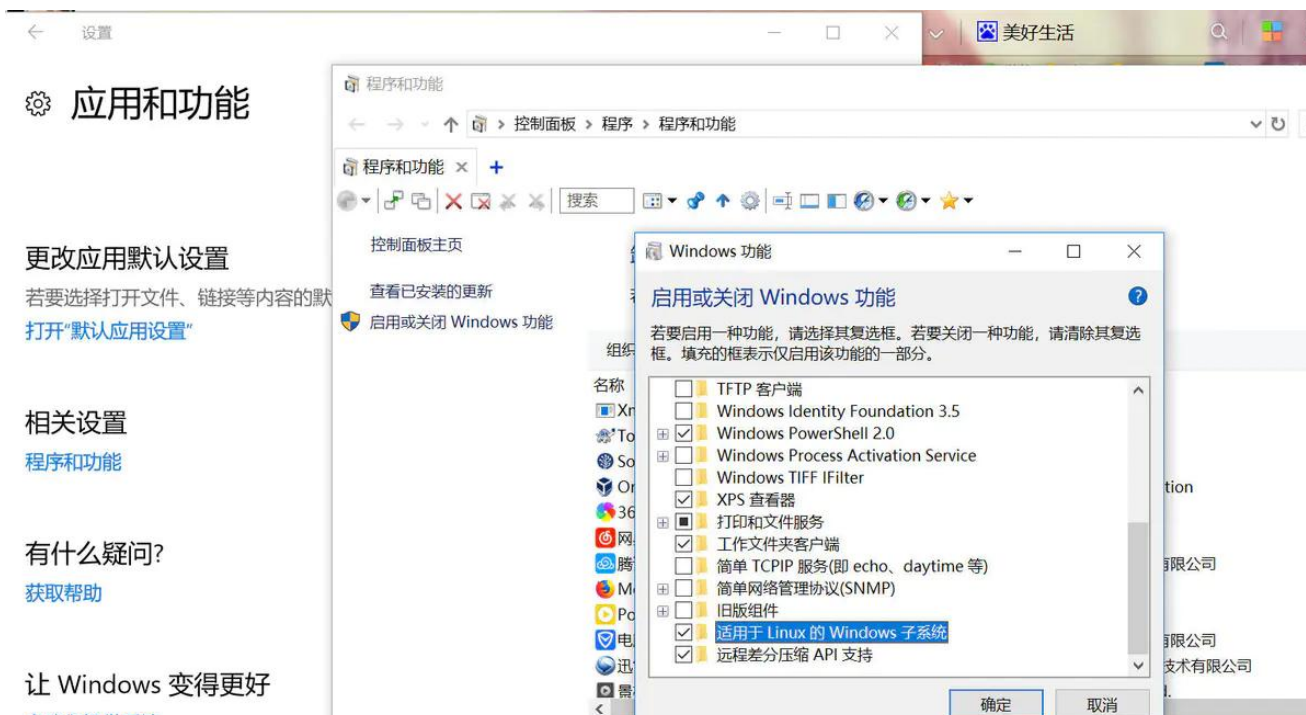


环境搭建

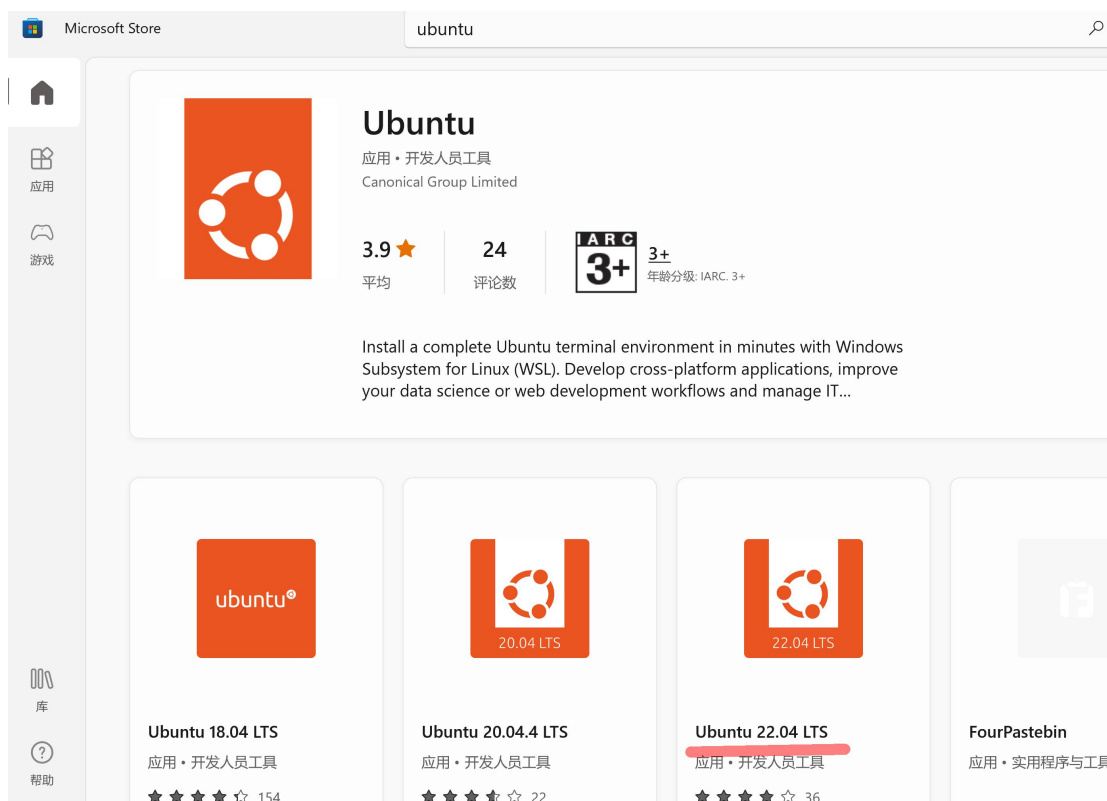
生物信息学需要计算机基础：Linux系统；Python；R

win10开启内置ubuntu

windows+x选n,打开设置 -> 应用 -> 应用和功能 -> 相关设置 -> 程序和功能 -> 启用或关闭Windows功能: 勾选适用于Linux的Windows子系统, 确定, 重启电脑。



- 在Windows应用商店里面搜索Linux，安装Ubuntu。



更新国内源

1.打开Ubuntu

进入/etc/apt/

```
cd /etc/apt
```

2.在修改前先对 sources.list文件进行备份和修改sources.list 文件权限:

```
sudo cp sources.list sources.list.bak
```

```
sudo chmod 777 sources.list
```

3.用VIM打开sources.list文件

```
sudo vim sources.list
```

用#注释掉原先的源，或者ggdG清空文档，复制粘贴如下源：

- #阿里云
- deb <http://mirrors.aliyun.com/ubuntu/> trusty main restricted universe multiverse
- deb <http://mirrors.aliyun.com/ubuntu/> trusty-security main restricted universe multiverse
- deb <http://mirrors.aliyun.com/ubuntu/> trusty-updates main restricted universe multiverse
- deb <http://mirrors.aliyun.com/ubuntu/> trusty-proposed main restricted universe multiverse
- deb <http://mirrors.aliyun.com/ubuntu/> trusty-backports main restricted universe multiverse
- deb-src <http://mirrors.aliyun.com/ubuntu/> trusty main restricted universe multiverse
- deb-src <http://mirrors.aliyun.com/ubuntu/> trusty-security main restricted universe multiverse
- deb-src <http://mirrors.aliyun.com/ubuntu/> trusty-updates main restricted universe multiverse
- deb-src <http://mirrors.aliyun.com/ubuntu/> trusty-proposed main restricted universe multiverse
- deb-src <http://mirrors.aliyun.com/ubuntu/> trusty-backports main restricted universe multiverse

