具有創新與創造力的程式設計開發模式

版本控管在教學上的應用

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2017.10

具有創新與創造力的程式設計開發模式 - 版本控管

具有創新與創造力的程式設計開發模式 - 版本控管

- Git 版本控管介紹
- 如何建置版本控管服務
- 主題分支(branch)應用
- 版本控管的7大流程

電腦程式語言版本控管在教學上的應用

電腦程式語言版本控管在教學上的應用

- Github 介紹
- Bitbucket 介紹
- 版本控管服務導入電腦程式相關課程實例
- 畢業專題協作開發實例

具有創新與創造力的程式設計開發模式 - 版本控管

消失的設計力

- 程式設計課程的老師，經常面臨下列問題：
  - 上一次上課同學們的程式都在存放哪裡? USB 隨身碟?
  - 最近同學們的進度如何？
  - 分組之後 1+1+1=1, 因為從頭到尾只有一個人做！沒有團隊默契！
  - 在多人的協同設計時，「版本」亂七八糟，經常出現多頭馬車，哪一份隨身碟的程式才是最新版的？

如何拯救「正在消失的設計力」？

答案可能在「版本控管」

為什麼要版本控管？

消失的設計力

- 程式設計課程的老師，經常面臨下列問題：
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為什麼要版本控管？

因為

- 能讓老師們了解「我做過什麼！正在做什麼！請不要當我啊!」
- 凡走過必留下痕跡, 而且隨時可以還原任何版本
- 擺脫 1+1+1+1+1=1，三個臭皮匠勝過一個諸葛亮
- 大家一起改，能清楚知道對方改了什麼,方便協調

為什麼要版本控管？

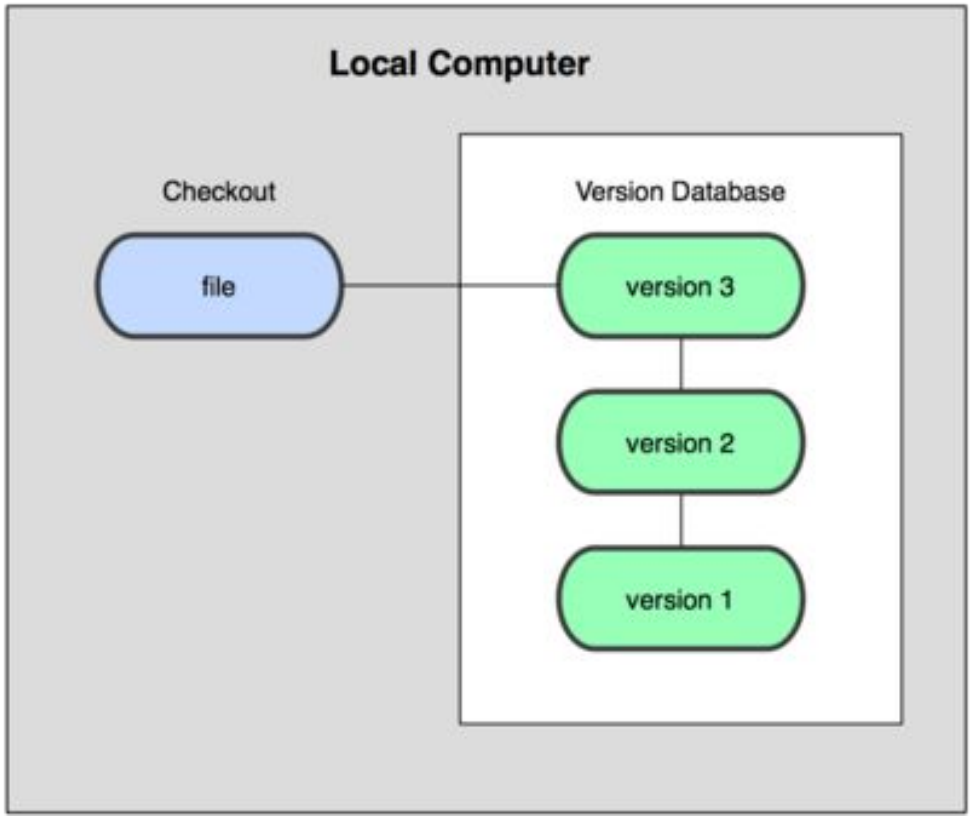
所以

- 誰改! 誰沒改! 沒改的人就是米蟲，一目了然
- 發揮團隊精神，大家都能貢獻
- 設計團隊能隨時掌握專案進度，以及作品的成熟度

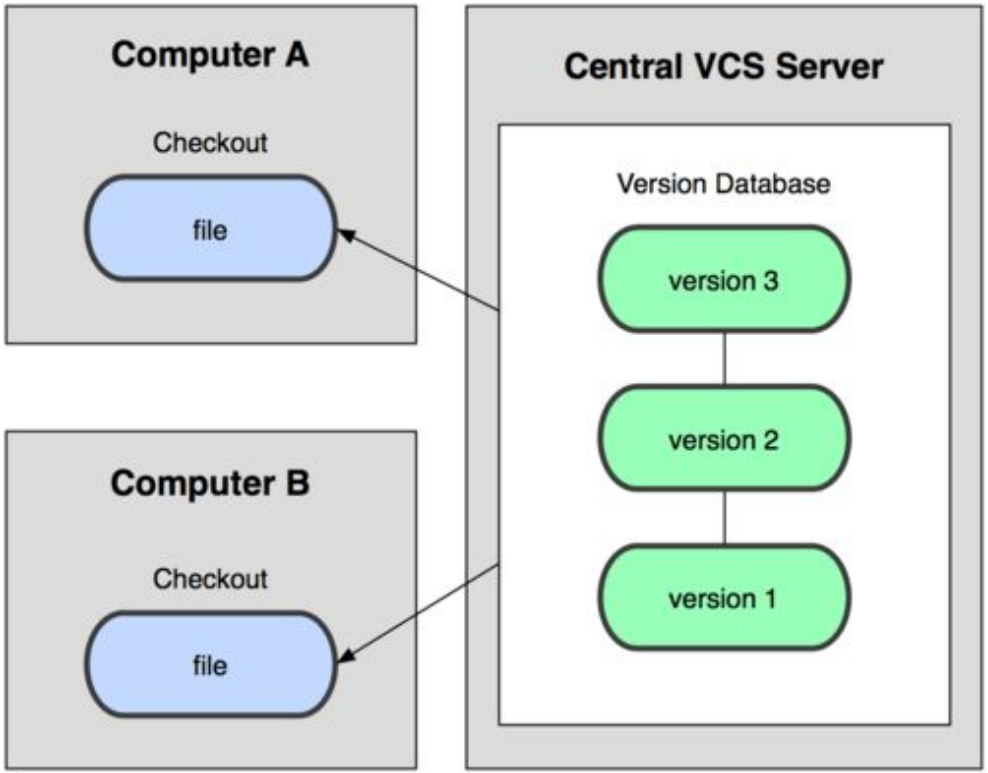
三種版本控管方式

1. Local Version Control Systems (各自為政)
2. Centralized Version Control Systems (所有雞蛋放在同一個菜籃)
3. Distributed Version Control Systems (具有前兩項優點，是目前主流)

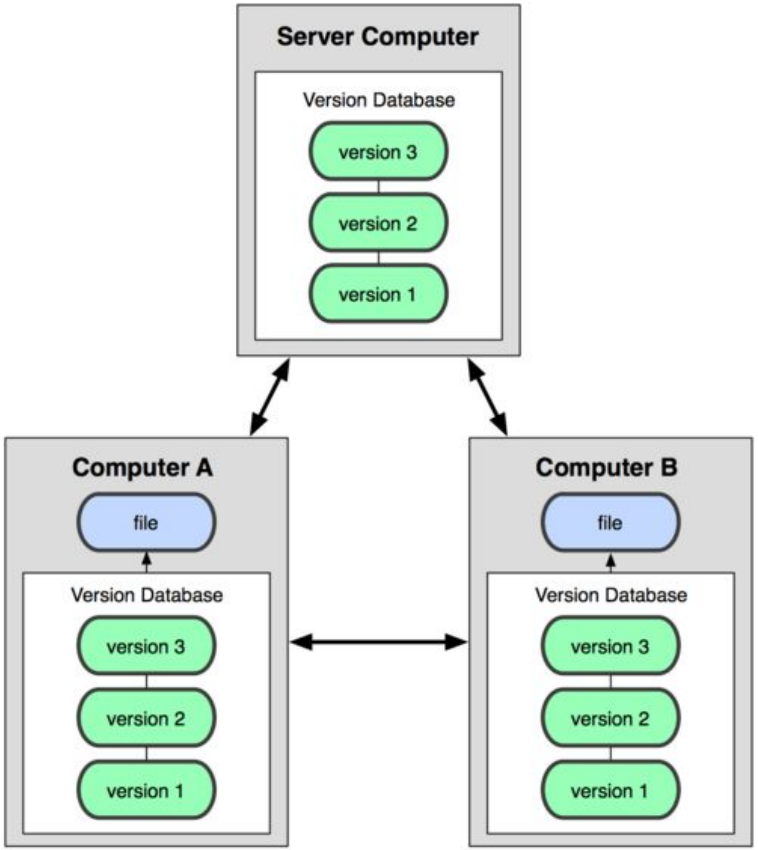
Local Version Control Systems



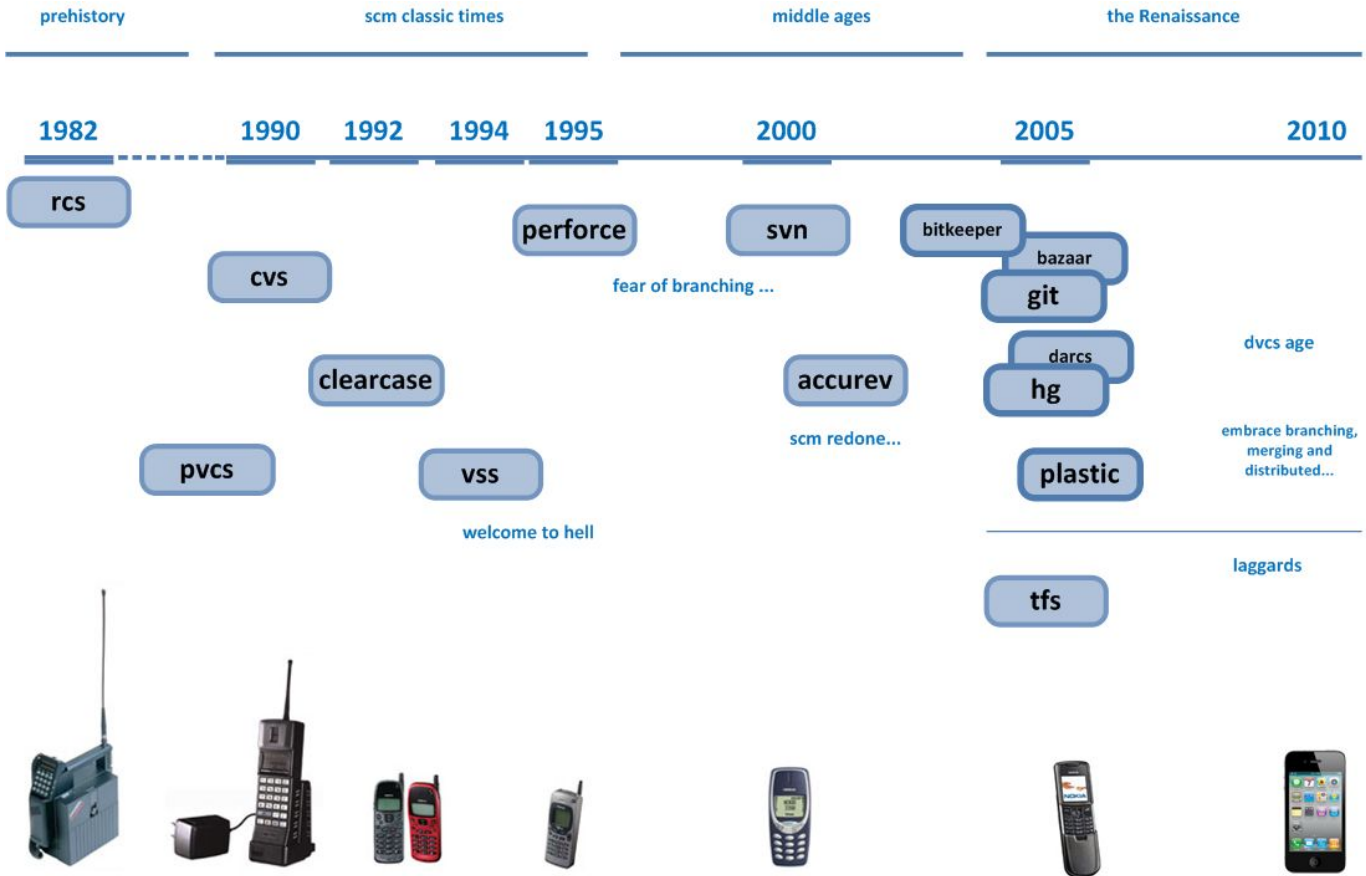
Centralized Version Control Systems 中央集權式



