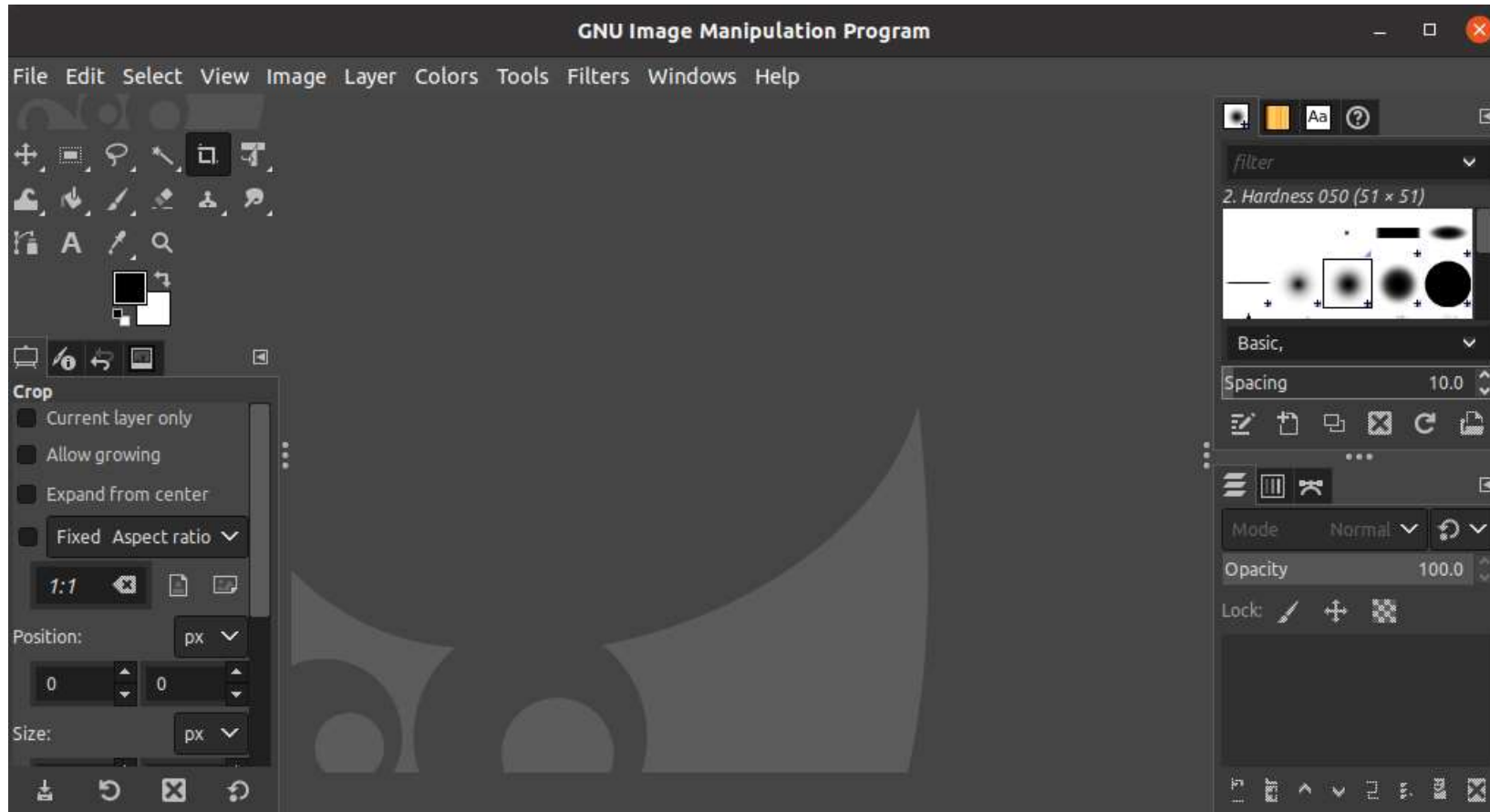


Graphics Editors

- Windows : Adobe Photoshop, GIMP
- Apple OS X : Adobe Photoshop, GIMP
- Linux : GIMP, Inkscape
- GIMP is a very powerful graphics editor.
- *GIMP* is not installed by default, but the application can be installed through the *Ubuntu Software Center*.



GIMP



Lab 6 : Installation GIMP on Ubuntu 20.04 LTS

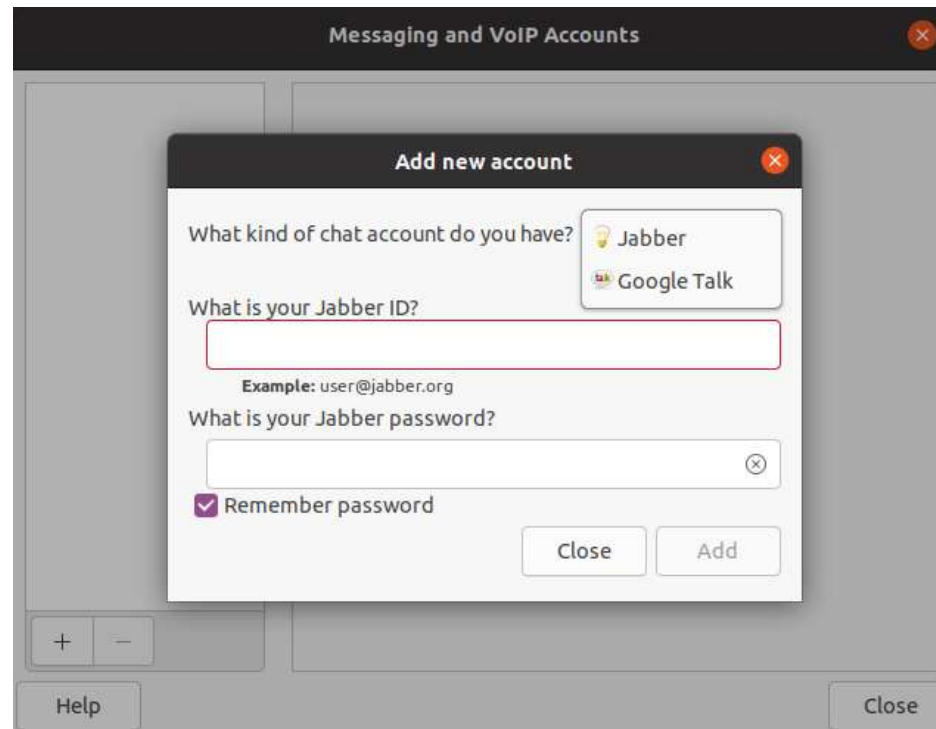
Instant Messaging

- Windows : Windows Live Messenger, AIM, Yahoo! Messenger, Google Talk, KakaoTalk, Nateon
- Apple OS X : Windows Live Messenger, AIM, Yahoo! Messenger, Adium, iChat
- Linux: Empathy, Pidgin, Kopete



Using Instant Messaging

- Ubuntu includes the *Empathy* application that lets use instant messaging features to keep in touch with your contacts.
- *Empathy* lets connect to many instant messaging networks.



Lab 7 : Installation & Configuration Empathy

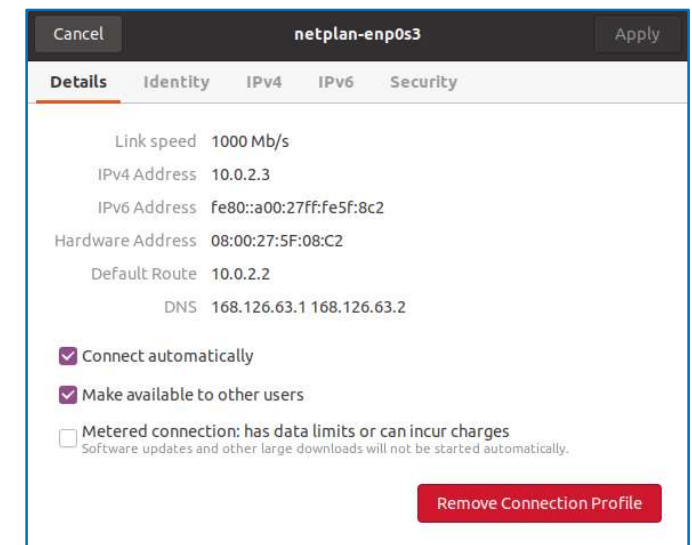
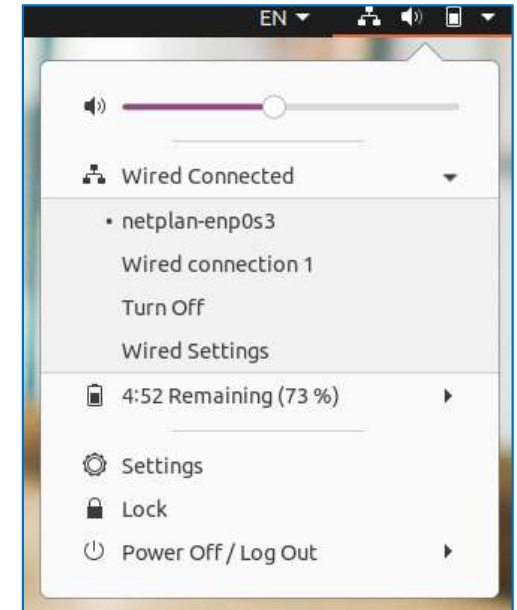
VoIP Applications

- Windows : Skype, Google Video Chat
- Apple OS X : Skype, Google Video Chat
- Linux : Ekiga, Skype, Google Video Chat
- VoIP technologies allow to talk to people over the Internet.
- The most popular application is Skype, which is available for Linux.



