

# Software Engineering and Agile Development

Jerry



# Mollusca



Software  $\neq$  Mollusca

# Software Engineering

- Software engineering is an engineering branch associated with development of software product using well-defined scientific principles, methods and procedures.
- The outcome of software engineering is an efficient and reliable software product.



客戶解釋他們想要的



專案主持人對客戶需求的認知



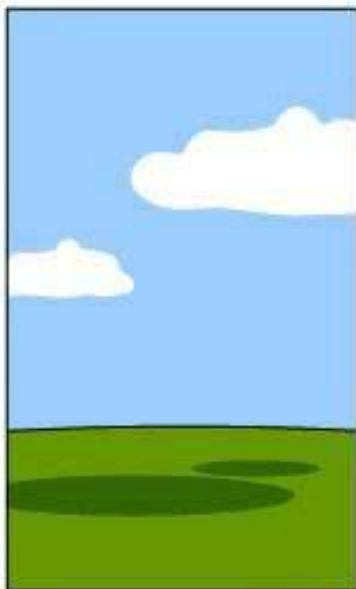
系統分析師所設計的



程式設計師所寫出來的



顧問所描繪的願景



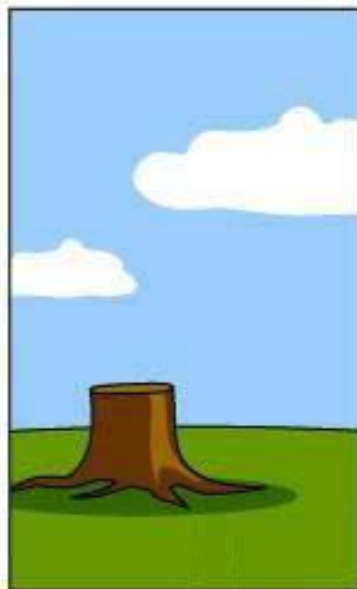
專案的文件



最後交付給客戶的軟體



客戶所付的錢



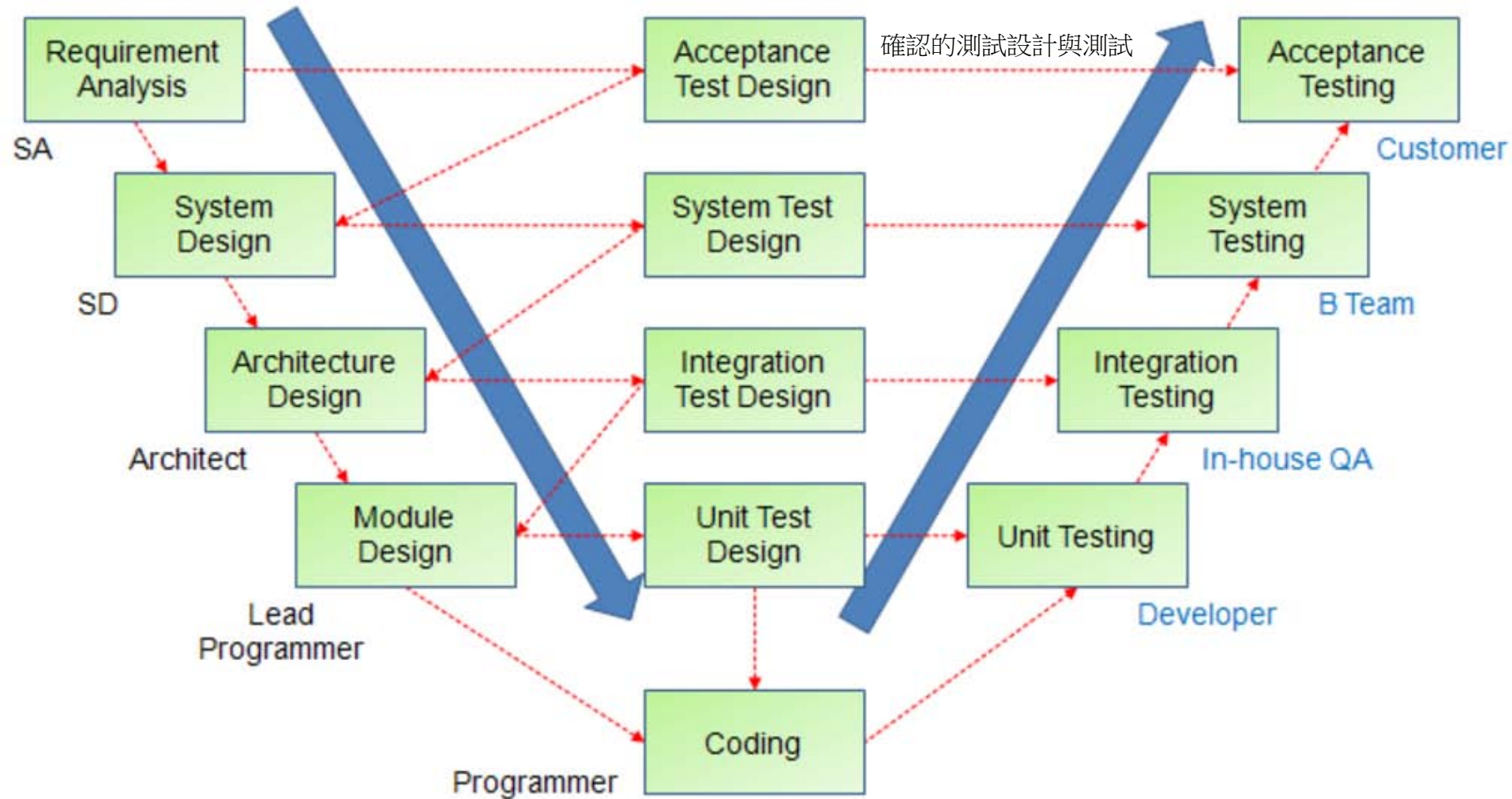
上線後的技術支援



客戶真正需要的



# Software Engineering Process



# Agile Software Development

- Agile software development is a set of principles for software development in which requirements and solutions evolve through collaboration between self-organizing, cross-functional teams.

[https://en.wikipedia.org/wiki/Agile\\_software\\_development](https://en.wikipedia.org/wiki/Agile_software_development)

# Agile Software Development

## The Agile: Scrum Framework at a glance

Inputs from Executives,  
Team, Stakeholders,  
Customers, Users





# Class Diagram

- Business Function
- Data Access Layer
- Interfaces
- Methods

# Daily Standup Meeting

- Leader
  - What did you do yesterday ?
  - What do you do today ?
  - Do you face any difficulties ?