Distributed Version Control Systems 分散式



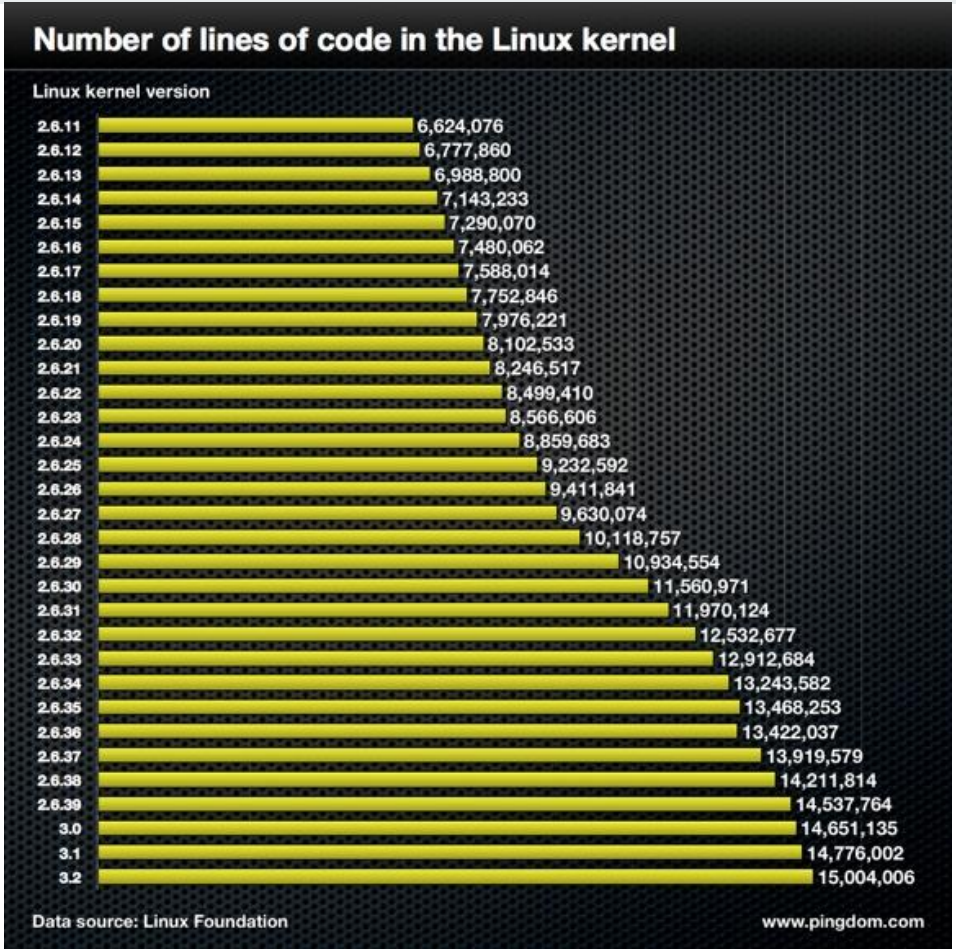
版本控管之前世今生

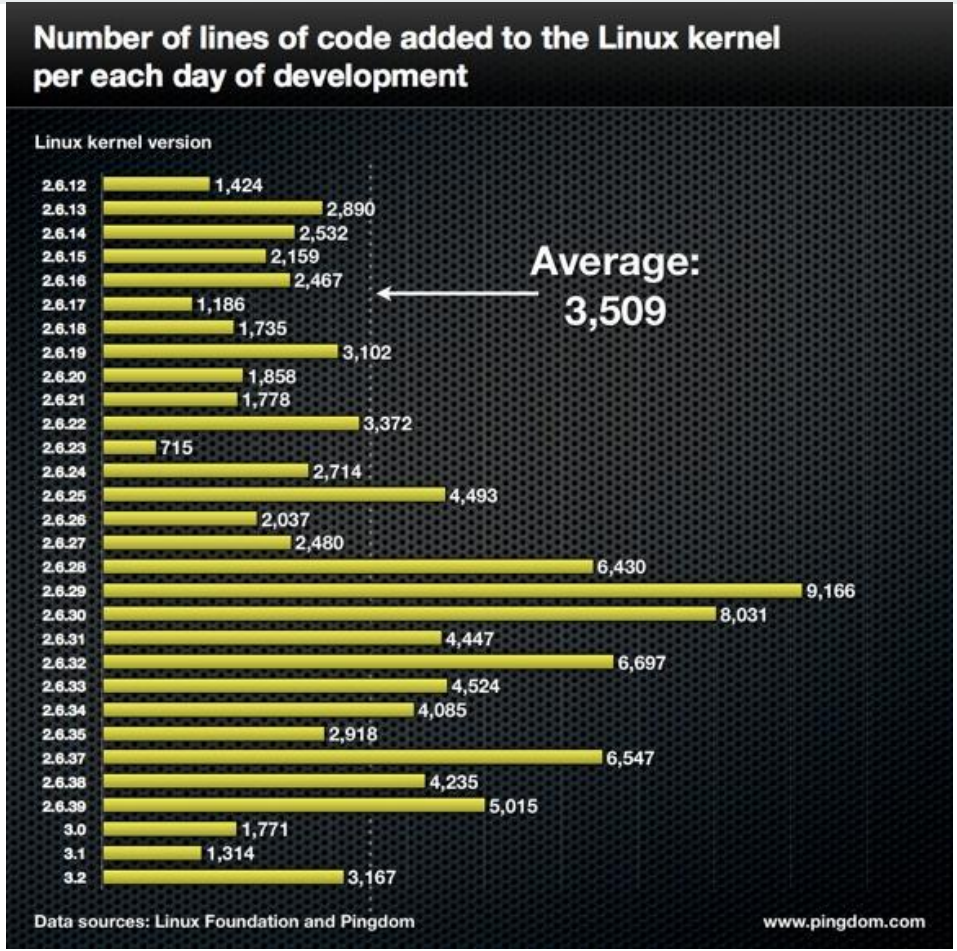

prehistory
scm classic times
middle ages
the Renaissance
1982
1990
1992
1994
1995
2000
2005
2010
rcs
cvs
clearcase
pvcs
vss
welcome to hell
perforce
svn
fear of branching ...
accurev
scm redone...
bitkeeper
bazaar
git
darcs
hg
dvcs age
embrace branching, merging and distributed...
plastic
laggards
tfs

今天的主角 Git

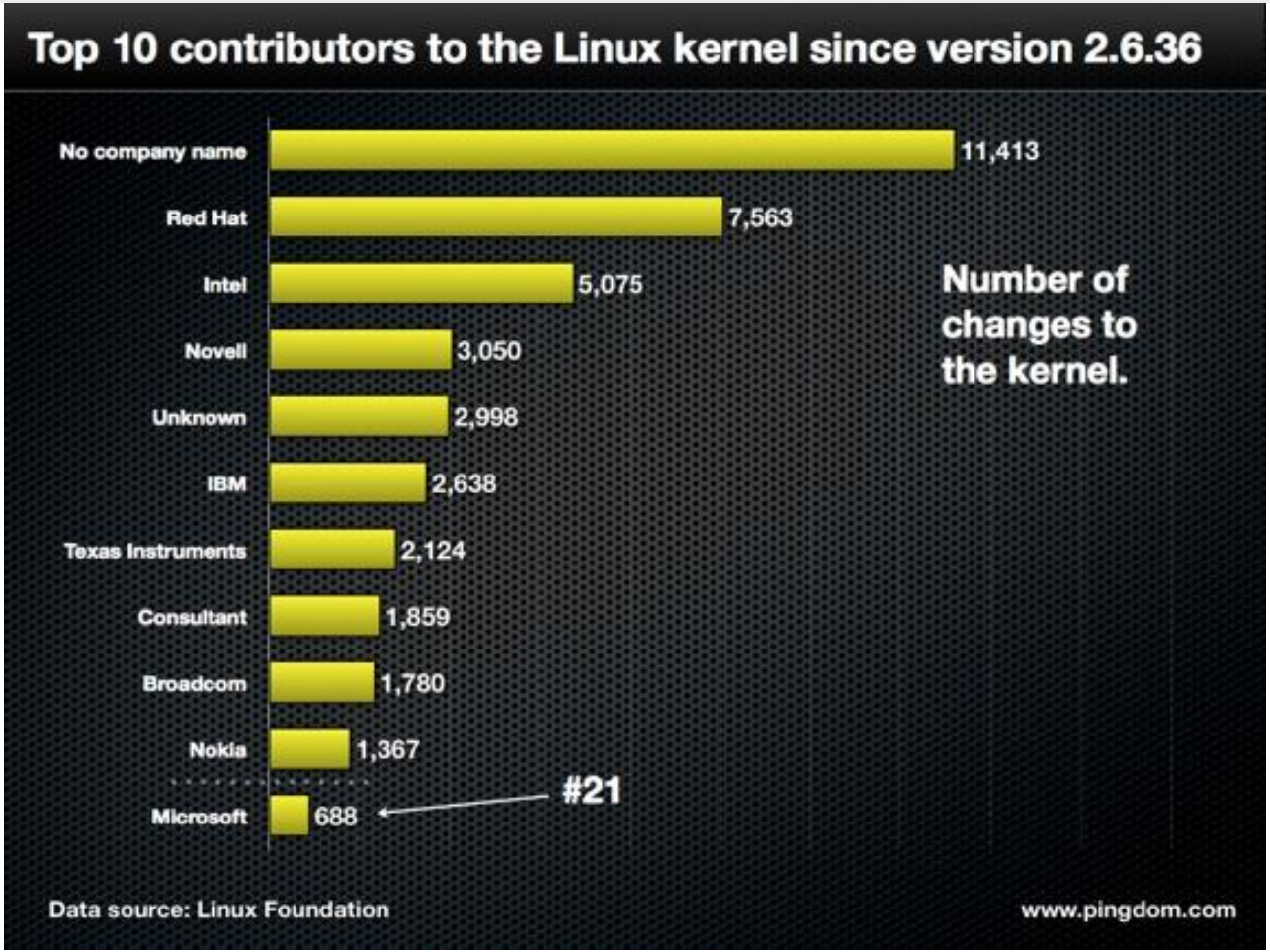
- Git 是一個分散式版本控管系統,原來是 Linux 核心開發者 Linus
- Torvalds 為了更好地管理 Linux 核心開發而創立 1 。
- 從 2005 年 6 月 16 日發表了 Linux 2.6.12 核心之後,以後的 Linux 版本
- 全部採用 Git 進行發佈。
- Youtube
  - Tech Talk: Linus Torvalds on git

成功的案例: The Linux kernel is a big community





成功的案例: The Linux kernel is a big community



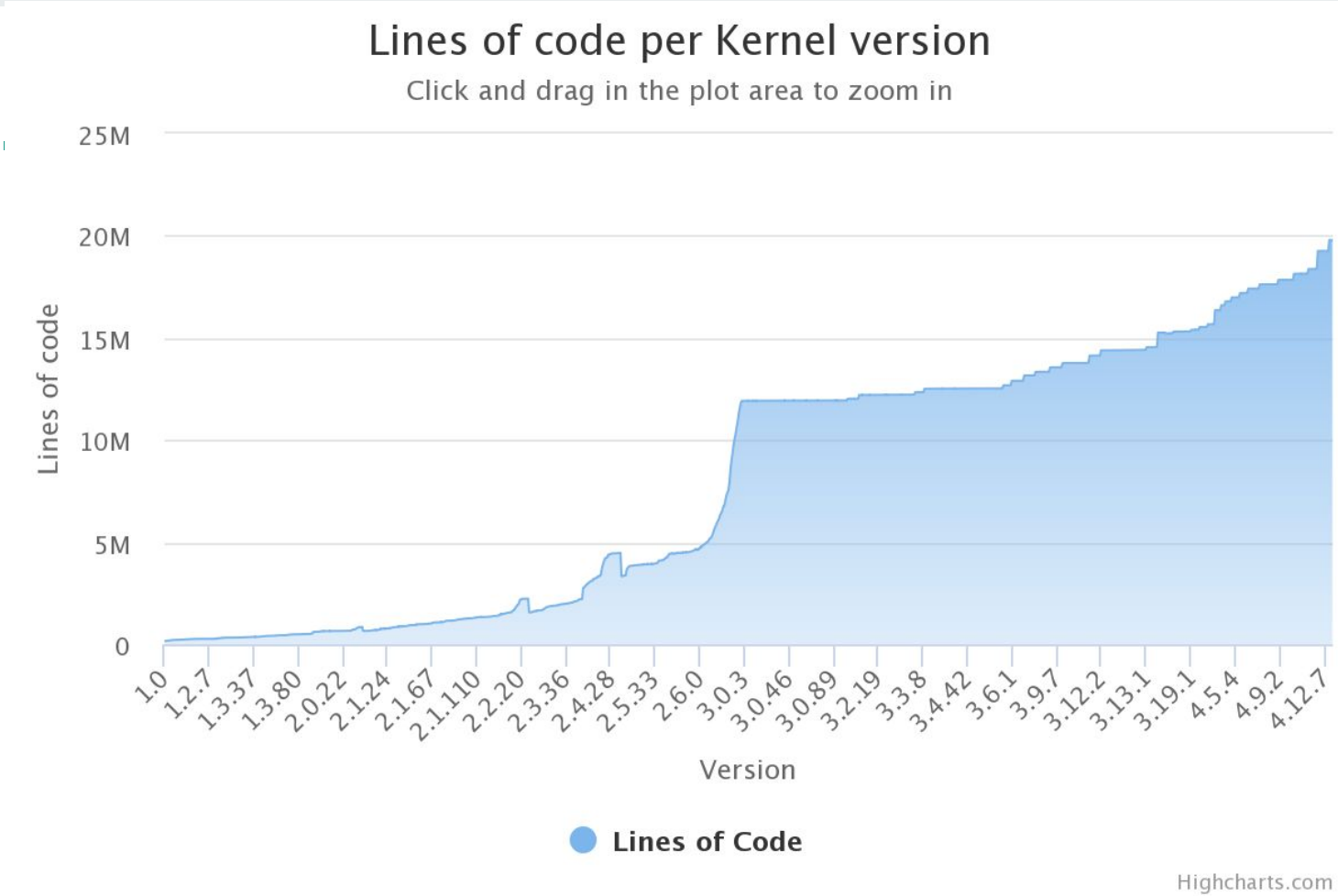
參與 Linux Kernel 開發者的身份:

”No company name” 表示開發者 (developer) 並不是替任何公司或營利單位工作,也沒有收取任何酬勞,完全是「義務志工」。

標示為”Unknow” 表示無法區別開發者 (developer) 的職業
(正職工作)

微軟公司也有上榜,排名為第 21 名。

成功的案例: The Linux kernel is a big community



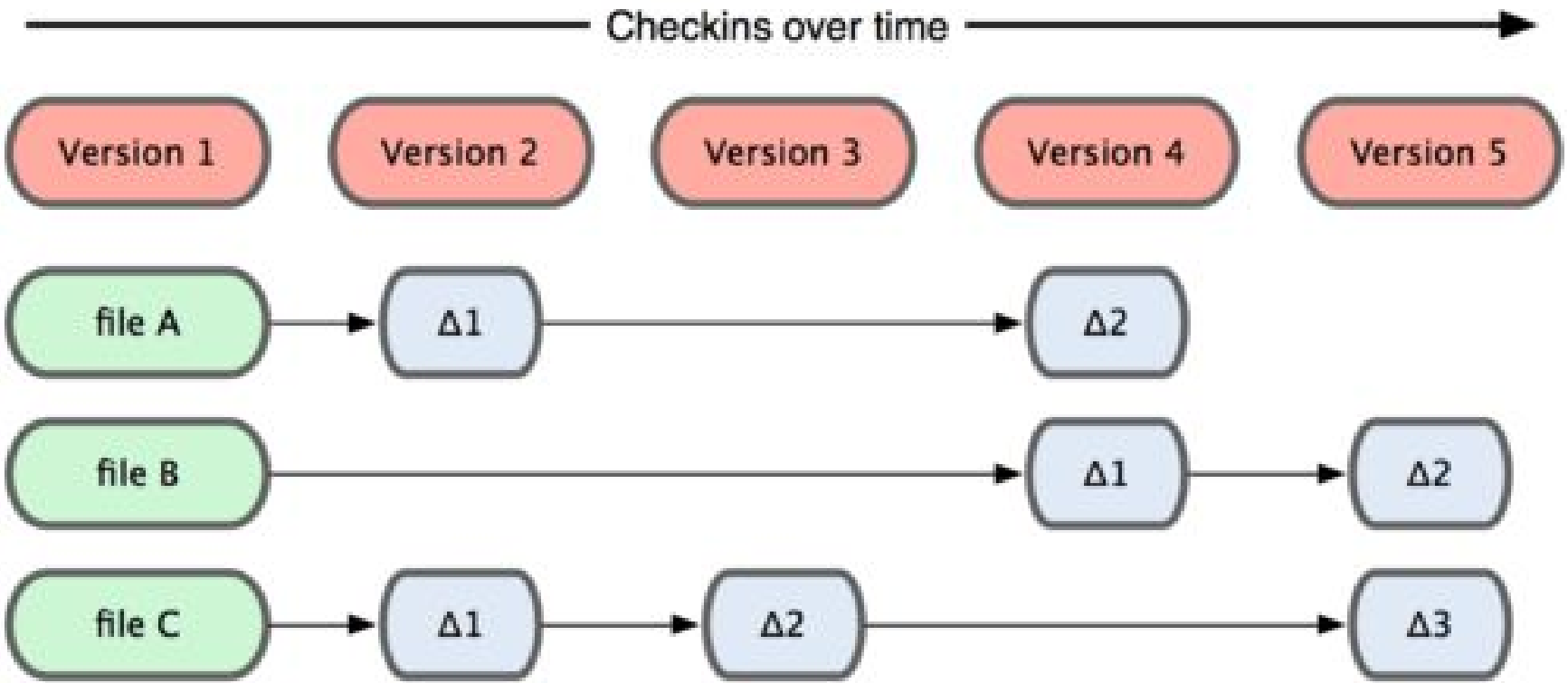
Git 的設計目標

- Speed (快速)、Simple design (簡單)
- Strong support for non-linear development (thousands of parallel branches) (支援非線性的開發)
- Fully distributed (在本機進行不需要網路連線也能單獨工作)
- Able to handle large projects like the Linux kernel efficiently (speed and data size) (能應付大型專案開發)
- Git是分散式版本控制，但每個人都有一份完整的本機儲存庫