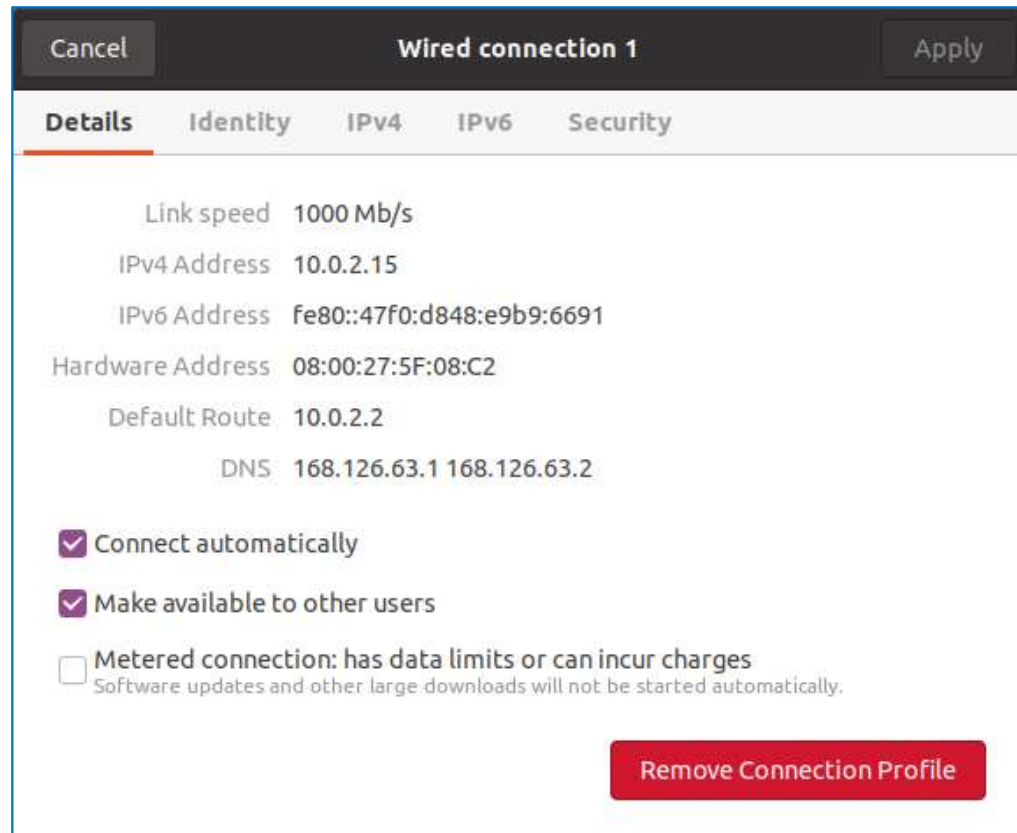
Network Manager

- In order to connect to the Internet using Ubuntu, need to use the *NetworkManager* utility.
- Allows to turn network connections on or off.
- Manage wired and wireless networks.
- Make other network connections, such as dialup, mobile broadband, and VPNs.



NetworkManager (Cont.)

- To manually configure a wired connection
 1. Click on the *NetworkManager* icon
 2. Select *Edit Connections*.
 3. Select *Wired connection*
 4. Click the *Edit...* button.



The screenshot shows the 'Wired connection 1' configuration window in NetworkManager. The window has a dark header with 'Cancel' and 'Apply' buttons. Below the header are tabs for 'Details', 'Identity', 'IPv4', 'IPv6', and 'Security'. The 'Details' tab is selected, showing various network settings. At the bottom, there are three checkboxes: 'Connect automatically' (checked), 'Make available to other users' (checked), and 'Metered connection: has data limits or can incur charges' (unchecked). A red button labeled 'Remove Connection Profile' is located at the bottom right.

Details	Identity	IPv4	IPv6	Security
Link speed	1000 Mb/s			
IPv4 Address	10.0.2.15			
IPv6 Address	fe80::47f0:d848:e9b9:6691			
Hardware Address	08:00:27:5F:08:C2			
Default Route	10.0.2.2			
DNS	168.126.63.1 168.126.63.2			
<input checked="" type="checkbox"/> Connect automatically				
<input checked="" type="checkbox"/> Make available to other users				
<input type="checkbox"/> Metered connection: has data limits or can incur charges Software updates and other large downloads will not be started automatically.				

Remove Connection Profile

Package Management in Ubuntu

■ Package ?

- Distributions of software
- Data in archive file containing a computer program¹
- Contain metadata for its deployment
 - The software's name
 - Description of its purpose
 - Version number
 - Vendor
 - Checksum
 - A list of dependencies² necessary for the software to run properly.

1. Can be in source code that has to be compiled and built first.

2. Other package that need to be installed beforehand.

Source from : https://en.wikipedia.org/wiki/Package_manager

Package Management in Ubuntu (Cont.)

- Package Manager(Package Management System)
 - Is a collection of software tools
 - Automates the process of installing, upgrading, configuring, and removing computer programs
- Repository
 - To give users more control over the kinds of software
 - Due to legal or convenience reasons on the distributors' side, where software is downloaded from.

Package Management in Ubuntu (Cont.)

- Ubuntu Software Center
- apt-get
 - A CLI utility installing packages in terminal.
- Synaptic Package Manager
 - A GUI for dpkg¹/APT²
- aptitude
 - A console client with CLI and ncurses-based TUI interfaces
- dpkg

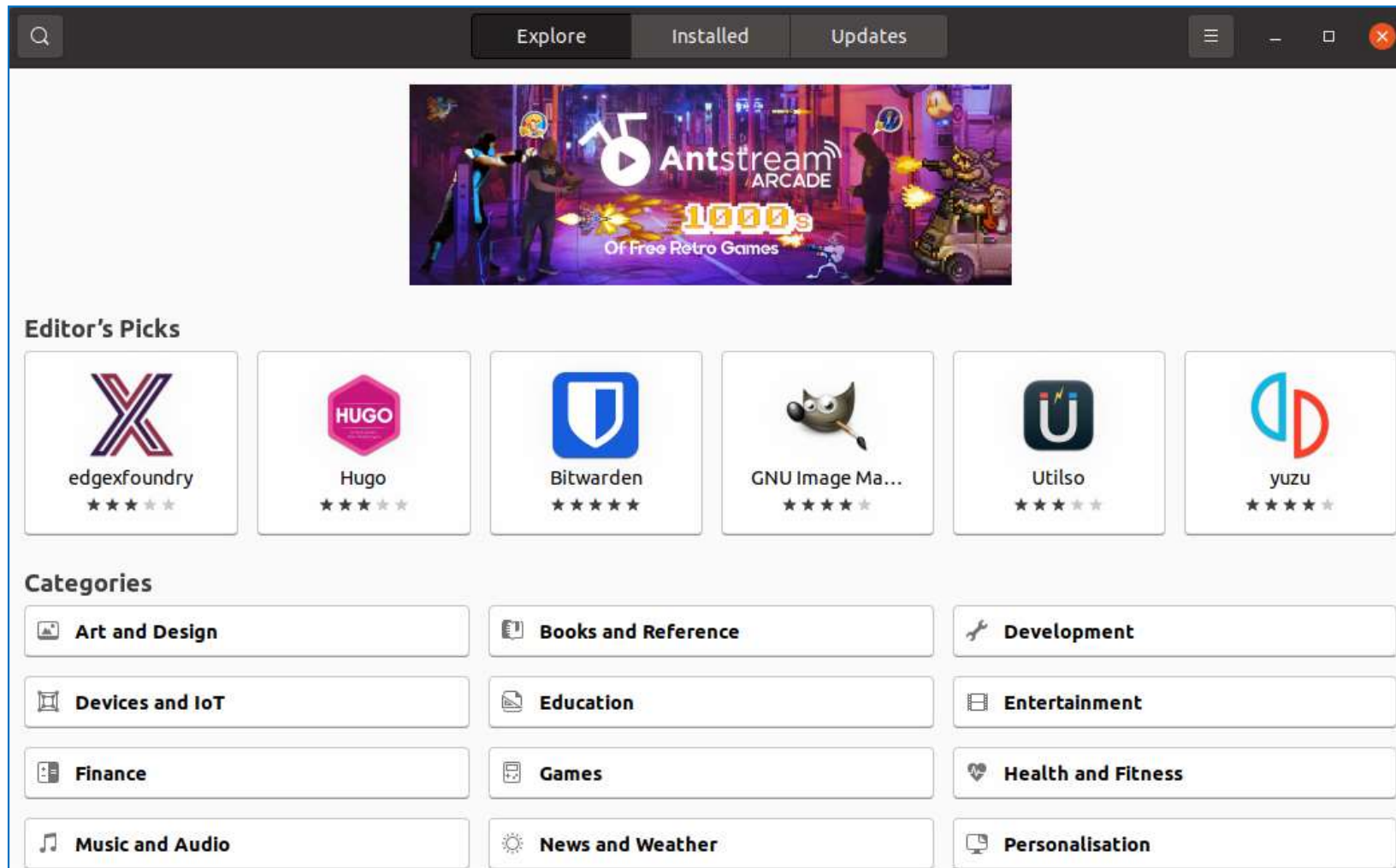
1. dpkg is used to install, remove, and provide information about .deb packages.