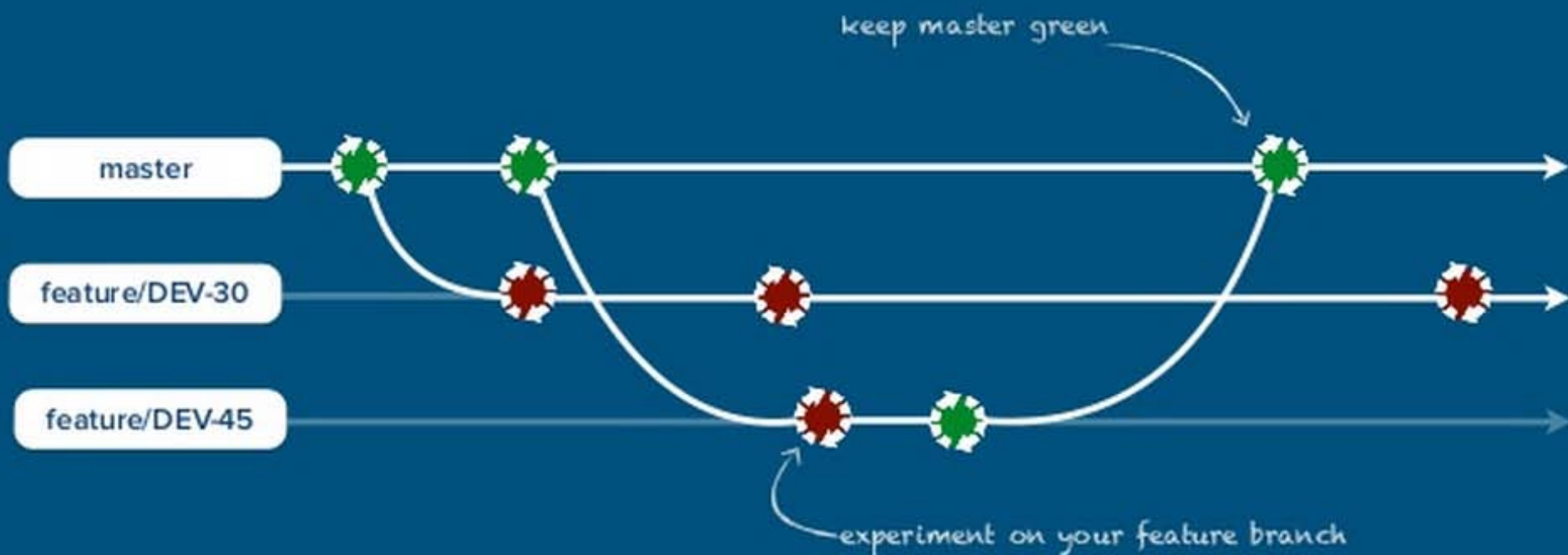


# Github

Jerry



# Simplest Workflow





# GitHub

## GitHub [編輯]

**GitHub**是一個共享虛擬主機服務，用於存放使用Git版本控制的軟體代碼和內容專案。它由GitHub公司（曾稱Logical Awesome）的開發者Chris Wanstrath、PJ Hyett和Tom Preston-Werner使用Ruby on Rails編寫而成。

GitHub 同時提供付費帳戶和免費帳戶。這兩種帳戶都可以建立公開的代碼倉庫，但是付費帳戶也可以建立私有的代碼倉庫。根據在2009年的Git使用者調查，GitHub是最流行的Git存取站點。<sup>[2]</sup>除了允許個人和組織建立和存取代碼庫以外，它也提供了一些方便社會化軟體開發的功能，包括允許使用者跟蹤其他使用者、組織、軟體庫的動態，對軟體代碼的改動和 bug 提出評論等。GitHub也提供了圖表功能，用於顯示開發者們怎樣在代碼庫上工作以及軟體的開發活躍程度。

截止到 2015 年，GitHub 已經有超過九百萬註冊使用者和 2110 萬代碼倉庫。<sup>[3]</sup>事實上已經成為了世界上最大的代碼存放網站。<sup>[4]</sup>

### GitHub

# GitHub

公司類型

私人

創始人

Tom Preston-Werner  
Chris Wanstrath  
PJ Hyett

執行長

Chris Wanstrath

總部地點

美國加利福尼亞州舊金山

產業

軟體

所有者

GitHub, Inc.

網址

[github.com](https://github.com)

Alexa排名

 世界 163 ▼ 16

 美國 149

 中國 304<sup>[1]</sup>

# Set up

- `git config --global user.name "jerry"`  
`git config --global user.email`  
`"jerry@mail.ntust.edu.tw"`

**NON-EMPTY REPOSITORY**

 rippleblue ▾



You've been added to the **codefortomorrow** organization!



Here are some quick tips for a first-time organization member.

- Use the switch context button in the upper left corner of this page to switch between your personal context (**rippleblue**) and organizations you are a member of.
- After you switch contexts you'll see an organization-focused dashboard that lists out organization repositories and activities.

 defunkt ▾





#### Easier feeds for GitHub Pages



If you publish a blog using GitHub pages, it's now easier for others to subscribe to updates with the Jekyll feed plugin.

[View 76 new broadcasts](#)

#### Repositories you contribute to

 <a href="#">dspim/A1-basic-data-analysis</a>	0 ★
 <a href="#">dspim2/dspim2.github.io</a>	0 ★

Your repositories **22**

[+ New repository](#)

Find a repository...



Owner

Repository name



rippleblue ▾

/

git



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

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** ▾



Create repository



Branch: master ▾

gitpython / +



Initial commit



rippleblue authored just now

latest commit 7097629b9b



README.md

Initial commit

just now



README.md

# gitpython

Pull requests

0

Wiki

Pulse

Graphs

Settings

HTTPS clone URL

<https://github.com/>



You can clone with [HTTPS](#), [SSH](#), or [Subversion](#).