Git 相關專業名詞

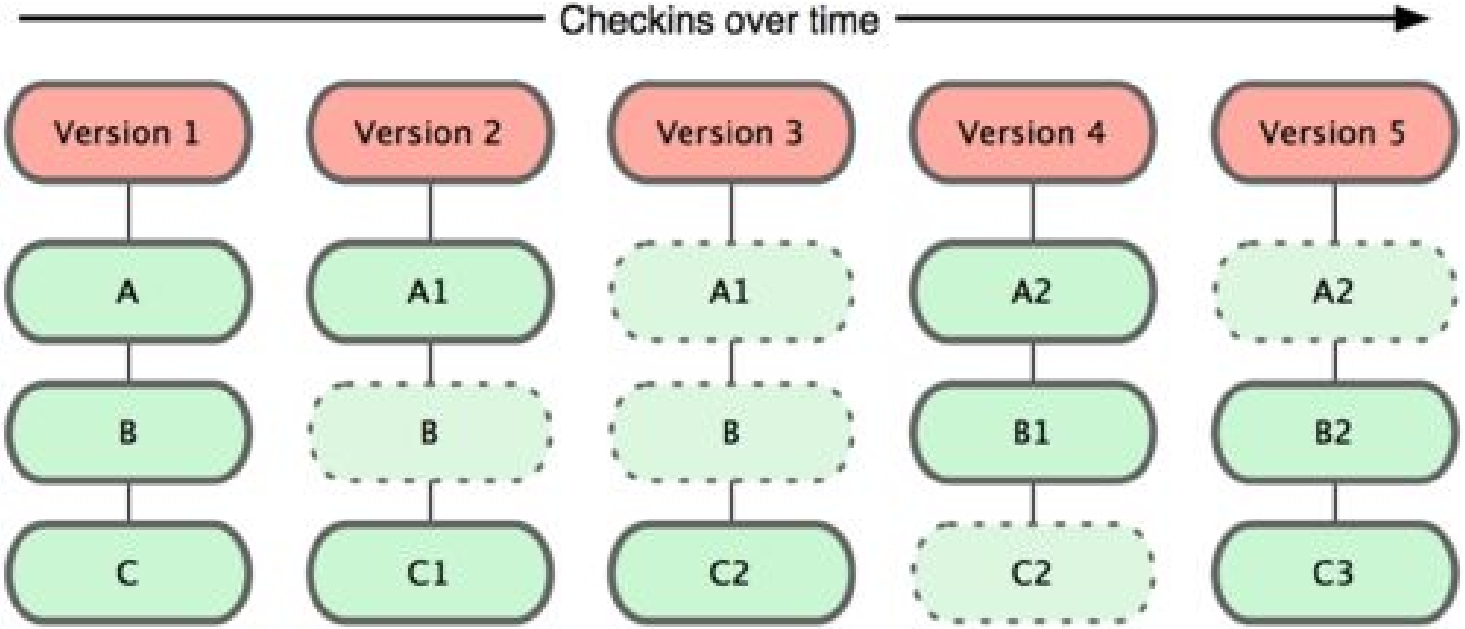
- 儲存庫 (repository)
- 提交 (commit)
- 工作目錄 (working directory)
- 暫存 (stage)
- 一個 Git 目錄裡，可以分成三種區域：
  - 目前工作目錄 (Working Directory)
  - 暫存準備遞交區 (Staging Area)
  - 儲存庫 (Repository)

傳統的版本控管作法: 差異式比對儲存

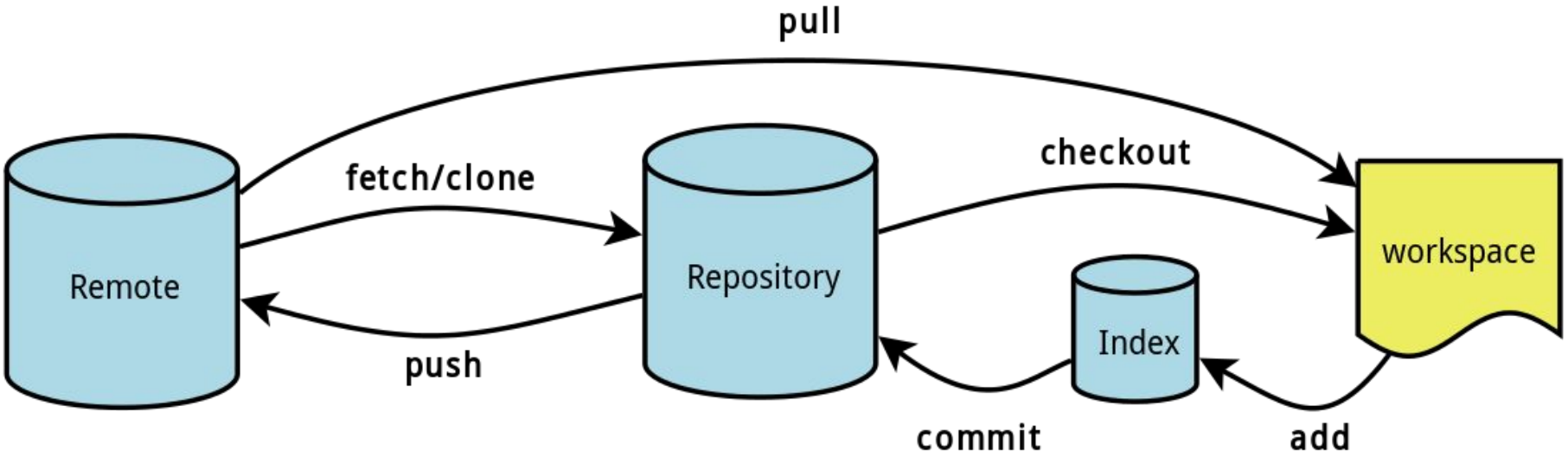


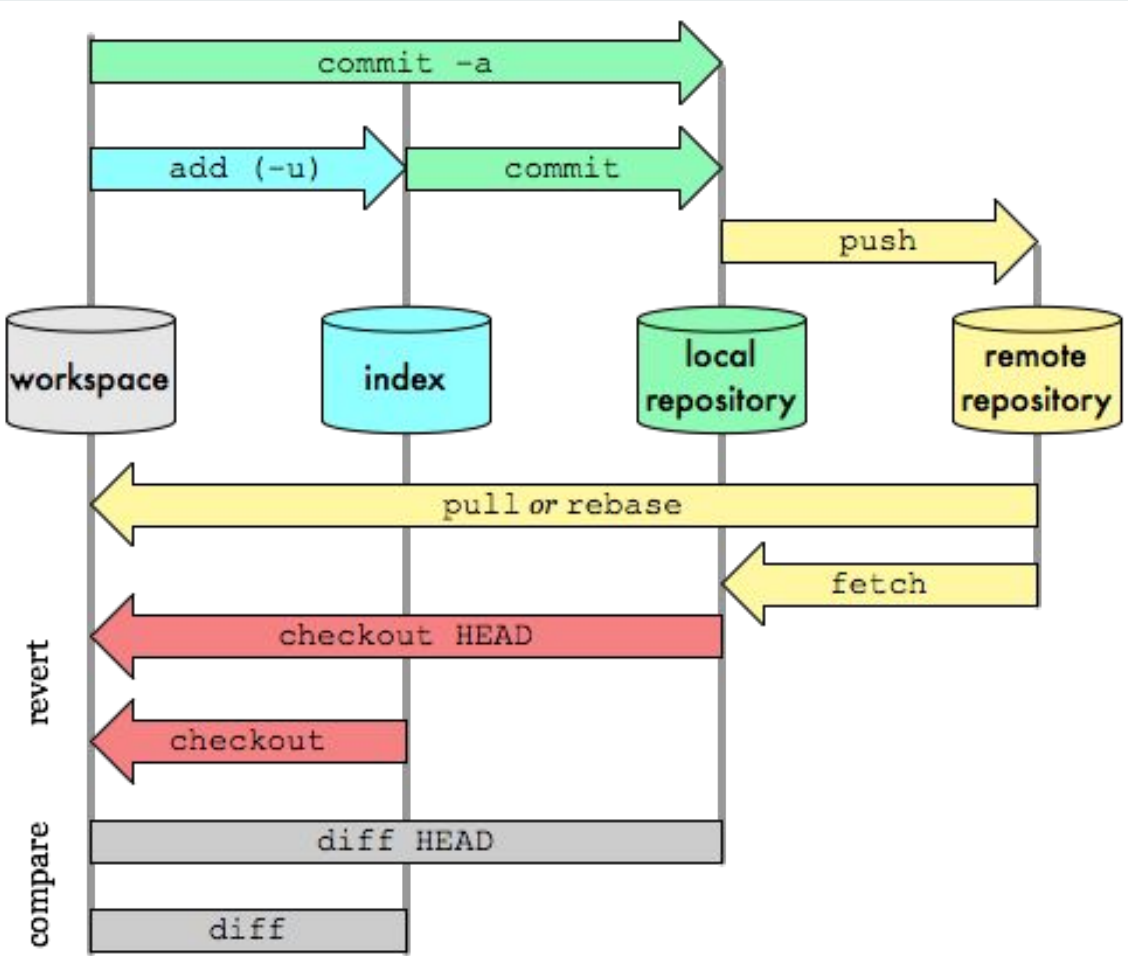
Git 的作法

- Snapshot 取代「差異式比對儲存」,稱為 Mini Filesystem
- Nearly Every Operation Is Local



Working with remote repositories





- git init
- git add .
- git commit -am "hi"
- git push
- git pull
- git fetch
- git checkout HEAD
- git checkout
- git diff HEAD
- git diff

https://git-scm.com

Git Basic

git --distributed-even-if-your-workflow-isnt

Search entire site...

Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Git is easy to learn and has a tiny footprint with lightning fast performance. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like cheap local branching, convenient staging areas, and multiple workflows.

Learn Git in your browser for free with Try Git.

About
The advantages of Git compared to other source control systems.

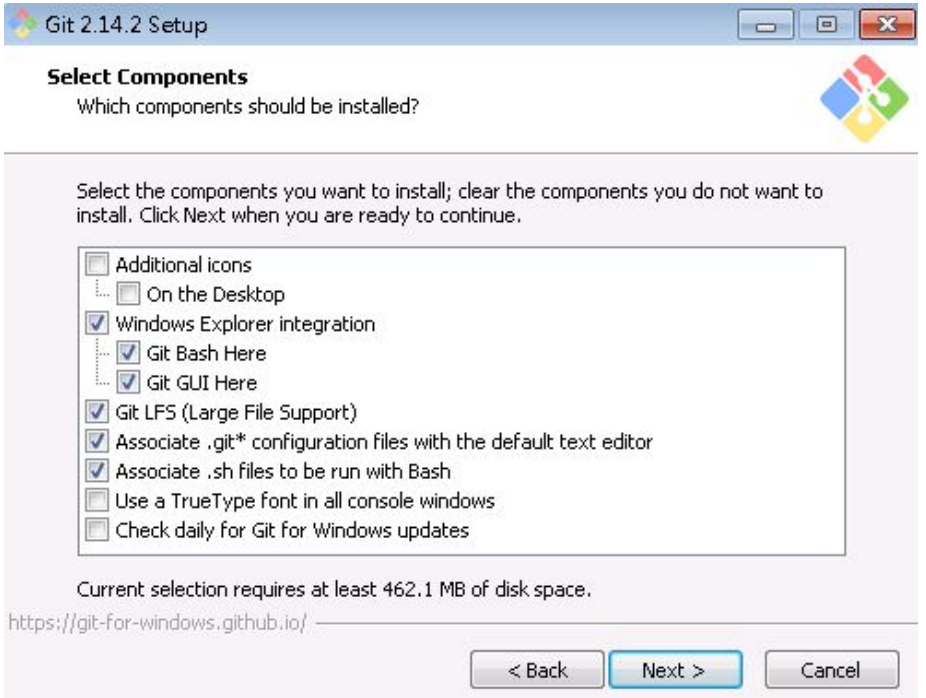
Documentation
Command reference pages, Pro Git book content, videos and other material.

Downloads
GUI clients and binary releases for all major platforms.

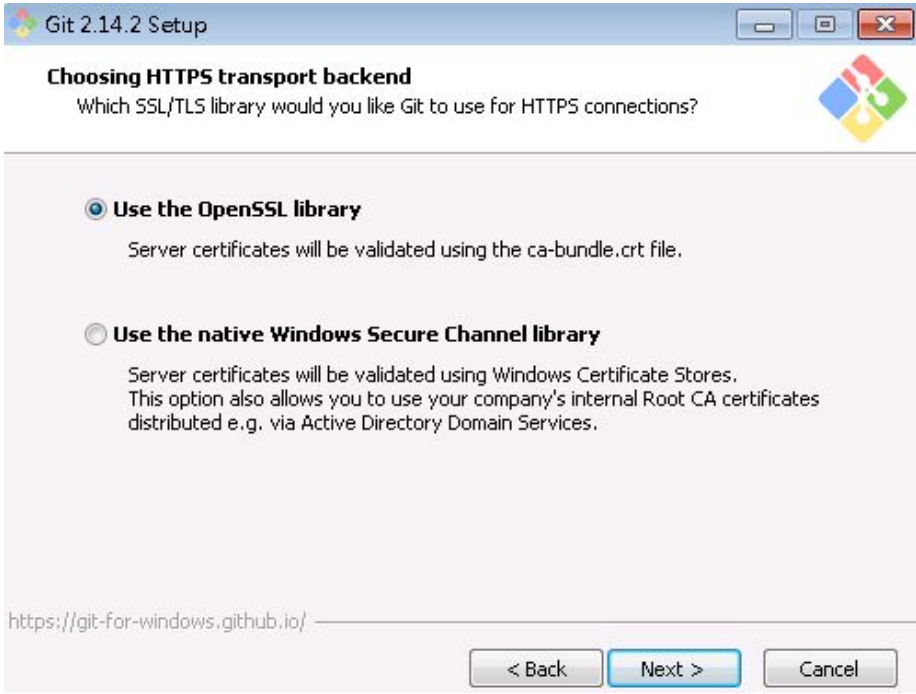
Community
Get involved! Bug reporting, mailing list, chat, development and more.

https://git-scm.com

Git Basic




Git 2.14.2 Setup
Adjusting your PATH environment
How would you like to use Git from the command line?
Use Git from Git Bash only
This is the safest choice as your PATH will not be modified at all. You will only be able to use the Git command line tools from Git Bash.
Use Git from the Windows Command Prompt
This option is considered safe as it only adds some minimal Git wrappers to your PATH to avoid cluttering your environment with optional Unix tools. You will be able to use Git from both Git Bash and the Windows Command Prompt.
Use Git and optional Unix tools from the Windows Command Prompt
Both Git and the optional Unix tools will be added to your PATH.
Warning: This will override Windows tools like "find" and "sort". Only use this option if you understand the implications.
https://git-for-windows.github.io/
< Back
Next >
Cancel