Source from : <https://en.wikipedia.org/wiki/Dpkg>

2. Advanced Package Tool is a free software user interface that works with core libraries to handle the installation and removal of software on the Debian and other Linux distributions.

Source from : https://en.wikipedia.org/wiki/Advanced_Packaging_Tool

Ubuntu Software Center



Lab 8 : Installation Frozen-Bubble Game using Ubuntu Software Center on Ubuntu 20.04 LTS

Installation Frozen-Bubble Game In Ubuntu Software Center



APT (Advanced Package Tool)

- Is a collection of tools.
- A significant part is defined in a C++ library of functions.
- Includes command-line programs.
- Three such programs are *apt*, *apt-get* and *apt-cache*.

apt-get

- Is the command line package management tool.
- Supplied with the Debian package apt.
- APT searches its cached list of packages.
- Lists the dependencies that must be installed or updated.
- APT retrieves, configures and installs the dependencies automatically.

apt-get (Cont.)

■ Usage

```
sudo apt-get [options] <command> <package-name 1> <package-name2> ...
```

■ Example

```
$ sudo apt-get install totem smplayer -y
```

apt-get (Cont.)

■ Commands

- *install* : install the new package.

```
$ sudo apt-get install totem smplayer
```

- *remove* : remove/delete an installed package except configuration files.

```
$ sudo apt-get remove zip
```

- *purge* : remove/delete everything including configuration files.

```
$ sudo apt-get purge mysql-server
```

apt-get (Cont.)

■ Commands

- *update* : sync the local software database with the repository database (build cache).

\$ **sudo apt-get update**

- *upgrade* : upgrade all the software on your system to the latest versions.

\$ **sudo apt-get upgrade**

- *dist-upgrade* : upgrades the whole linux distribution to a new version.

\$ **sudo apt-get dist-upgrade**

apt-get (Cont.)

■ Commands

- *check* : verifies system's integrity using apt.
- *clean* : removes the downloaded packages from the cache directory (/var/cache/apt/archives/).
- *autoclean* : like clean, The difference is that it only removes package files that can no longer be downloaded, and are largely useless.
- *autoremove* : remove packages that were automatically installed to satisfy dependencies for some package and that are no more needed.

apt-get (Cont.)

■ Options

- *-h, --help* : shows a short usage summary.
- *-d, --download-only* : downloads only, not unpacked or installed.
- *-y, --yes* : automatic yes to prompt.
- *-f, --fix-broken* : fix, attempt to correct a system with broken dependencies in place.

apt-cache

- Performs a variety of operations on APT's package cache.
- Does not manipulate the state of the system.
- Provide operations to search
- Generate interesting output from the package metadata.

apt-cache (Cont.)

■ Commands

- *search* : performs a full text search on all available package lists for the regex pattern given.
- *pkgnames* : prints the name of each package in the system.
- *depends* : shows a listing of each dependency a package has.
- *show* : displays the package records for the named packages.

\$ **apt-cache show docky**

apt-cache (Cont.)

\$ apt-cache show frozen-bubble

```
instructor@Ubuntu-Desktop: ~  
instructor@Ubuntu-Desktop:~$ apt-cache show frozen-bubble  
Package: frozen-bubble  
Architecture: amd64  
Version: 2.212-9build2  
Priority: extra  
Section: universe/games  
Origin: Ubuntu  
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>  
Original-Maintainer: Debian Perl Group <pkg-perl-maintainers@lists.alioth.debian.org>  
Bugs: https://bugs.launchpad.net/ubuntu/+filebug  
Installed-Size: 689  
Depends: perl (>= 5.30.0-7), perlapi-5.30.0, libc6 (>= 2.15), libglib2.0-0 (>= 2.12.0), libsdl-mixer1.2, libsdl1.2debian (>= 1.2.11), frozen-bubble-data (= 2.212-9build2), libalien-sdl-perl, libcompress-bzip2-perl, liblocale-gettext-perl, libsdl-perl  
Replaces: frozen-bubble-lib  
Filename: pool/universe/f/frozen-bubble/frozen-bubble_2.212-9build2_amd64.deb  
Size: 166708  
MD5sum: 68cfa2fa850075eae9b22e482f4760a2  
SHA1: 671195781475fde1736847885b9cbe3504710509  
SHA256: f86e455b085d93e31ee816b7d4a3783b7804009da267849d84840009065d49cf  
Homepage: http://www.frozen-bubble.org/  
Description-en: cool game where you pop out the bubbles!  
Frozen-Bubble is a clone of the popular "Puzzle Bobble" game, in which  
you attempt to shoot bubbles into groups of the same color to cause  
them to pop.  
.  
Players compete as penguins and must use the arrow keys to aim a  
colored bubble at groups of bubbles. The objective is to clear all the  
bubbles off the screen before a bubble passes below a line at the  
bottom.  
.  
It features 100 single-player levels, a two-player mode, music and  
striking graphics. A level editor is also included to allow players to  
create and play their own levels.  
Description-md5: 3785aec5dfad3884d80489fbf1b4f48a
```

PPA

- Personal Package Archive
- Is a special software repository for uploading source packages to be built and published as an APT.

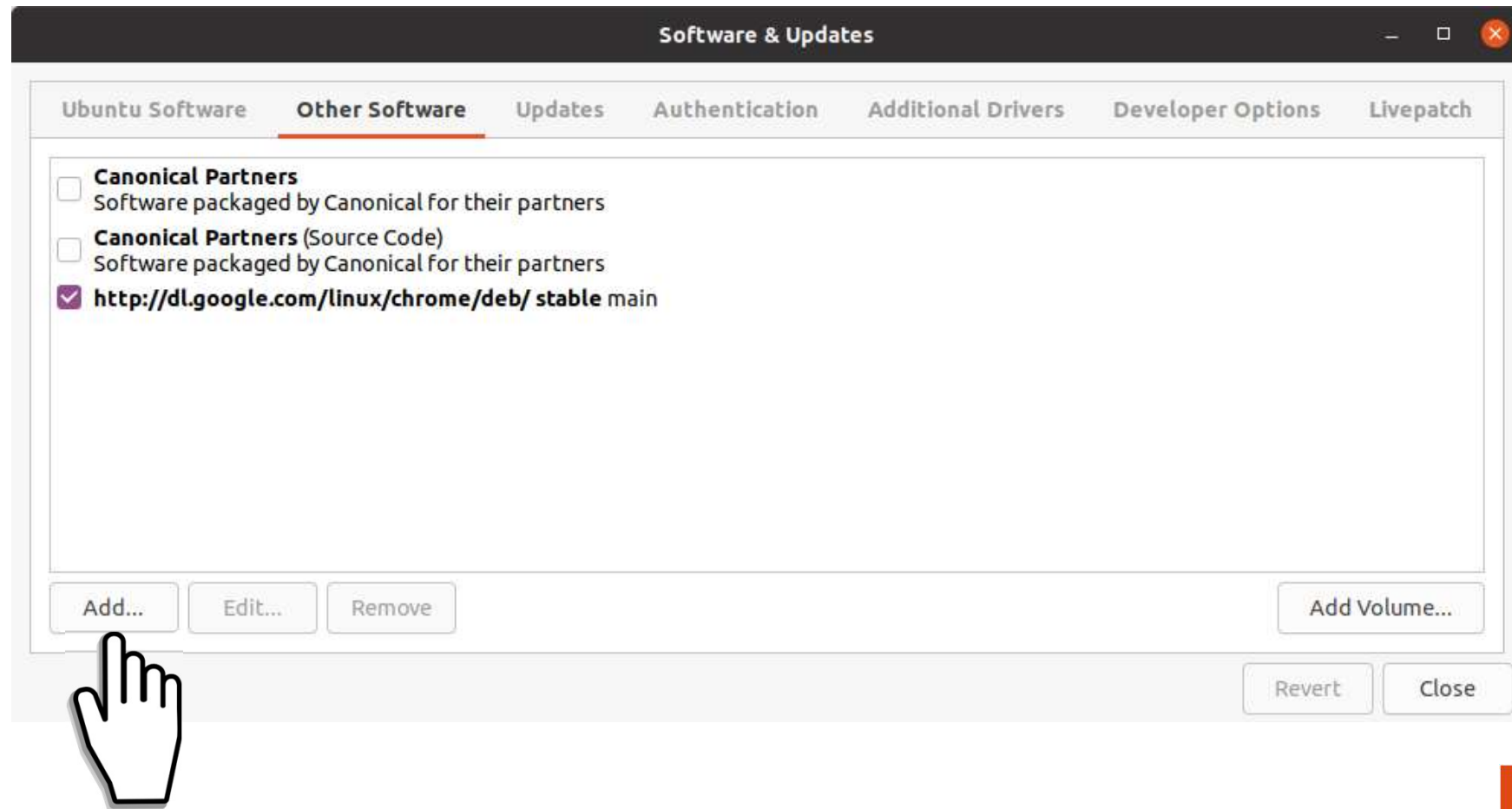
- Usage

```
$ sudo add-apt-repository <PPA Address>
```

