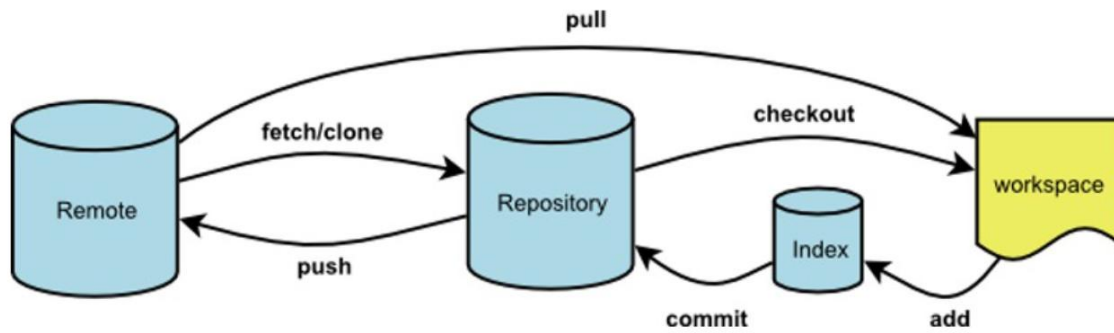


## Git Basic Usages

Version	Date	Authors	Changes
0.1	2021.03.16	LiNing	New document

1. Clone from remote Github and commit.....	2
2. Push local files to remote.....	7
3. SSH configuration.....	9



### 1. Clone from remote Github and commit

**Task:** To finish a new feature coding (tool: Git Bash or other your favorite tools).

**Precondition:**

No	Action	
	Assignee(Project Member) <a href="#">(userX@XXX)</a>	Administrator(Project Master) <a href="#">(lining@nwpu.edu.cn)</a>
1.		Create a public project in Github.
2.		Send the invitation link to each team member as project collaborator.
3.	Accept the collaborator invitation.	
4.		Create some new issues, and assign them to some member or members.

**Process:**

	Action	
	Assignee(Project Member) <a href="#">(userX@XXX)</a>	Administrator(Project Master) <a href="#">(lining@nwpu.edu.cn)</a>
1.	Clone this project from Github.	
2.	Create a new local branch for issue#1 . branch name: 1_add (example)	
3.	Modify code according to the requirement of this issue#6 in local work directory.	
4.	Commit changes to this local branch.	
5.	Push local branch to remote branch.	
6.	Pull merge request (merge remote 1_add branch to remote master branch).	
7.		Merge the request from <a href="#">userX@XXX</a>
8.		Close this issue#1

## Detail Operation:

Login account: [userX@XXXXX](#)

### 1) Clone a project from github (current dir: d:\0-Github)

Current directory: d:\0-Github

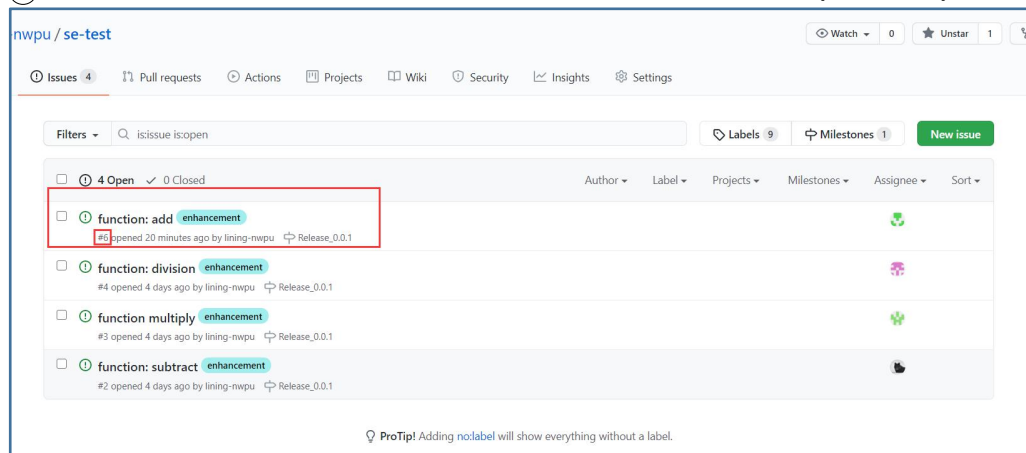
`git clone https://github.com/lining-nwpu/se-test.git`

```
lining@THINKPAD_LINING MINGW64 /d/0-Github
$ git clone https://github.com/lining-nwpu/se-test.git
Cloning into 'se-test'...
remote: Enumerating objects: 19, done.
remote: Counting objects: 100% (19/19), done.
remote: Compressing objects: 100% (12/12), done.
remote: Total 19 (delta 2), reused 3 (delta 1), pack-reused 0
Receiving objects: 100% (19/19), 4.32 KiB | 4.32 MiB/s, done.
Resolving deltas: 100% (2/2), done.
```

