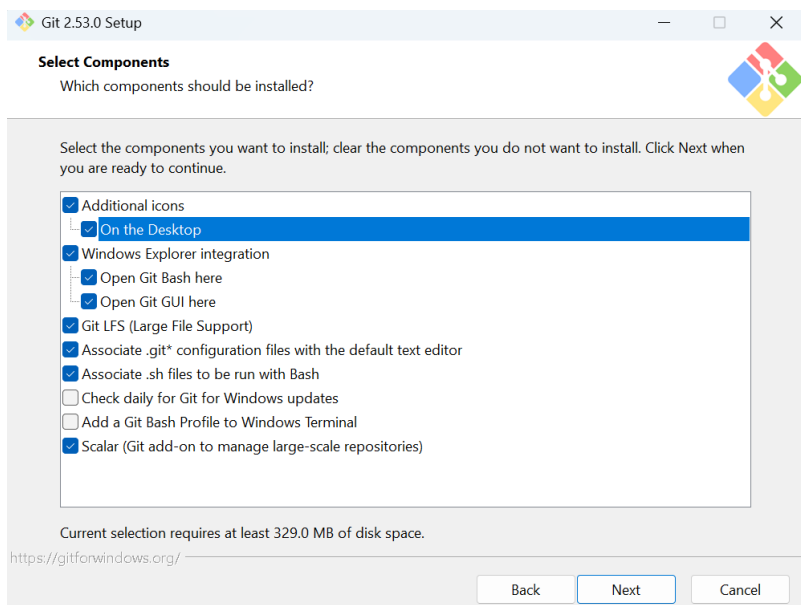
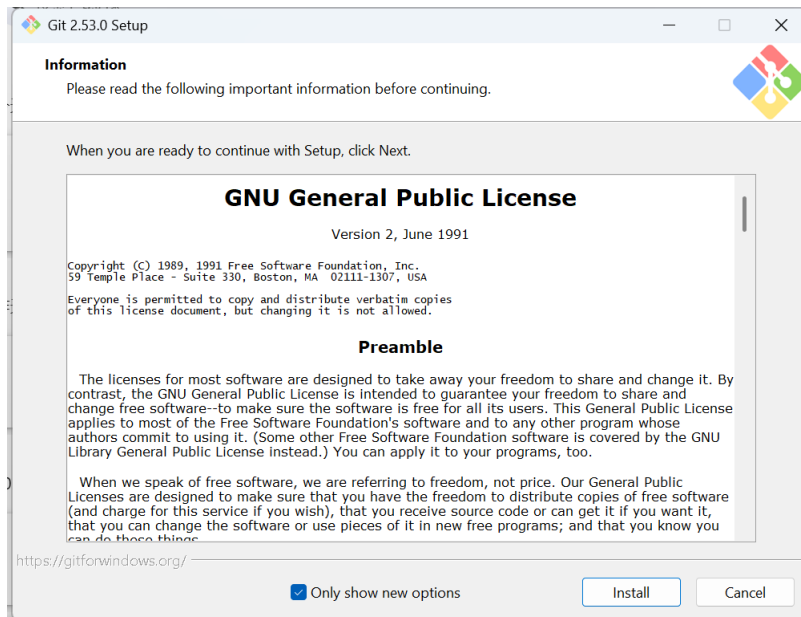
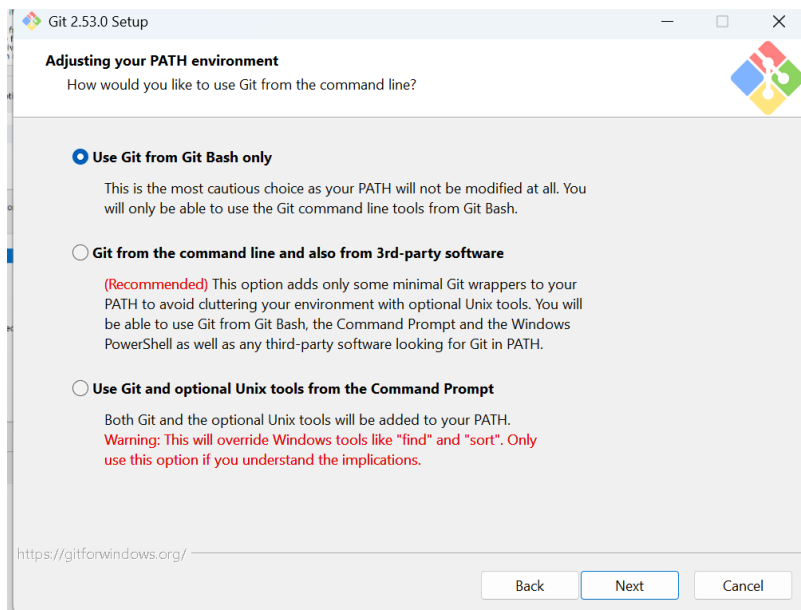