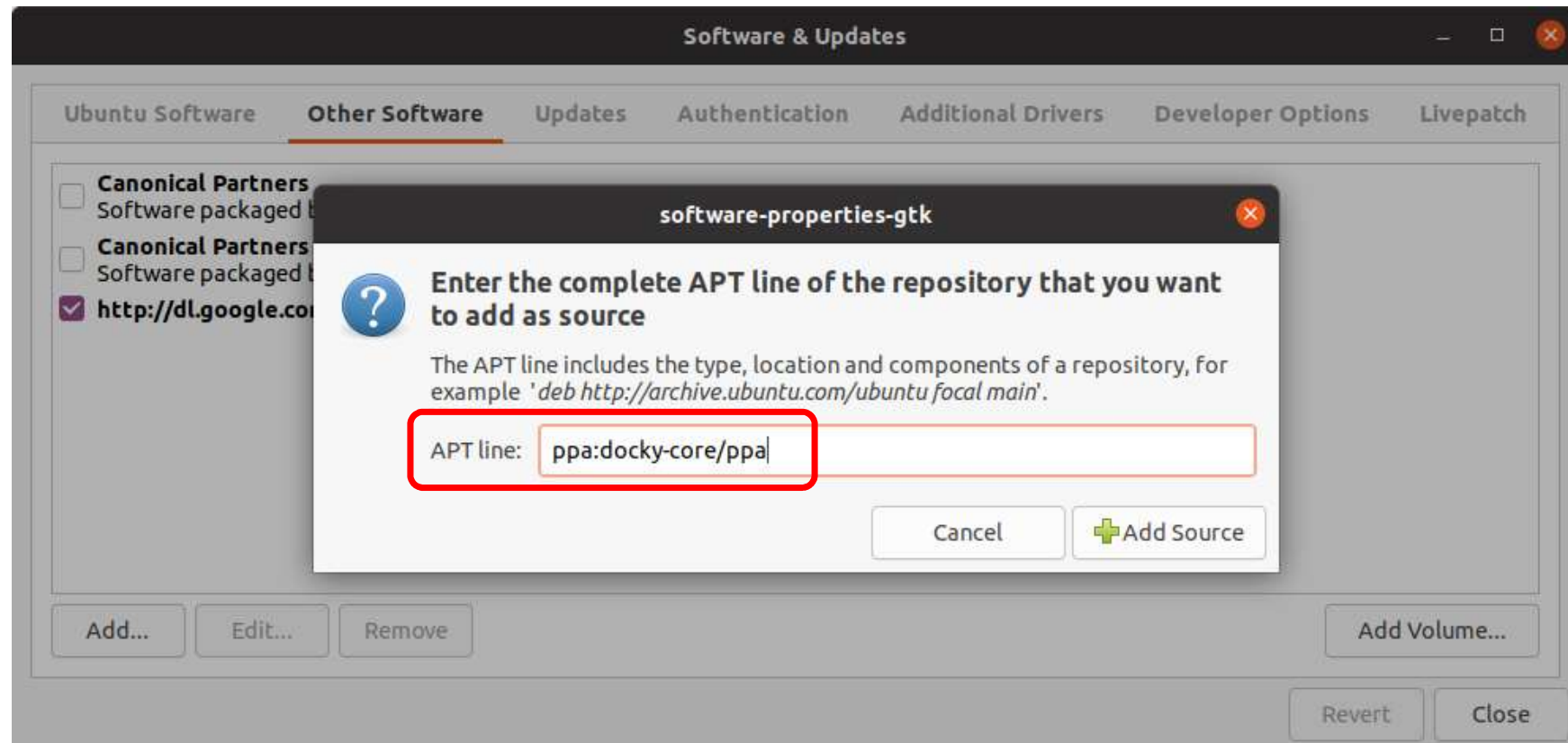
- Example

```
$ sudo add-apt-repository ppa:docky-core/ppa
```

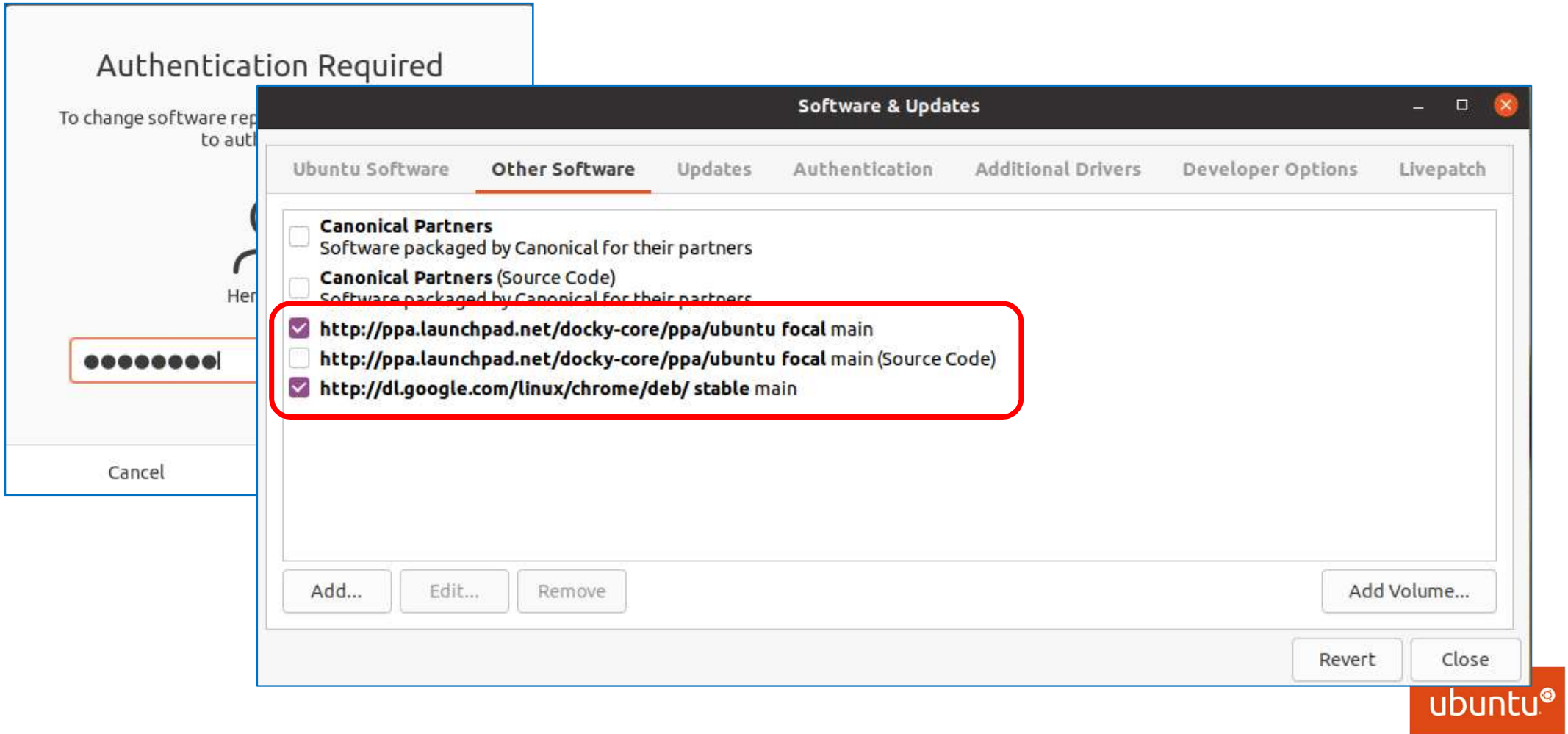
PPA (Cont.)



PPA (Cont.)



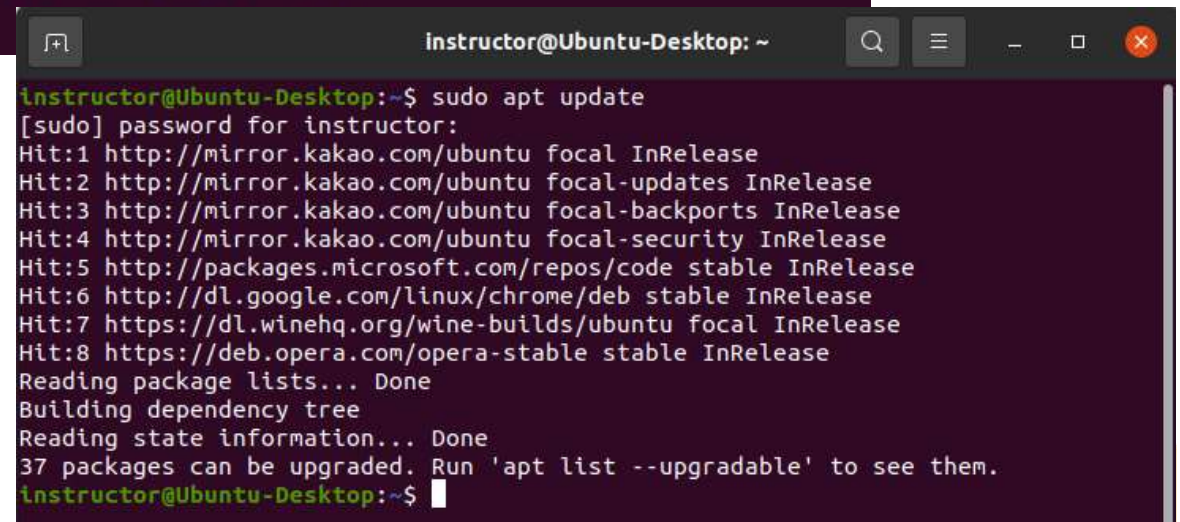
PPA (Cont.)