Git 2.14.2 Setup
Choosing HTTPS transport backend
Which SSL/TLS library would you like Git to use for HTTPS connections?
Use the OpenSSL library
Server certificates will be validated using the ca-bundle.crt file.
Use the native Windows Secure Channel library
Server certificates will be validated using Windows Certificate Stores.
This option also allows you to use your company's internal Root CA certificates distributed e.g. via Active Directory Domain Services.
https://git-for-windows.github.io/
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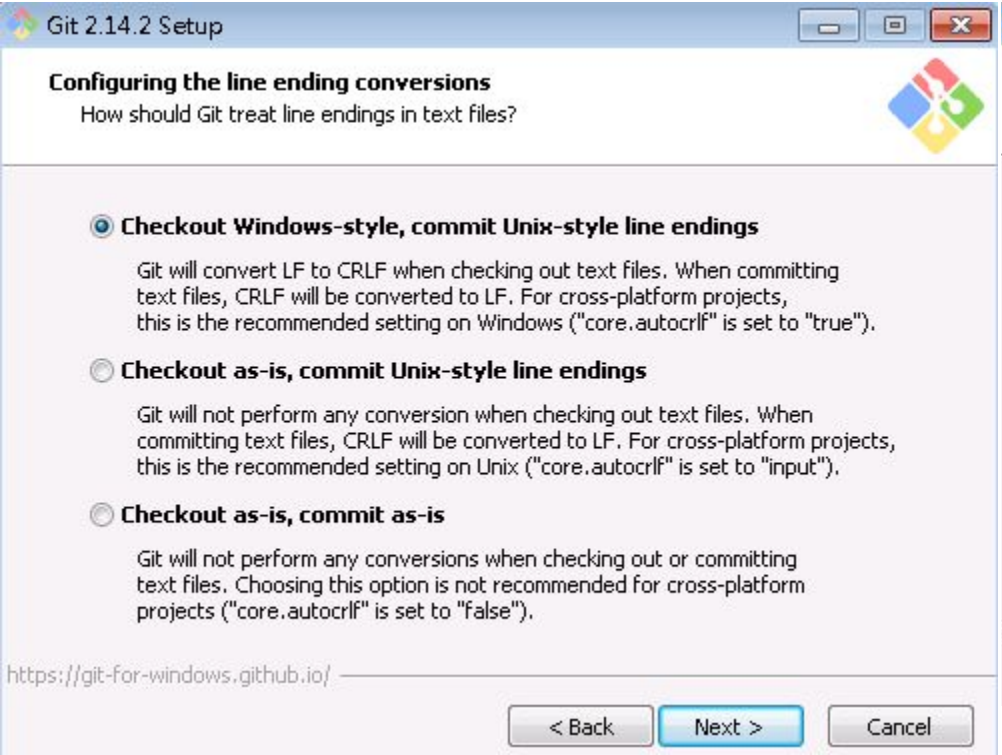
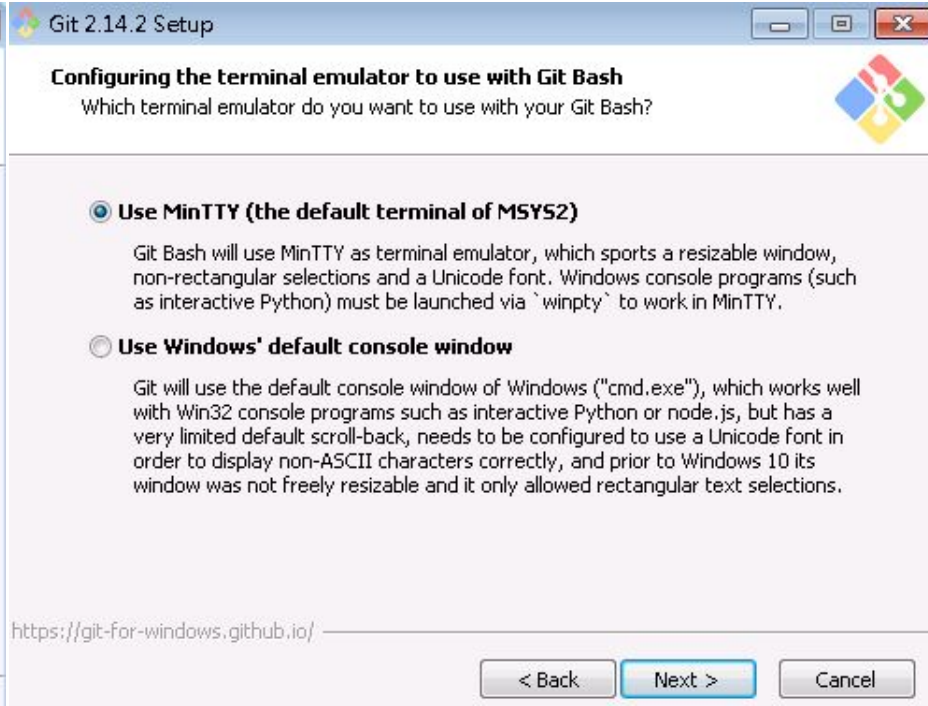
Cancel


Git 2.14.2 Setup
Configuring the line ending conversions
How should Git treat line endings in text files?
Checkout Windows-style, commit Unix-style line endings
Git will convert LF to CRLF when checking out text files. When committing text files, CRLF will be converted to LF. For cross-platform projects, this is the recommended setting on Windows ("core.autocrlf" is set to "true").
Checkout as-is, commit Unix-style line endings
Git will not perform any conversion when checking out text files. When committing text files, CRLF will be converted to LF. For cross-platform projects, this is the recommended setting on Unix ("core.autocrlf" is set to "input").
Checkout as-is, commit as-is
Git will not perform any conversions when checking out or committing text files. Choosing this option is not recommended for cross-platform projects ("core.autocrlf" is set to "false").
https://git-for-windows.github.io/
< Back
Next >
Cancel


Git 2.14.2 Setup
Configuring the terminal emulator to use with Git Bash
Which terminal emulator do you want to use with your Git Bash?
Use MinTTY (the default terminal of MSYS2)
Git Bash will use MinTTY as terminal emulator, which sports a resizable window, non-rectangular selections and a Unicode font. Windows console programs (such as interactive Python) must be launched via `winpty` to work in MinTTY.
Use Windows' default console window
Git will use the default console window of Windows ("cmd.exe"), which works well with Win32 console programs such as interactive Python or node.js, but has a very limited default scroll-back, needs to be configured to use a Unicode font in order to display non-ASCII characters correctly, and prior to Windows 10 its window was not freely resizable and it only allowed rectangular text selections.
https://git-for-windows.github.io/
< Back
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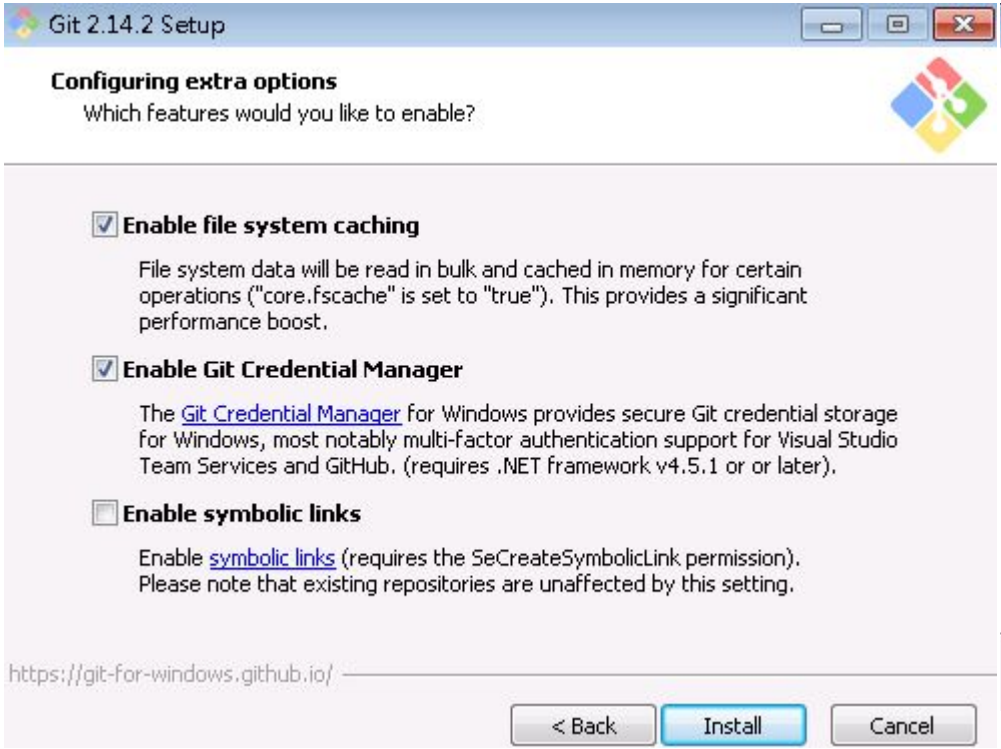
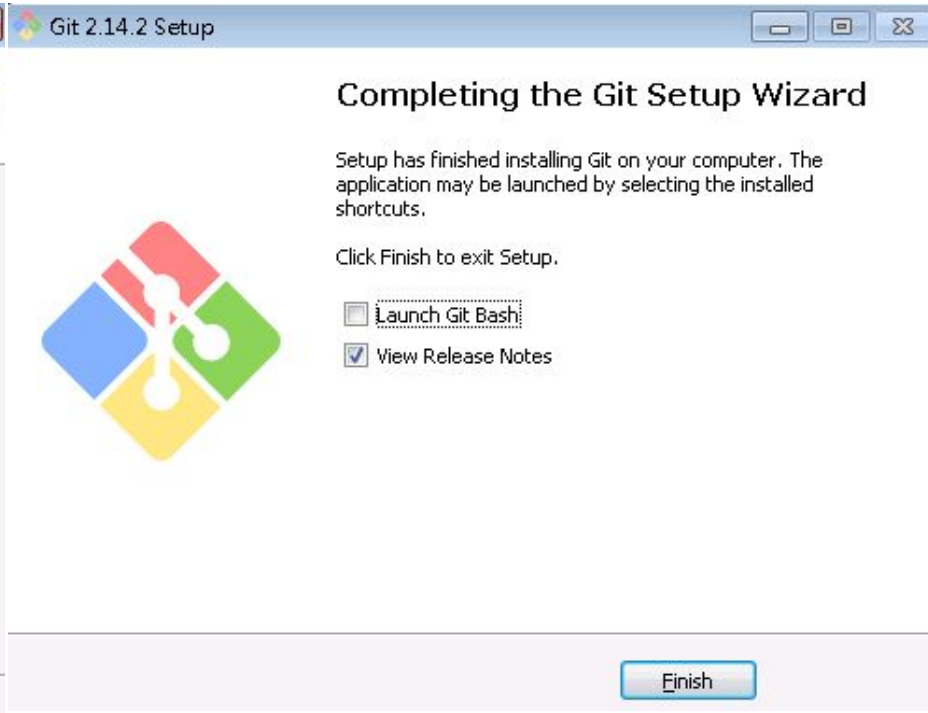
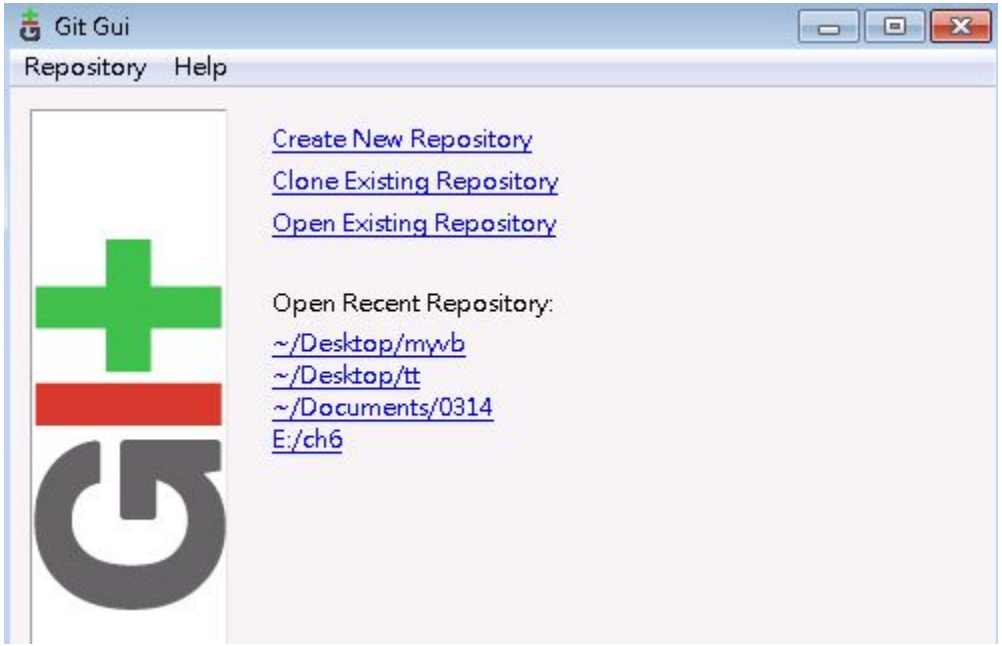
Cancel