A new folder was created: d:\0-Github\se-test

### 2) Create a new branch for issue#6 (issue#6 is assigned to [userX@XXXXX](#) )

#### ① Confirm issue# in issue lists of Github: issue#6: function: add (issue id: 6)



#### ② Checkout local branch

`cd se-test`

`git checkout -b 6_add`

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (master)
$ git checkout -b 6_add
Switched to a new branch '6_add'

lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (6_add)
$
```

Create a new local branch named “6\_add” (“6” is issue\_id, “add” is the summary of the issue), and change current branch to this new branch. Then checkout it for editing.

If you want to delete a local branch, use: `git branch -d ***(branch name)`

Show local and remote branches: `git branch -a`

```
$ git branch -a
* 6_add
  master
remotes/origin/HEAD -> origin/master
remotes/origin/master

lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (6_add)
```

### 3) Edit files and add these changes to git(e.g. edit "time.c")

After changing files(modify, add, remove), check the file status: `git status`

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (6_add)
$ git status
On branch 6_add
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:   time.c

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

Suppose you add a new file in your work directory, e.g. lining.md

Add the new file to git (managed by git): `git add`

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (6_add)
$ git status
On branch 6_add
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   lining.md

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:   time.c
```

### 4) commit the changes to local git repository

commit new changes to local branch: `git commit -a -m "the first commit for issue6"`

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (6_add)
$ git commit -a -m "the first commit for issue6"
[6_add 7448029] the first commit for issue6
2 files changed, 2 insertions(+), 1 deletion(-)
create mode 100644 lining.md
```

-- Config your email and username for commit

`git config --global user.email "lining@nwpu.edu.cn"`

`git config --global user.name "LiNing"`

## 5) Push the local branch to remote(github) branch

Creates a new connection to a remote repository with a shortname which can later be used instead of the URL when referencing the remote.

```
git remote add origin git@github.com:lining-nwpu/se-test.git
git remote -v
```

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (6_add)
$ git remote -v
origin  git@github.com:lining-nwpu/se-test.git (fetch)
origin  git@github.com:lining-nwpu/se-test.git (push)
```

`git push -u origin 6_add`

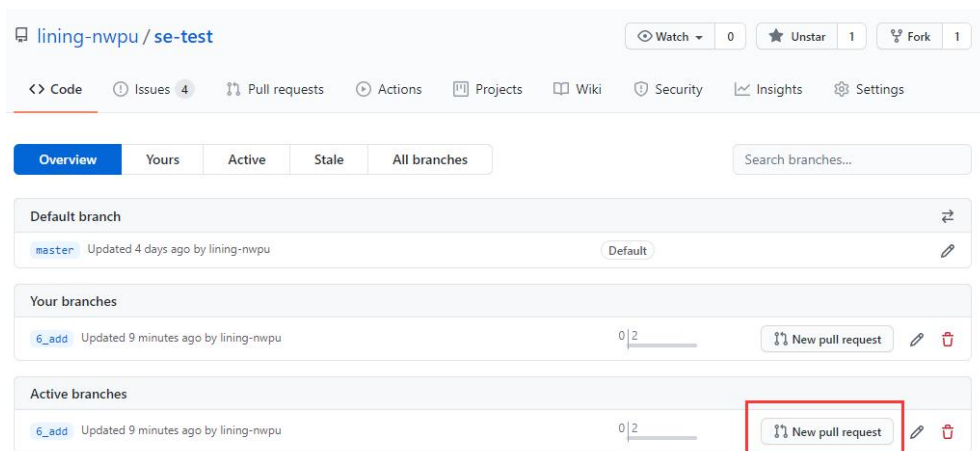
```
lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (6_add)
$ git push -u origin 6_add
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 8 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (7/7), 678 bytes | 678.00 KiB/s, done.
Total 7 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
remote:
remote: Create a pull request for '6_add' on GitHub by visiting:
remote:   https://github.com/lining-nwpu/se-test/pull/new/6_add
remote:
To github.com:lining-nwpu/se-test.git
 * [new branch]      6_add -> 6_add
Branch '6_add' set up to track remote branch '6_add' from 'origin'.
```

