



balaswecha

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1. Overview of Balaswecha

The primary objective of BalaSwecha is to bridge the growing digital divide in education between privileged and underprivileged in India. Schools for the underprivileged in India, for example the government schools and government aided schools, face a lot of problems including lack of continuous electricity, infrastructure and personnel.

To introduce computer based learning at the school level for children studying in government schools and other schools for the under-privileged. Frugal innovation, using Open Hardware and Free Software technologies, will be the plank on which computer aided learning will be delivered. Specialised hardware and software (BalaSwecha) will be used for this purpose.

Balaswecha has more than **160 simulations / applications** which are mapped to state syllabus.

Teachers can also create multimedia content for students using tools like **Openshot** video editor, **Audacity** audio editor, **Inkscape** to edit / create the images.

Mindmapping tools will help the teachers to create class plans. In the browser you can directly download **video & audio** from youtube.

Support system - Swecha has a huge volunteer base across Telangana & Andhra Pradesh.

Localization - custom solutions like teachers after using balaswecha they asked if we can create application in biology as well. That's when we came up with cell structure. It was teacher's idea. Along with that teachers wanted to conduct quiz for students. In future if anyone came up with a new idea we are happy to implement that change in the balaswecha operating system.

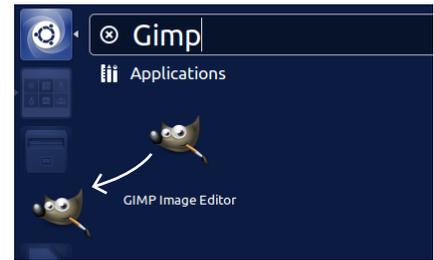
2. Exploring Desktop (UI)

How to Start Applications



Click on the launch icon & type name of desired application in the search box. For example, GIMP!

You can also drag and drop your frequent application to the unity bar for quick access.

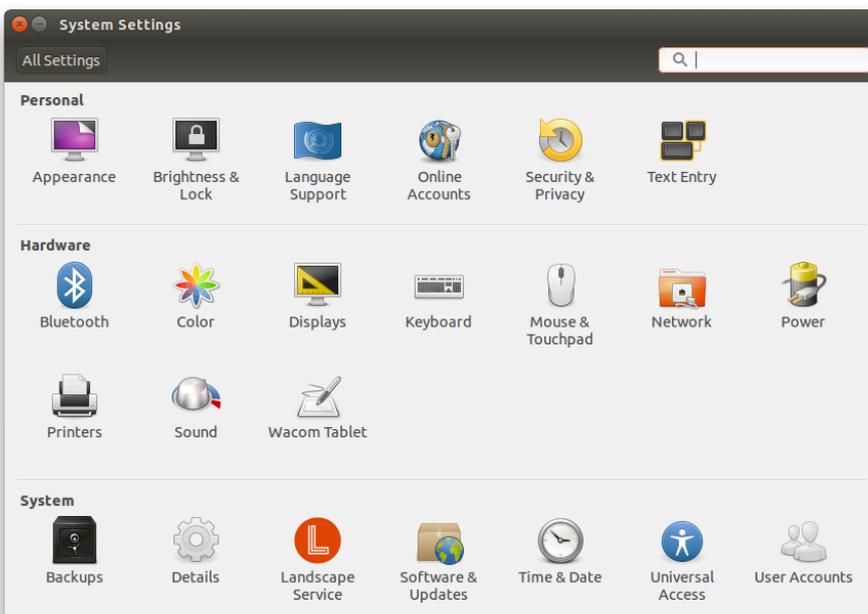


Just in case if you do not find it, then you can search for it on-line by choosing applications category.



In addition to searching for applications you can search for music / videos / photos by choosing respective category.

System Settings

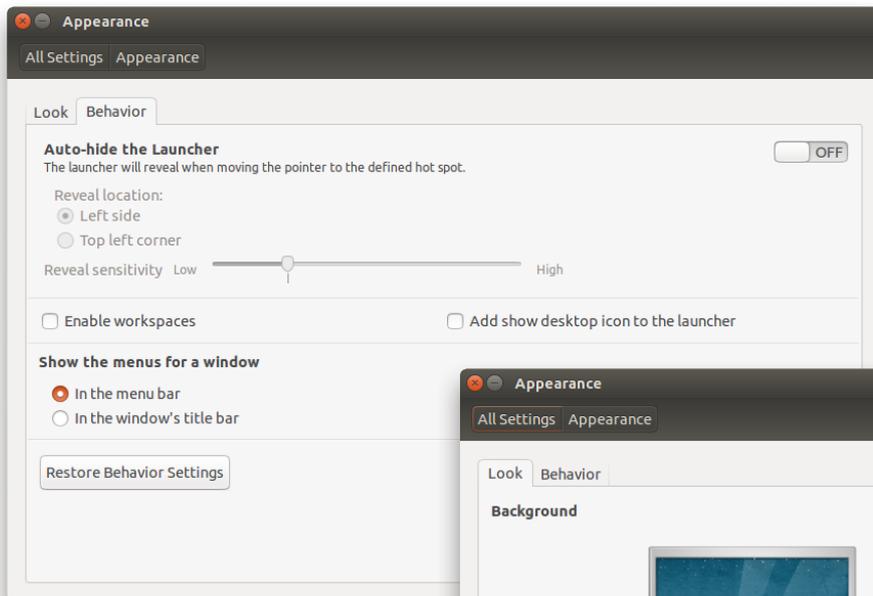


System Settings > Personal

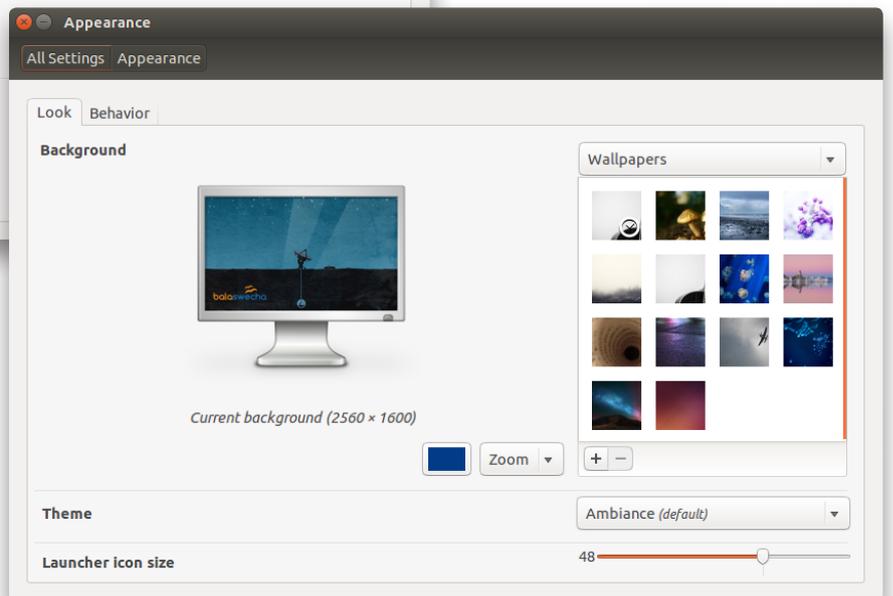


Appearance

Behavior of the screen is about appearance of icons or menu on the screen, those can be hidden with the following settings.



Behavior



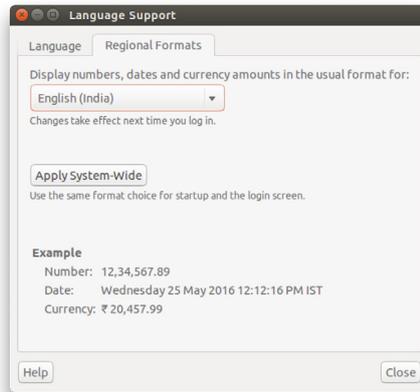
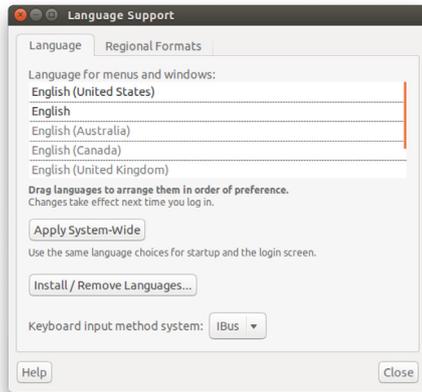
Look

Brightness & Lock

Brightness of the screen and screen timeout sessions can be set in this option.