https://git-scm.com

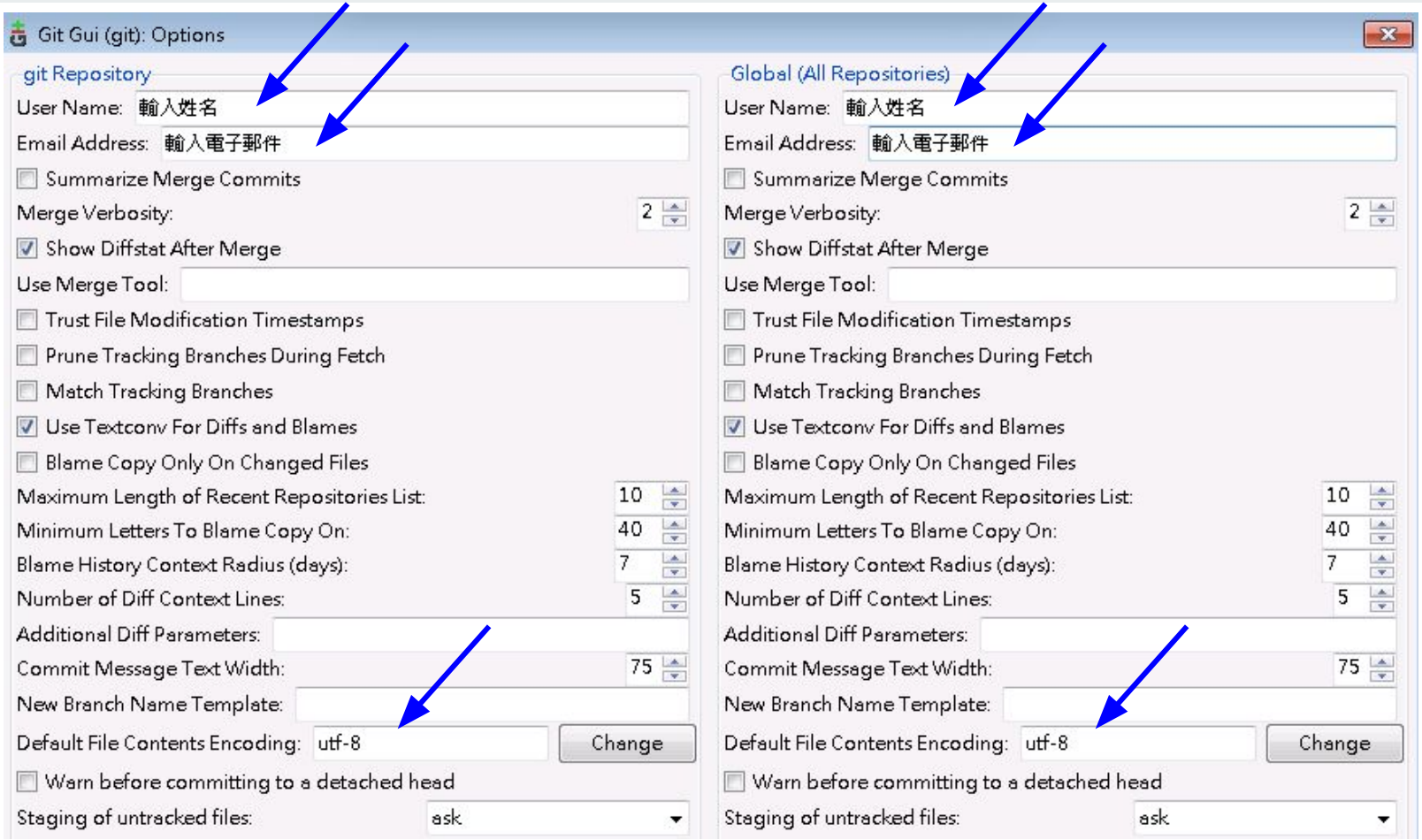
Git Basic





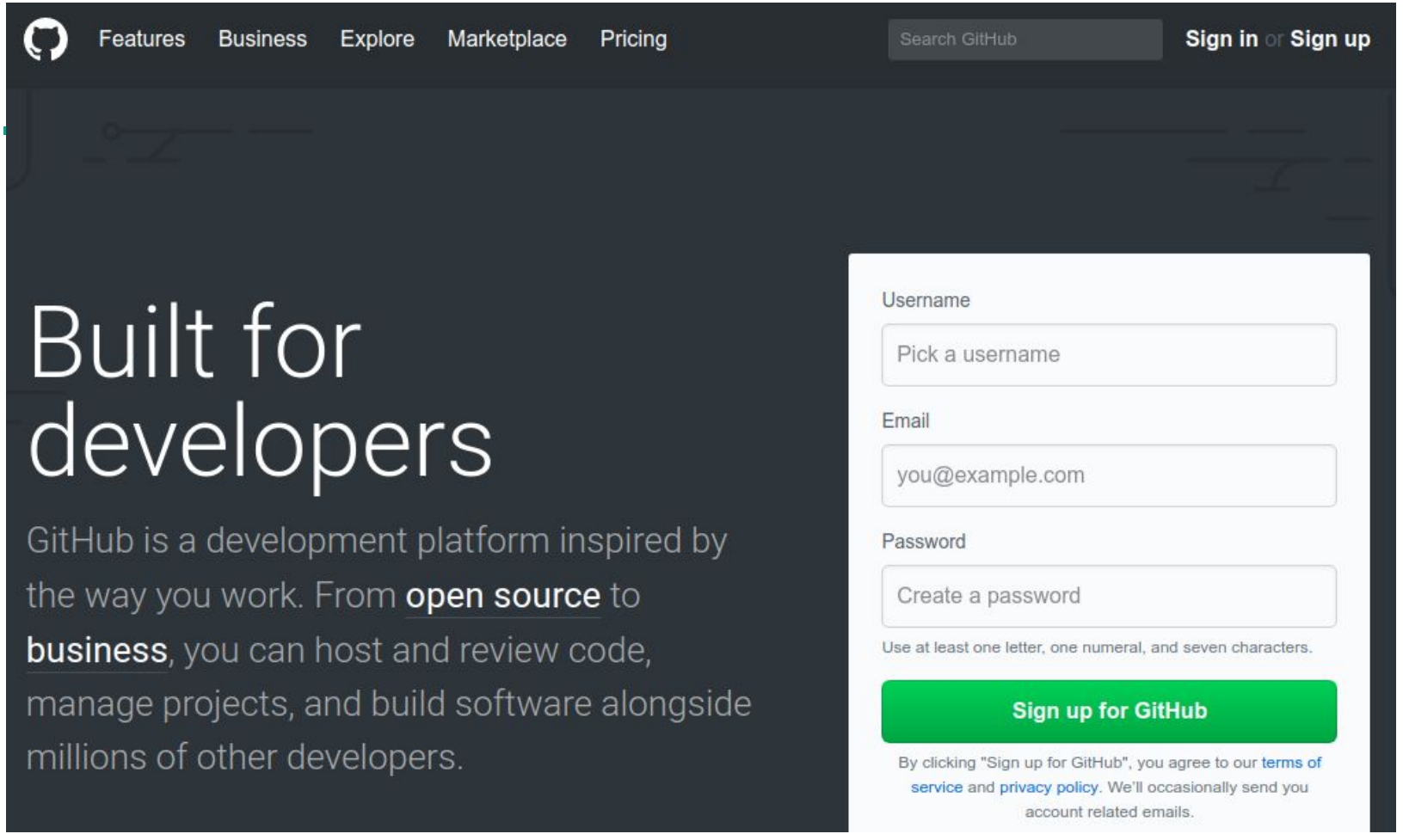

Git Gui
Repository Help
Create New Repository
Clone Existing Repository
Open Existing Repository
Open Recent Repository:
~/Desktop/myvb
~/Desktop/tt
~/Documents/0314
E:/ch6

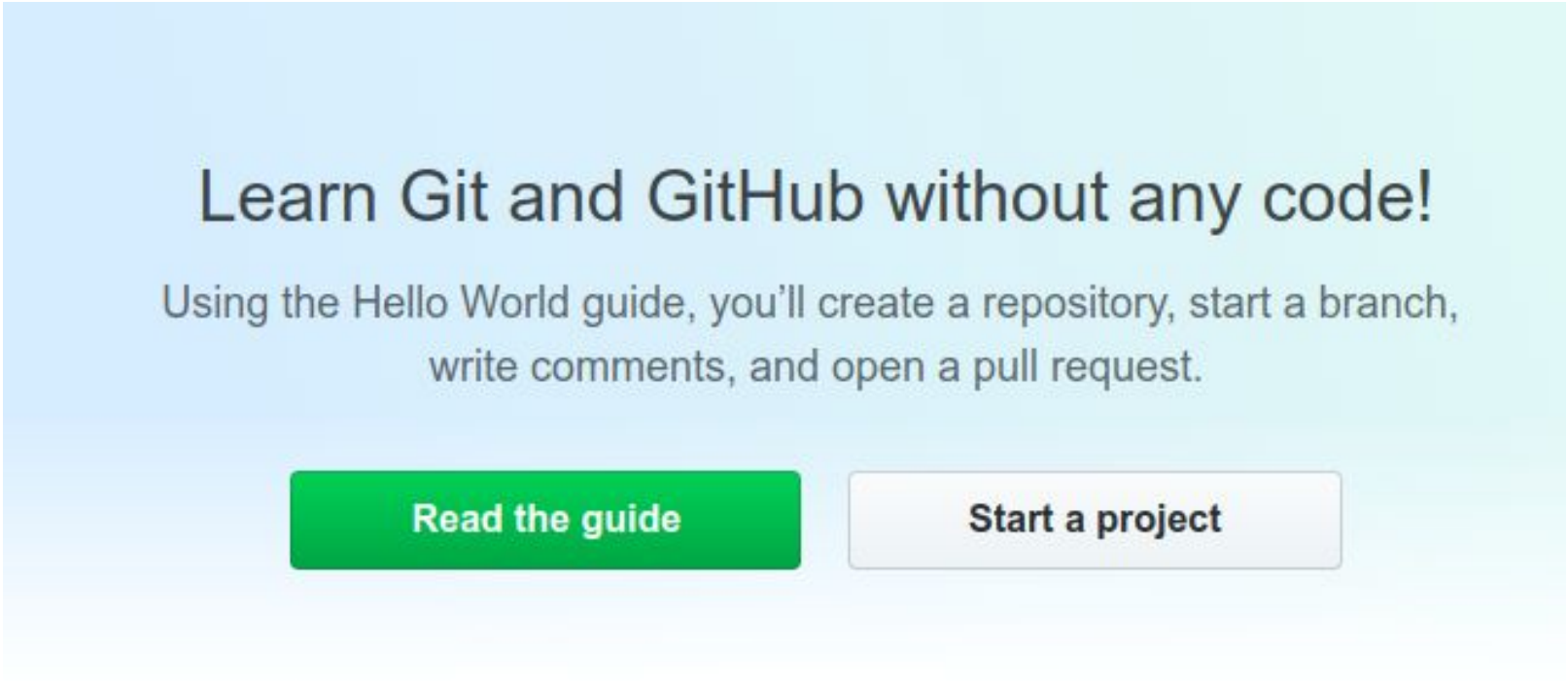
基本設定 Edit -> Options



https://github.com/

Github Basic




Learn Git and GitHub without any code!
Using the Hello World guide, you'll create a repository, start a branch, write comments, and open a pull request.
Read the guide
Start a project

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner **Repository name**

tpcucclin /

Great repository names are short and memorable. Need inspiration? How about **symmetrical-octo-chainsaw**.

Description (optional)

Public
Anyone can see this repository. You choose who can commit.

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

Initialize this repository with a README
This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: **None** | Add a license: **None**

https://github.com/ Github Basic

Quick setup — if you've done this kind of thing before

or HTTPS SSH https://github.com/tpcucclin/myphp.git

We recommend every repository include a README, LICENSE, and .gitignore.

...or create a new repository on the command line

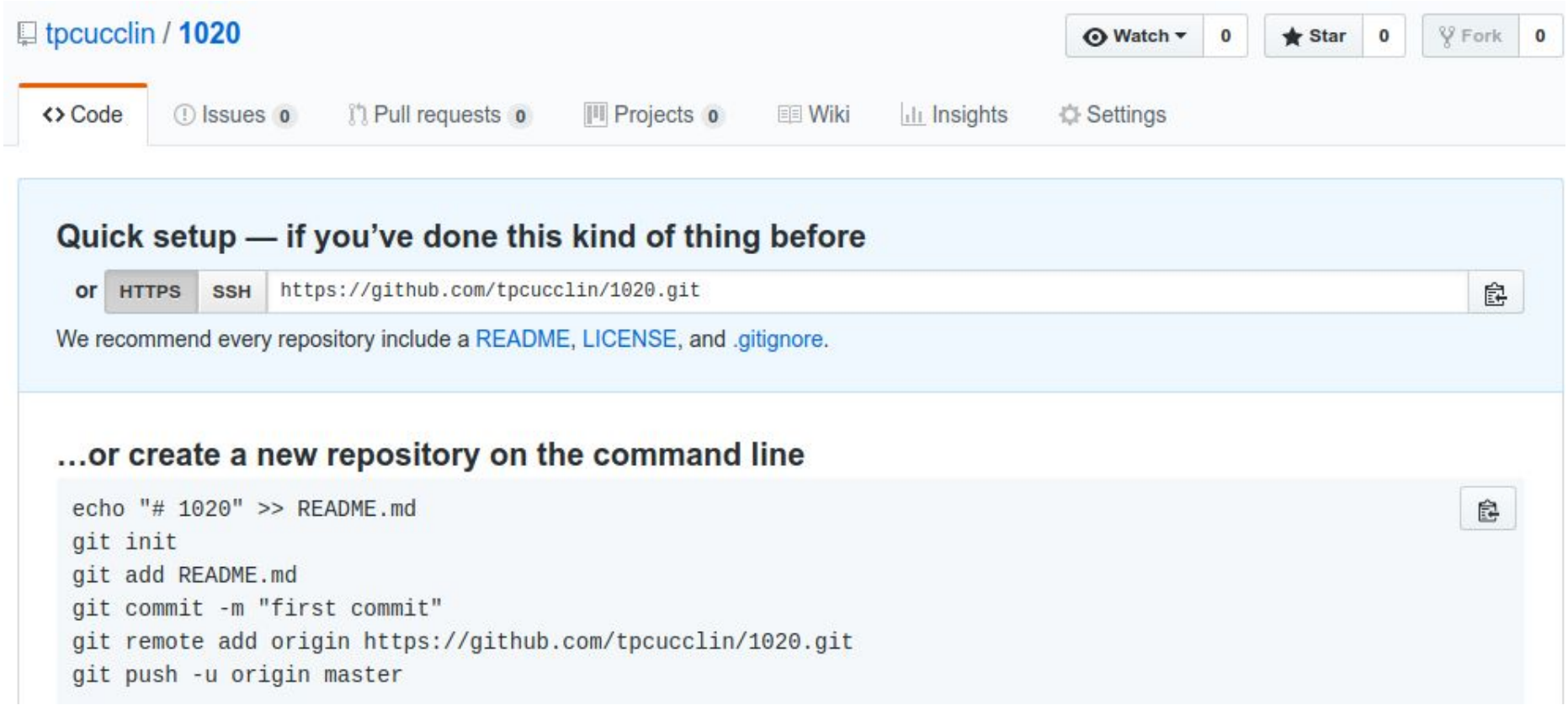
```
echo "# myphp" >> README.md
git init
git add README.md
git commit -m "first commit"
git remote add origin https://github.com/tpcucclin/myphp.git
git push -u origin master
```

...or push an existing repository from the command line

```
git remote add origin https://github.com/tpcucclin/myphp.git
git push -u origin master
```