Git使用

- 官网下载
 - <https://git-scm.com/install/windows>
- 安装，定义好后，一直next





- 安装完成后，打开git，进行最后一步设置

```
SU_hole@LAPTOP-1LV12I2R MINGW64 ~  
$ git config --global user.email "dsu186666@outlook.com"  
  
SU_hole@LAPTOP-1LV12I2R MINGW64 ~  
$ git config --global user.name "SuDawn"
```

- Git是分布式版本控制系统，所以需要填写用户名和邮箱作为一个标识

- `git config --global user.email "dsu186666@outlook.com"`
- `git config --global user.name "SuDawn"`

- 创建版本库

- 版本库又名仓库，英文名repository,你可以简单的理解一个目录，这个目录里面的所有文件都可以被Git管理起来，每个文件的修改，删除，Git都能跟踪，以便任何时候都可以追踪历史，或者在将来某个时刻还可以将文件“还原”。

• -

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes  
$ mkdir testgit
```

- 通过命令 `git init` 把这个目录变成git可以管理的仓库

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes  
$ git init  
Initialized empty Git repository in D:/Class/jiangxia_AI/2305070129_sudong/Codes/.git/
```

| 名称 | 修改日期 |
|---------|-----------|
| .git | 2026-02-0 |
| testgit | 2026-02-0 |

- 把文件添加到版本库中

- 在testgit下创建read.txt
- `git add readme.txt`
- `git commit` 告诉Git，把文件提交到仓库。

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git commit -m "readme.txt提交"
[master (root-commit) 6f47253] readme.txt提交
1 file changed, 2 insertions(+)
create mode 100644 testgit/readme.txt
```

git status

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   readme.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        ../test.ipynb

no changes added to commit (use "git add" and/or "git commit -a")
```

- 文件已被修改，但是未被提交的修改

git diff readme.txt

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git diff readme.txt
diff --git a/testgit/readme.txt b/testgit/readme.txt
index 7e18e6e..2bbf87e 100644
--- a/testgit/readme.txt
+++ b/testgit/readme.txt
@@ -1,2 +1,3 @@
 test
-hello world
 \ No newline at end of file
+hello world
+1111
 \ No newline at end of file
```

- 知道了对readme.txt文件做了什么修改后，我们可以放心的提交到仓库了，提交修改和提交文件是一样的2步

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git add readme.txt

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git commit -m "readme.txt提交"
[master 2816e0d] readme.txt提交
1 file changed, 2 insertions(+), 1 deletion(-)
```

- git add
- git commit

版本回退

git log

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git log
commit 6a226e780e39013385916da600caf33fef0bbacf (HEAD -> master)
Author: SuDawn <dsu186666@outlook.com>
Date: Wed Feb 4 14:52:26 2026 +0800

    readme.txt提交

commit 2816e0daf9116f37ce8dc2f1055f24a85f08ca4
Author: SuDawn <dsu186666@outlook.com>
Date: Wed Feb 4 14:11:06 2026 +0800

    readme.txt提交

commit 6f47253f4356830dfc930b3de6b576a246f76901
Author: SuDawn <dsu186666@outlook.com>
Date: Wed Feb 4 14:07:01 2026 +0800