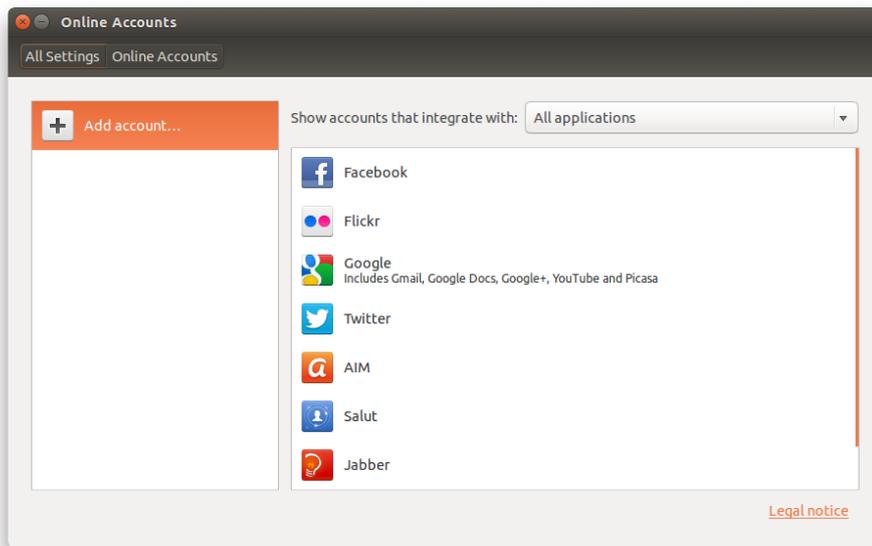


Language Support



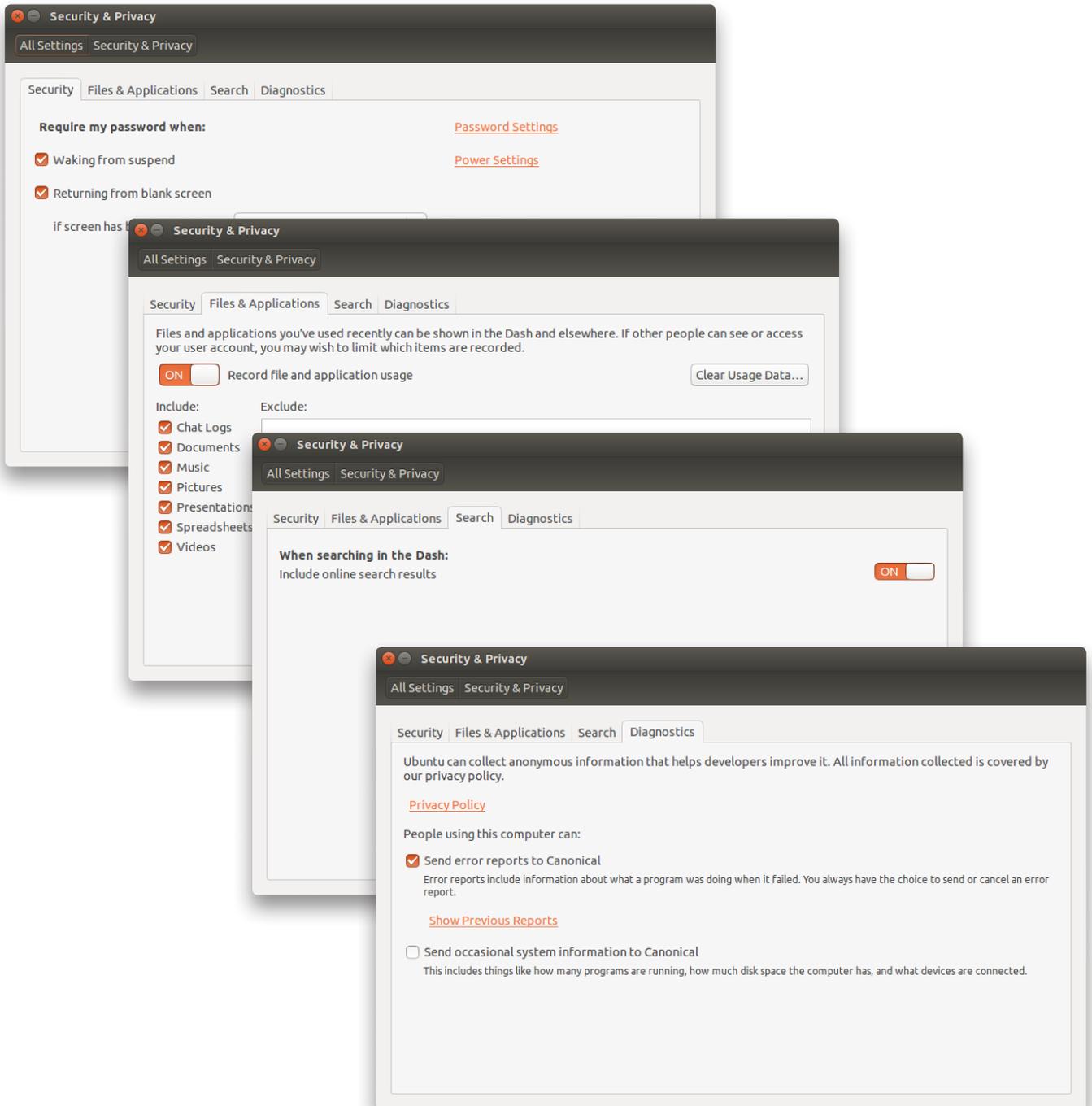
Online Accounts

This option allows us to see/add/remove online accounts just as we do for our mobile phone.



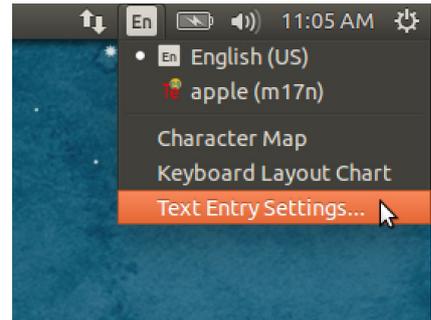
Security & Privacy

The name itself tells us that this option is about security and privacy settings based on our requirement

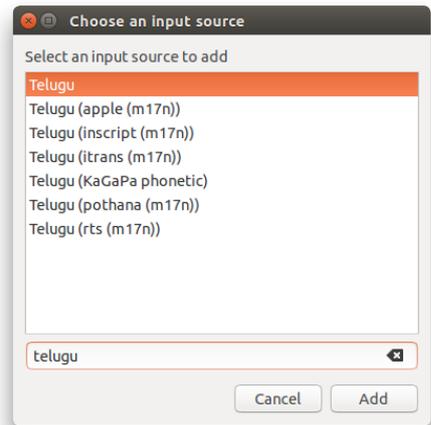
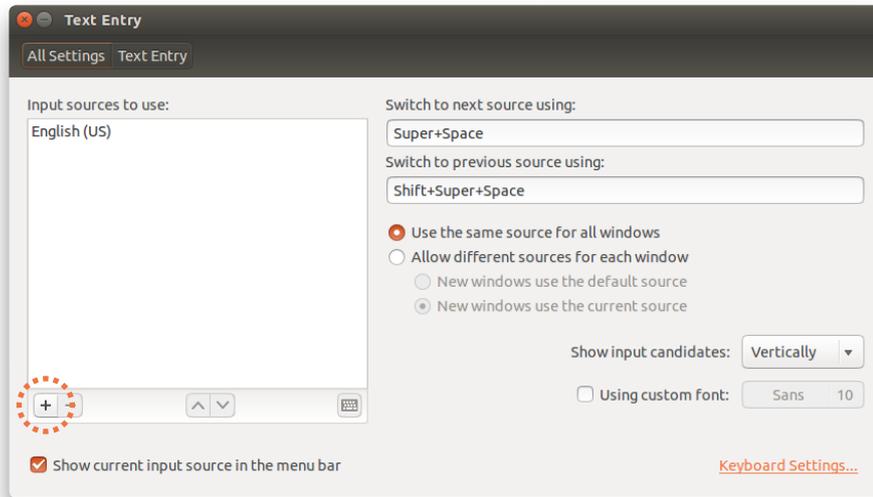


Text Entry : How to add another language

Click on En button new to battery symbol →



You'll find input source that is currently in use, to add more language click on + Button (circled) ↓

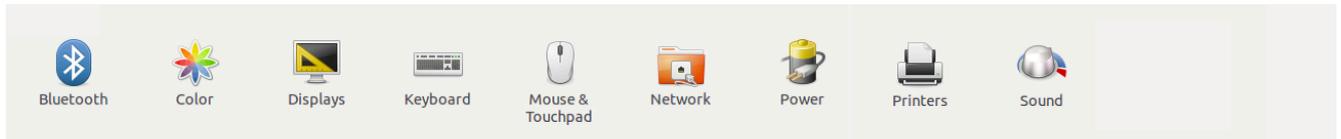


Search for the desired language for example Telugu. Simply click add once make choice of a language. ↑

You'll find your language in the list of input sources. →

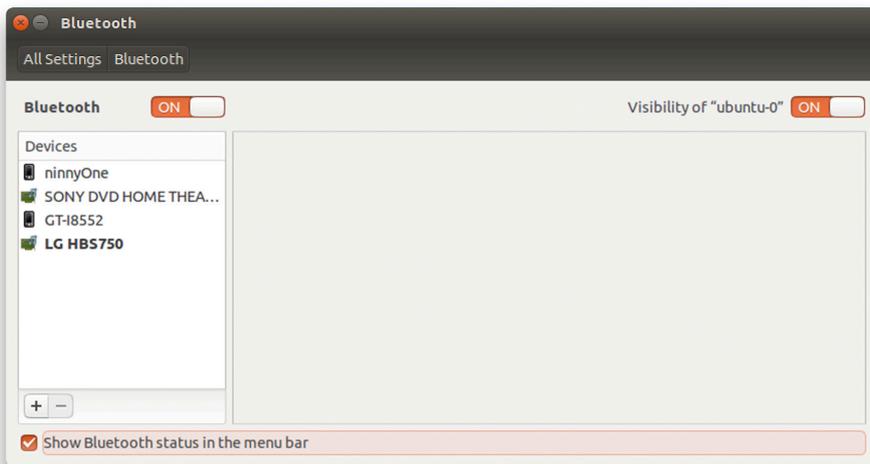


System Settings > Hardware



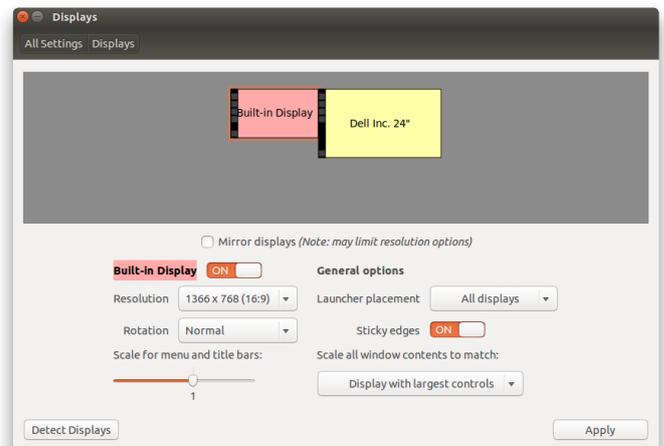
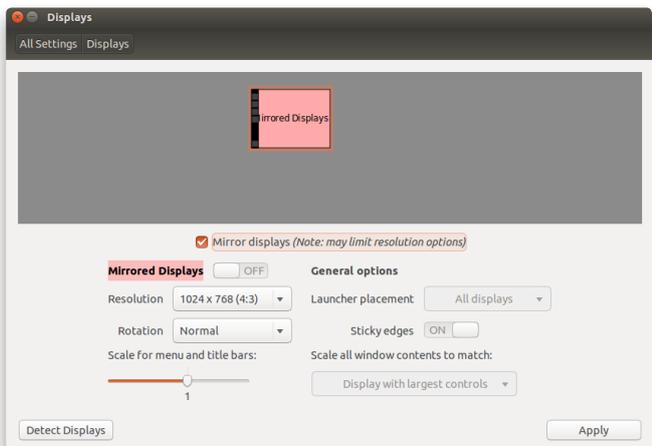
Bluetooth

We can add/remove bluetooth devices here

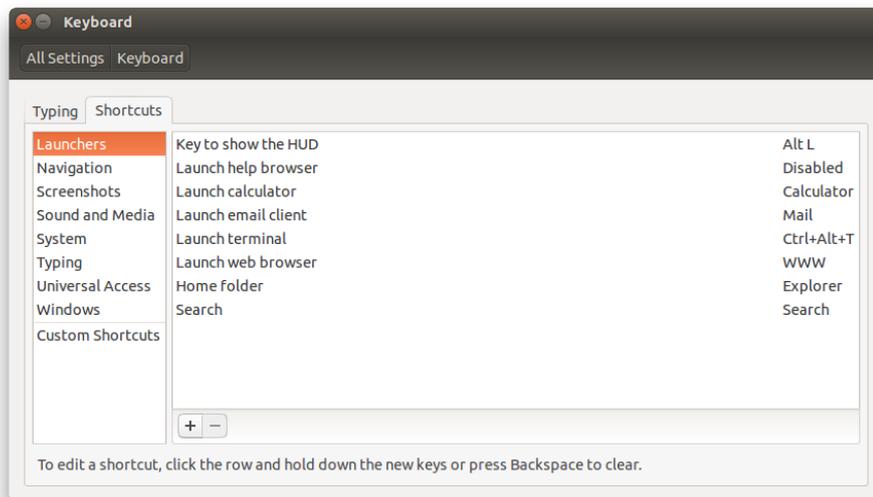
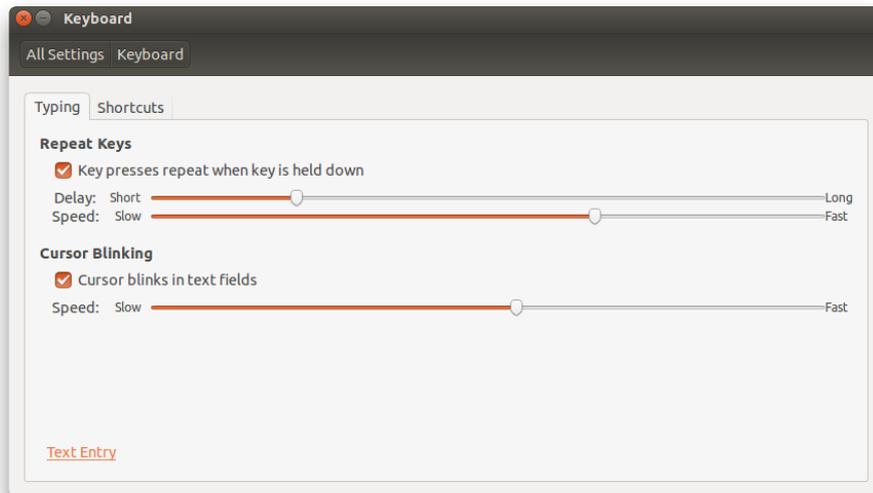


Displays

It is used to switch between displays of the system & screen when connected to the projector, we call it as mirror displays.