- 清华源：访问该网址选择合适的镜像
<https://mirrors.tuna.tsinghua.edu.cn/help/ubuntu/>
- 以Ubuntu 20.04 LTS 为例

```
# 默认注释了源码镜像以提高 apt update 速度，如有需要可自行取消注释 deb
https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal main restricted universe multiverse # deb-src
https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal main restricted universe multiverse deb
https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-updates main restricted universe multiverse # deb-
src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-updates main restricted universe multiverse deb
https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-backports main restricted universe multiverse #
deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-backports main restricted universe
multiverse deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-security main restricted universe
multiverse # deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-security main restricted
universe multiverse # 预发布软件源，不建议启用 # deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/
focal-proposed main restricted universe multiverse # deb-src
https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-proposed main restricted universe multiverse
```

- 4.然后ESC+:+wq保存文档。
- 5.输入命令：
- `sudo apt-get update`
- `sudo apt-get upgrade`更新源。
- 之后就可以畅快地下载安装软件了。

安装中文

如果你是刚安装好的系统，先更新一下软件源和软件包，输入

```
sudo apt update && sudo apt upgrade -y
```

安装中文语言包：

```
sudo apt install -y language-pack-zh-hans language-pack-zh-hans-base
```

设置本地化环境变量：

```
echo "LANG=zh_CN.UTF-8" >> ~/.profile
```

重新打开 Ubuntu，完成！

并不是所有命令都支持中文，要看软件是否支持。

添加普通用户

useradd 用户名 和 adduser 用户名

两个用户创建命令之间的区别

adduser: 会自动为创建的用户指定主目录、系统shell版本, 会在创建时输入用户密码。

给普通用户sudo权限, 否则用户无法使用sudo命令。

使用root用户编辑/etc/下的sudoers 文件, 在文件中添加要创建的用户的sudo权限

su 用户名 即可切换用户

sudo su 切换root用户

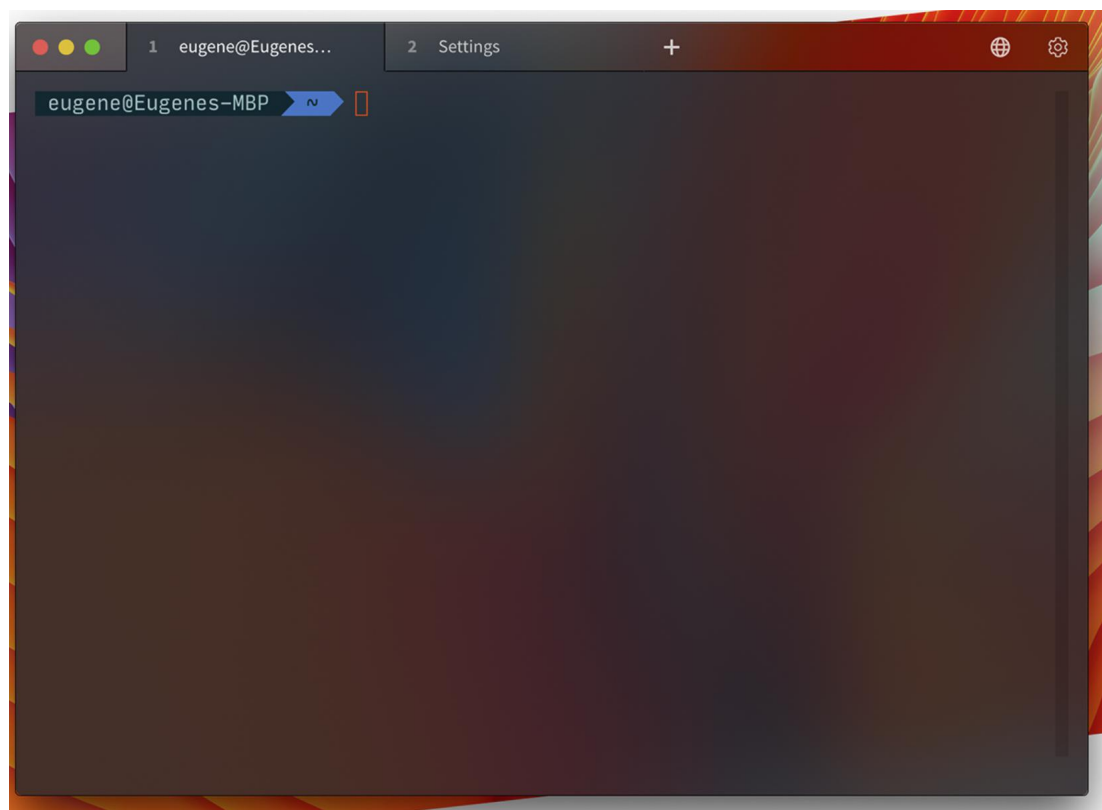
```
11 Defaults      secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/snap/bin"
12
13 # Host alias specification
14
15 # User alias specification
16
17 # Cmnd alias specification
18
19 # User privilege specification
20 root    ALL=(ALL:ALL) ALL
21 wtgg    ALL=(ALL:ALL) ALL
22 # Members of the admin group may gain root privileges
23 %admin  ALL=(ALL) ALL
24
25 # Allow members of group sudo to execute any command
26 %sudo   ALL=(ALL:ALL) ALL
27
28 # See sudoers(5) for more information on "#include" directives:
29
30 #includedir /etc/sudoers.d
```