    readme.txt提交
```

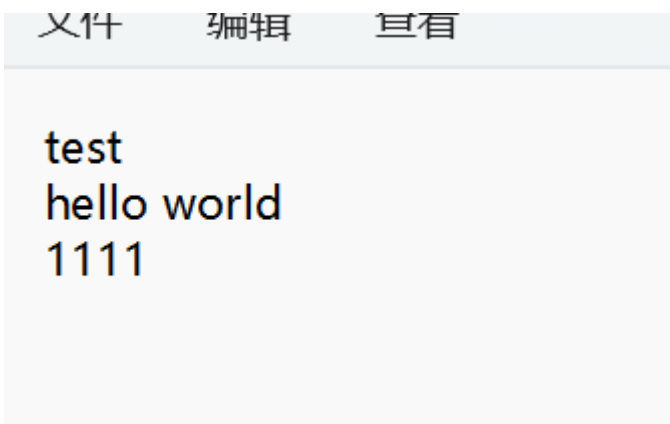
- git log --pretty=oneline

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git log --pretty=oneline
6a226e780e39013385916da600caf33fef0bbacf (HEAD -> master) readme.txt提交
2816e0daf9116f37ce8dc2f1055f24a85f08ca4 readme.txt提交
6f47253f4356830dfc930b3de6b576a246f76901 readme.txt提交
```

- 使用版本回退操作，把当前的版本回退到上一个版本

- `git reset --hard HEAD^`

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git reset --hard HEAD^
HEAD is now at 2816e0d readme.txt提交
```



- 那么如果要回退到上上个版本只需把HEAD^ 改成 HEAD^^ 以此类推。
- 那如果要回退到前100个版本的话，使用上面的方法肯定不方便，我们可以使用下面的简便命令操作：`git reset --hard HEAD~100` 即可。

- `git reset --hard 版本号`

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git log
commit 477aa945766aad5ff7813a35b88d00f23e05fa7 (HEAD -> master)
Author: SuDawn <dsu186666@outlook.com>
Date: Wed Feb 4 14:58:08 2026 +0800
    增加2222

commit 2816e0dc9f9116f37ce8dc2f1055f24a85f08ca4
Author: SuDawn <dsu186666@outlook.com>
Date: Wed Feb 4 14:11:06 2026 +0800
    readme.txt提交

commit 6f47253f4356830dfc930b3de6b576a246f76901
Author: SuDawn <dsu186666@outlook.com>
Date: Wed Feb 4 14:07:01 2026 +0800
    readme.txt提交
```

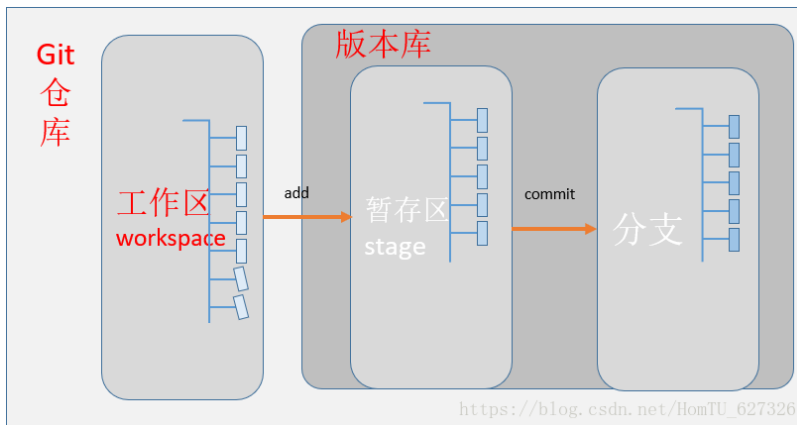
```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git reflog
477aa94 (HEAD -> master) HEAD@{0}: commit: 增加2222
2816e0d HEAD@{1}: reset: moving to HEAD^
6a226e7 HEAD@{2}: commit: readme.txt提交
2816e0d HEAD@{3}: commit: readme.txt提交
6f47253 HEAD@{4}: commit (initial): readme.txt提交
```

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git reset --hard 477aa94
HEAD is now at 477aa94 增加2222