Keyboard



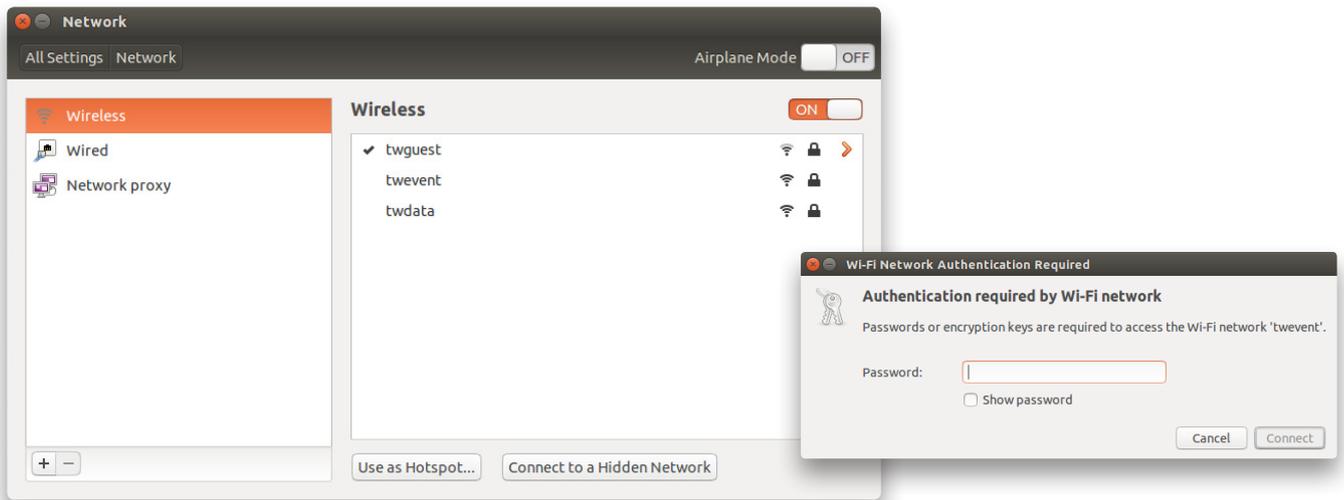
Mouse & Touchpad



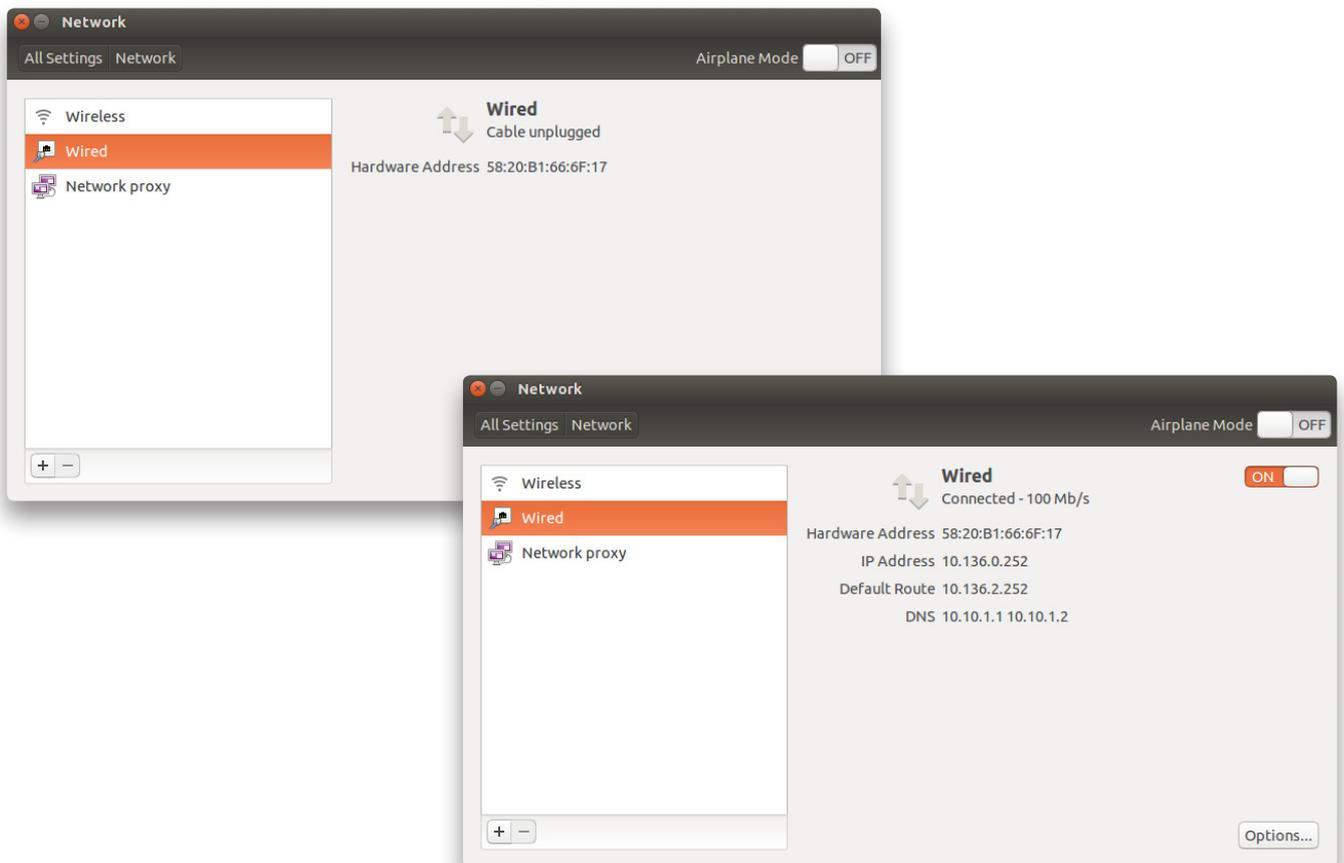
Network

The name itself tells us that this option is about security and privacy settings based on our requirement

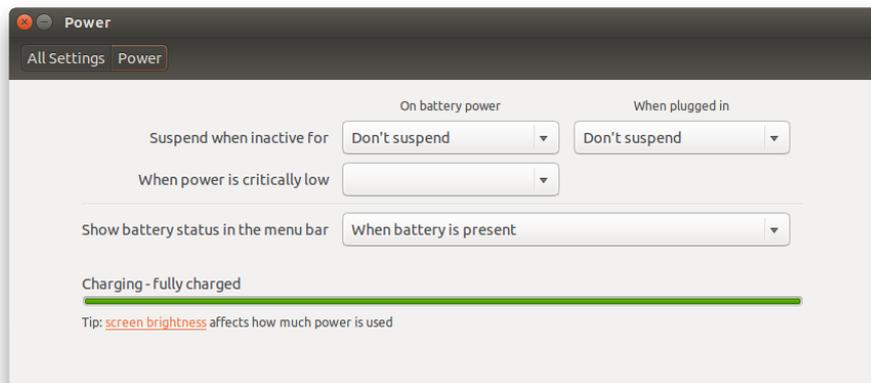
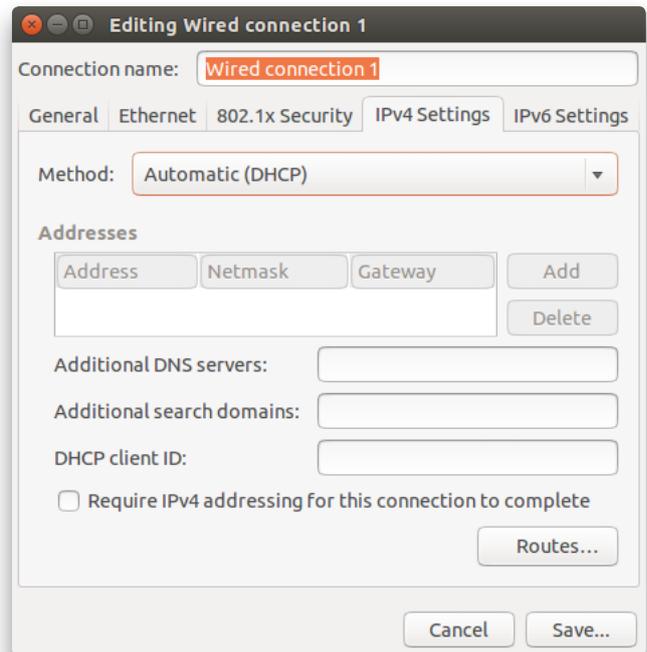
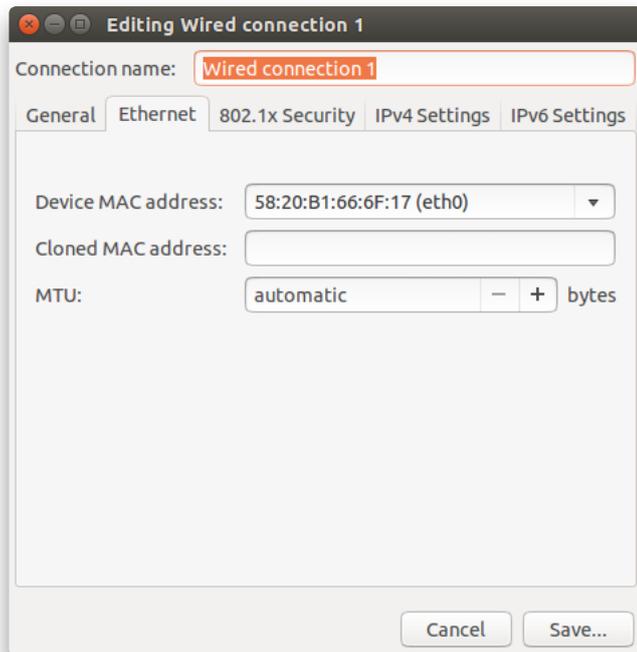
Wireless Network