Check all branches of remote and local

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (6_add)
$ git branch -a
* 6_add
master
remotes/origin/6_add
remotes/origin/master
```

## 6) Pull merge request ( merge 6\_add to master )

New a pull request for this modified code.



## Master of this project

### 7) Merge the request: click the Merge pull request button

The screenshot shows a GitHub pull request interface. At the top, the title is "the first commit #5". Below the title, there's a green "Open" button and a status bar indicating "lining-nwpu wants to merge 1 commit into master from i\_add". The main content area shows a conversation with a comment from "lining-nwpu" stating "In this version, I add a new function : add.". Below the comment, there's a green checkmark indicating "This branch has no conflicts with the base branch". At the bottom of the main content area, there's a green "Merge pull request" button. On the right side, there are sections for "Reviewers", "Assignees", "Labels", "Projects", "Milestone", and "Linked issues", all of which are currently empty or show "None yet".

Your changes for issue#1 could be found in master branch.

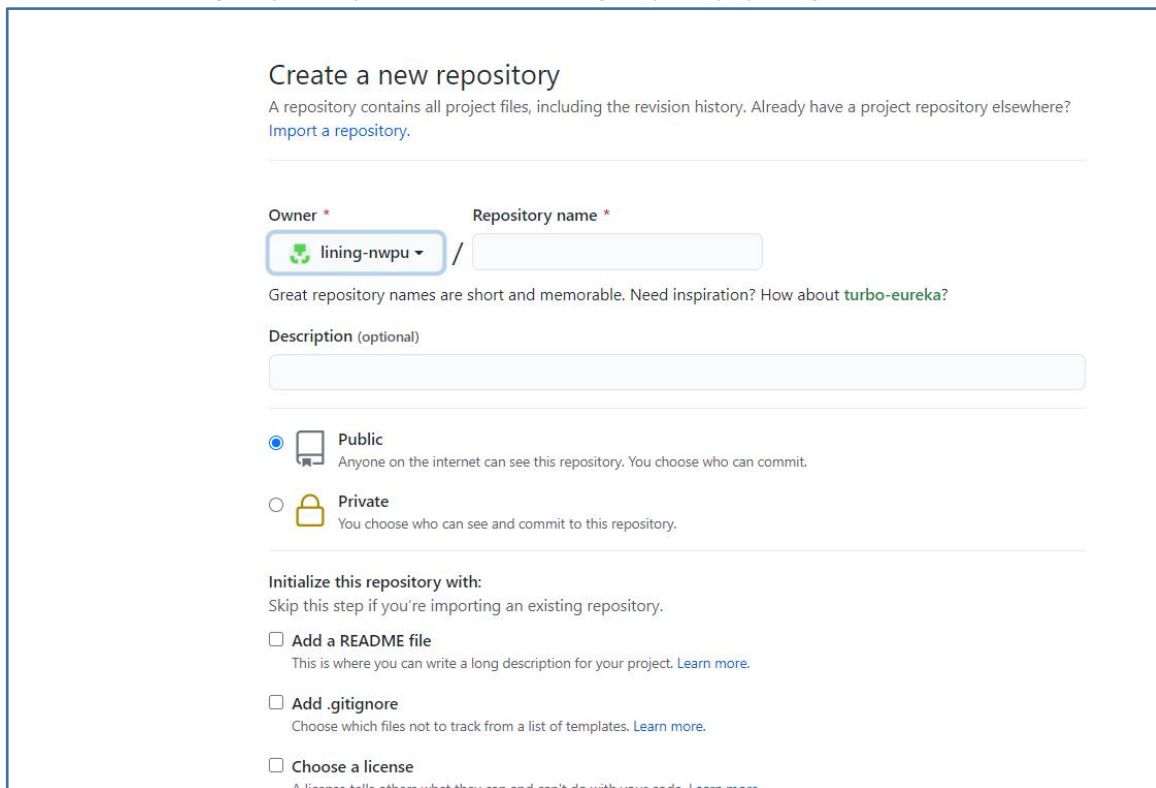
### 8) Close the issue

Click "close" button, then you can find this issue in closed issue list.

The screenshot shows a GitHub Issues list. At the top, there's a search bar with the filter "is:issue is:closed". Below the search bar, there's a button that says "Clear current search query, filters, and sorts". The list of issues shows a single entry: "function: add" with a label "enhancement". The issue is marked as closed with a green checkmark. Below the issue title, it says "#6 by lining-nwpu was closed 1 minute ago" and "Release\_0.0.1".

## 2. Push local files to remote


### 1) Create remote git repository in Github.com ([lining-nwpu/mysqltest.git](https://github.com/lining-nwpu/mysqltest.git))



Create a new repository


A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)


Owner \* Repository name \*

 lining-nwpu /

Great repository names are short and memorable. Need inspiration? How about [turbo-eureka?](#)

Description (optional)

☒  Public  
Anyone on the internet can see this repository. You choose who can commit.

☐  Private  
You choose who can see and commit to this repository.

Initialize this repository with:

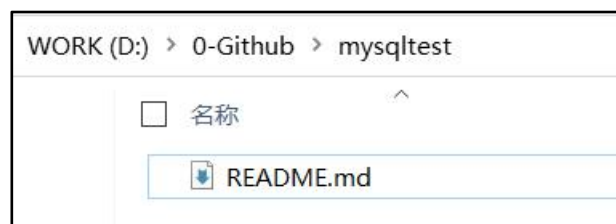
Skip this step if you're importing an existing repository.

☒ Add a README file  
This is where you can write a long description for your project. [Learn more.](#)

☐ Add .gitignore  
Choose which files not to track from a list of templates. [Learn more.](#)

☐ Choose a license  
A license tells others what they can and can't do with your code. [Learn more.](#)

### 2) New some files or directories in a folder (d:\0-github\mysqltest)



### 3) Init this local folder ( make this folder to be a git controlled folder)

`git init`

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/mysqltest
$ git init
Initialized empty Git repository in D:/0-Github/mysqltest/.git/

lining@THINKPAD_LINING MINGW64 /d/0-Github/mysqltest (master)
```