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ cat readme.txt
test
hello world
1111
2222
```

• 工作区与暂存区

- 工作区：就是你在电脑上看到的目录，比如目录下testgit里的文件(.git隐藏目录版本库除外)。或者以后需要再新建的目录文件等等都属于工作区范畴。
- 版本库(Repository)：工作区有一个隐藏目录.git,这个不属于工作区，这是版本库。其中版本库里面存了很多东西，其中最重要的就是stage(暂存区)(或者叫index)，还有Git为我们自动创建了第一个分支master,以及指向master的一个指针HEAD。
- 使用Git提交文件到版本库有两步：



- 第一步：是使用 git add 把文件添加进去，实际上就是把文件添加到暂存区。
- 第二步：使用 git commit 提交更改，实际上就是把暂存区的所有内容提交到当前分支上。

- 撤销修改

- 撤销修改

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ cat readme.txt
test
hello world
1111
2222
3333
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   readme.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        ../test.ipynb

no changes added to commit (use "git add" and/or "git commit -a")

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git restore -- readme.txt

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ cat readme.txt
test
hello world
1111
2222
```

- 通过撤销命令让其回到暂存区后的状态

```

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ cat readme.txt
test
hello world
1111
2222
4444
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git add readme.txt

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ cat readme.txt
test
hello world
1111
2222
4444
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ cat readme.txt
test
hello world
1111
2222
4444
5555
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git restore -- readme.txt

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ cat readme.txt
test
hello world
1111
2222
4444
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)

```

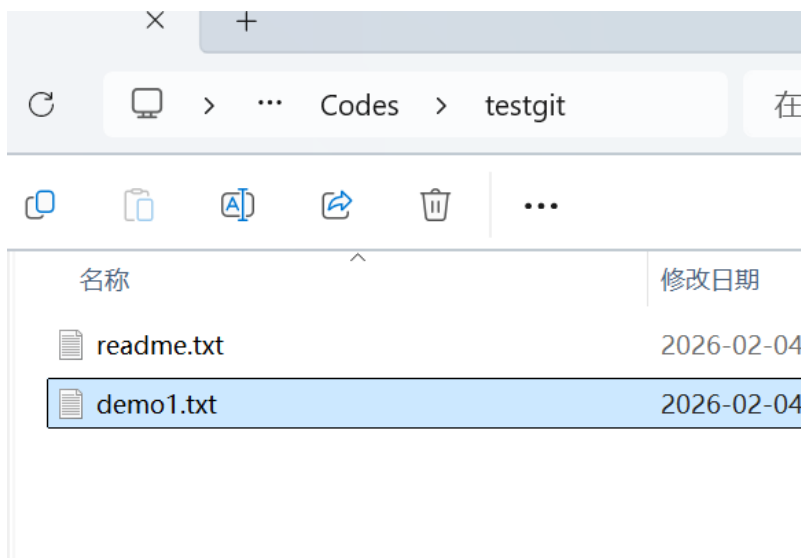
• 删除文件

```

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git add demo1.txt

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git commit -m "提交demo1.txt"
[master c4de5e5] 提交demo1.txt
2 files changed, 2 insertions(+)
create mode 100644 testgit/demo1.txt