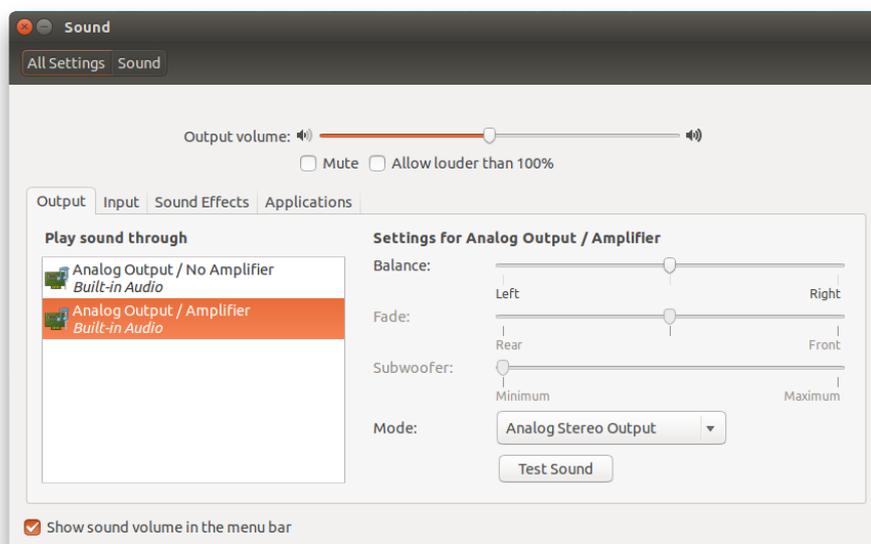
Wired Network



Editing Wired Connection



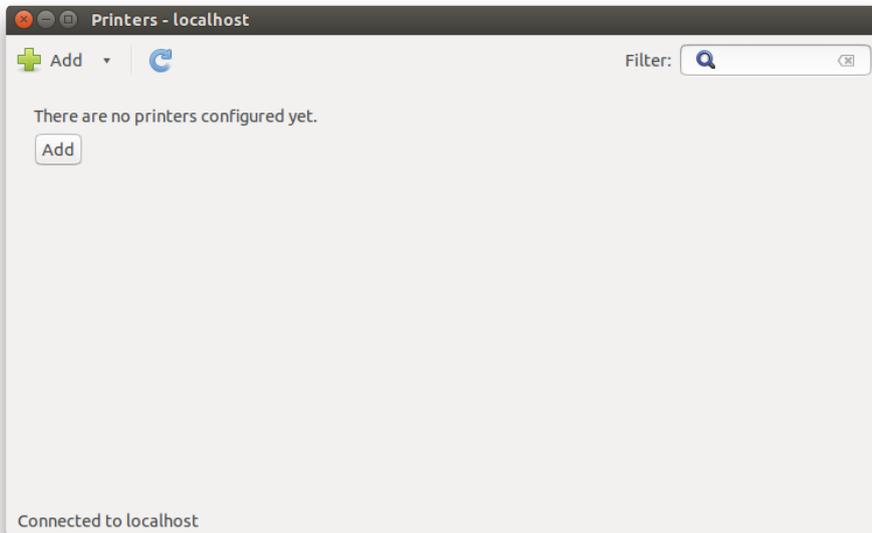
Power



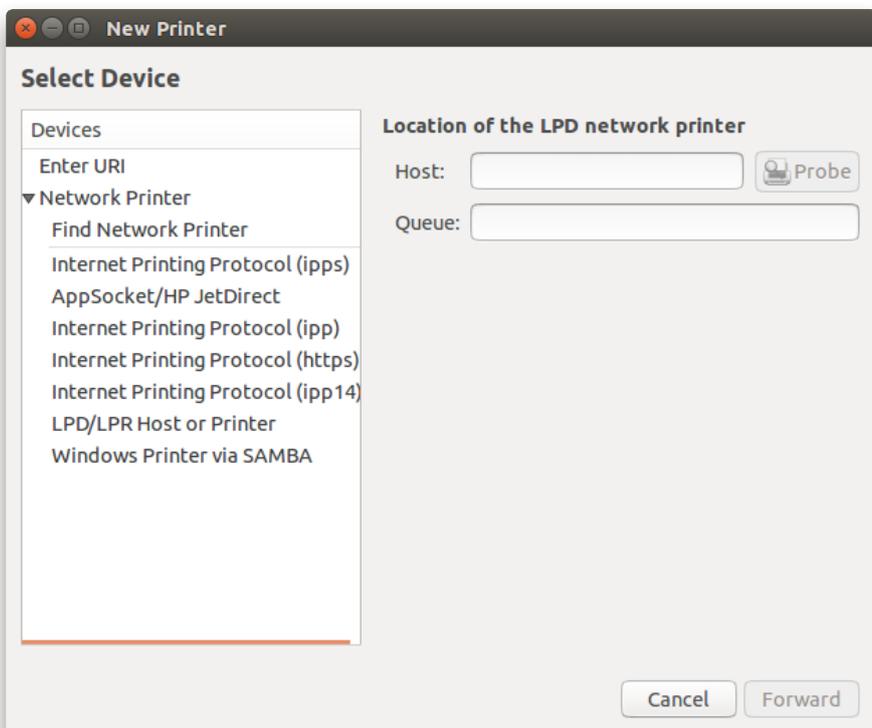
Sound

Printers

A new printer can be added to access it by clicking on Add button.



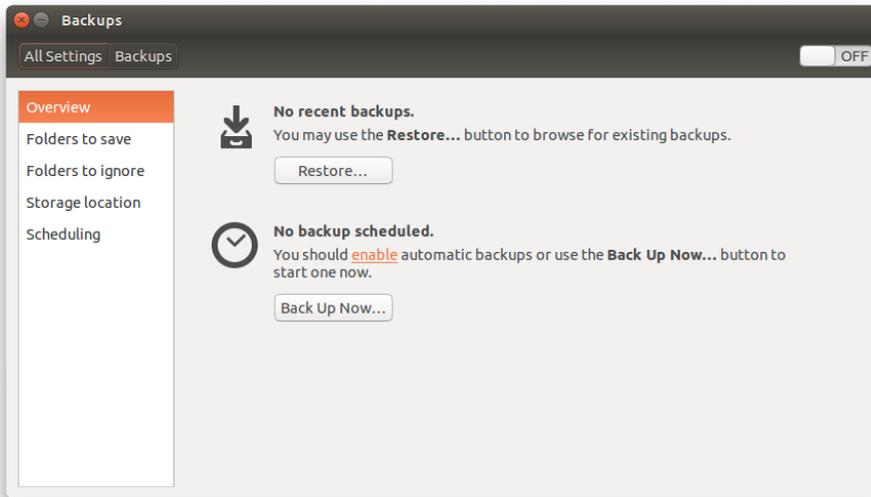
Please select name of your Print under Network Printer.



System Settings > System

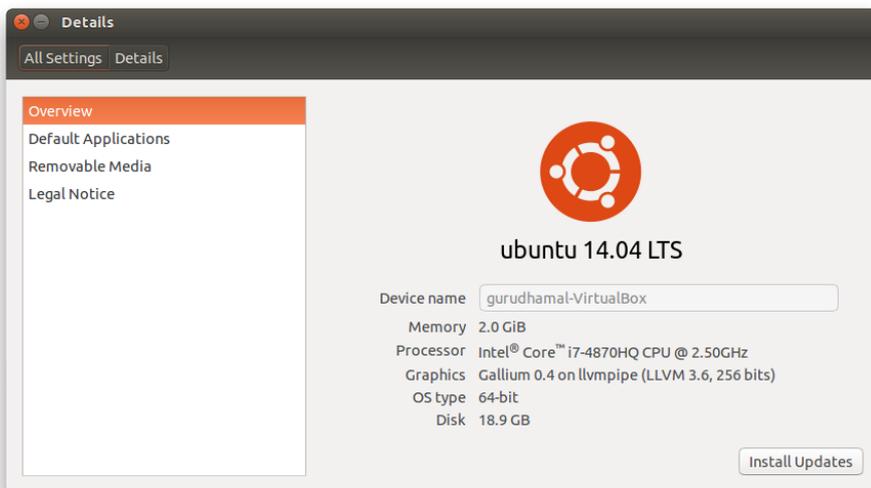


Backups

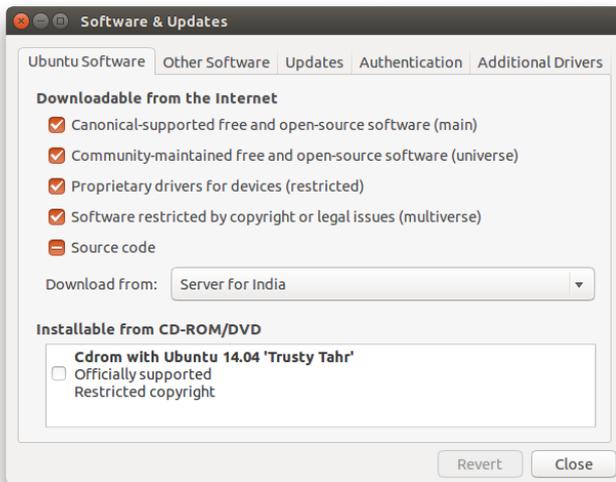


Details

Hardware details of the system can be seen in this option.

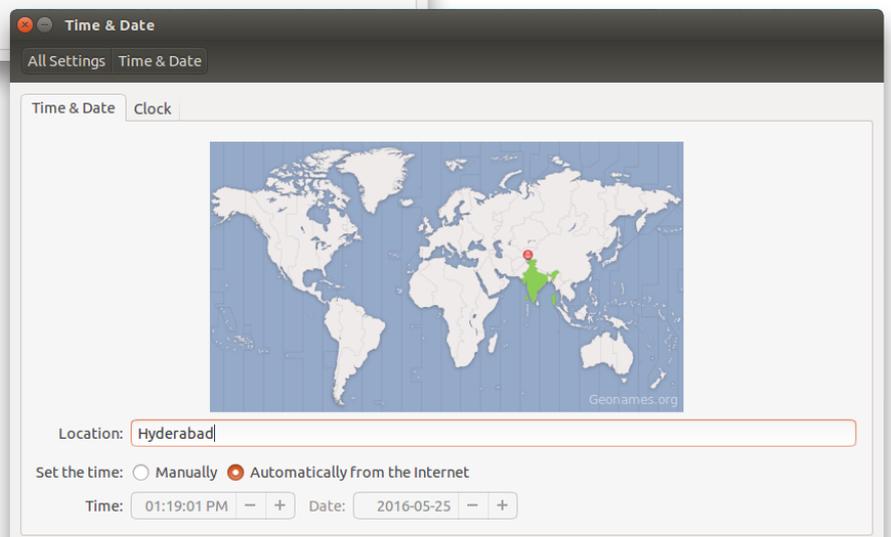
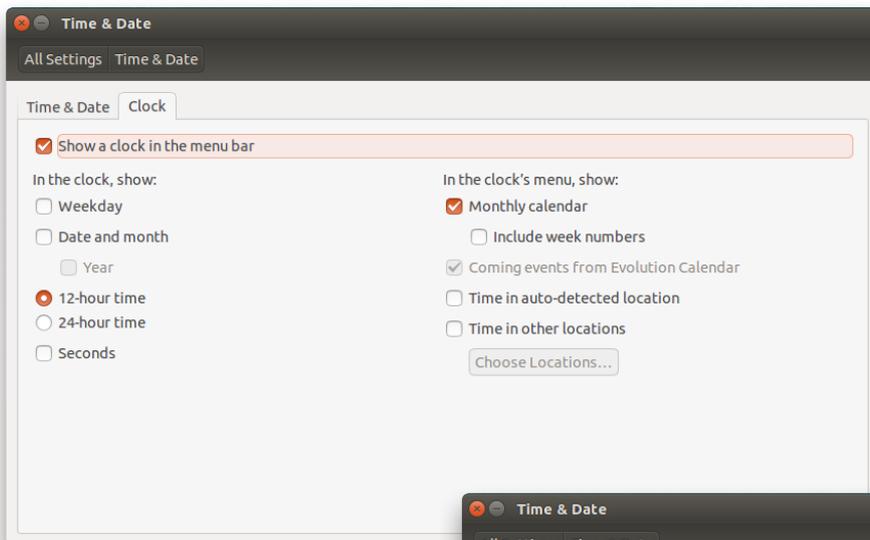


Software & Updates



Time & Date

Settings of Time & Date can be done here.