Clone in Desktop

Download ZIP

# Non-empty Repository

- `git clone`  
`https://github.com/rippleblue/pythontest2.git`
- `cd gitpython`
- Create a new file
- `git add .`
- `git commit -m "11.txt"`
- `git push origin master`
- `git log`

# Non-empty Repository

- 再新增檔案至資料夾
- `git add .`
- `git commit -m "new commit"`
- `git push`



# 新檔案上傳

- 再新增檔案至資料夾
- `git add .`
- `git commit -m "new commit"`
- `git push`

```
[master +1 ~0 -0 1]> git add .  
[master +1 ~0 -0]> git add.
```

```
[master +1 ~0 -0  
[master +2 ~0 -0]:
```

**DELETE FILES**

# Error ?

Mode	LastWriteTime	Length	Name
----	-----	-----	----
-a---	2015/9/26 下午 10:35	5	README.md

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master +0 ~0 -1]> git add .  
warning: You ran 'git add' with neither '-A (--all)' or '--ignore-removal',  
whose behaviour will change in Git 2.0 with respect to paths you removed.  
Paths like '1.txt' that are  
removed from your working tree are ignored with this version of Git.
```

```
* 'git add --ignore-removal <pathspec>', which is the current default,  
ignores paths you removed from your working tree.
```

```
* 'git add --all <pathspec>' will let you also record the removals.
```

```
Run 'git status' to check the paths you removed from your working tree.
```

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master +0 ~0 -1]> git commit -m "Delete 1.txt"  
On branch master  
Your branch is up-to-date with 'origin/master'.
```

```
Changes not staged for commit:  
  deleted:    1.txt
```

```
no changes added to commit
```

# Delete files

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master +0 ~0 -1]> git add --all
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master +0 ~0 -1]> git commit -m "Delete 1.txt"
[master 5f5b362] Delete 1.txt
1 file changed, 0 insertions(+), 0 deletions(-)
delete mode 100644 1.txt
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git push
Counting objects: 4, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (1/1), done.
Writing objects: 100% (2/2), 232 bytes | 0 bytes/s, done.
Total 2 (delta 0), reused 0 (delta 0)
To https://github.com/rippleblue/Rtest.git
 383b2d8..5f5b362 master -> master
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]>
```



# **REPOSITORY MERGE**

- 新增github 與 工作目錄
  - gitpython\_empty
    - 照舊再做一次

- git remote add origin [https://github.com/rippleblue/gitpython\\_empty.git](https://github.com/rippleblue/gitpython_empty.git)
- git add .
- git branch new1
- git branch
- git checkout new1

- 新增任檔案
- `git add .`
- `git commit -m "new1 branch"`
- `git push`
- `git push origin new1`

- git checkout master
- git merge new1
- git push

# Github

The screenshot shows a GitHub repository interface for 'gitpython\_empty'. A modal window titled 'Switch branches/tags' is open, displaying a search bar 'Find or create a branch...' and a list of branches: 'master' (checked) and 'new1'. The repository page shows the 'master' branch selected, with a commit hash 'db07d6b4dc' and a timestamp '10 minutes ago'. The right sidebar contains links for 'Pull requests', 'Wiki', 'Pulse', 'Graphs', and 'Settings'. At the bottom, there is a section for the 'HTTPS clone URL' and a 'Clone in Desktop' button.

Branch: master ▾ gitpython\_empty / +

Switch branches/tags

Find or create a branch...

Branches Tags

✓ master

new1

new1

latest commit db07d6b4dc

10 minutes ago

40 minutes ago

16 minutes ago

Help people interested in this repository understand your project by adding a README. [Add a README](#)

Pull requests 0

Wiki

Pulse

Graphs

Settings

HTTPS clone URL

<https://github.com/>

You can clone with HTTPS, SSH, or Subversion. ?

Clone in Desktop




 Branch: **new1** **gitpython\_empty** / +

This branch is 2 commits ahead, 1 commit behind master.

 Pull request  Compare

new file2

 **rippleblue** authored 3 minutes ago

latest commit d2dfa94773 

 111.txt	next new file	10 minutes ago
 2222.txt	new file	7 minutes ago
 eee.txt	new file2	3 minutes ago
 new111.txt	first commit	41 minutes ago
 new222.txt	new1 branch	16 minutes ago

Help people interested in this repository understand your project by adding a README.

[Add a README](#)

# Comparing changes

Choose two branches to see what's changed or to start a new pull request. If you need to, you can also [compare across forks](#).



base: **master** ▾

...

compare: **new1** ▾

✓ **Able to merge.** These branches can be automatically merged.

**Create pull request**

Discuss and review the changes in this comparison with others.



**2** commits

**2** files changed

**0** commit comments

**1** contributor



Commits on Sep 19, 2015



**rippleblue**

new file

074cd64



**rippleblue**

new file2

d2dfa94



Showing **2** changed files with **0** additions and **0** deletions.

Unified

Split





New1 new file1

Write

Preview

 Markdown supported

Leave a comment

Attach images by dragging & dropping, [selecting them](#), or pasting from the clipboard.

Create pull request



rippleblue commented just now

Owner



*No description provided.*



rippleblue added some commits 8 minutes ago



new file

074cd64



new file2

d2dfa94

Add more commits by pushing to the **new1** branch on **rippleblue/gitpython\_empty**.



**This branch is up-to-date with the base branch**

Merging can be performed automatically.



**Merge pull request**

You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

**BRANCH**

# Create and delete branches

- Create

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git branch
* master
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git branch v1
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git branch
* master
  v1
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]>
```