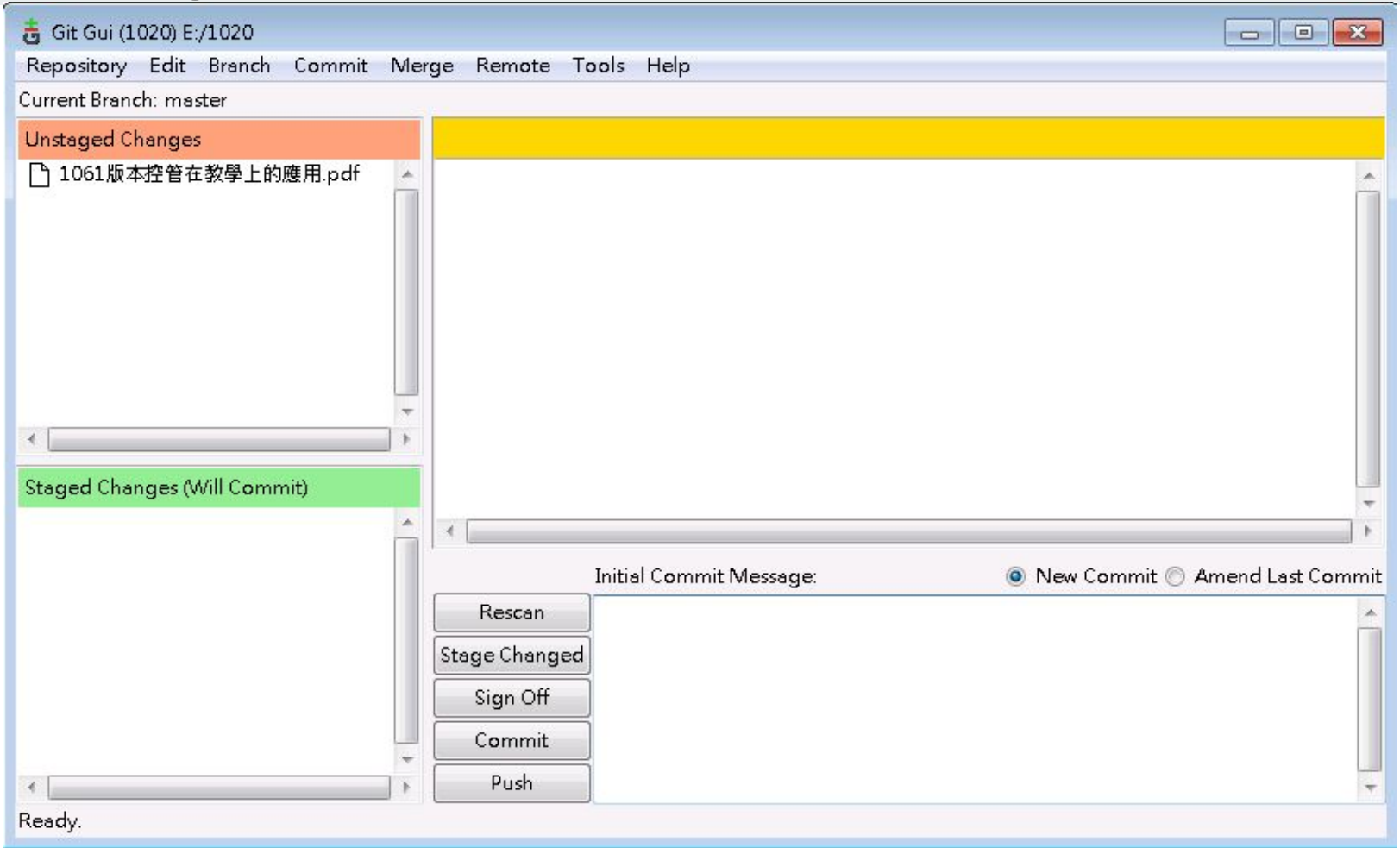
https://github.com/

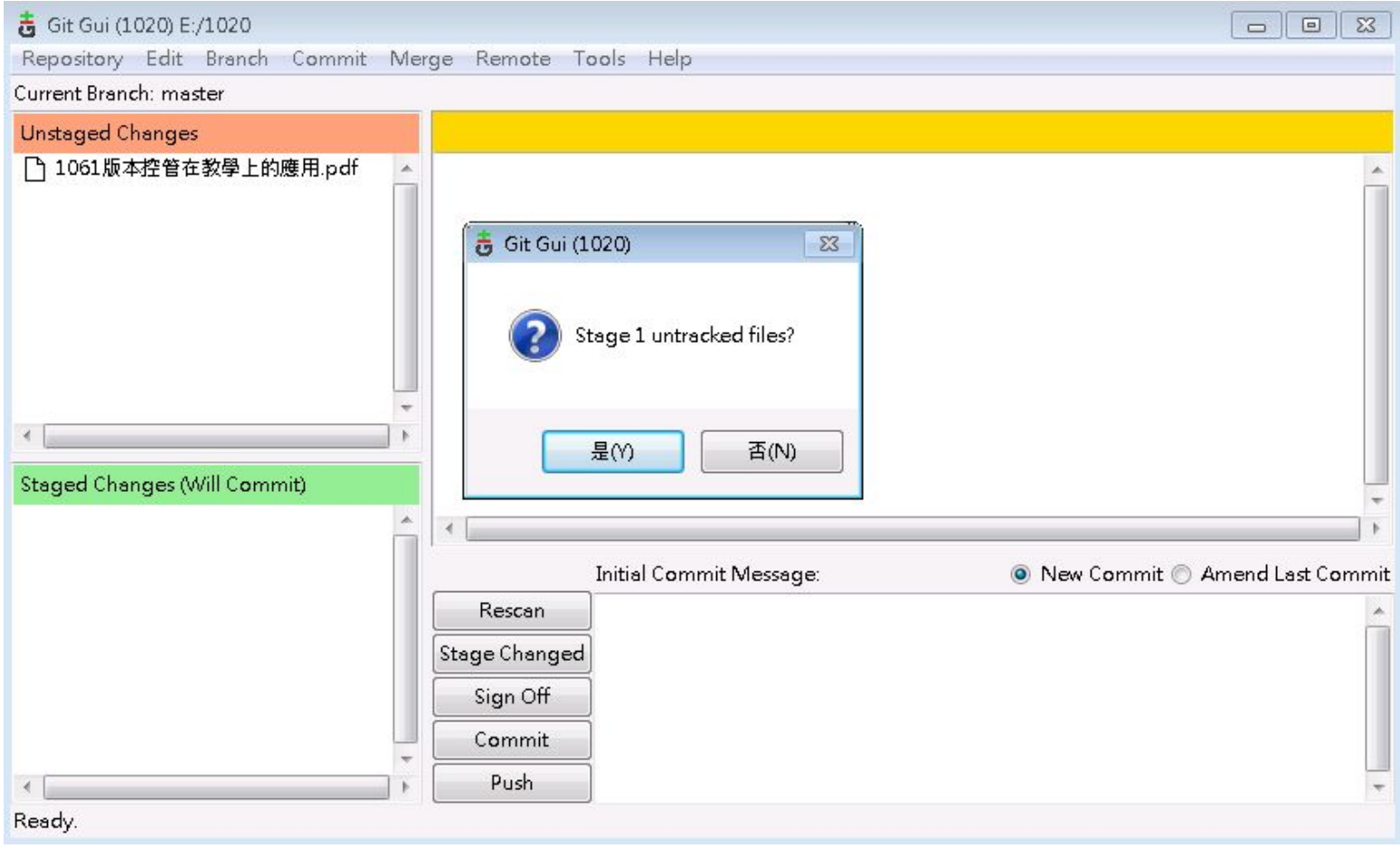
Github Basic



https://git-scm.com

Git Basic


Git Gui (1020) E:/1020
Repository Edit Branch Commit Merge Remote Tools Help
Current Branch: master
Unstaged Changes
1061版本控管在教學上的應用.pdf
Staged Changes (Will Commit)
Initial Commit Message:
New Commit
Amend Last Commit
Rescan
Stage Changed
Sign Off
Commit
Push
Ready.


Git Gui (1020) E:/1020
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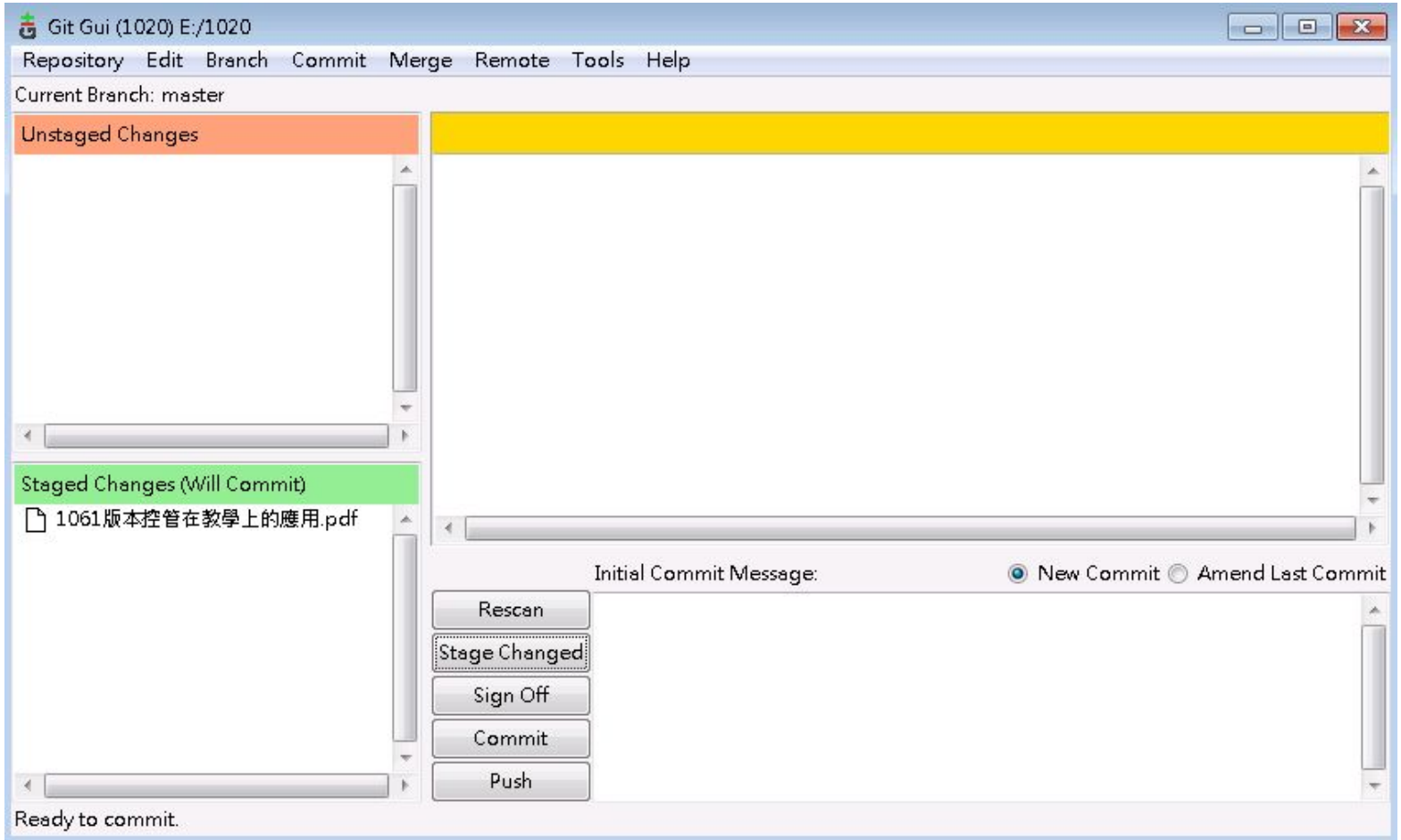
Current Branch: master
Unstaged Changes
1061版本控管在教學上的應用.pdf
Staged Changes (Will Commit)
Git Gui (1020)
Stage 1 untracked files?
是(Y)
否(N)
Initial Commit Message:
New Commit
Amend Last Commit
Rescan
Stage Changed
Sign Off
Commit
Push
Ready.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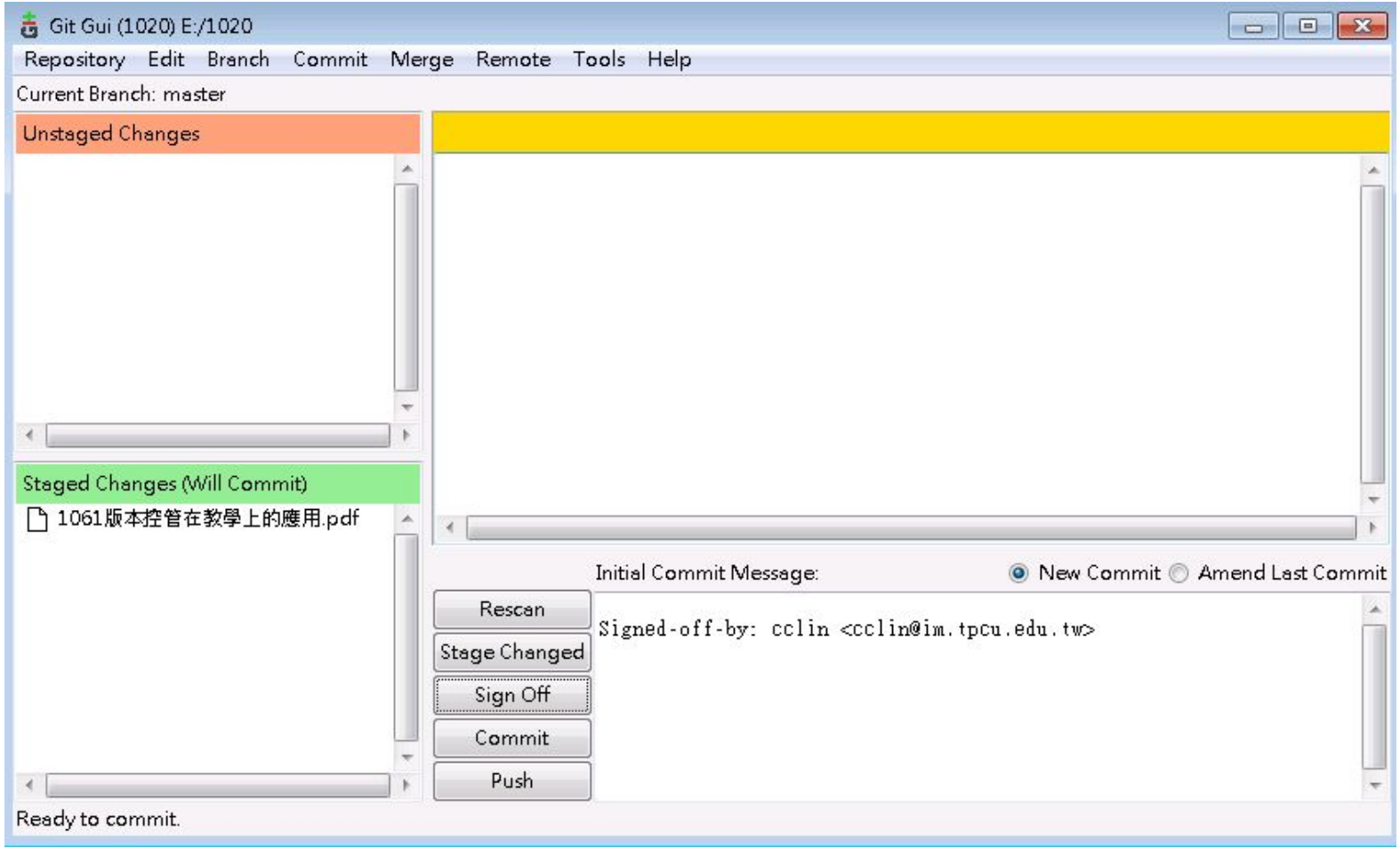
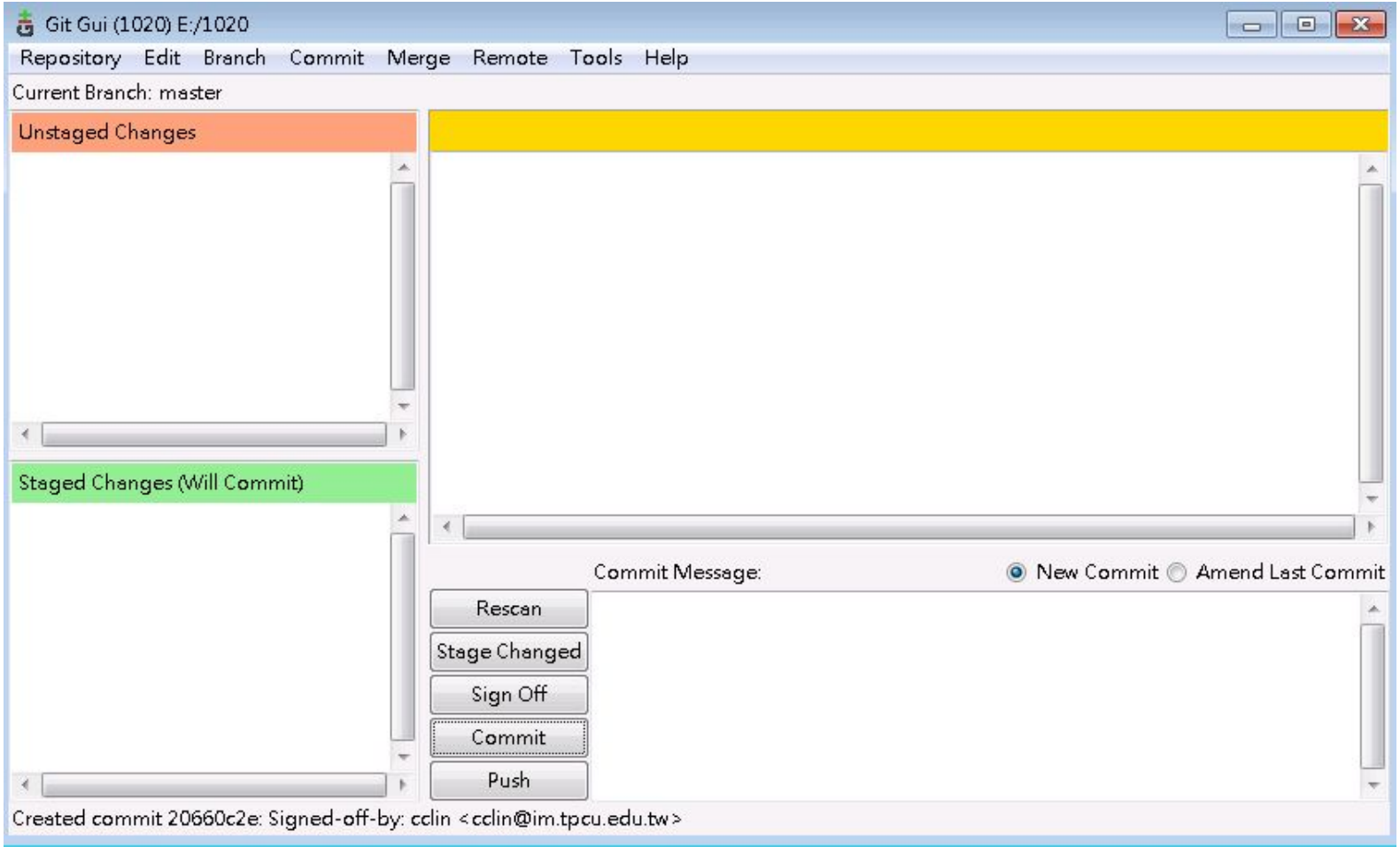
Push
Ready to commit.