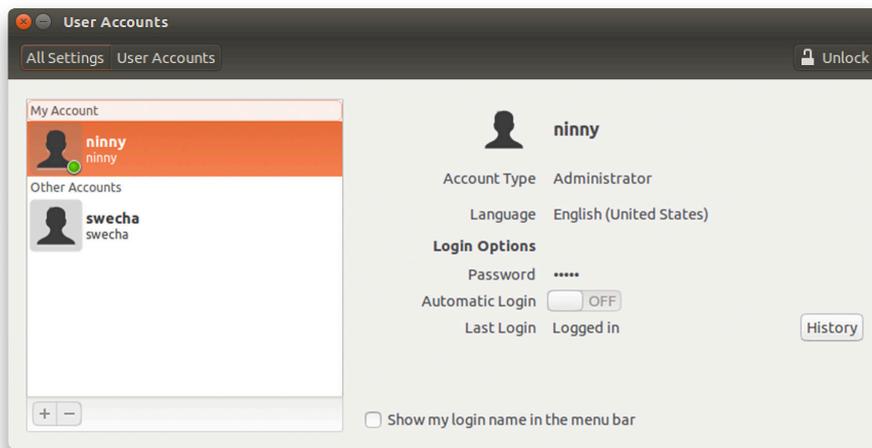


Clock menu settings can be done in this option.

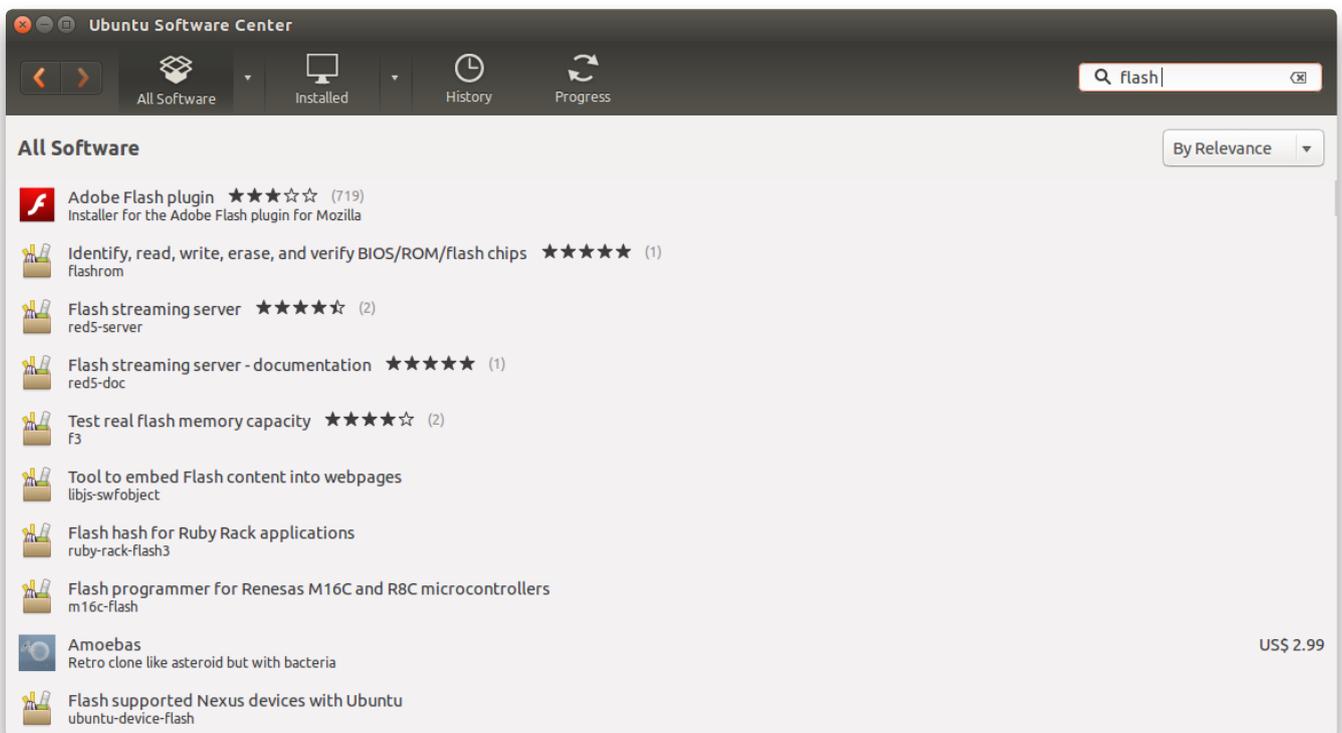
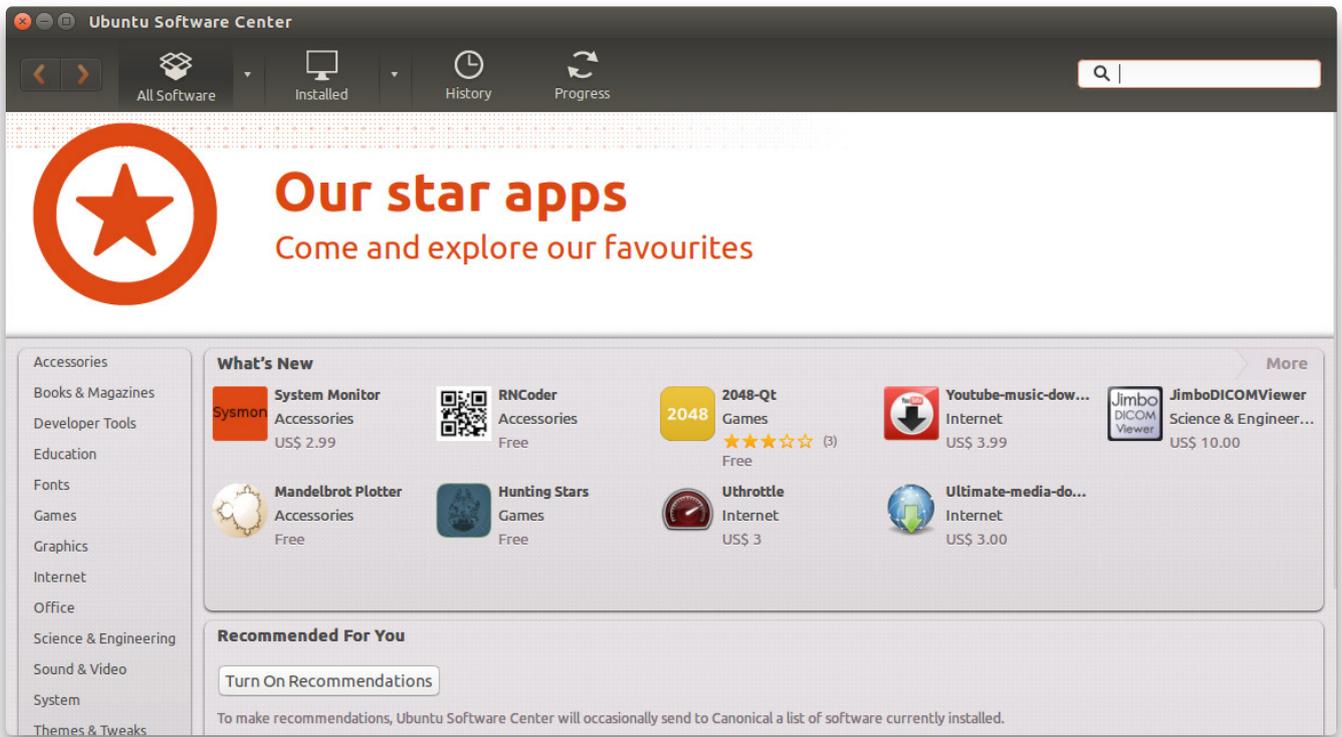
User Accounts

This option displays the number of accounts existing in this operating systems and its authentication settings can be done hFile Permissions

By right clicking on any required folder, we will find an option called properties. Click on properties and set desired permissions for owner , group and others. Permissions like read , write and edit options can be selected.



Installing Apps through Software Centre



3. Basic Commands

ls	Lists directory contents of files and directories.
cd	Change the directory.
pwd	Get the current working directory.
cat	Display the content of any files
cp	Copy files and directories.
mv	Move files and directories.
man	Formats and displays the on-line manual pages.
clear	Clear the terminal screen.
mkdir	Creates a directory.
rm	Remove a file.
rmdir	Remove a directory
diff	Comparison between two files.
find	Search files with respect to different category.
df	Summary of available & used disk space of file system
gzip	Compress the file and reduce the size.
reboot	Restart the system.

ls Lists directory contents of files and directories.

```
balaswecha@balaswecha:~$ ls
Desktop  Downloads  Music      Public     tmp
Documents examples.desktop Pictures    Templates  Videos
balaswecha@balaswecha:~$
```

```
balaswecha@balaswecha:~$ ls -a
.          .config      .gconf      .pki        .Xauthority
..         Desktop      .gnome2     .profile    .xsession-errors
.bash_history .dmrc       .ICEauthority Public       .xsession-errors.old
.bash_logout Documents
.bashrc     Downloads
.cache      .electron
.compiz     examples.desktop Pictures      tmp
Videos
```

```
balaswecha@balaswecha:~$ ls -l
total 48
drwxr-xr-x 2 balaswecha balaswecha 4096 Mar 22 18:04 Desktop
drwxr-xr-x 2 balaswecha balaswecha 4096 Mar 22 18:04 Documents
drwxr-xr-x 2 balaswecha balaswecha 4096 Mar 22 18:04 Downloads
-rw-r--r-- 1 balaswecha balaswecha 8980 Mar 22 17:43 examples.desktop
drwxr-xr-x 2 balaswecha balaswecha 4096 Mar 22 18:04 Music
drwxr-xr-x 2 balaswecha balaswecha 4096 Jun 15 11:16 Pictures
drwxr-xr-x 2 balaswecha balaswecha 4096 Mar 22 18:04 Public
drwxr-xr-x 2 balaswecha balaswecha 4096 Mar 22 18:04 Templates
drwxr-xr-x 2 balaswecha balaswecha 4096 Mar 22 17:43 tmp
drwxr-xr-x 2 balaswecha balaswecha 4096 Mar 22 18:04 Videos
balaswecha@balaswecha:~$
```

cd Change the directory.

```
balaswecha@balaswecha:~$ pwd
/home/balaswecha
balaswecha@balaswecha:~$ cd sampleDirectory/
balaswecha@balaswecha:~/sampleDirectory$ pwd
/home/balaswecha/sampleDirectory
balaswecha@balaswecha:~/sampleDirectory$
```

pwd Get the current working directory.

```
balaswecha@balaswecha:~$ pwd
/home/balaswecha
balaswecha@balaswecha:~$
```