```



```

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ rm demo1.txt

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    demo1.txt

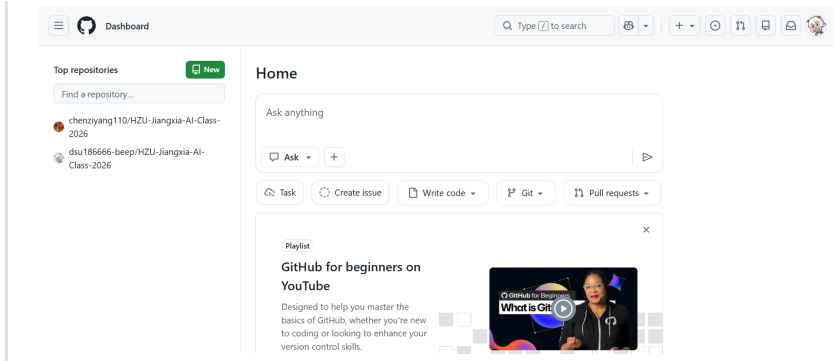
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        ../test.ipynb

no changes added to commit (use "git add" and/or "git commit -a")

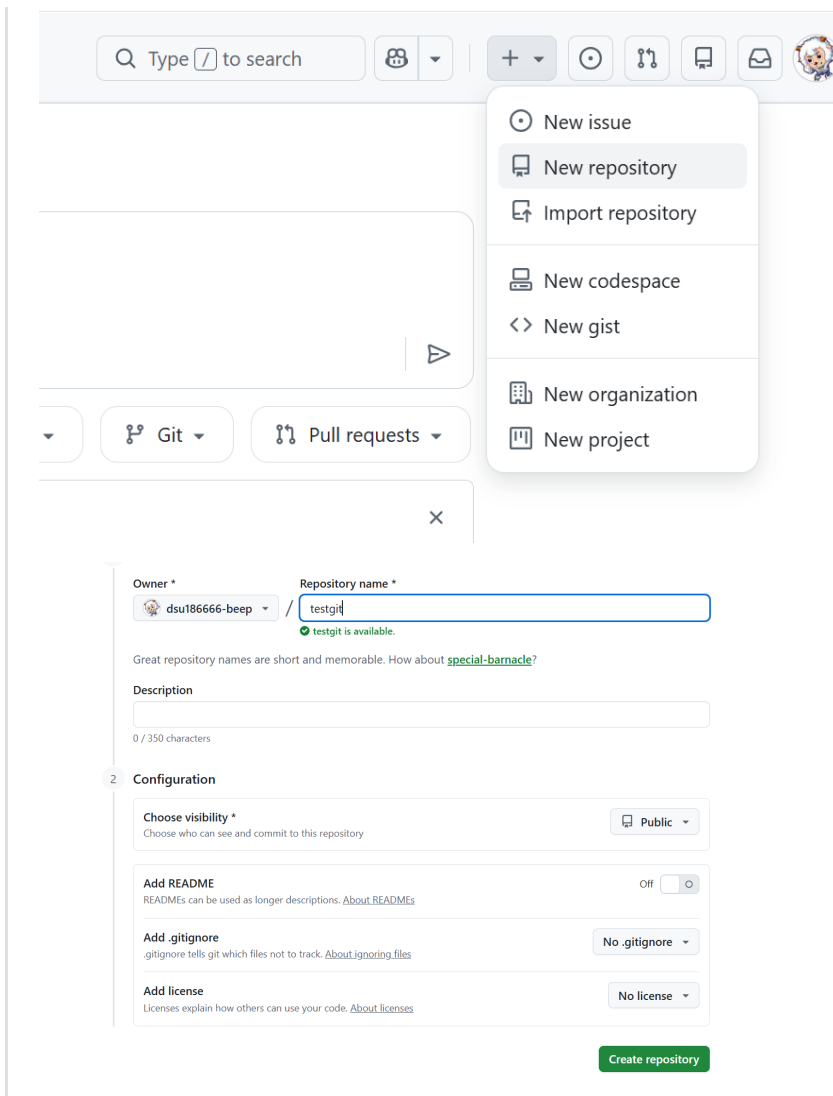
```

• 远程仓库

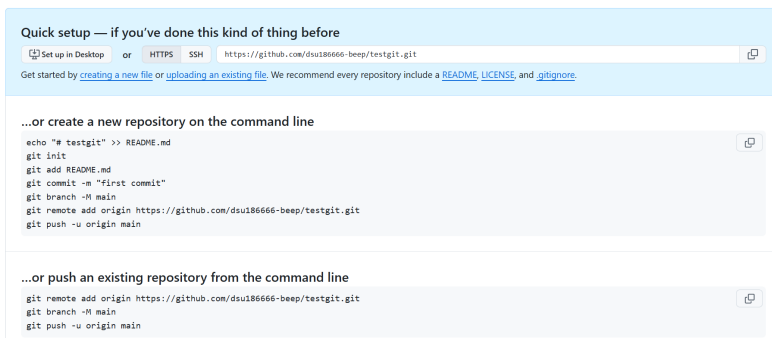
- 现在我们已经在本机创建了一个Git仓库，又想让其他人来协作开发，此时就可以把本地仓库同步到远程仓库，同时还增加了本地仓库的一个备份。
- 常用的远程仓库就是github：<https://github.com/>，接下来演示如何将本地代码同步到github。