PPA (Cont.) Or

\$ sudo add-apt-repository

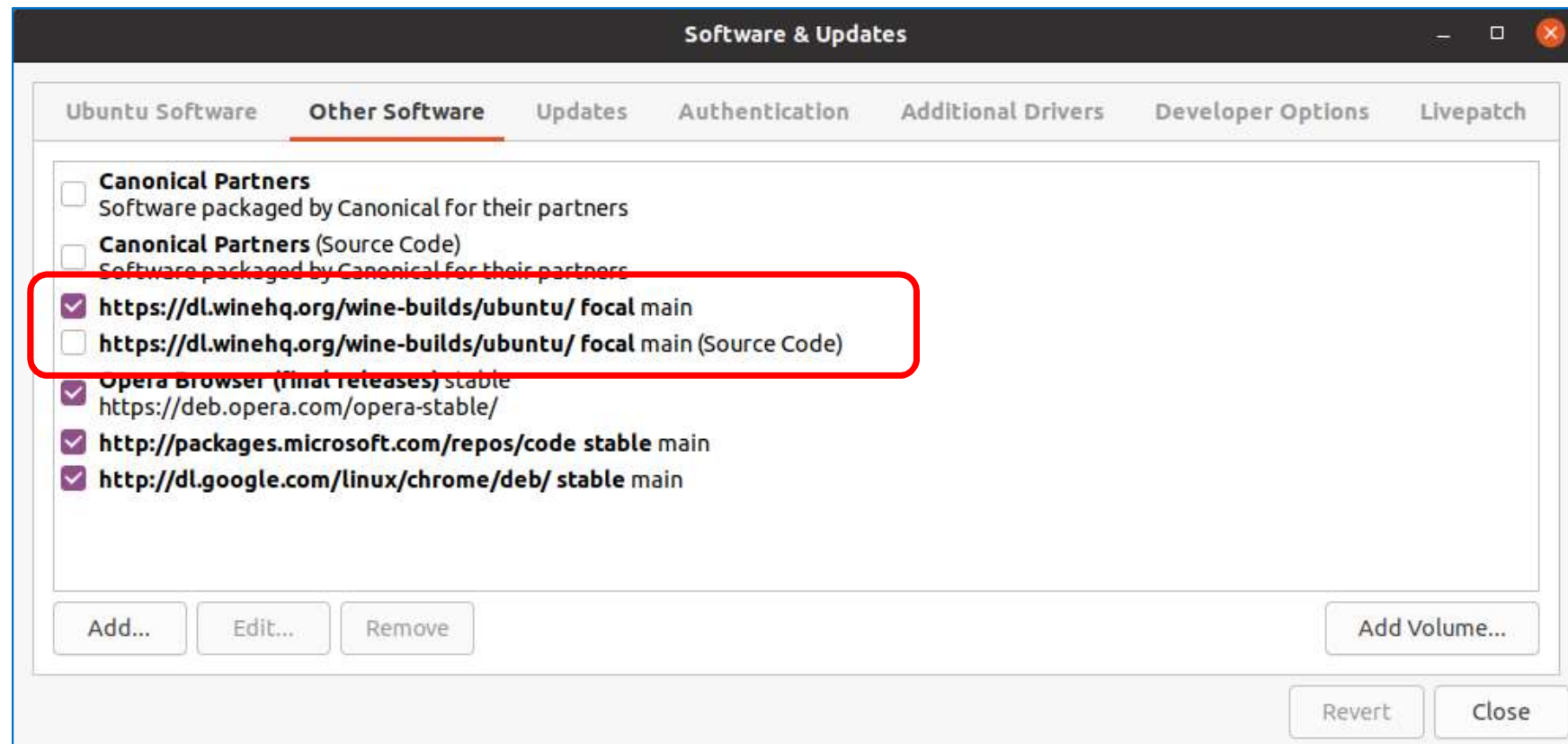
```
instructor@Ubuntu-Desktop:~$ sudo add-apt-repository 'deb https://dl.winehq.org/wine-builds/ubuntu/ focal main'
Hit:1 http://mirror.kakao.com/ubuntu focal InRelease
Hit:2 http://mirror.kakao.com/ubuntu focal-updates InRelease
Hit:3 http://mirror.kakao.com/ubuntu focal-backports InRelease
Hit:4 http://mirror.kakao.com/ubuntu focal-security InRelease
Hit:5 https://deb.opera.com/opera-stable stable InRelease
Hit:6 http://packages.microsoft.com/repos/code stable InRelease
Get:7 https://dl.winehq.org/wine-builds/ubuntu focal InRelease [6,257 B]
Hit:8 http://dl.google.com/linux/chrome/deb stable InRelease
Get:9 https://dl.winehq.org/wine-builds/ubuntu focal/main i386 Packages [239 kB]
Get:10 https://dl.winehq.org/wine-builds/ubuntu focal/main amd64 Packages [237 kB]
Fetched 482 kB in 1s (499 kB/s)
Reading package lists... Done
```

A terminal window titled 'instructor@Ubuntu-Desktop: ~' with standard window controls. It shows the output of the 'sudo apt update' command. The output lists various mirrors and repositories, including the newly added winehq repository, and reports that 37 packages can be upgraded.

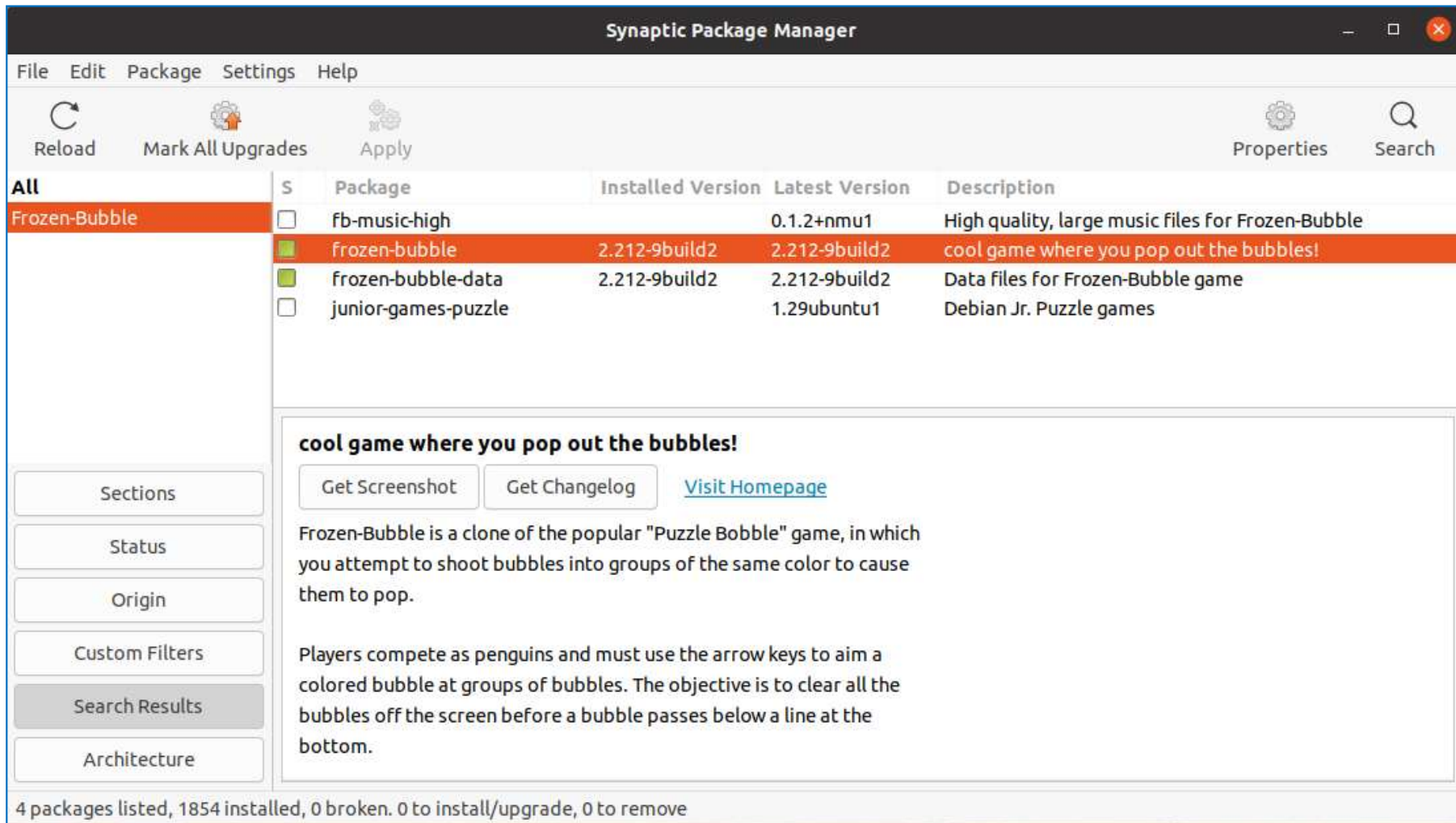
```
instructor@Ubuntu-Desktop:~$ sudo apt update
[sudo] password for instructor:
Hit:1 http://mirror.kakao.com/ubuntu focal InRelease
Hit:2 http://mirror.kakao.com/ubuntu focal-updates InRelease
Hit:3 http://mirror.kakao.com/ubuntu focal-backports InRelease
Hit:4 http://mirror.kakao.com/ubuntu focal-security InRelease
Hit:5 http://packages.microsoft.com/repos/code stable InRelease
Hit:6 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:7 https://dl.winehq.org/wine-builds/ubuntu focal InRelease
Hit:8 https://deb.opera.com/opera-stable stable InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
37 packages can be upgraded. Run 'apt list --upgradable' to see them.
instructor@Ubuntu-Desktop:~$
```


