Linux Party

2023-09-22

FOCS Group

What is Linux

In many devices, including web servers, smartphones, electric cars, and of course on Steam Decks, you can find Linux.

Linux kernel itself does not support many functions, so people bundle software (browsers, file managers, etc.) together with the Linux kernel to form a functional operating system. Many different people and companies bundle various software with Linux, each coming with their own configurations (wallpapers, theme, etc.) Various "flavors" of the Linux operating system, or *Linux distributions*, are thus created.

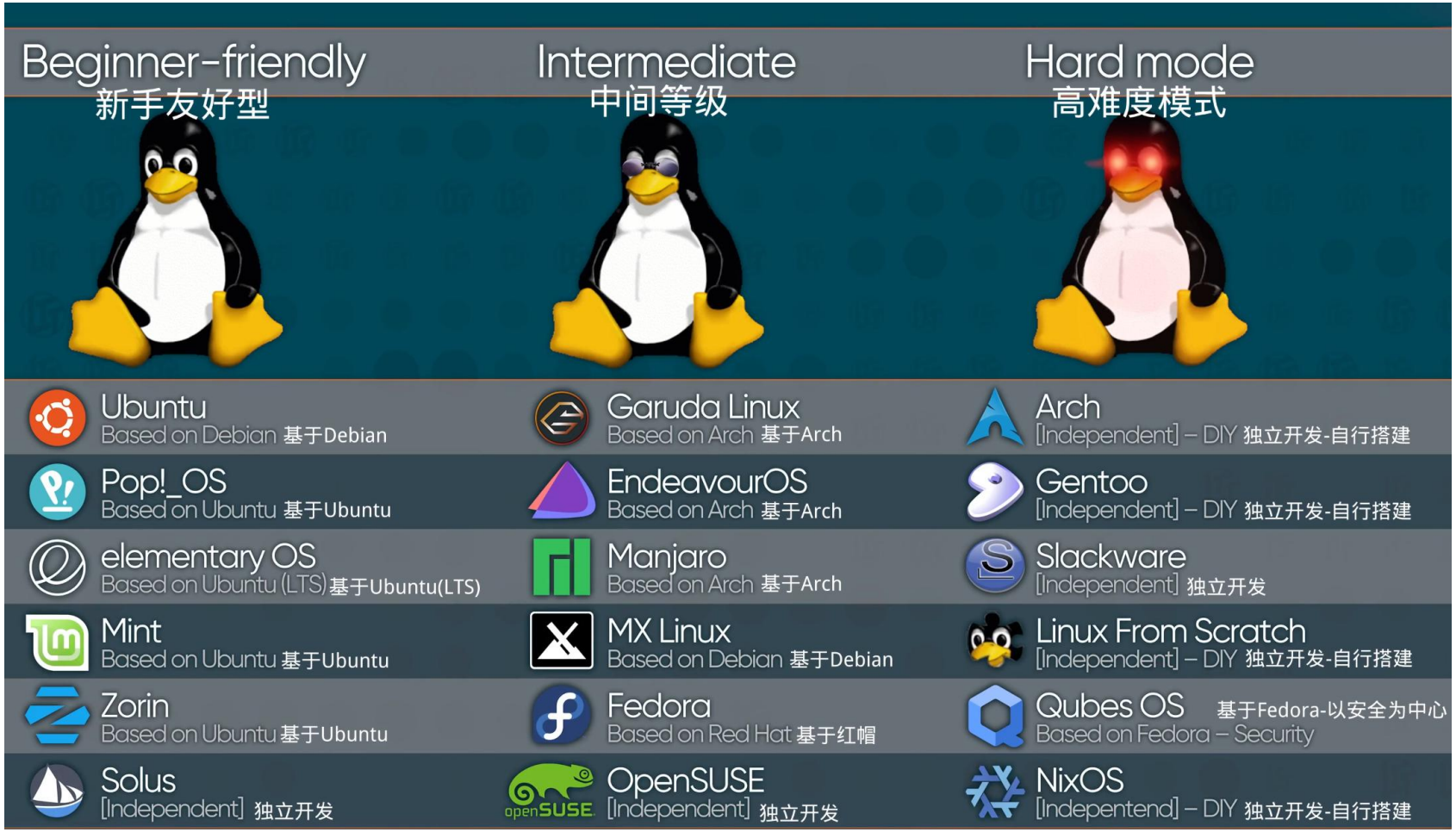
Installing Linux

Today, we will help you to install a Linux distribution on your computer. You can choose Ubuntu, one of the most popular Linux distributions; or choose FOCS Debian, a Debian-based distribution which is developed by and for fellow JIers. Also you can choose other distributions.