- 创建仓库



- Github支持两种同步方式“https”和“ssh”。



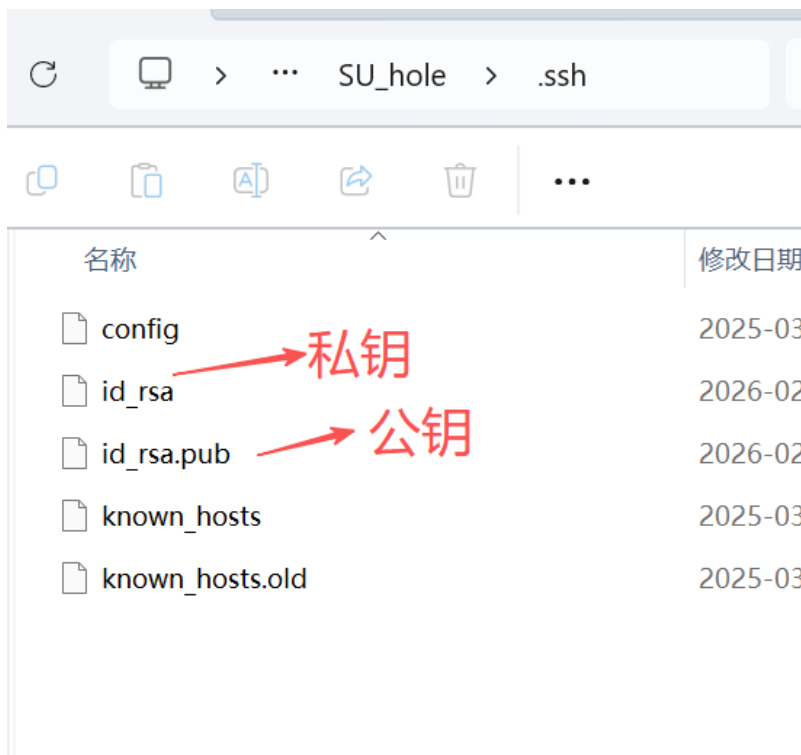
- 如果使用https很简单基本不需要配置就可以使用，但是每次提交代码和下载代码时都需要输入用户名和密码。
- 如果使用ssh方式就需要客户端先生成一个密钥对，即一个公钥一个私钥。然后还需要把公钥放到github的服务器上。

- SSH 为 Secure Shell（安全外壳协议）的缩写，由 IETF 的网络小组（Network Working Group）所制定。SSH 是目前较可靠，专为远程登录会话和其他网络服务提供安全性的协议。利用 SSH 协议可以有效防止远程管理过程中的信息泄露问题。
- 使用ssh协议通信时，推荐使用基于密钥的验证方式。你必须为自己创建一对密匙，并把公用密匙放在需要访问的服务器上。如果你要连接到SSH服务器上，客户端软件就会向服务器发出请求，请求用你的密匙进行安全验证。服务器收到请求之后，先在该服务器上你的主目录下寻找你的公用密匙，然后把它和你发送过来的公用密匙进行比较。如果两个密匙一致，服务器就用公用密匙加密“质询”（challenge）并把它发送给客户端软件。客户端软件收到“质询”之后就可以用你的私人密匙解密再把它发送给服务器。