PPA (Cont.) Or

\$ sudo add-apt-repository



Synaptic Package Manager



The screenshot shows the Synaptic Package Manager window. The title bar is 'Synaptic Package Manager'. The menu bar includes 'File', 'Edit', 'Package', 'Settings', and 'Help'. The toolbar has icons for 'Reload', 'Mark All Upgrades', 'Apply', 'Properties', and 'Search'. The main window is divided into two panes. The left pane shows a list of packages under the 'All' section, with 'Frozen-Bubble' selected. The right pane shows a table of packages with columns: 'S', 'Package', 'Installed Version', 'Latest Version', and 'Description'. The 'Frozen-Bubble' package is highlighted in orange. Below the table, there is a detailed view for the selected package, including a title 'cool game where you pop out the bubbles!', buttons for 'Get Screenshot', 'Get Changelog', and a link to 'Visit Homepage'. The description text is: 'Frozen-Bubble is a clone of the popular "Puzzle Bobble" game, in which you attempt to shoot bubbles into groups of the same color to cause them to pop. Players compete as penguins and must use the arrow keys to aim a colored bubble at groups of bubbles. The objective is to clear all the bubbles off the screen before a bubble passes below a line at the bottom.'

S	Package	Installed Version	Latest Version	Description
<input type="checkbox"/>	fb-music-high		0.1.2+nmu1	High quality, large music files for Frozen-Bubble
<input checked="" type="checkbox"/>	frozen-bubble	2.212-9build2	2.212-9build2	cool game where you pop out the bubbles!
<input checked="" type="checkbox"/>	frozen-bubble-data	2.212-9build2	2.212-9build2	Data files for Frozen-Bubble game
<input type="checkbox"/>	junior-games-puzzle		1.29ubuntu1	Debian Jr. Puzzle games

cool game where you pop out the bubbles!

Get Screenshot Get Changelog [Visit Homepage](#)

Frozen-Bubble is a clone of the popular "Puzzle Bobble" game, in which you attempt to shoot bubbles into groups of the same color to cause them to pop.

Players compete as penguins and must use the arrow keys to aim a colored bubble at groups of bubbles. The objective is to clear all the bubbles off the screen before a bubble passes below a line at the bottom.

4 packages listed, 1854 installed, 0 broken. 0 to install/upgrade, 0 to remove

Lab 9 : Installation Synaptic Manager on Ubuntu 20.04 LTS

aptitude

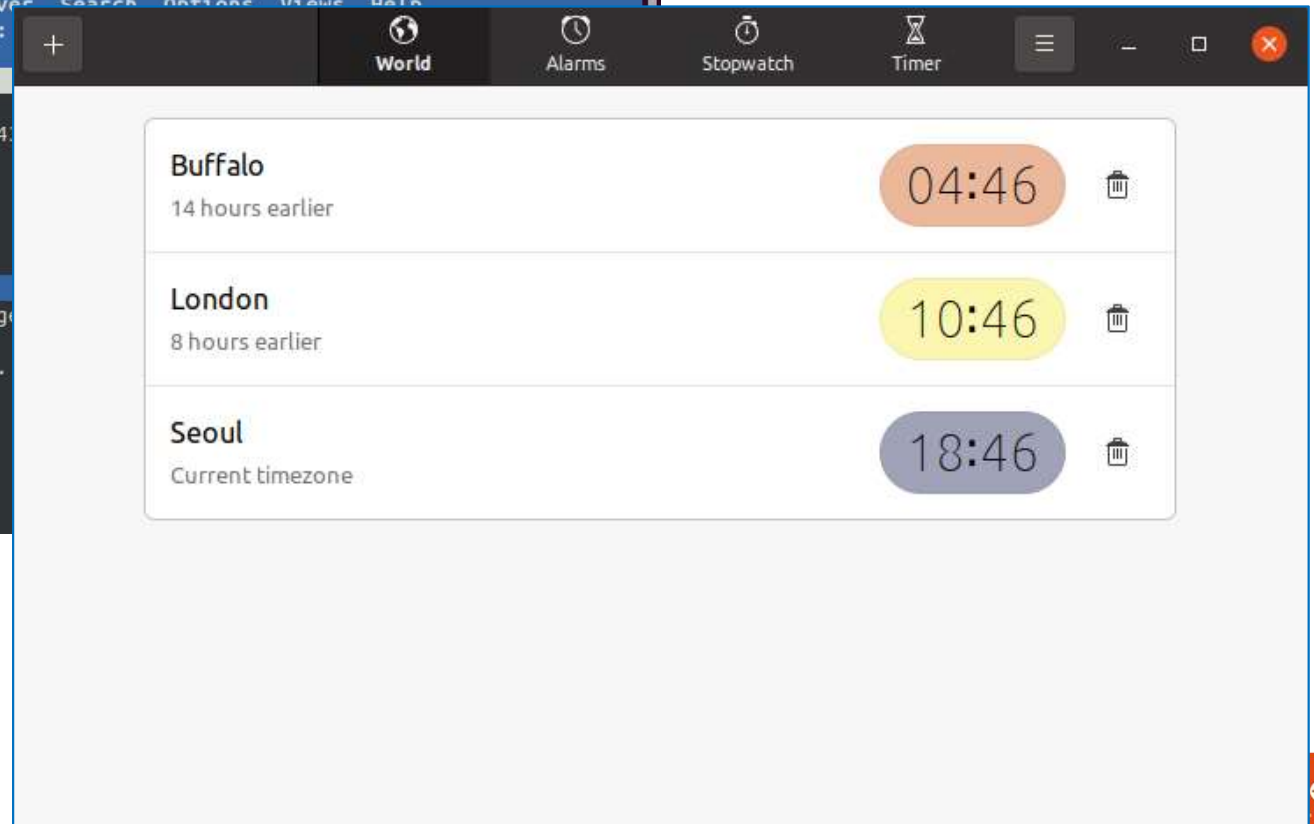
- Is a front-end to the Advanced Packaging Tool (APT).
- Displays a list of software packages.
- Allows the user to interactively pick packages to install or remove.
- Was initially created for Debian, but has appeared in RPM Package Manager (RPM) based distributions.

Lab 10 : Installation aptitude and installation gnome-clocks using aptitude

aptitude – gnome-clocks

```
instructor@Ubuntu-Desktop: ~  
instructor@Ubuntu-Desktop:~$ aptitude show gnome-clocks  
Package: gnome-clocks  
Version: 3.36.2-1~ubuntu20.04.1  
State: not installed  
Priority: optional  
Section: universe/gnome  
Maintainer: Ubuntu Developers <ubuntu-devel@ubuntu.com>  
Architecture: amd64  
Uncompressed Size: 1,819 k  
Depends: geoclue-2.0, dconf-gsettings-editor (>= 2.4), libgeoclue-2-0 (>= 2.4), libglib2.0-0 (>= 2.58), libgtk-3-0 (>= 1.0.1), libhandy-0.0-0 (>= 0.0.0)  
Description: Simple GNOME app with world clocks  
GNOME Clocks is a simple application for displaying world clocks for different locations and set alarms or timers.  
Homepage: https://wiki.gnome.org/Apps/Clocks/  
A newer version of these package is available.  
This group contains 4 packages.
```

```
instructor@Ubuntu-Desktop: ~  
Actions Undo Package Resolver Search Options Views Help  
C-T: Menu ?: Help q: Quit u: Upgrade  
--- Upgradable Packages (4)  
--- Installed Packages (1861)  
--- Not Installed Packages (684)  
--- Virtual Packages (19017)  
--- Tasks (25088)
```



dpkg

- Is the software at the base of the package management system in the free operating system Debian.
- Is used to install, remove, and provide information about .deb packages.
- Usage
 - dpkg [options] action

dpkg (Cont.)

- `$ dpkg -l`
- List packages.

```
instructor@Ubuntu-Desktop: ~$ dpkg -l
```

Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend	Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
Name	Version
ii accountsservice	0.6.55-0ubuntu12~20.04.4
ii acl	2.2.53-6
ii acpi-support	0.143
ii acpid	1:2.0.32-1ubuntu1
ii adduser	3.118ubuntu2
ii adwaita-icon-theme	3.36.1-2ubuntu0.20.04.2
ii aisleriot	1:3.22.9-1
ii alsa-base	1.0.25+dfsg-0ubuntu5
ii alsa-topology-conf	1.2.2-1
ii alsa-ucm-conf	1.2.2-1ubuntu0.8
ii alsa-utils	1.2.2-1ubuntu2.1
ii amd64-microcode	3.20191218.1ubuntu1
ii anacron	2.3-29
ii apg	2.2.3.dfsg.1-5
ii app-install-data-partner	19.04

```
lines 1-20... skipping...
```

Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend	Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
Name	Version
ii accountsservice	0.6.55-0ubuntu12~20.04.4
ii acl	2.2.53-6
ii acpi-support	0.143
ii acpid	1:2.0.32-1ubuntu1
ii adduser	3.118ubuntu2
ii adwaita-icon-theme	3.36.1-2ubuntu0.20.04.2

dpkg (Cont.)