Notes for macOS users

If you purchased your Mac after 2020, it is highly likely that your Mac features an Apple silicon processor. Apple Silicon processors can't run the software required by some JI courses, including Vivado and Solidworks. You are **highly recommended** to prepare a Windows computer (or other x86 based computer) as a backup.

Linux and Linux Distributions



Screenshot from LinusTechTips

FOCS Debian

- Features a similar interface to Windows 10. Windows users will feel at home
- Developed from base system to avoid redundant software as in official Debian images
- Aims to lower the time spent by students on installing software during labs
- Has the following software pre-installed:

Benefits of having a Linux system

- Survive 151, 280, 281, 482 and other JI courses without having to worry about configuring your system
- More control of your computer; no disturbing desktop ads anymore, no worrying about Big Brother watching you ;)
- A bonus point on your resume that can help you find a job
- Most importantly... Linux is fun!

Ways to get a Linux system

- Use a virtual machine
- Use Windows Subsystem for Linux - WSL
- Install a dual boot system
- Only use Linux on your computer

Comparison of different installation methods

Benefits\Method	WSL	Virtual Machine	Dual Boot
Close integration with your current system (shared files, etc)	Yes	Part	Part
Full-featured Linux	No (sometimes GUI won't work)	Yes	Yes
Easy to install	Yes	Yes	No
Suitable for every-day use	Yes	No	Yes
Performance	High	Low	Best

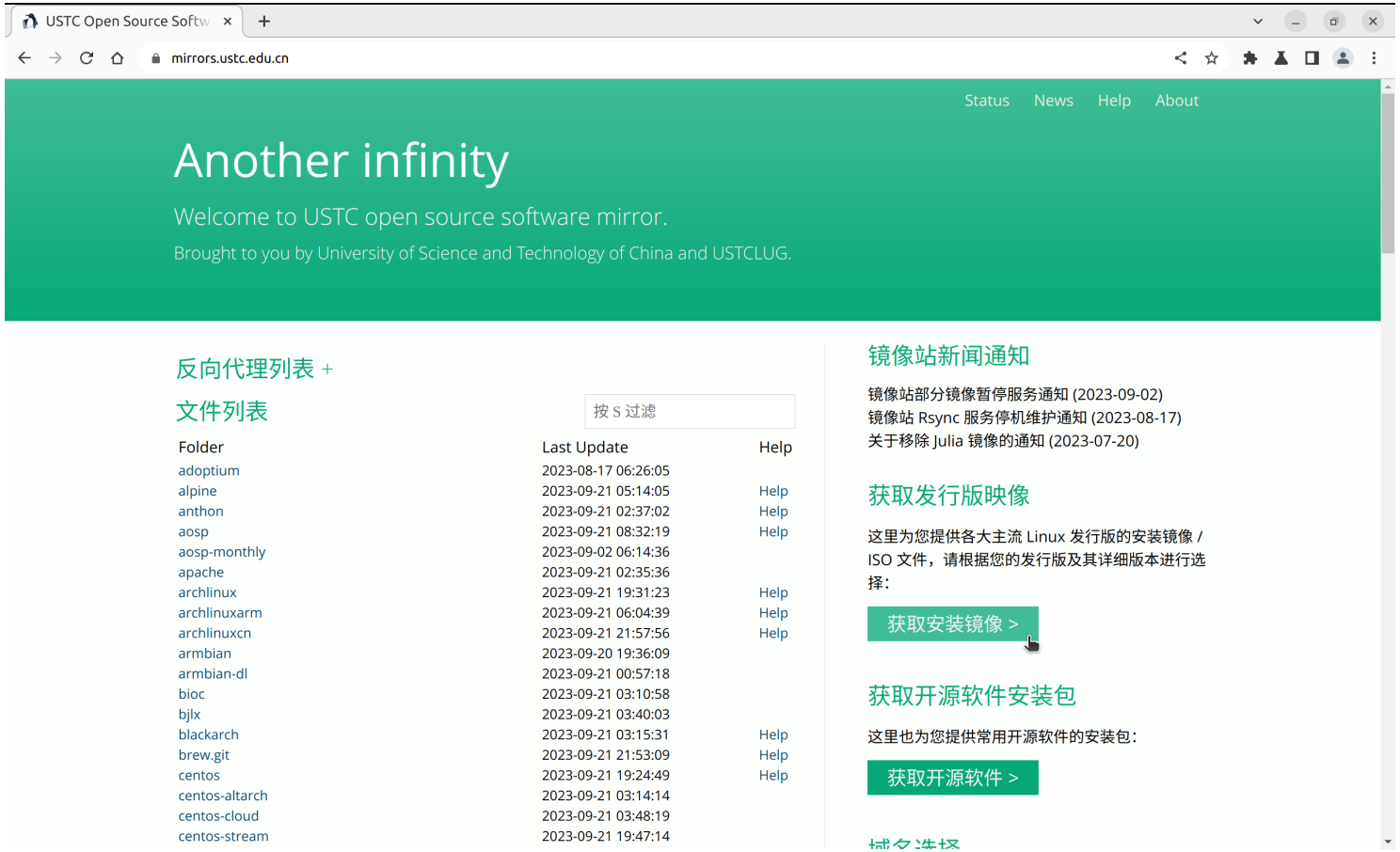
Comparison of different installation methods