21行是添加的代码。给wtgg用户sudo权限

- 命令行输入
- bash
- 进入ubuntu

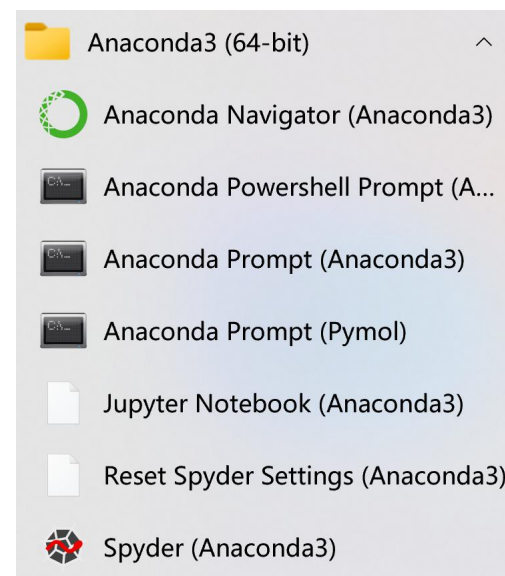
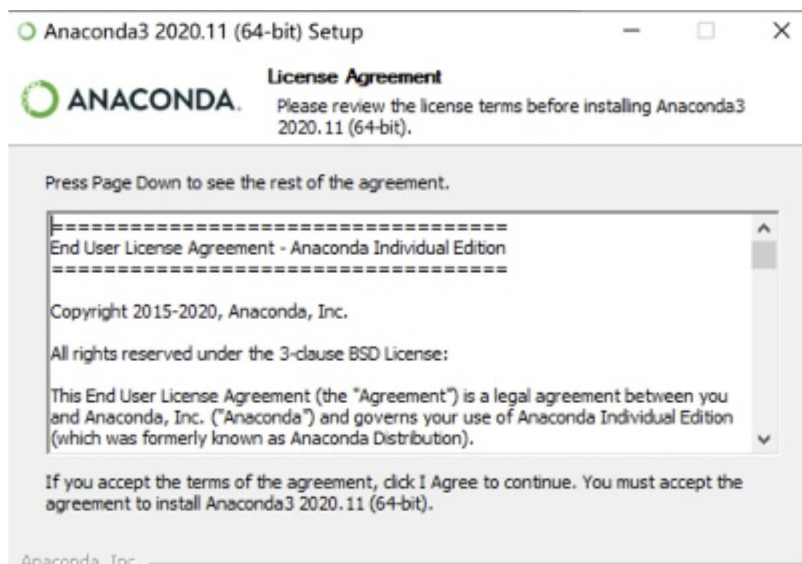
推荐命令行工具