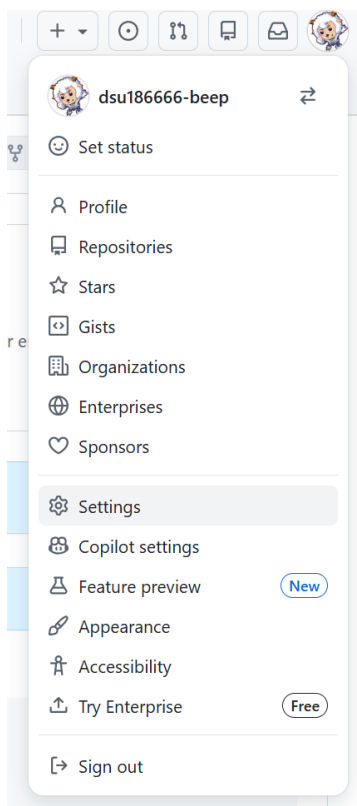
• ssh密钥

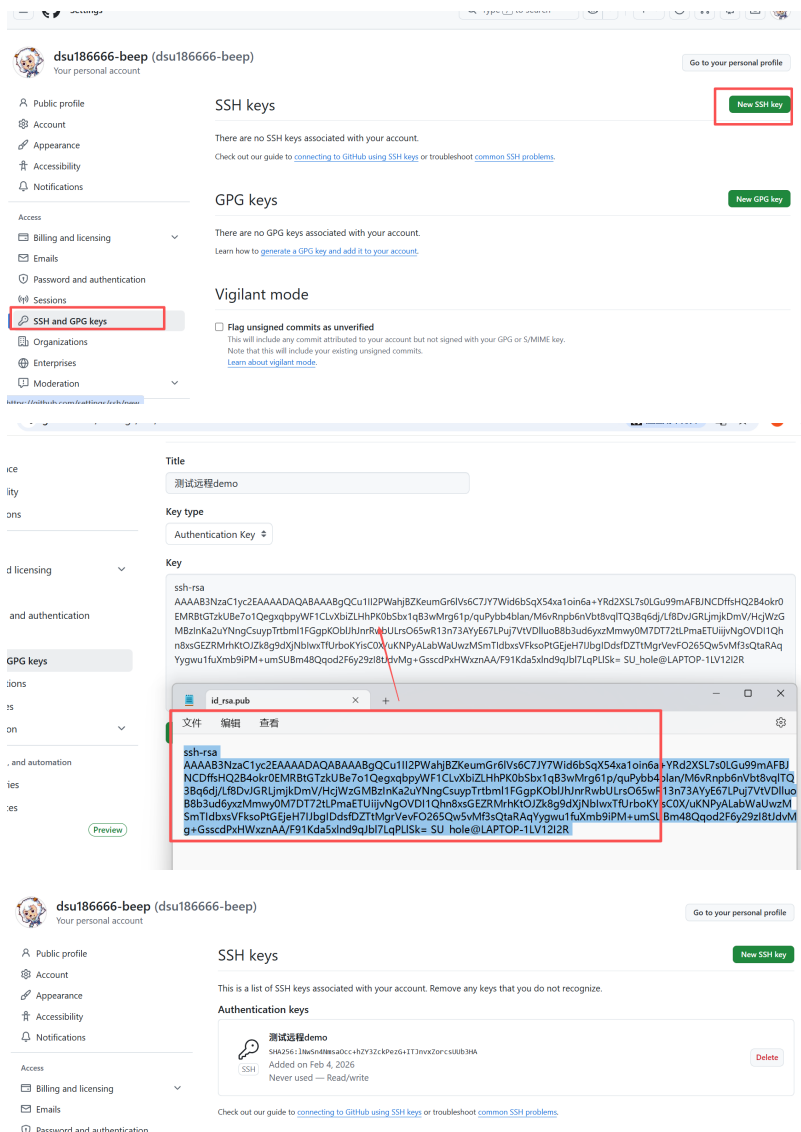
- 生成 `ssh-keygen -t rsa`

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/c:/Users/SU_hole/.ssh/id_rsa):
Enter passphrase for "/c:/Users/SU_hole/.ssh/id_rsa" (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /c:/Users/SU_hole/.ssh/id_rsa
Your public key has been saved in /c:/Users/SU_hole/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:INwSn4NmsaOcc+hZY3ZckPezG+ITJnvxZorcsUUb3HA SU_hole@LAPTOP-1LV12I2R
The key's randomart image is:
+---[RSA 3072]-----+
|
|  o  .
| . o .
| @ = . . . E
|
| . B + o . o +
| * S o  + o .
| . B o . = . o o
| o      = . = o o
| .. o + + =
| o . + =
+---[SHA256]-----+
```

- 配置





同步

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git remote rm origin

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git remote add origin https://github.com/dsu186666-beef/testgit

SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git push -u origin main
error: src refspec main does not match any
```

- git remote rm origin

从远程库克隆

Go to file t Add file <> Code

Local

Codespaces

Clone ?

HTTPS SSH GitHub CLI

Clone using the web URL.

Open with GitHub Desktop

Download ZIP

```
SU_hole@LAPTOP-1LV12I2R MINGW64 /d/Class/jiangxia_AI/2305070129_sudong/Codes/testgit
(master)
$ git clone https://github.com/chenziyang110/HZU-Jiangxia-AI-Class-2026.git
Cloning into 'HZU-Jiangxia-AI-Class-2026'...
remote: Enumerating objects: 359, done.
remote: Counting objects: 100% (80/80), done.
remote: Compressing objects: 100% (60/60), done.
fetch-pack: unexpected disconnect while reading sideband packet
fatal: fetch-pack: invalid index-pack output
```

- `git clone`