- Delete

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git branch -d v1
Deleted branch v1 (was 5f5b362).
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git branch
* master
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]>
```

- `git branch -D new-branch` # 強制刪除 new-branch



# Switching branches

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git branch v1
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git branch
* master
v1
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git checkout v1
Switched to branch 'v1'
C:\Users\rippleblue2002\Documents\GitHub\Rtest [v1]> git branch
master
* v1
C:\Users\rippleblue2002\Documents\GitHub\Rtest [v1]>
```

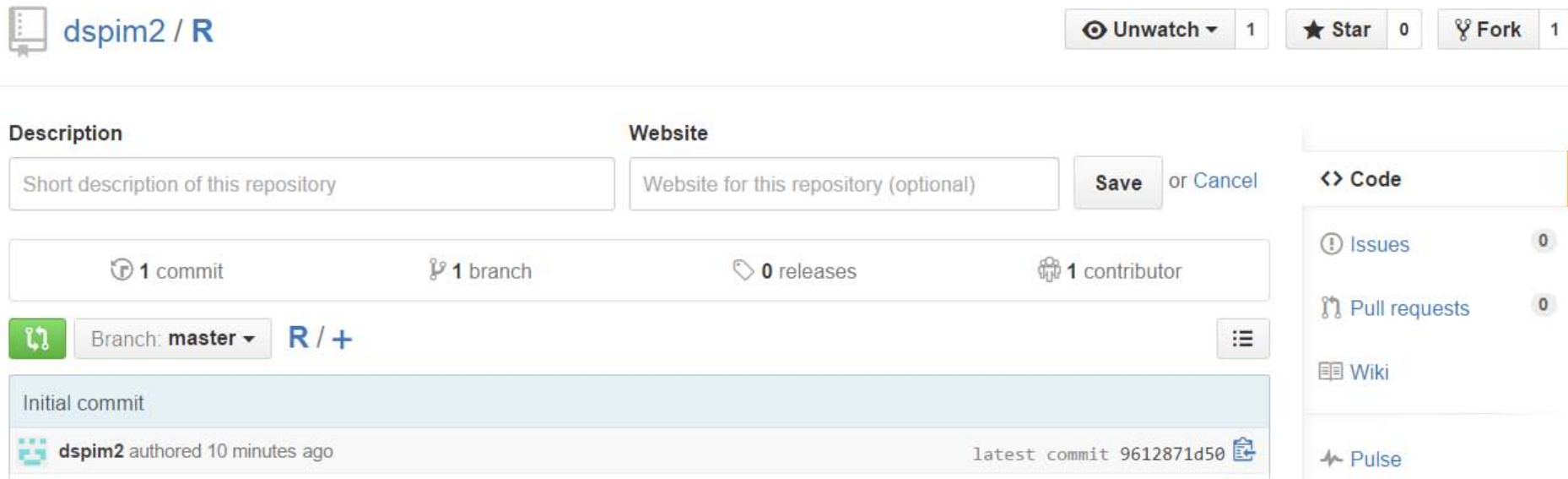
# EXERCISE

# Exercise

- Try to create non-empty and Empty repository
- Try to commit to repository
- Try to push files to repository
- Try to delete files from repository
- How to upload your files to teacher repository ?