Git Gui (1020) E:/1020
Repository Edit Branch Commit Merge Remote Tools Help
Current Branch: master
Unstaged Changes
Staged Changes (Will Commit)
1061版本控管在教學上的應用.pdf
Initial Commit Message:
New Commit
Amend Last Commit
Rescan
Stage Changed
Sign Off
Commit
Push
Signed-off-by: cclin <cclin@im.tpcu.edu.tw>
Ready to commit.

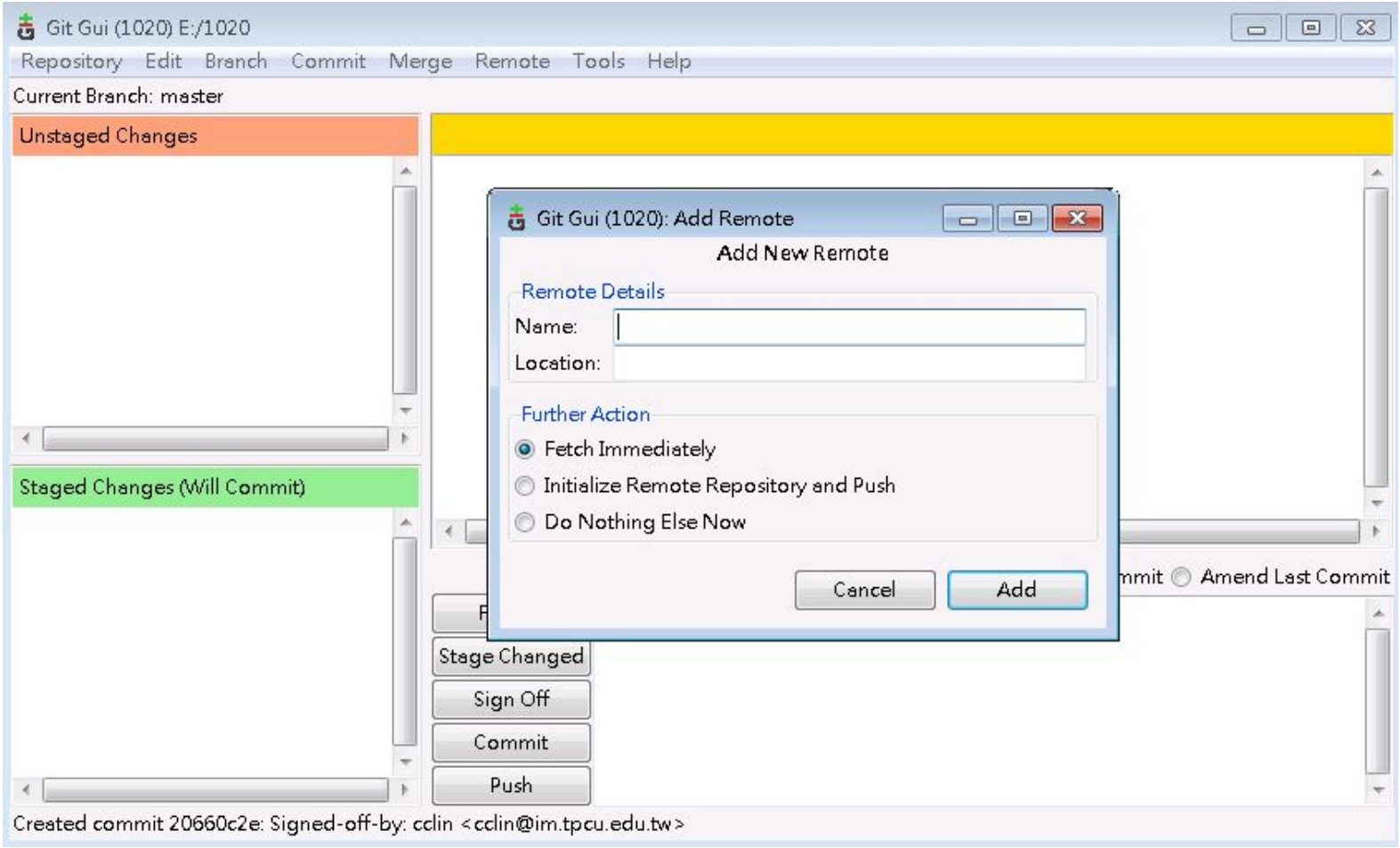
https://git-scm.com

Git Basic



https://git-scm.com

Git Basic



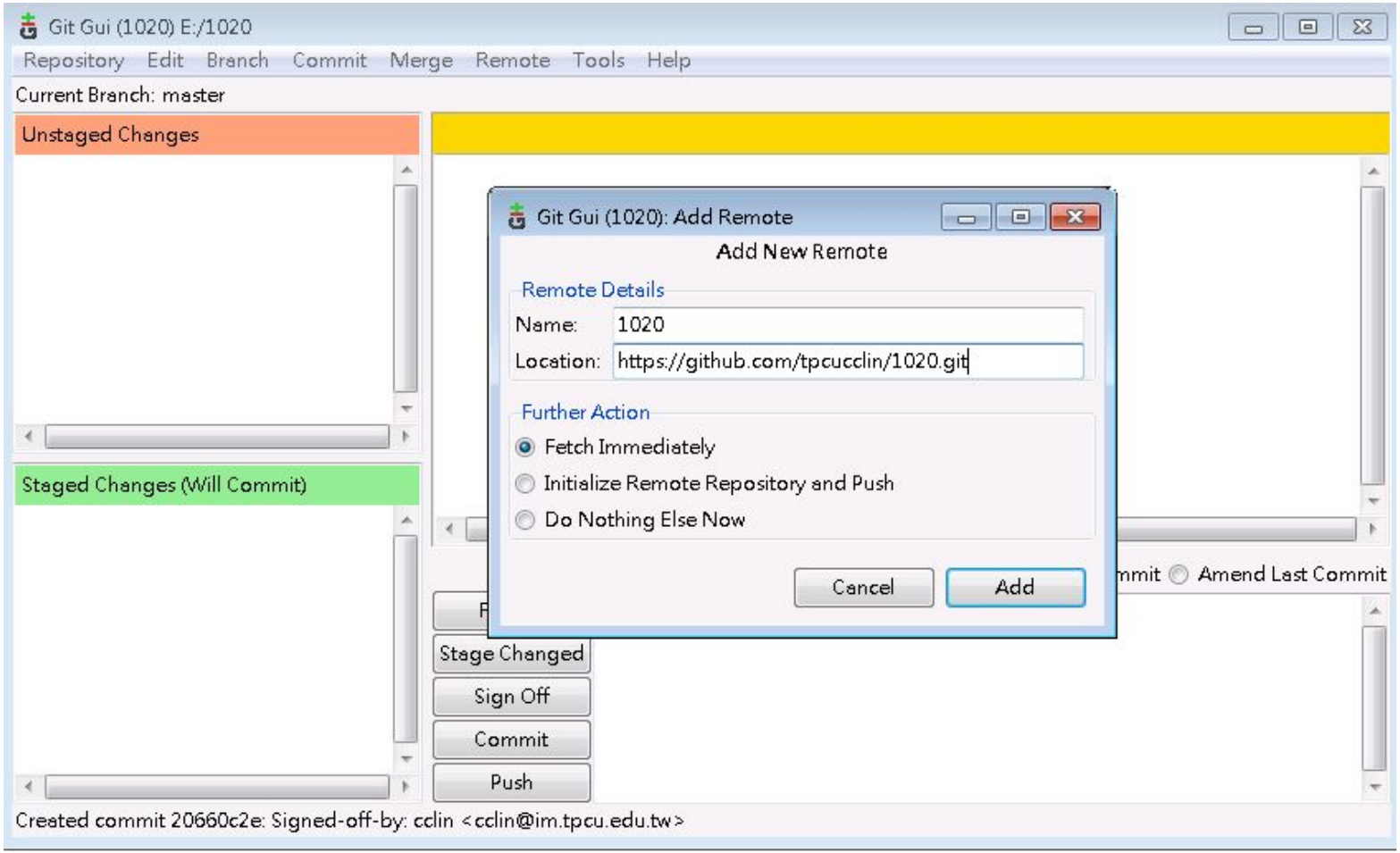
Quick setup — if you've done this kind of thing before

or HTTPS SSH https://github.com/tpcucclin/1020.git

We recommend every repository include a README, LICENSE, and .gitignore.