■ `$ dpkg -l zip`

```
instructor@Ubuntu-Desktop: ~  
instructor@Ubuntu-Desktop:~$  
instructor@Ubuntu-Desktop:~$ dpkg -l zip  
Desired=Unknown/Install/Remove/Purge/Hold  
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend  
||/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)  
||/ Name                Version             Architecture Description  
+++-=====+-----+-----+-----+  
ii  zip                  3.0-11build1      amd64        Archiver for .zip files  
instructor@Ubuntu-Desktop:~$
```

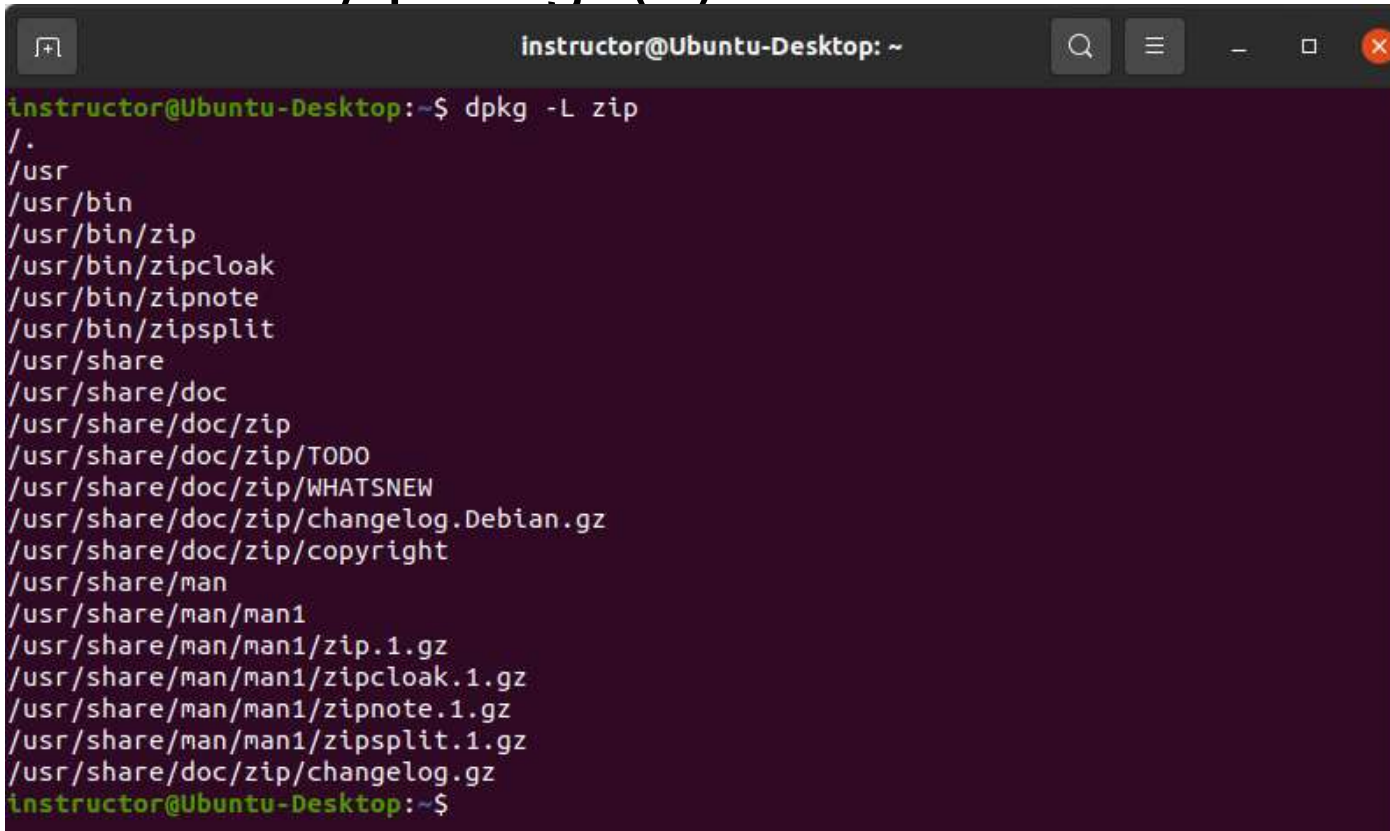
dpkg (Cont.)

- `$ dpkg -s zip`
- Find package(s) owning file(s).

```
instructor@Ubuntu-Desktop: ~  
instructor@Ubuntu-Desktop:~$ dpkg -s zip  
Package: zip  
Status: install ok installed  
Priority: optional  
Section: utils  
Installed-Size: 623  
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>  
Architecture: amd64  
Multi-Arch: foreign  
Version: 3.0-11build1  
Depends: libbz2-1.0, libc6 (>= 2.14)  
Recommends: unzip  
Description: Archiver for .zip files  
 This is InfoZIP's zip program. It produces files that are fully  
 compatible with the popular PKZIP program; however, the command line  
 options are not identical. In other words, the end result is the same,  
 but the methods differ. :-)  
.  
 This version supports encryption.  
Original-Maintainer: Santiago Vila <sanvila@debian.org>  
Homepage: http://www.info-zip.org/Zip.html  
instructor@Ubuntu-Desktop:~$
```

dpkg (Cont.)

- `$ dpkg -L zip`
- List files 'owned' by package(s).

A terminal window titled 'instructor@Ubuntu-Desktop: ~' with standard Ubuntu window controls. The terminal shows the command 'dpkg -L zip' and its output, which lists all files owned by the 'zip' package. The output is as follows:

```
instructor@Ubuntu-Desktop:~$ dpkg -L zip
/.
/usr
/usr/bin
/usr/bin/zip
/usr/bin/zipcloak
/usr/bin/zipnote
/usr/bin/zipsplit
/usr/share
/usr/share/doc
/usr/share/doc/zip
/usr/share/doc/zip/TODO
/usr/share/doc/zip/WHATSNEW
/usr/share/doc/zip/changelog.Debian.gz
/usr/share/doc/zip/copyright
/usr/share/man
/usr/share/man/man1
/usr/share/man/man1/zip.1.gz
/usr/share/man/man1/zipcloak.1.gz
/usr/share/man/man1/zipnote.1.gz
/usr/share/man/man1/zipsplit.1.gz
/usr/share/doc/zip/changelog.gz
instructor@Ubuntu-Desktop:~$
```

dpkg (Cont.)

- `$ dpkg -c opera*.deb`
- Check for broken package(s).

```
instructor@Ubuntu-Desktop: ~/Downloads
instructor@Ubuntu-Desktop:~/Downloads$ ls
opera-stable_78.0.4093.112_amd64.deb
instructor@Ubuntu-Desktop:~/Downloads$ dpkg -c opera*.deb
drwxr-xr-x root/root      0 2021-08-02 02:46 ./
drwxr-xr-x root/root      0 2021-08-02 02:46 ./usr/
drwxr-xr-x root/root      0 2021-08-02 02:46 ./usr/bin/
drwxr-xr-x root/root      0 2021-08-02 02:46 ./usr/lib/
drwxr-xr-x root/root      0 2021-08-02 02:46 ./usr/lib/x86_64-linux-gnu/
drwxr-xr-x root/root      0 2021-08-02 02:46 ./usr/lib/x86_64-linux-gnu/opera/
-rwxr-xr-x root/root    1052328 2021-08-02 02:46 ./usr/lib/x86_64-linux-gnu/opera/crashpad_handler
-rw-r--r-- root/root    10182992 2021-08-01 23:16 ./usr/lib/x86_64-linux-gnu/opera/icudtl.dat
-rw-r--r-- root/root      228416 2021-08-02 02:46 ./usr/lib/x86_64-linux-gnu/opera/libEGL.so
-rw-r--r-- root/root      7001928 2021-08-02 02:46 ./usr/lib/x86_64-linux-gnu/opera/libGLSv2.so
-rw-r--r-- root/root      1823736 2021-08-02 02:46 ./usr/lib/x86_64-linux-gnu/opera/libffmpeg.so
-rw-r--r-- root/root      3997432 2021-08-02 02:46 ./usr/lib/x86_64-linux-gnu/opera/libvk_swiftshader.so
-rw-r--r-- root/root      471992 2021-08-02 02:46 ./usr/lib/x86_64-linux-gnu/opera/libvulkan.so.1
drwxr-xr-x root/root      0 2021-08-02 02:46 ./usr/lib/x86_64-linux-gnu/opera/localization/
-rw-r--r-- root/root      413704 2021-08-02 02:16 ./usr/lib/x86_64-linux-gnu/opera/localization/be.pak
-rw-r--r-- root/root      497962 2021-08-02 02:16 ./usr/lib/x86_64-linux-gnu/opera/localization/bg.pak
-rw-r--r-- root/root      644345 2021-08-02 02:16 ./usr/lib/x86_64-linux-gnu/opera/localization/bn.pak
-rw-r--r-- root/root      314249 2021-08-02 02:16 ./usr/lib/x86_64-linux-gnu/opera/localization/ca.pak
-rw-r--r-- root/root      312002 2021-08-02 02:16 ./usr/lib/x86_64-linux-gnu/opera/localization/cs.pak
-rw-r--r-- root/root      287602 2021-08-02 02:16 ./usr/lib/x86_64-linux-gnu/opera/localization/da.pak
```


dpkg (Cont.)