(create ./.git folder automatically, and create a "master" branch)





- 4) Commit this new folder into local master branch

`git add .`

`git commit -m "mysqltest commit1"`

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/mysqltest (master)
$ git add .

lining@THINKPAD_LINING MINGW64 /d/0-Github/mysqltest (master)
$ git commit -m "mysqltest commit1"
[master (root-commit) c3da7e5] mysqltest commit1
1 file changed, 3 insertions(+)
create mode 100644 README.md

lining@THINKPAD_LINING MINGW64 /d/0-Github/mysqltest (master)
$ |
```

- 5) connect local repo with remote repo

`git remote add origin git@github.com:lining-nwpu/mysqltest.git` Or

`git remote add origin https://github.com/lining-nwpu/mysqltest.git`

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/mysqltest (master)
$ git remote add origin git@github.com:lining-nwpu/mysqltest.git

lining@THINKPAD_LINING MINGW64 /d/0-Github/mysqltest (master)
$ |
```

Here, **origin** is an alias of remote repo.

- 6) push local master branch into remote origin repo's master branch

`git push -u origin master`

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/mysqltest (master)
$ git push -u origin master
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 284 bytes | 284.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:lining-nwpu/mysqltest.git
   356033d..4b82064  master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.
```

If origin was created with <https://github.com/lining-nwpu/mysqltest.git>, you need input username and password of github.

If origin was created with [git@github.com:lining-nwpu/mysqltest.git](https://github.com/lining-nwpu/mysqltest.git), you need config SSH (see next section) in advance.

- 7) Confirm remote origin repo's master branch.

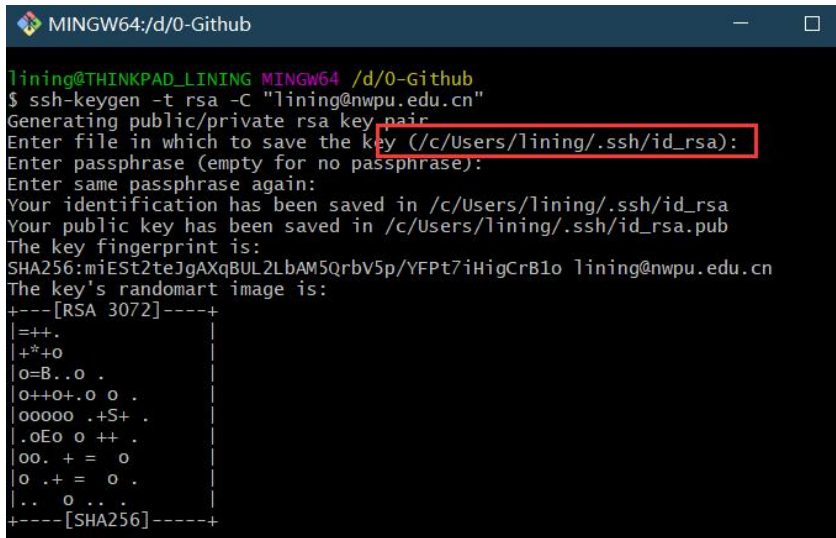


### 3. SSH configuration

Github can be accessed by SSH or HTTP. The following is access by SSH.

#### 1) Generate SSH key on client machine

`ssh-keygen -t rsa -C *****(github username)`

