



# Version Control with Git

# 今天我将学到



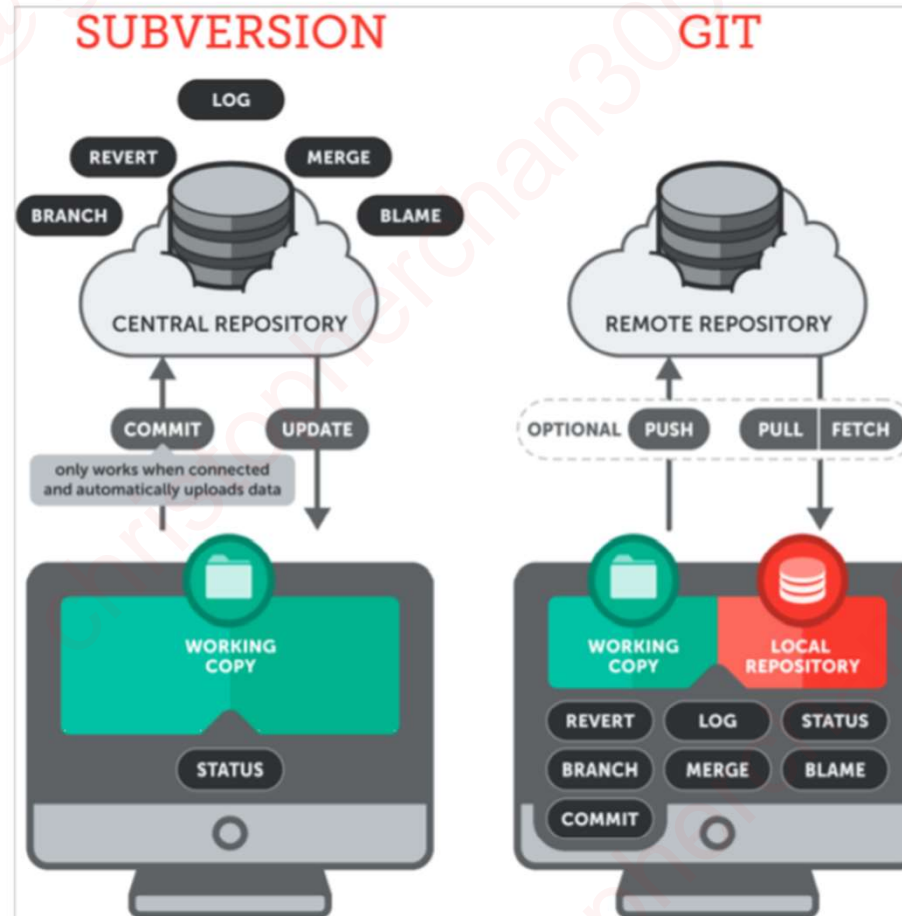
- 为什么要使用 Git?
- 如何设置 Git?
- Git的本地工作方法
- 使用Git branch进行创建与合并分支
- 使用GitHub进行团队协作
- 使用merge和rebase进行日常协作

# 为什么要使用 version control?



- 撤销改动或者回滚版本 (snapshot)
- 回溯历史 (A complete long-term history of every file that provides **traceability**)
- 协同合作 (via branching strategies)
- 备份

# Centralized & Distributed



# Git and GitHub



**git**



**GitHub**

# Git and GitHub





## Step 0: 一个点的历史 – Git Setup

# Git Global Setup



```
git config --global user.name "<Your-Full-Name>"
```

```
git config --global user.email "<your-email-address>"
```

```
git config --global color.ui auto
```

```
git config --global merge.conflictstyle diff3
```

```
git config --global core.editor "code --wait"
```



# Setting up a repository



```
git init
```

OR

```
git clone (remote repository only)
```



Step 1: 一条线的历史 – commit

# Git工作原理：两步 commit



# Commit changes



```
git add
```

```
git commit
```

```
git rm (optional)
```

```
git stash (important!)
```

# Commit message 要有意义



	COMMENT	DATE
○	CREATED MAIN LOOP & TIMING CONTROL	14 HOURS AGO
○	ENABLED CONFIG FILE PARSING	9 HOURS AGO
○	MISC BUGFIXES	5 HOURS AGO
○	CODE ADDITIONS/EDITS	4 HOURS AGO
○	MORE CODE	4 HOURS AGO
○	HERE HAVE CODE	4 HOURS AGO
○	AAAAAAA	3 HOURS AGO
○	ADKFJSLKDFJSDKLFJ	3 HOURS AGO
○	MY HANDS ARE TYPING WORDS	2 HOURS AGO
○	HAAAAAAAAAANDS	2 HOURS AGO

AS A PROJECT DRAGS ON, MY GIT COMMIT MESSAGES GET LESS AND LESS INFORMATIVE.