- `$ sudo dpkg -i (--install) opera*.deb`
- Package install

```
instructor@Ubuntu-Desktop: ~/Downloads
instructor@Ubuntu-Desktop:~/Downloads$ sudo dpkg -i opera*.deb
Selecting previously unselected package opera-stable.
(Reading database ... 207157 files and directories currently installed.)
Preparing to unpack opera-stable_78.0.4093.112_amd64.deb ...
Unpacking opera-stable (78.0.4093.112) ...
Setting up opera-stable (78.0.4093.112) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu1) ...
Processing triggers for desktop-file-utils (0.24-1ubuntu3) ...
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for shared-mime-info (1.15-1) ...
instructor@Ubuntu-Desktop:~/Downloads$
```

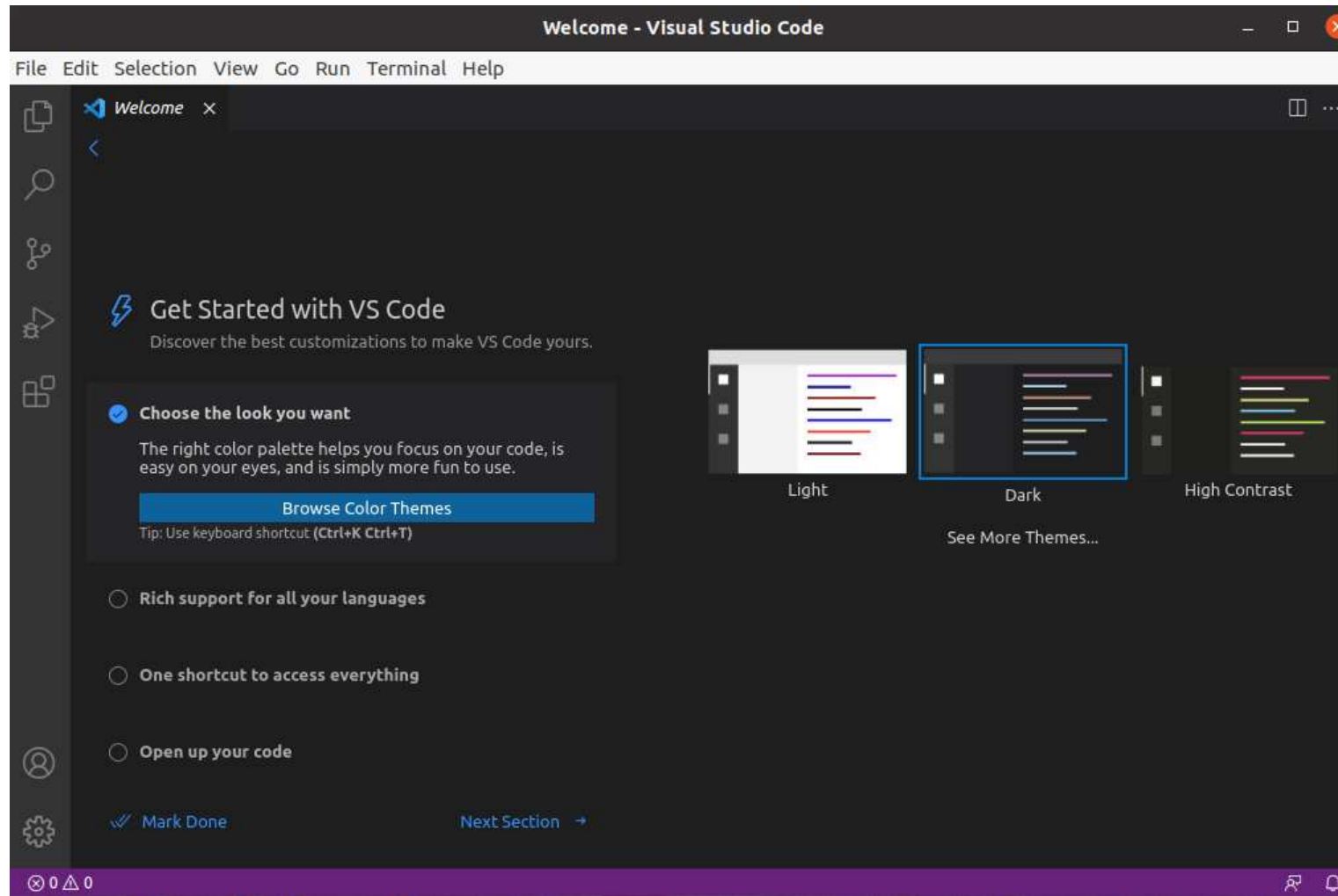
dpkg (Cont.)

- `$ sudo dpkg -r | --remove`
- `$ sudo dpkg -P | --purge`
- Package remove

```
instructor@Ubuntu-Desktop: ~/Downloads
instructor@Ubuntu-Desktop:~/Downloads$ sudo dpkg -r opera-stable
(Reading database ... 207287 files and directories currently installed.)
Removing opera-stable (78.0.4093.112) ...
Processing triggers for shared-mime-info (1.15-1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu1) ...
Processing triggers for desktop-file-utils (0.24-1ubuntu3) ...
Processing triggers for mime-support (3.64ubuntu1) ...
instructor@Ubuntu-Desktop:~/Downloads$
```

Lab 11 : Installation VSCode on Ubuntu 20.04 Using dpkg

VSCode



Wine

- Wine Is Not an Emulator
- Aims to allow application software and computer games developed for Microsoft Windows to run on Unix-like OS.

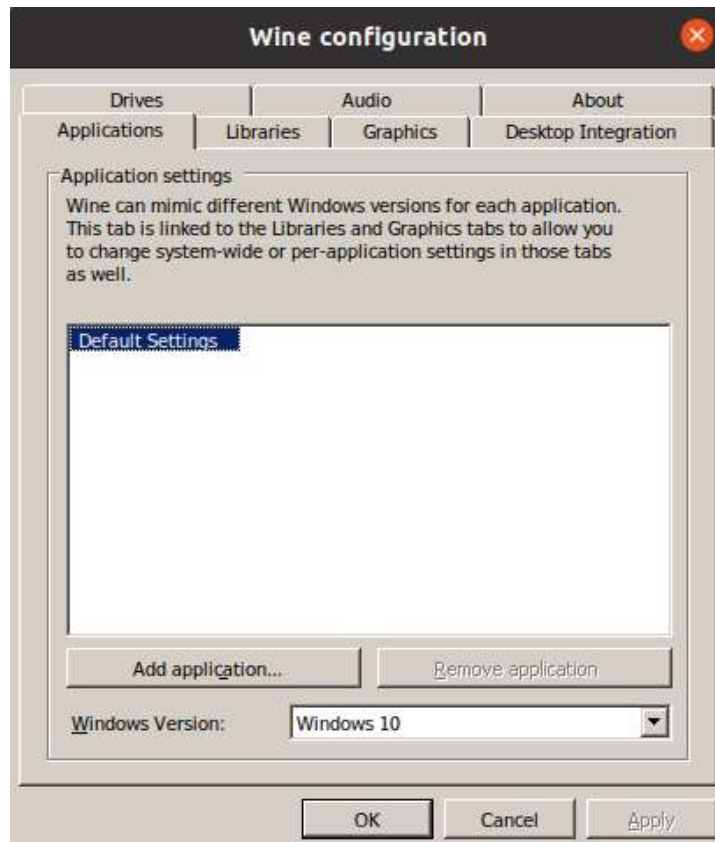
A screenshot of the WineHQ website, specifically the page for StarCraft. The browser address bar shows 'appdb.winehq.org/objectManager.php?sClass=application&iid=72'. The website has a dark red header with 'WINEHQ' in white. A sidebar on the left contains links like 'AppDB', 'Home', 'Screenshots', 'Browse Apps', 'Browse by Developer', 'Top 25', 'Submit App', 'Help', 'Statistics', 'Operating systems (830)', and 'Contact Us'. The main content area shows the 'StarCraft' application page. It includes a category path: 'Main > Games > Strategy Games > Real-Time Strategy > StarCraft'. There is a small image of the StarCraft game box with a 'View Screenshots' link. A paragraph of text describes the game's premise. To the right, 'Application Details' are listed: 'Developer: Blizzard Entertainment Inc.' and 'URL: http://blizzard.com/games/sc/'. Below that, 'Super Maintainers' are listed, including 'Igor Polyakov' with a 'Be a super maintainer' button. At the bottom, there is a table with columns: 'Version', 'Description', 'Latest Rating', 'Latest Wine version tested', 'Test results', and 'Comments'. The first row shows '1.16.1 (Brood War)' as the latest classic version before the Remastered Edition, with a 'Platinum' rating, version '2.1', 286 test results, and 20 comments. A second row is partially visible, describing 'The original StarCraft with 1.18 patch onward including...'.

Version	Description	Latest Rating	Latest Wine version tested	Test results	Comments
1.16.1 (Brood War)	Latest classic version before the Remastered Edition.	Platinum	2.1	286	20
	The original StarCraft with 1.18 patch onward including...				



Lab 12 : Installation WINE on Ubuntu 20.04 LTS

Wine (Cont.)



Ubuntu Desktop