cat Display the content of any files

```
balaswecha@balaswecha:~/Desktop$ ls
sampleTextFile.txt
balaswecha@balaswecha:~/Desktop$ cat sampleTextFile.txt
This is a sample text file.
balaswecha@balaswecha:~/Desktop$
```

cp Copy files and directories.

```
balaswecha@balaswecha:~$ ls
Desktop      Documents  examples.desktop  Pictures  sourceFile.txt  tmp
destinationFolder  Downloads  Music             Public   Templates       Videos
balaswecha@balaswecha:~$ cp sourceFile.txt destinationFolder/
balaswecha@balaswecha:~$ cd destinationFolder/
balaswecha@balaswecha:~/destinationFolder$ ls
sourceFile.txt
balaswecha@balaswecha:~/destinationFolder$
```

mv Move files and directories.

```
balaswecha@balaswecha:~$ cat fileToBeMoved.txt
This file will be moved into another folder.
balaswecha@balaswecha:~$ mv fileToBeMoved.txt destinationFolder/
balaswecha@balaswecha:~$ cd destinationFolder/
balaswecha@balaswecha:~/destinationFolder$ ls
fileToBeMoved.txt
balaswecha@balaswecha:~/destinationFolder$ cat fileToBeMoved.txt
This file will be moved into another folder.
balaswecha@balaswecha:~/destinationFolder$
```

man Formats and displays the on-line manual pages.

```
LS(1) User Commands LS(1)
NAME
  ls - list directory contents
SYNOPSIS
  ls [OPTION]... [FILE]...
DESCRIPTION
  List information about the FILES (the current directory by default). Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.
  Mandatory arguments to long options are mandatory for short options too.
  -a, --all
    do not ignore entries starting with .
  -A, --almost-all
    do not list implied . and ..
  --author
    with -l, print the author of each file
  -b, --escape
    print C-style escapes for nongraphic characters
  --block-size=SIZE
    scale sizes by SIZE before printing them. E.g., '--block-size=M' prints sizes in units of 1,048,576 bytes. See SIZE format below.
  -B, --ignore-backups
    do not list implied entries ending with ~
  -c
    with -lt: sort by, and show, ctime (time of last modification of file status information) with -l: show ctime and sort by name otherwise: sort by ctime, newest first
  -C
    list entries by columns
  --color[=WHEN]
    colorize the output. WHEN defaults to 'always' or can be 'never' or 'auto'. More info below
Manual page ls(1) line 1 (press h for help or q to quit)
```

clear Clear the terminal screen.

```
balaswecha@balaswecha:~$ cd
balaswecha@balaswecha:~$ ls
Desktop          Downloads        Music            sourceFile.txt  Videos
destinationFolder  examples.desktop Pictures          Templates
Documents        fileToBeMoved.txt~ Public           tmp
balaswecha@balaswecha:~$ cd destinationFolder/
balaswecha@balaswecha:~/destinationFolder$ ls
fileToBeMoved.txt
balaswecha@balaswecha:~/destinationFolder$ cd ..
balaswecha@balaswecha:~$ clear
```

```
balaswecha@balaswecha:~$
```

mkdir Creates a directory.

```
balaswecha@balaswecha:~$ ls
aaaaa      Documents      fileToBeMoved.txt~  Public      sourceFile.txt  Untitled Folder
Desktop    Downloads      Music              sampleDirectory  Templates        Videos
destinationFolder  examples.desktop Pictures          secondPhasePics tmp
balaswecha@balaswecha:~$ mkdir newDirectory
balaswecha@balaswecha:~$ ls
aaaaa      Documents      fileToBeMoved.txt~  Pictures      secondPhasePics  tmp
Desktop    Downloads      Music              Public        sourceFile.txt   Untitled Folder
destinationFolder  examples.desktop newDirectory        sampleDirectory Templates         Videos
balaswecha@balaswecha:~$ cd newDirectory/
balaswecha@balaswecha:~/newDirectory$ pwd
/home/balaswecha/newDirectory
balaswecha@balaswecha:~/newDirectory$
```

rm Remove a file.

```
balaswecha@balaswecha:~/sampleDirectory$ ls
fileToBeRemove.txt
balaswecha@balaswecha:~/sampleDirectory$ rm fileToBeRemove.txt
balaswecha@balaswecha:~/sampleDirectory$ ls
balaswecha@balaswecha:~/sampleDirectory$
```

rmdir Remove a directory.

```
balaswecha@balaswecha:~$ ls
Desktop      Downloads      fileToBeMoved.txt~  Public      tmp
destinationFolder  emptyDirectory  Music              sourceFile.txt  Videos
Documents    examples.desktop Pictures          Templates
balaswecha@balaswecha:~$ cd emptyDirectory/
balaswecha@balaswecha:~/emptyDirectory$ ls
balaswecha@balaswecha:~/emptyDirectory$ cd ..
balaswecha@balaswecha:~$ rmdir emptyDirectory/
balaswecha@balaswecha:~$
```

diff

Comparison between two files.

```
balaswecha@balaswecha:~/sampleDirectory$ ls
sampleFileOne.txt  sampleFileTwo.txt
balaswecha@balaswecha:~/sampleDirectory$ cat sampleFileOne.txt
I need to buy apples.
I need to run the laundry.
I need to wash the dog.
I need to get the car detailed.
balaswecha@balaswecha:~/sampleDirectory$ cat sampleFileTwo.txt
I need to buy apples.
I need to do the laundry.
I need to wash the car.
I need to get the dog detailed.
balaswecha@balaswecha:~/sampleDirectory$ diff sampleFileOne.txt sampleFileTwo.txt
2,4c2,4
< I need to run the laundry.
< I need to wash the dog.
< I need to get the car detailed.
---
> I need to do the laundry.
> I need to wash the car.
> I need to get the dog detailed.
balaswecha@balaswecha:~/sampleDirectory$
```

find

Search files with respect to different category.

```
balaswecha@balaswecha:~$ find -name sampleFileOne.txt
./sampleDirectory/sampleFileOne.txt
balaswecha@balaswecha:~$ find -iname saMpleFileTw0.txt
./sampleDirectory/sampleFileTwo.txt
balaswecha@balaswecha:~$ cd sampleDirectory/
balaswecha@balaswecha:~/sampleDirectory$ ls -l
total 8
-rw-rw-r-- 1 balaswecha balaswecha 105 Jun 15 11:49 sampleFileOne.txt
-rw-rw-r-- 1 balaswecha balaswecha 104 Jun 15 11:50 sampleFileTwo.txt
balaswecha@balaswecha:~/sampleDirectory$
```

df Shows the amount of available disk space being used by file system

```
balaswecha@balaswecha:~/sampleDirectory$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
udev            1980148         4   1980144   1% /dev
tmpfs           398176        1336   396840   1% /run
/dev/sda1      476526616  7132820 445164576   2% /
none             4              0         4   0% /sys/fs/cgroup
none            5120           0        5120   0% /run/lock
none           1990864        188   1990676   1% /run/shm
none           102400         76    102324   1% /run/user
balaswecha@balaswecha:~/sampleDirectory$
```

gzip Compress the file and reduce the size.

```
balaswecha@balaswecha:~/sampleDirectory$ ls
sampleFileOne.txt sampleFileTwo.txt
balaswecha@balaswecha:~/sampleDirectory$ gzip sampleFileTwo.txt
balaswecha@balaswecha:~/sampleDirectory$ ls
sampleFileOne.txt sampleFileTwo.txt.gz
balaswecha@balaswecha:~/sampleDirectory$ gunzip sampleFileTwo.txt.gz
balaswecha@balaswecha:~/sampleDirectory$ ls
sampleFileOne.txt sampleFileTwo.txt
balaswecha@balaswecha:~/sampleDirectory$
```

reboot Restart the system.

```
balaswecha@balaswecha:~/sampleDirectory$ sudo reboot
```

```
balaswecha@balaswecha:~/sampleDirectory$ sudo reboot
[sudo] password for balaswecha:
```

3.1 Installing Apps

1. How to install applications through command line
 - 1.1 apt-get install
 - 1.2 apt-get update
 - 1.3 apt-get -f install
 - 1.4 apt-cache search
2. How to install applications through PPA
3. How to solve dependency issues

```
balaswecha@balaswecha:~$ sudo apt-get install vlc
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  libbasicusageenvironment0 libcddeb2 libchromaprint0 libcrystalhd3
  libdirac-encoder0 libdvbpsi8 libebml4 libgnutls28 libgroupsock1 libhogweed2
  libkate1 liblivemedia23 libmatroska6 libproxy-tools libresid-builder0c2a
  libsidplay2 libssh2-1 libtar0 libupnp6 libusageenvironment1 libvlc5
  libvlccore7 libxcb-composite0 libzvbi-common libzvbi0 vlc-data vlc-nox
  vlc-plugin-notify vlc-plugin-pulse
Suggested packages:
  libchromaprint-tools python-acoustid firmware-crystalhd gnutls-bin
  videolan-doc
Recommended packages:
  libdvdcss2
The following NEW packages will be installed:
  libbasicusageenvironment0 libcddeb2 libchromaprint0 libcrystalhd3
  libdirac-encoder0 libdvbpsi8 libebml4 libgnutls28 libgroupsock1 libhogweed2
  libkate1 liblivemedia23 libmatroska6 libproxy-tools libresid-builder0c2a
  libsidplay2 libssh2-1 libtar0 libupnp6 libusageenvironment1 libvlc5
  libvlccore7 libxcb-composite0 libzvbi-common libzvbi0 vlc vlc-data vlc-nox
  vlc-plugin-notify vlc-plugin-pulse
0 upgraded, 30 newly installed, 0 to remove and 167 not upgraded.
Need to get 10.7 MB of archives.
After this operation, 52.0 MB of additional disk space will be used.
Do you want to continue? [Y/n] n
Abort.
balaswecha@balaswecha:~$
balaswecha@balaswecha:~$ sudo apt-get install vlc
Reading package lists... Done
Building dependency tree
Reading state information... Done
```

4. File System Overview

/bin	basic programs (Programs that are absolutely needed, shell & commands only)
/boot	initialization files (Required to actually boot your computer)
/dev	device files (Describe physical stuff like hard disks and partitions)
/etc	configuration files
/home	users' home directories
/lib	libraries (collections of data & functions) for sytem bootand running system programs
/media	mount points for removable media
/mnt	mount points (For system admins who need to temporarily mount a filesystem)
/opt	third-party programs
/proc	proc filesystem (Describe processes and status info, not stored on disk)
/root	system administrator's files
/sbin	basic administration programs (Like bin, but only usable by administrators)
/srv	service-specific files
/sys	sys file system (Similar to proc, stored in memory based filesystem: tempfs)
/tmp	temporary files (Files kept only a short time depending on system policy, often in tempfs)
/usr	users' programs (Another bin, lib, sbin, plus local, share, src, and more)
/var	variable data preserved between reboots

5. File Permissions

Permission Groups

Owner - The Owner permissions apply only the owner of the file or directory, they will not impact the actions of other users.

Group - The Group permissions apply only to the group that has been assigned to the file or directory, they will not affect the actions of other users.

All users - The All Users permissions apply to all other users on the system, this is the permission group that you want to watch the most.

Permissions Type

Read - The Read permission refers to a user's capability to read the contents of the file.

Write - The Write permissions refer to a user's capability to write or modify a file or directory.

Execute - The Execute permission affects a user's capability to execute a file or view the contents of a directory.