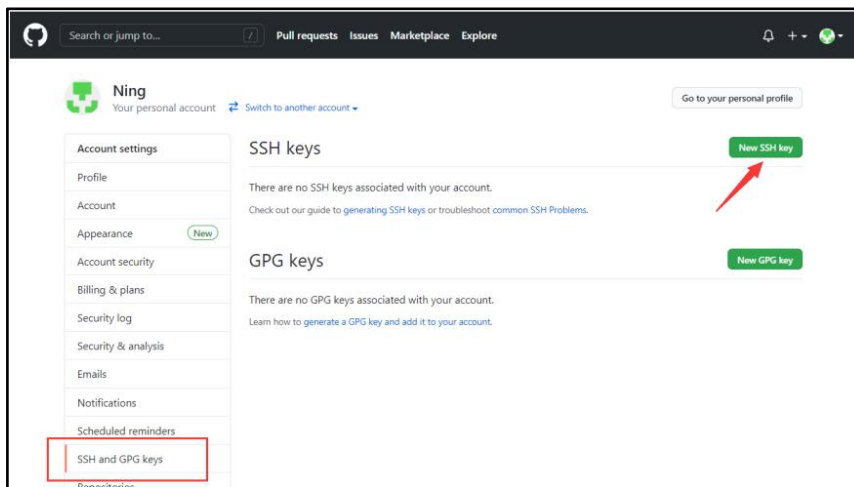


```
MINGW64:/d/0-Github
lining@THINKPAD_LINING MINGW64 /d/0-Github
$ ssh-keygen -t rsa -C "lining@nwpu.edu.cn"
Generating public/private rsa key pair
Enter file in which to save the key (/c/Users/lining/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /c/Users/lining/.ssh/id_rsa
Your public key has been saved in /c/Users/lining/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:miEst2teJgAXqBUL2LbAM5QrbV5p/YFPt7iHigCrB1o lining@nwpu.edu.cn
The key's randomart image is:
+---[RSA 3072]-----+
|==+.
|+*+0
|o=B..o .
|o++o+.o o .
|ooooo .+S+ .
|.oEo o ++ .
|oo. + = o
|o .+ = o .
|.. o .. .
+---[SHA256]-----+
```

Here, the email is your account of Github.

#### 2) Copy public key into Github setting


Copy all contents of “C:\Users\lining\.ssh\id\_rsa.pub” into Github\setting\SSH and GPG Keys. (Permit to access this git project with the above email)



## SSH keys

New SSH key

This is a list of SSH keys associated with your account. Remove any keys that you do not recognize.



LN\_GIT

SHA256:p4E15T2Dka1aLh1RezQHh9XVCcd3hS0k87qQqBXCAAdQ

Added on 19 Mar 2021

Never used — Read/write

Delete

Check out our guide to [generating SSH keys](#) or troubleshoot [common SSH Problems](#).

## GPG keys

New GPG key

There are no GPG keys associated with your account.

Learn how to [generate a GPG key](#) and add it to your account.

### 3) Validate the configuration

[ssh -T git@github.com](https://github.com)

If testing is successful, it means you can access by SSH.

```
lining@THINKPAD_LINING MINGW64 /d/0-Github/se-test (6_add)
$ ssh -T git@github.com
The authenticity of host 'github.com (13.250.177.223)' can't be established.
RSA key fingerprint is SHA256:nThbg6kXUpJWG17E1IGOCspRomTxdCARLviKw6E5SY8.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'github.com' (RSA) to the list of known hosts.
Hi lining-nwpu! You've successfully authenticated, but GitHub does not provide s
hell access.
```