# How to upload your files to teacher repository ?

- 提交檔案到老師的Repository

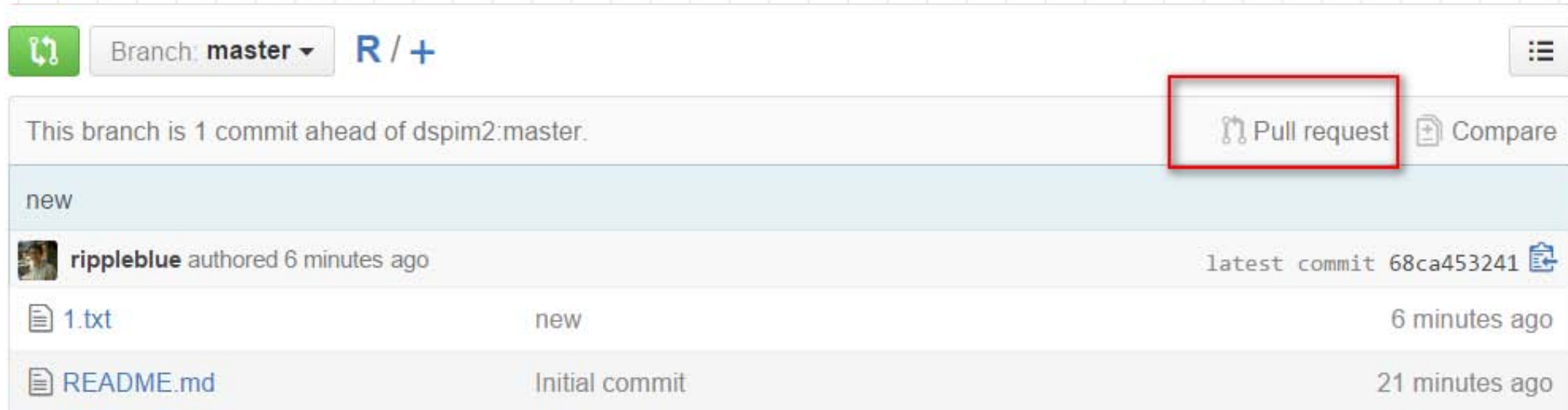


The screenshot shows the GitHub interface for the repository `dspim2 / R`. At the top, there are buttons for `Unwatch` (1), `Star` (0), and `Fork` (1). Below this, the `Description` and `Website` fields are visible, with a `Save` button and a link to `Cancel`. The repository statistics show `1 commit`, `1 branch`, `0 releases`, and `1 contributor`. The `Branch: master` dropdown is set to `R / +`. The `Initial commit` section shows a commit by `dspim2` authored 10 minutes ago, with the latest commit hash `9612871d50`. On the right sidebar, there are links for `Code`, `Issues` (0), `Pull requests` (0), `Wiki`, and `Pulse`.

# 先Fork到本機

- git clone <https://github.com/rippleblue/R.git>
- 新增檔案
- Git add .
- Git commit -m “something new”
- Git push



# Create pull request





The screenshot shows a GitHub pull request interface. At the top, there's a green icon with a fork and a branch selector showing 'master'. To the right is a blue 'R / +' button. Below this, a status bar indicates 'This branch is 1 commit ahead of dspim2:master.' On the right side of this bar, there are two buttons: 'Pull request' (highlighted with a red rectangle) and 'Compare'. Below the status bar, the pull request title is 'new'. The author is 'rippleblue' who authored it 6 minutes ago. The latest commit is '68ca453241'. The pull request contains two files: '1.txt' (new) and 'README.md' (Initial commit).



Branch: master ▾ R / +

This branch is 1 commit ahead of dspim2:master.

 Pull request  Compare

new

 rippleblue authored 6 minutes ago latest commit 68ca453241 

 1.txt	new	6 minutes ago
 README.md	Initial commit	21 minutes ago



# Comparing changes

Choose two branches to see what's changed or to start a new pull request. If you need to, you can also [compare across forks](#).

 base fork: **dspim2/R** ▼ base: **master** ▼ ... head fork: **rippleblue/R** ▼ compare: **master** ▼


✓ **Able to merge.** These branches can be automatically merged.


 **Create pull request**

Discuss and review the changes in this comparison with others.



 **1** commit

 **1** file changed


 **0** commit comments

 **1** contributor



Commits on Sep 19, 2015



 **rippleblue**

new

68ca453



Showing **1** changed file with **0** additions and **0** deletions.