Benefits\Method	WSL	Virtual Machine	Dual Boot
Easy to customize and manage (change desktop wallpaper, tweak system parameters)	No	Yes	Yes
Hardware compatibility	Adequate	Adequate	Good
Our recommendation	Just enough to survive	Recommended for newcomers	Gaining more experience and fun

Where to get Linux installation images

USTC Mirror is a good starting point. It is located at https://mirrors.ustc.edu.cn

You can also use SJTU Mirror at https://mirrors.sjtug.sjtu.edu.cn



Some FAQ after installing Linux

- Q: I want to install software under `D:\Program Files`. Where is it?
  - A: Linux have no `C:` or `D:`. Different disks (partitions) are mounted at different path.
- Q: Where are my documents, photos, films... stored?
  - A: You have a dedicated folder for all your personal files. If your username is `focs` then all your files lie under `/home/focs`. This is also the default startup folder of your file manager.
- Q: Where can I find software?
  - A: In most cases you don't need to search online for a long time to get the installer. You have a *package manager* on your system that automatically grabs the software for you. More details later.

Administering a Linux system

Linux is pretty much designed around a command-line *shell* (think of it as a far more powerful version of `cmd`). In order to master Linux, some basic shell knowledge is necessary.

To launch a command-line shell, you may press **Ctrl**+**Alt**+**T** on Ubuntu and FOCS Debian; or you may find the application named `Terminal` in the application grid. macOS users may find themselves acquainted with the Terminal app.

Package Manager and installing software

Most distribution have a built-in App Store based on some **package managers**. It is easy to use UI but some operations still need your CLI. Package managers automatically connect to a central software repository (you may need to change it to a mirror in China), download and install software for you. For Ubuntu and FOCS Debian, the package manager used is apt. Software installation is made easy and straightforward with the presence of package managers.

- To install software, run `sudo apt install <software-name>`
- To upgrade the system, run `sudo apt update && sudo apt upgrade`
- To remove installed software, run `sudo apt remove <software-name>`
- To search for something, run `apt search <software-name>`

There are also 2 new package managers called Snap and Flatpak. Their usage is similar to apt.

Alternatives of common Windows softwares

MATLAB, Mathematica, Vivado, feishu, QQ and many other softwares officially support Linux.

- Microsoft Office -> *LibreOffice*, WPS Office
- Chinese Input Method -> `ibus` (easier to configure), `fcitx5` (more powerful and more features)\
- MiKTeX, Overleaf TeX Editor -> *Texmaker*, or plugins in your editor
- Adobe Photoshop, Lightroom, etc. -> *GIMP*, *darktable* ...
- Solidworks -> *FreeCAD*, or check https://github.com/cryinkfly/SOLIDWORKS-for-Linux
- Games not support Linux -> *Lutris*

softwares in bold are open source.

Where can I find help and support

- Use `man` and `--help` to get local help.
- Check your distro's Wiki. For example, Ubuntu Wiki is hosted at https://wiki.ubuntu.com; Debian at https://wiki.debian.org
- Arch Linux Wiki often have the know-how that you want. Check https://wiki.archlinux.org if you can't find help on your distro Wiki
- Search online and find solutions from forums and blogs.
- Join FOCS Mattermost! We are available at https://focs.ji.sjtu.edu.cn/mm/lobby/channels/linux at any time. You are always welcomed!
- You may also join a local Linux User Group. SJTU has its own Linux User Group; check https://sjtug.org/contacts for how to join them

Let's begin the Install Party!

Check the documentation of your preferred installation method.