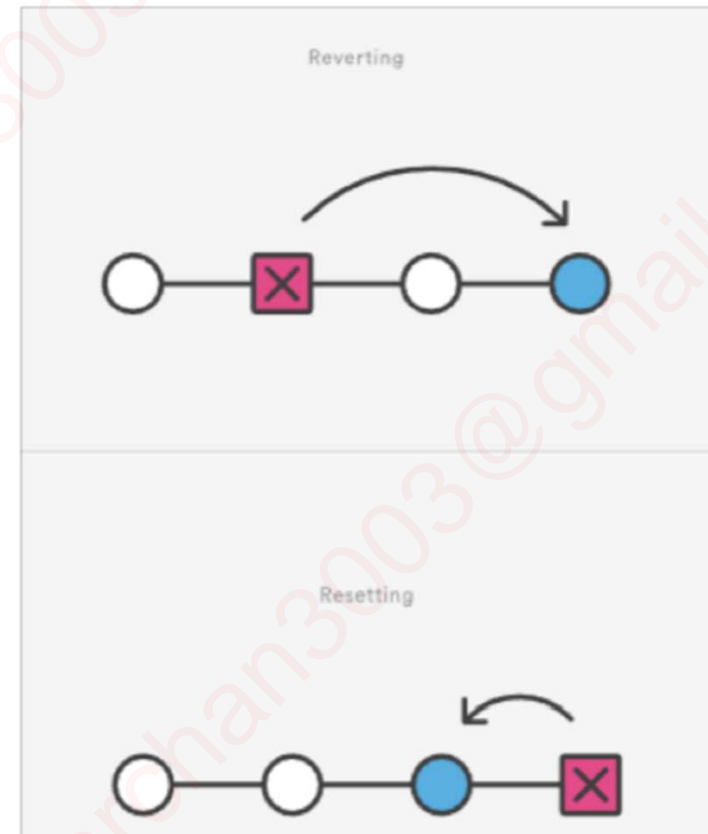
# Git undo changes

`git checkout`

`git clean`

`git revert`

`git reset`



# Git status and history



```
git status
```

```
git diff
```

```
git log
```



Step 2: 两条线的历史 – branch & merge



# Branching



```
git branch
```

```
git branch -d
```

```
git checkout -b
```

<https://www.conventionalcommits.org/en/v1.0.0-beta.4/>

# Semantic branch names



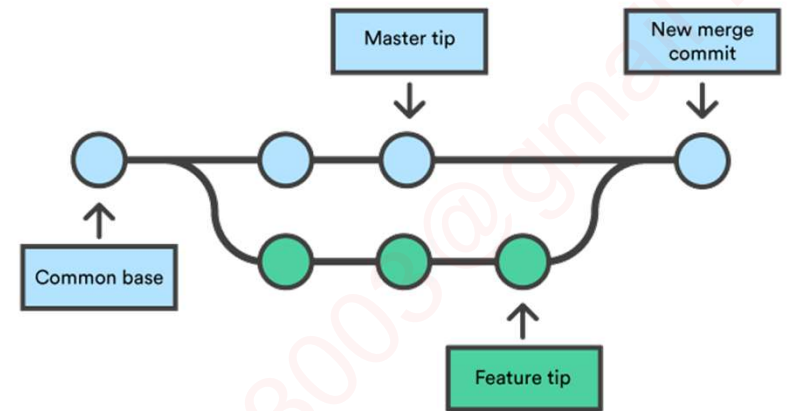
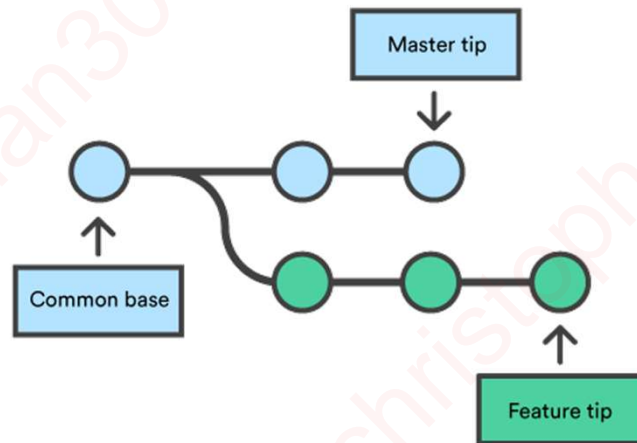
<type>/<ticket-number>-<title>

e.g. **feat/JR-101-create-header-for-home-page**

- feature
- fix/bugfix/hotfix
- chore

<https://www.conventionalcommits.org/en/v1.0.0-beta.4/>

# Merging branches



# Git Graph



```
git log --all --decorate --oneline --graph
```



# Merge conflicts!!!



如果不想解决冲突：

```
git merge <branch name> --abort
```

```
git merge <branch name> --overwrite-ignore
```

```
git merge <branch name> --no-overwrite-ignore
```