Defining Permissions

The Permission Groups used are:

u - Owner

g - Group

o - Others [a - All Users]

The Permission Types that are used are:

r - Read

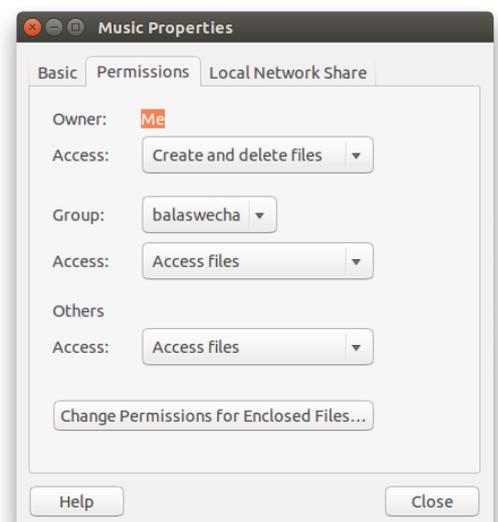
w - Write

x - Execute

The potential Assignment Operators are **+** (plus) and **-** (minus) , these are used to tell the system whether to add or remove the specific permissions.

File Permissions Example

By right clicking on any required folder, we will find an option called properties. Click on properties and set desired permissions for owner, group and others. Permissions like read, write & edit options can be selected.



Execute a script file

- Create a simple file with extension sh.
- Check permission of that file.
- Give execute permission of that file.
- Execute this file.

Switching between UI and text terminal

When the GUI stuck, then we need to switch into text terminal to get control back.

```
ctrl + alt + f1    UI -> terminal
ctrl + alt + f7    terminal -> UI
```

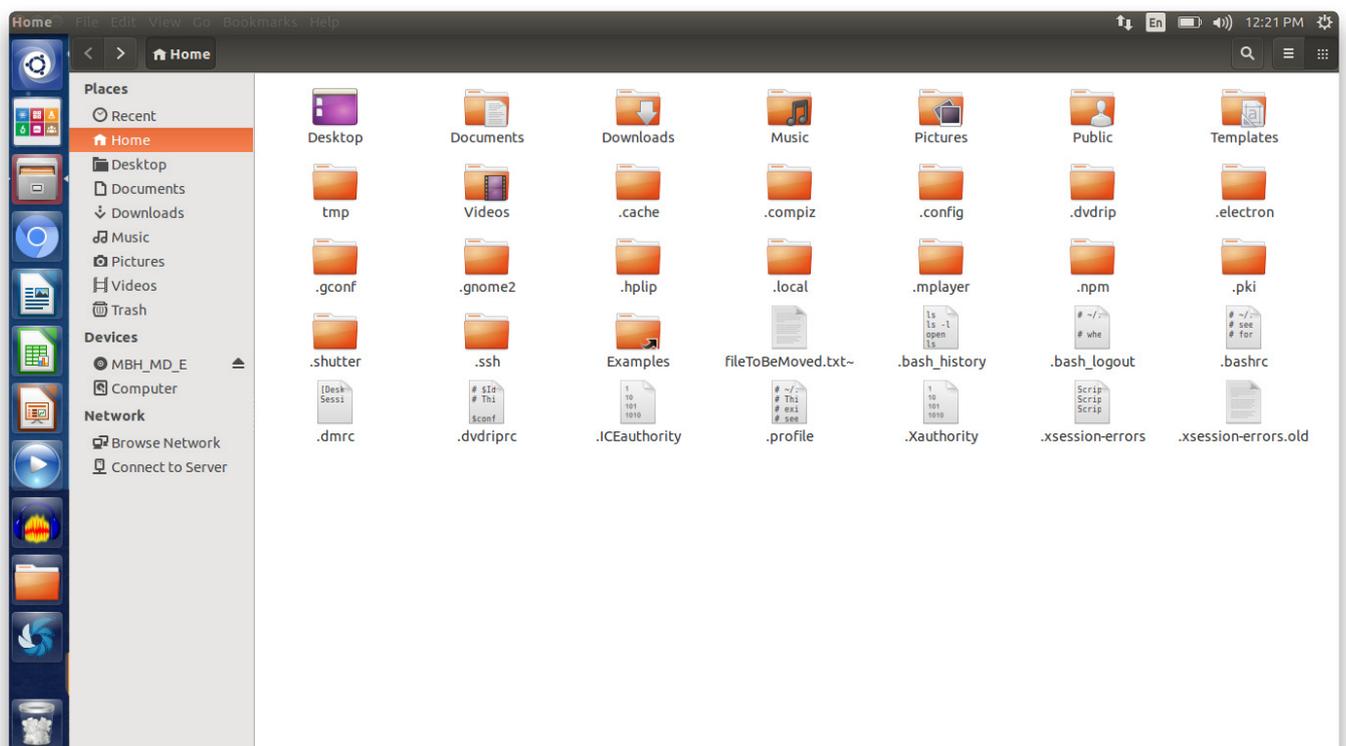
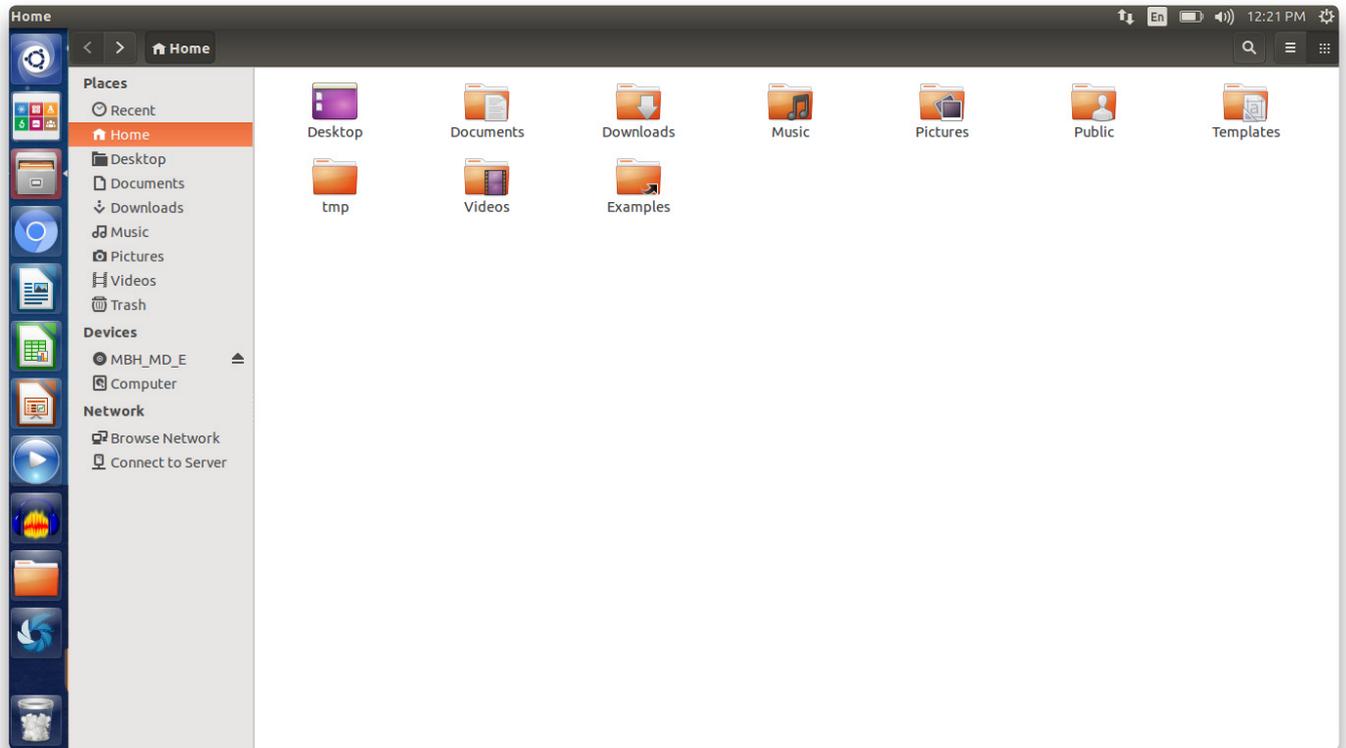
Superuser

The superuser is a special user account used for system administration. The user group administrator consists of non-root users who are allowed root privileges via the command "**sudo**".

Hidden Files

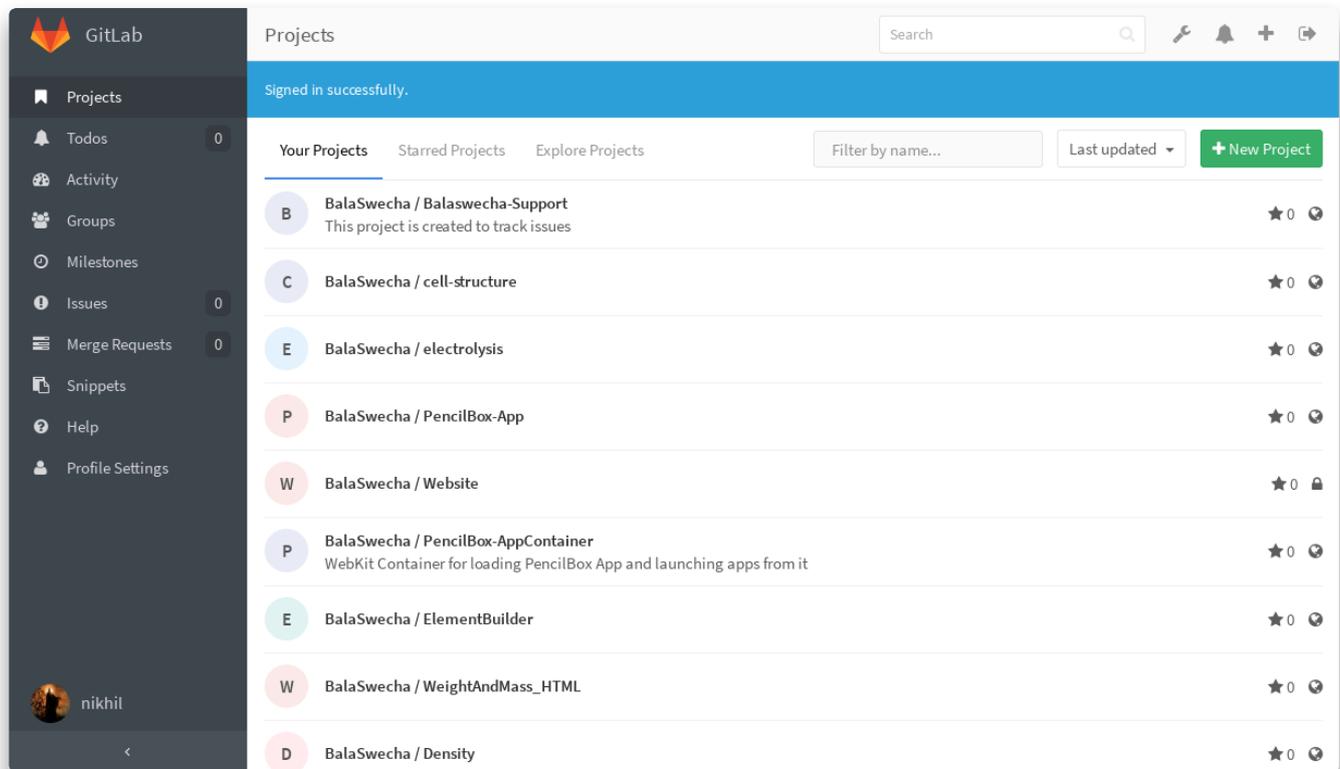
Hidden files names start with .