Unified

Split

0  1.txt

View



# 收到Pull requests的Repository



dspim2 / R

Unwatch 1

Star 0

Fork 1

## Description

Short description of this repository

## Website

Website for this repository (optional)

Save or Cancel

1 commit

1 branch

0 releases

1 contributor



Branch: master

R / +

Initial commit



dspim2 authored 22 minutes ago

latest commit 9612871d50



README.md

Initial commit

22 minutes ago



README.md

R

<> Code

Issues 0

Pull requests 1

Wiki

Pulse

Graphs

Settings

HTTPS clone URL



rippleblue commented [a minute ago](#)



*No description provided.*



new

68ca453



dspim2 commented just now

Owner



Thx



**This branch is up-to-date with the base branch**

Merging can be performed automatically.



**Merge pull request**

You can also [open this in GitHub Desktop](#) or view [command line instructions](#).



Write

Preview

**MD** Markdown supported

Leave a comment

Attach images by dragging & dropping, [selecting them](#), or pasting from the clipboard.

Close pull request

Comment



### Merge pull request #2 from rippleblue/master

Something new2

 **Confirm merge**

Cancel

## Description


Short description of this repository

## Website

Website for this repository (optional)

**Save** or [Cancel](#)

## <> Code

 Issues 0

 Pull requests 0

 Wiki

 Pulse

 Graphs

 Settings

**HTTPS** clone URL

<https://github.com/dspim2/R> 

 3 commits

 1 branch

 0 releases

 1 contributor




Branch: **master** ▾


[R](#) / [+](#)



Merge pull request **#2** from rippleblue/master ...

 **dspim2** authored 10 seconds ago

latest commit [aad009cae4](#) 

 1.txt new 11 minutes ago

 README.md Initial commit 25 minutes ago

 **README.md**

**R**

# 進階GIT

# Git reset 還原

- 檔案經過Branch上傳
- 將v1進行Merge

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [v1]> git checkout master
Switched to branch 'master'
Your branch is up-to-date with 'origin/master'.
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git merge v1
Updating 5f5b362..816b591
Fast-forward
 2.txt | 0
 33.txt | 0
2 files changed, 0 insertions(+), 0 deletions(-)
create mode 100644 2.txt
create mode 100644 33.txt
```



```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> dir
```

目錄: C:\Users\rippleblue2002\Documents\GitHub\Rtest

Mode	LastWriteTime	Length	Name
----	-----	-----	----
-a---	2015/9/26 下午 11:15	0	1.txt
-a---	2015/9/26 下午 11:15	0	2.txt
-a---	2015/9/26 下午 11:15	0	3.txt
-a---	2015/9/26 下午 10:35	5	README.md

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git revert HEAD
```

```
[master f0a4e46] Revert "new"
3 files changed, 0 insertions(+), 0 deletions(-)
delete mode 100644 1.txt
delete mode 100644 2.txt
delete mode 100644 3.txt
```

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git push
```

```
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (1/1), done.
Writing objects: 100% (2/2), 254 bytes | 0 bytes/s, done.
Total 2 (delta 0), reused 0 (delta 0)
To https://github.com/rippleblue/Rtest.git
a942f8f..f0a4e46 master -> master
```

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> dir
```

目錄: C:\Users\rippleblue2002\Documents\GitHub\Rtest

Mode	LastWriteTime	Length	Name
----	-----	-----	----
-a---	2015/9/26 下午 10:35	5	README.md

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]>
```

- git show HEAD^ (前一版本)
- git show HEAD^^ (前前一版本)
- git show HEAD~4 (前前前前一版本)

```
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git show HEAD^
commit 929669b3419a4dd12562a3368d7e67fcd1d34d46
Author: jerry <jerry@mail.ntust.edu.tw>
Date: Sat Sep 26 22:37:16 2015 +0800

    txt2

diff --git a/2.txt b/2.txt
deleted file mode 100644
index e69de29..0000000
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git revert HEAD^
[master 50ba30b] Revert "txt2"
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 2.txt
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]> git push
Counting objects: 4, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 312 bytes | 0 bytes/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/rippleblue/Rtest.git
 f0a4e46..50ba30b master -> master
C:\Users\rippleblue2002\Documents\GitHub\Rtest [master]>
```

- `git show filename` #檢查狀態
- `git diff filename` #列出差異
- `git stash` #放入暫存區