## Step 3: 多条线的历史 – 远程协作

# Connect to remote repo



```
git clone
```

```
git remote add <name> <url>
```

```
git remote rm <name>
```

```
git remote rename <old-name> <new-name>
```



# Set up tracking branch



```
git branch -u <name>/<branch>
```

也可以在push的时候建立这种联系



# Update local from remote



```
git fetch
```

```
git pull
```

# Update remote from local



```
git push <name> <branch>
```

```
git push <name> <local_branch>:<remote_branch>
```

# Delete a remote branch



```
git push -d <name> <branch>
```

```
git push <name> :<branch>
```

# Create a pull request (PR)



australiaitgroup / pizza-shop-backend-java

Watch 6 Star 0 Fork 3

Code Issues 0 Pull requests 0 Projects 0 Wiki Security Insights

Label issues and pull requests for new contributors  
Now, GitHub will help potential first-time contributors discover issues labeled with **help wanted** or **good first issue** [Dismiss](#)

Filters is:pr is:open Labels 8 Milestones 0 **New pull request**

0 Open 5 Closed Author Labels Projects Milestones Reviews Assignee Sort

There aren't any open pull requests.  
You could search [all of GitHub](#) or try an [advanced search](#).

**ProTip!** Type `g i` on any issue or pull request to go back to the issue listing page.

# Create a pull request (PR)



## 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 repository: MagicCube/tensorflow-rerun base: gh-pages  
head repository: australiagroup/tensorflow-rerun compare: master ✓ Able to merge. These branches can be automatically merged.

Create pull request Discuss and review the changes in this comparison with others.

5 commits 10 files changed 0 commit comments 1 contributor

- Commits on Apr 15, 2018
- MagicCube Update generationEL 5773f8c
  - MagicCube Add fit() ab95fb6
  - MagicCube Add ; 5359664
  - MagicCube Change train() to fit() 2b4f069
- Commits on Apr 28, 2018
- MagicCube Update README.md Verified 54b87fe

Showing 10 changed files with 25 additions and 17 deletions.

Unified Split

2 README.md

```
@@ -1,4 +1,4 @@
1 -# t-rerun
2
3 A TensorFlow.js based AI player platform for T-Rex Runner.
4
```

```
1 +# tensorflow-rerun
2
3 A TensorFlow.js based AI player platform for T-Rex Runner.
4
```

# Ask git to ignore files



```
1 *
2 !bin/
3 !bin/*
4 !.android_aliases
5 !.androidrc
6 !.bash_aliases
7 !.bash_hosts
8 !.bashrc
9 !.dircolors
10 !.git-completion.bash
11 !.gitignore
12 !.profile
13 !.tmux.conf
14 !.vim/
15 !.vim/*
16 !.vim/**/*
17 !.vimrc
18 .vim/.netrwhist

1 .DS_Store
2 node_modules/
3 dist/
4 npm-debug.log*
5 yarn-debug.log*
6 yarn-error.log*
7 test/unit/coverage
8 test/e2e/reports
9 selenium-debug.log
10 platforms/*/*/
11 plugins/*/
12 www/index.html
13 www/static/
14 buildlog
15 # Editor directories and files
16 .idea
17 .vscode
18 *.suo
19 *.ntvs*
20 *.njsproj
21 *.sln
```

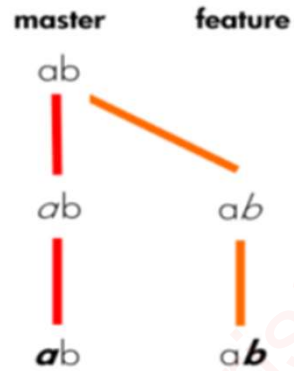


两种workflow: merge 和 rebase

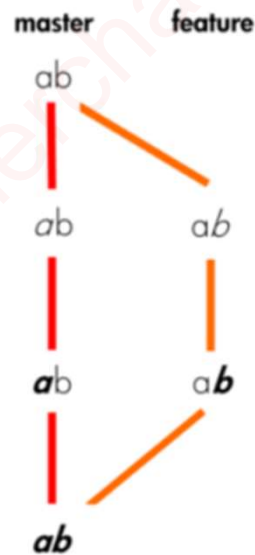
# Merging vs Rebasing



## Commits



## Merge



## Rebase





# Force push



```
git push -f
```

```
git push <name> +<branch_name>
```

```
git push --force-with-lease
```