- Go to home and press ctrl+h to show all hidden files.
- In terminal use command "ls -a" to show all files including hidden files.

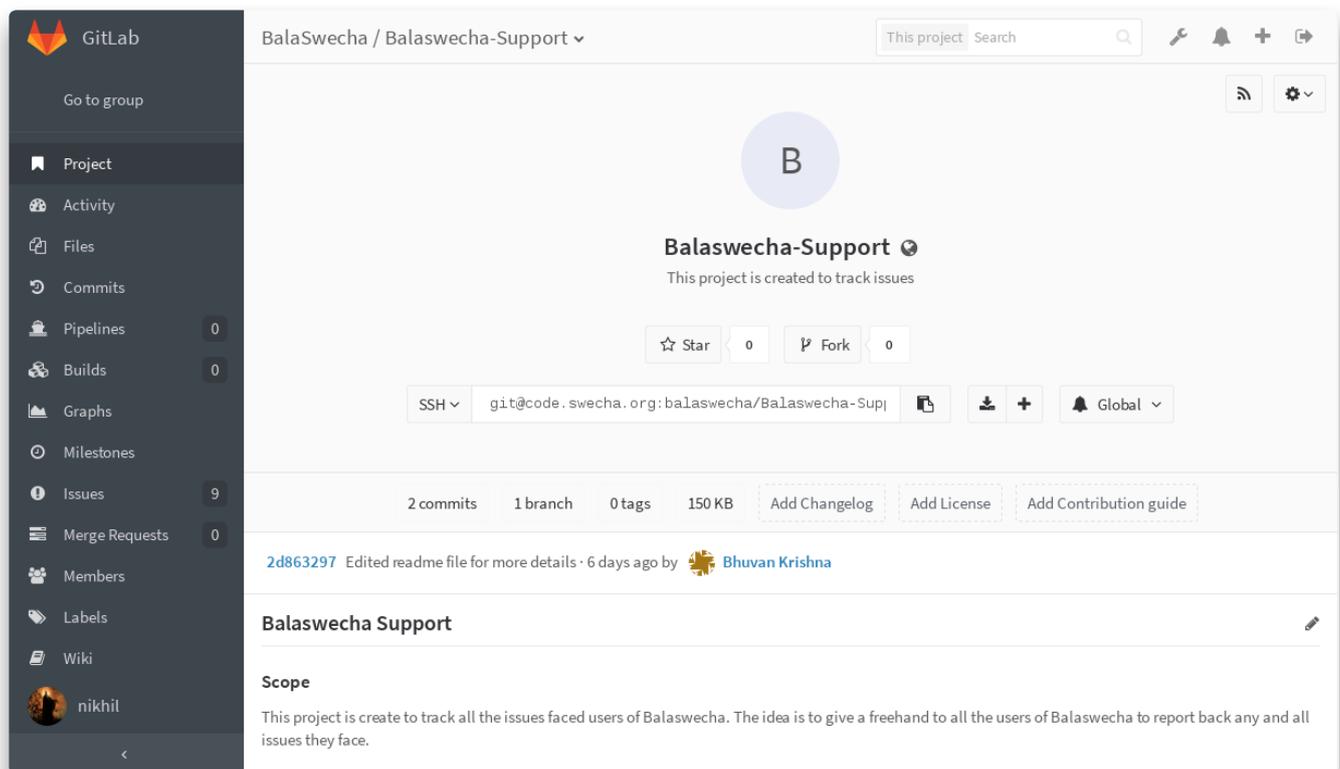


6. Reporting Errors To Developers

Create an account on <https://code.swecha.org/> to report any error in BalaSwecha OS.

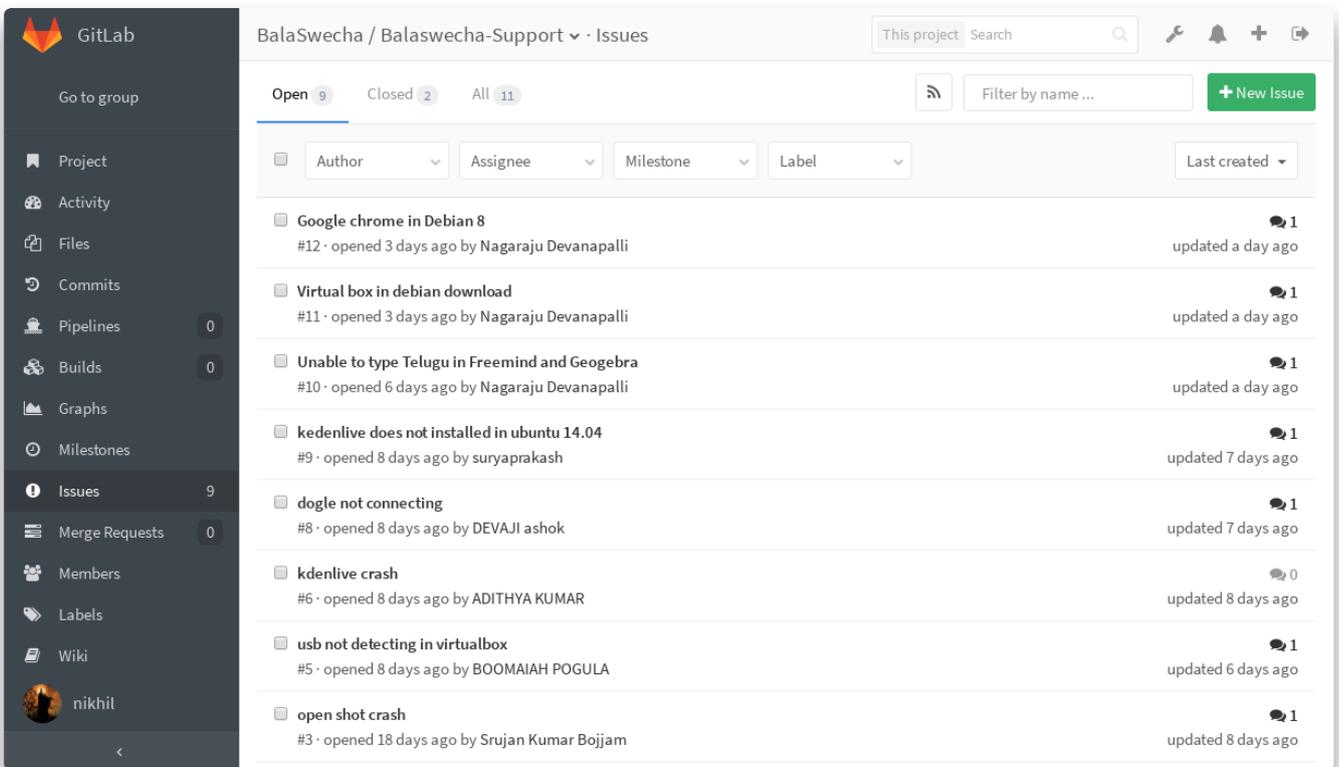


1. Click on **'Balaswecha-Support'**

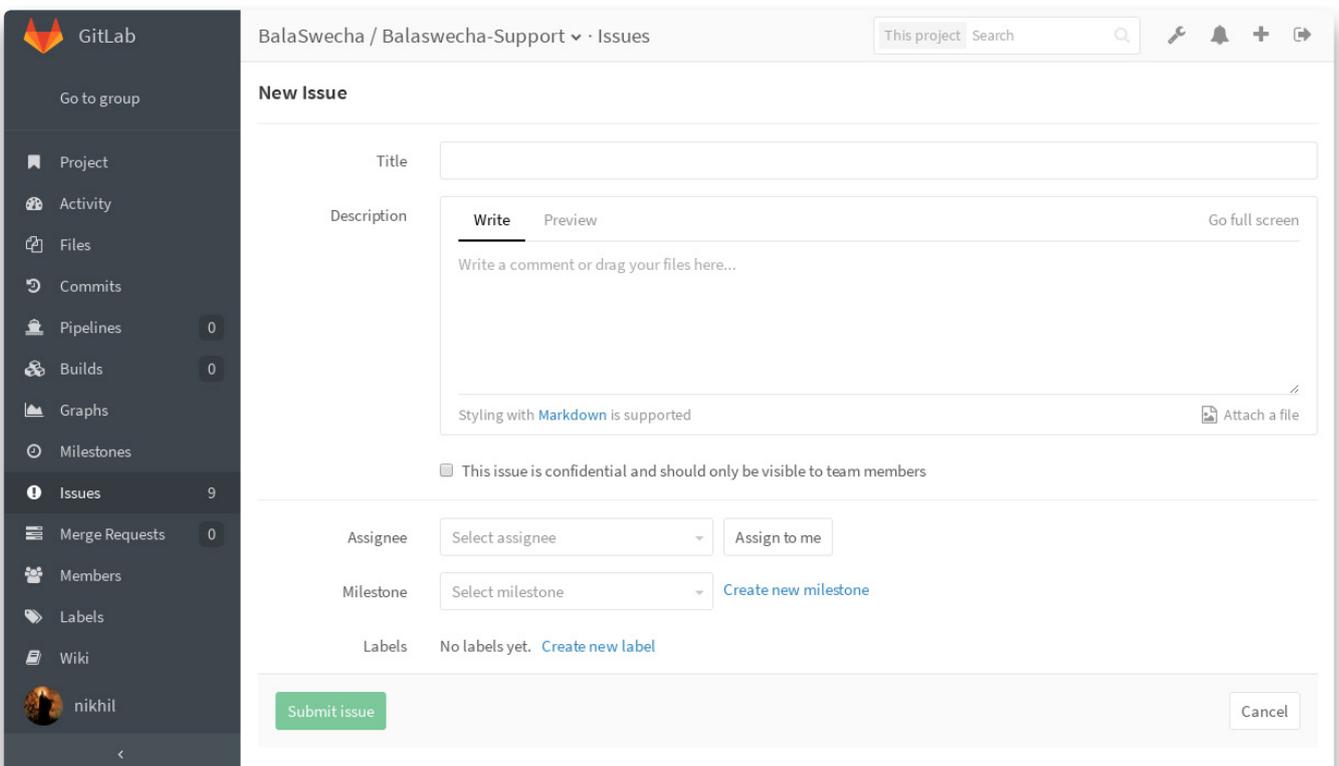


2. Click on **'Issues'** to see existing issues.

Note : Please close the issue once it is resolved.



3. Click on 'New Issue' button to report your issue.



4. Add Title, Description and Attach a screenshot of your issue and click 'Submit Issue'

7. Finding solutions online

Important links

<http://askubuntu.com/>

<https://wiki.ubuntu.com/>

<https://help.ubuntu.com>

Since Bala Swecha is based on ubuntu most of the system related issue can be solved by solutions for ubuntu. The following issues are commonly known which can be solved by checking out the links. For Example:

HP all-in-one printers

In this link you will find various methods of adding a HP all in one to your system.

<https://help.ubuntu.com/community/HpAllInOne>

Inkscape Tutorial

<https://inkscape.org/en/doc/basic/tutorial-basic.html>

<https://www.unixmen.com/31-best-tutorials-of-inkscape/>

Kdenlive Tutorial

<https://userbase.kde.org/Kdenlive/Manual/QuickStart>