- tabby
- <https://github.com/Eugeniy/tabby>




python

- 开发环境部署
- ANACONDA



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EXTENSIONS: MARKETPLACE


@sortinstalls


 **Python** 2019.6.24221 54.9M ★ 4.5
Linting, Debugging (multi-threaded, ...
Microsoft [Install](#)


 **GitLens — Git sup...** 98.5 23.1M ★ 5
Supercharge the Git capabilities buil...
Eric Amodio [Install](#)

 **C/C++** 0.24.0 23M ★ 3.5
C/C++ IntelliSense, debugging, and ...
Microsoft [Install](#)

 **ESLint** 1.9.0 21.9M ★ 4.5
Integrates ESLint JavaScript into VS ...
Dirk Baeumer [Install](#)

 **Debugger for Ch...** 4.11.6 20.6M ★ 4
Debug your JavaScript code in the C...
Microsoft [Install](#)

 **Language Supp...** 0.47.0 18.7M ★ 4.5
Java Linting, Intellisense, formatting, ...
Red Hat [Install](#)

 **vscode-icons** 8.8.0 17.2M ★ 5
Icons for Visual Studio Code
VSCo Icons Team [Install](#)

File Edit Selection View Go Debug Terminal Help

serviceWorker.js - create-react-app - Visual Studio Code - In...

JS App.js JS index.js JS serviceWorker.js

src > JS serviceWorker.js > register > window.addEventListener('load') callback

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checkValidServiceWorker(swUrl, config);

// Add some additional logging to localhost, p...
// service worker/PWA documentation.
navigator.serviceWorker.ready.then(() => {
 product
 productSub
 removeSiteSpecificTrackingException
 removeWebWideTrackingException
 requestMediaKeySystemAccess
 sendBeacon
 serviceWorker (property) Navigator.serviceWorke...
 storage
 storeSiteSpecificTrackingException
 storeWebWideTrackingException
 userAgent
 vendor
})

function registerValidSW(swUrl, config) {
 navigator.serviceWorker
 .register(swUrl)
 .then(registration => {

TERMINAL ... 1: node

```
$ python
```

```
Python 3.8.5 (default, Sep 4 2020, 07:30:14)
```

```
[GCC 7.3.0] :: Anaconda, Inc. on linux
```

```
Type "help", "copyright", "credits" or "license" for more information.
```

```
>>>
```

或者输入以下命令查看python是否安装成功

```
$ python --version
```

```
Python 3.8.5
```


- 退出python

(1) 在Python终端输入命令函数： `exit()`或`quit()`。

```
>>> exit() #或用quit()
```

(2) 使用快捷键 “Ctrl+Z” (或 “Ctrl + D”) 退出。

conda 命令简介

- 创建环境: `conda create -n 环境名称 python=版本`
- 激活环境: `conda activate 环境名称`
-

pip批量导出包含环境中所有组件的**requirements.txt**文件

```
pip freeze > requirements.txt
```

pip批量安装**requirements.txt**文件中包含的组件依赖

```
pip install -r requirements.txt
```

conda批量导出包含环境中所有组件的**requirements.txt**文件

```
conda list -e > requirements.txt
```

conda批量安装**requirements.txt**文件中包含的组件依赖

```
conda install --yes --file requirements.txt
```

Jupyter Notebook是什么

- Jupyter Notebook是一个开放源码的集成开发环境(IDE)，它允许你创建和共享包含实时代码、公式、可视化和叙述性文本的文档。对我们来说，本质上它就是我们的笔记本，我们将在那里一起编写代码。



R+Rstudio

- <https://cran.r-project.org/>
- <https://www.rstudio.com/>



RStudio Desktop

Run RStudio on your desktop