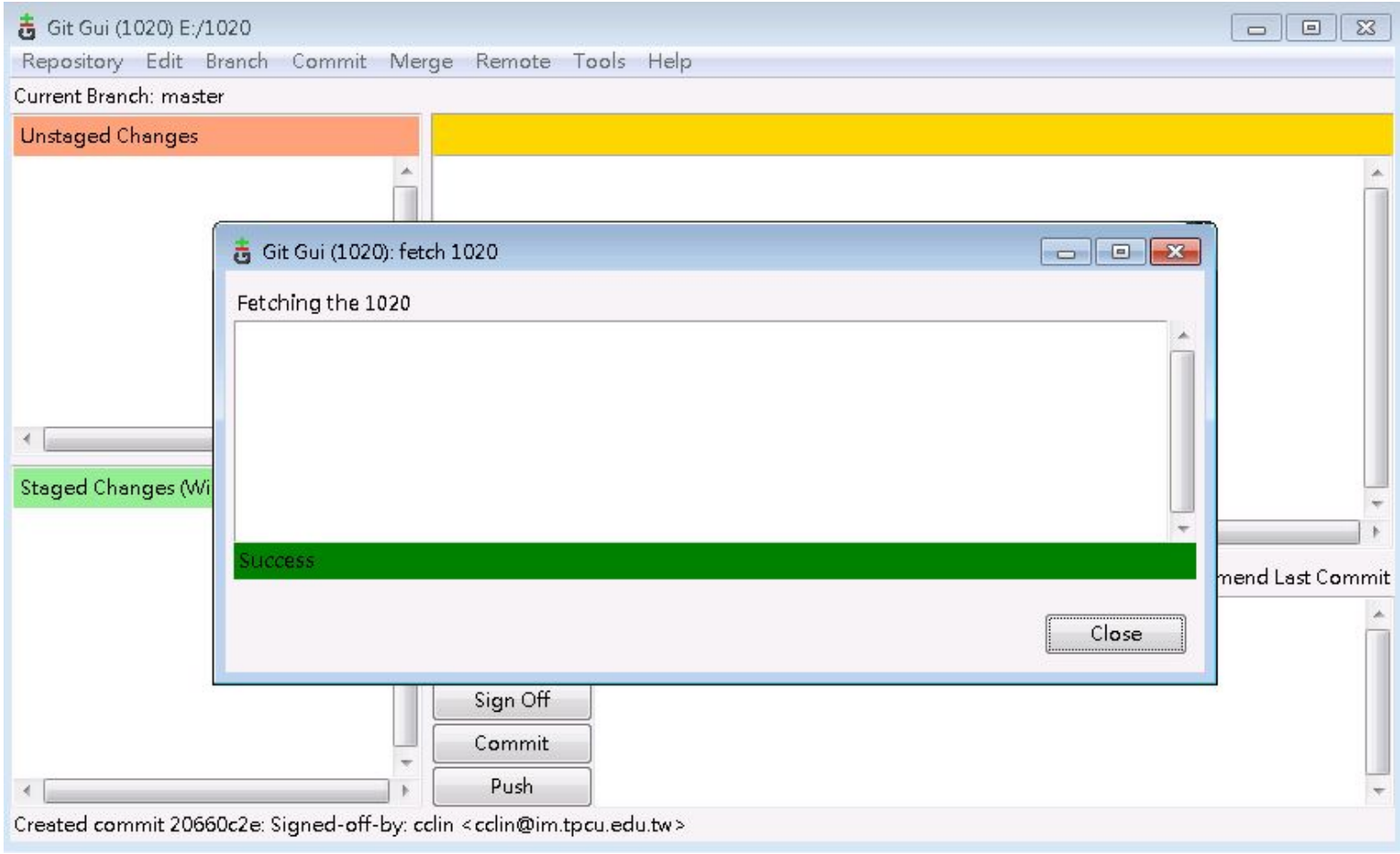
https://git-scm.com

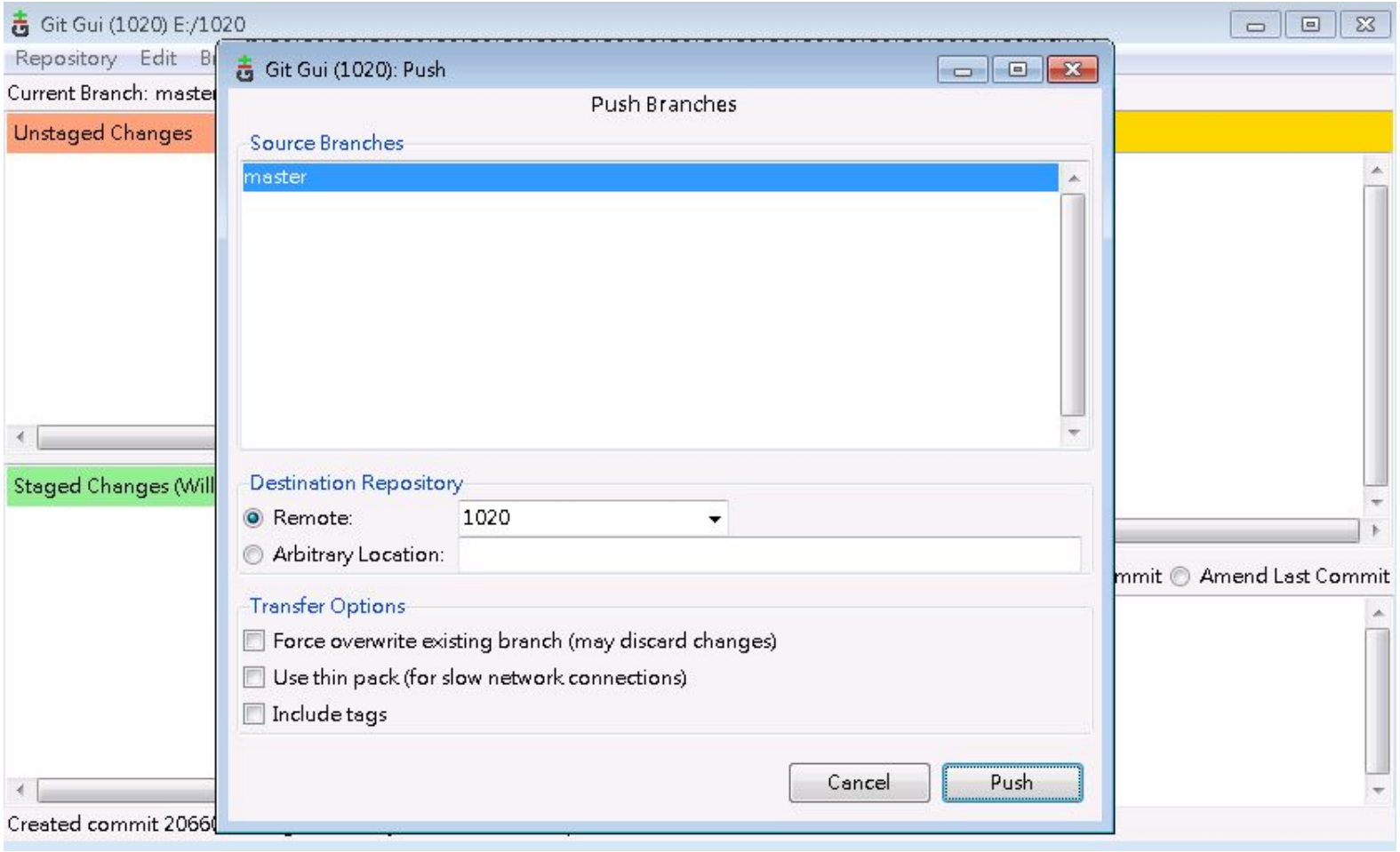
Git Basic



https://git-scm.com

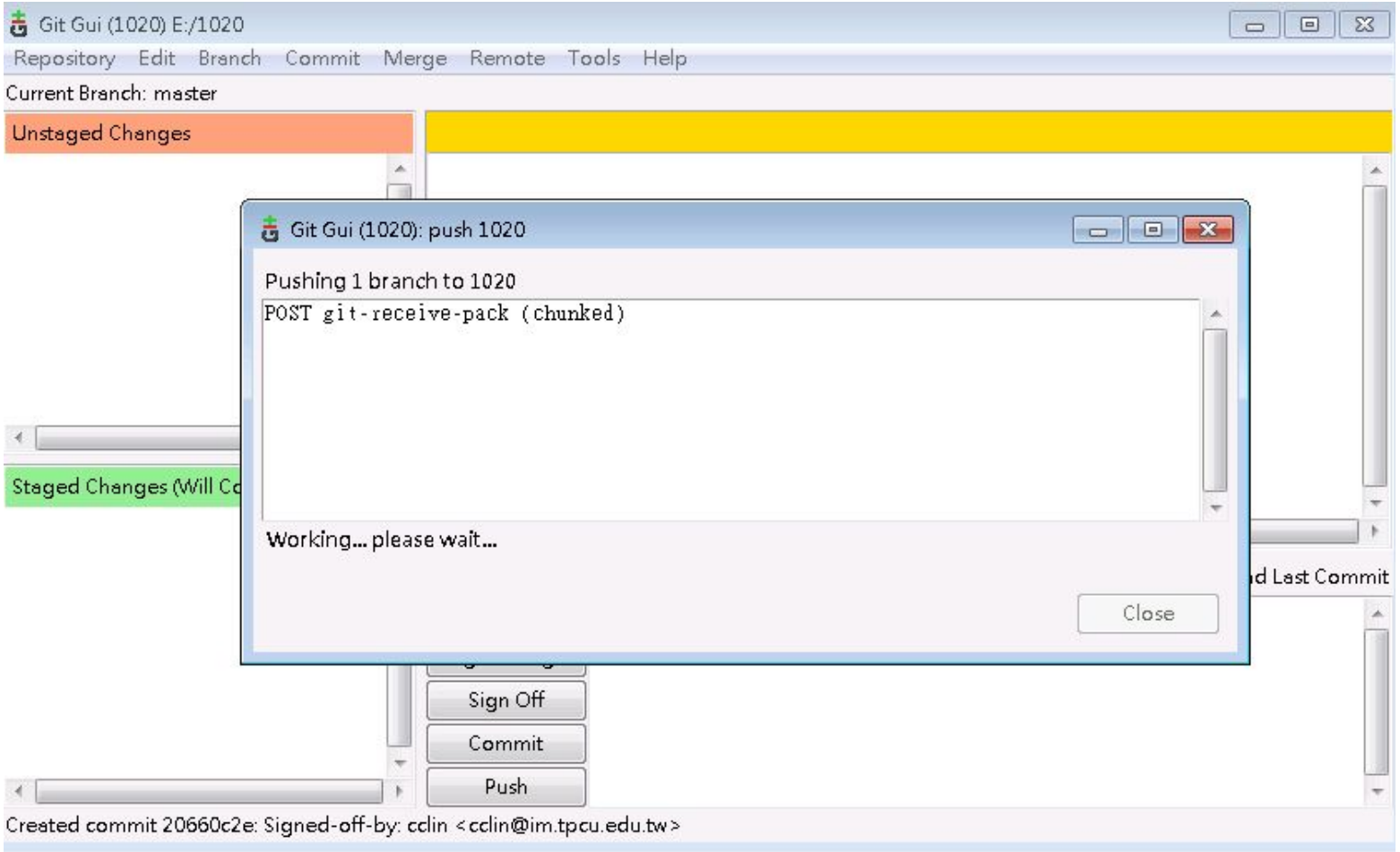
Git Basic




Git Gui (1020) E:/1020
Repository Edit
Current Branch: master
Unstaged Changes
Staged Changes (Will
Created commit 2066
Git Gui (1020): Push
Push Branches
Source Branches
master
Destination Repository
Remote:
1020
Arbitrary Location:
Transfer Options
Force overwrite existing branch (may discard changes)
Use thin pack (for slow network connections)
Include tags
Cancel
Push
mmit
Amend Last Commit

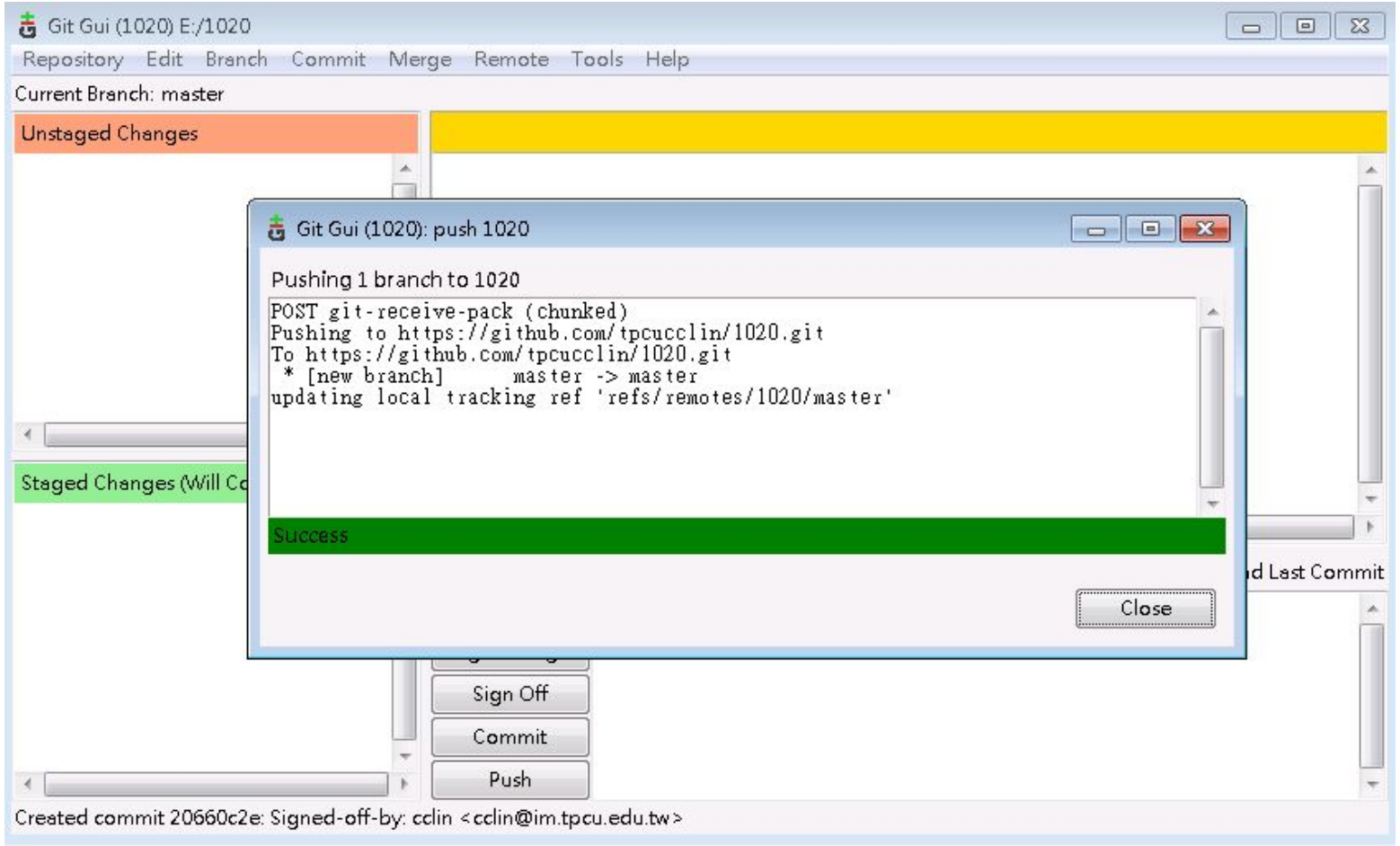
https://git-scm.com

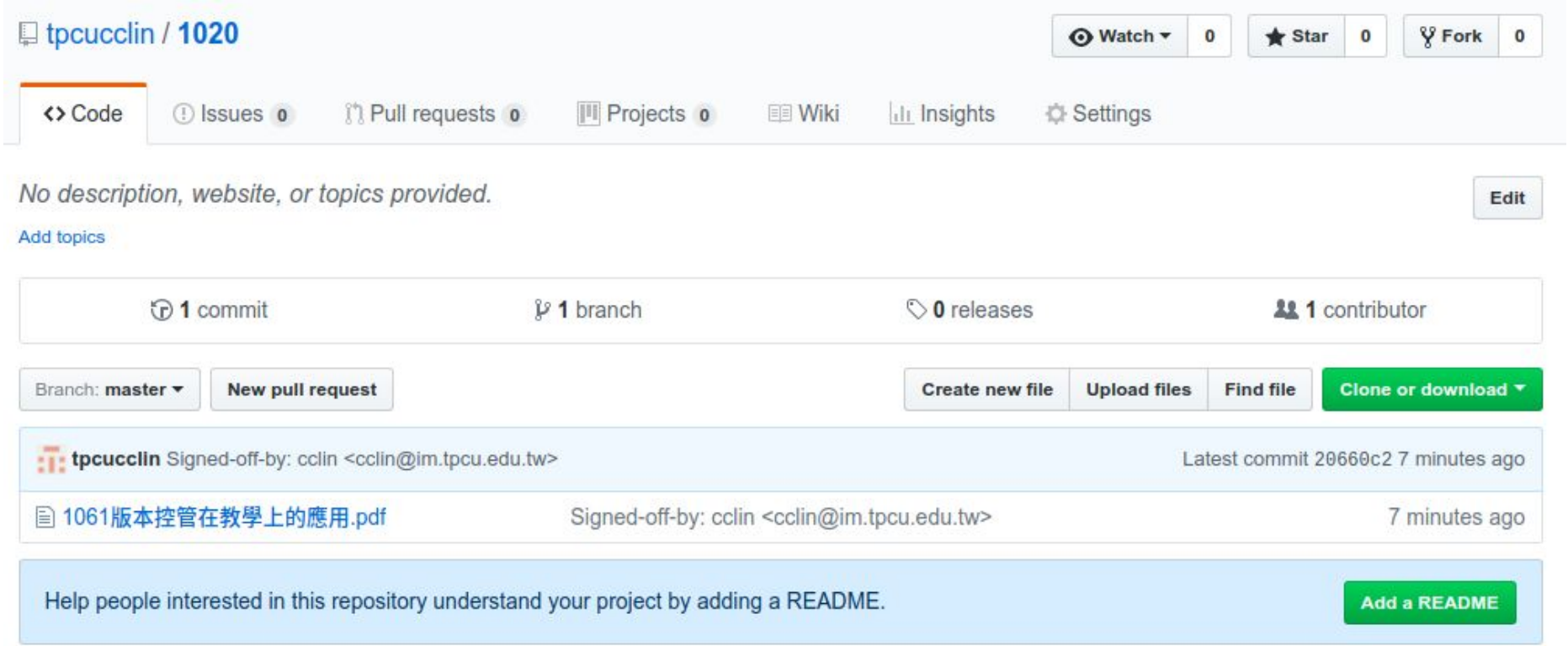
Git Basic



https://git-scm.com

Git Basic




tpcucclin / 1020
Watch 0
Star 0
Fork 0
Code
Issues 0
Pull requests 0
Projects 0
Wiki
Insights
Settings
No description, website, or topics provided.
Edit
Add topics
1 commit
1 branch
0 releases
1 contributor
Branch: master
New pull request
Create new file
Upload files
Find file
Clone or download
tpcucclin Signed-off-by: cclin <cclin@im.tpcu.edu.tw>
Latest commit 20660c2 7 minutes ago
1061版本控管在教學上的應用.pdf
Signed-off-by: cclin <cclin@im.tpcu.edu.tw>
7 minutes ago
Help people interested in this repository understand your project by adding a README.
Add a README

END