

# **Git/Git-flow**

Use Git to Survive in the Grad School

# What is git?

- Version Control System
- Tracks **Changes** in
  - Files
  - Actions among Co-workers
- Basic Skill in Companies

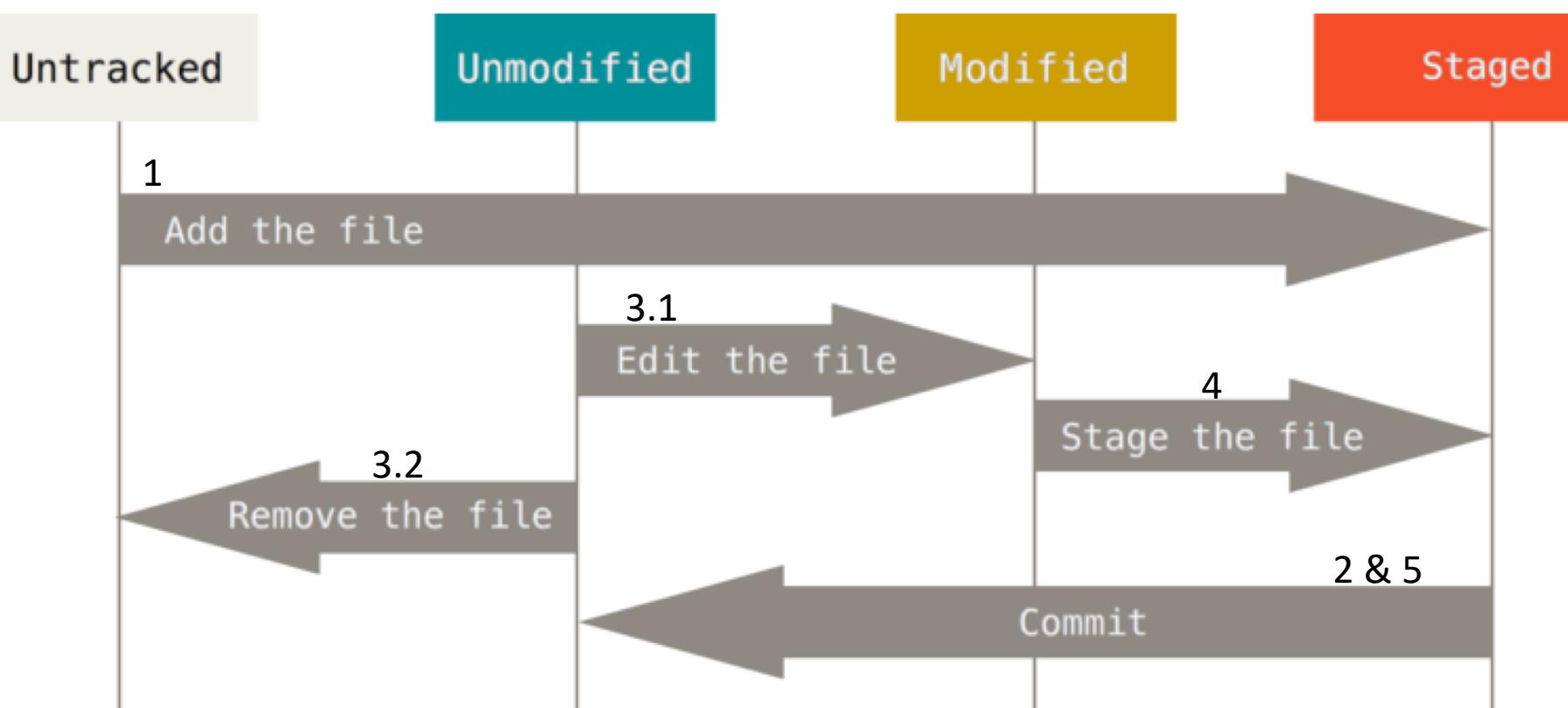
```

* commit de2654932f15da91b389ffff1f06422ca79cade46 (HEAD -> master, origin/master, origin/HEAD)
| Author: Yu-Ching Hu <yhu22@ncsu.edu>
| Date: Tue Apr 17 11:47:50 2018 -0400
|
|   move Service prior to CheckIn
|
* commit c4af1d661115ec947fb27da5b9f672d34024fa5f
| Author: Yu-Ching Hu <yhu22@ncsu.edu>
| Date: Tue Apr 17 00:24:45 2018 -0400
|
|   reorder insert table
|
* commit a18cede9d48a9d02247dfcb0ec1b0ae0c5482122
| Author: Yu-Ching Hu <yhu22@ncsu.edu>
| Date: Tue Apr 17 00:13:47 2018 -0400
|
|   reorder create table
|
* commit 1799929b0c174e631a98fa6d985bcd535b88452d
\| Merge: 2192f59 f5db487
| | Author: Yu-Ching Hu <yhu22@ncsu.edu>
| | Date: Mon Apr 16 23:48:23 2018 -0400
|
| | Merge pull request #23 from yhu22/Yuching
|
| | fix insert Room
|
| * commit f5db48717ce1f23f058314897d8ecdb5c14143c8 (origin/Yuching)
|/| Author: Otto <yuh198@ucsd.edu>
| | Date: Mon Apr 16 23:28:25 2018 -0400
|
| | fix insert Room
|
* commit 2192f59d2bc7745f2bcb16c43bb2d772a1f21583
\| Merge: 0a54884 74fb159
| | Author: Yu-Ching Hu <yhu22@ncsu.edu>
| | Date: Mon Apr 16 22:22:52 2018 -0400
|
| | Merge pull request #22 from yhu22/hank
|
| | fixed typo. <U+1F643>
|
| * commit 74fb159cf00a1430519a7a44e5c462780c48d38 (origin/hank, hank)
|/| Author: hankliu5 <yliu224@ncsu.edu>
| | Date: Mon Apr 16 22:07:07 2018 -0400
|
| | fixed typo.
|
* commit 0a548846f9722a9ab21d329a0c8c5be1d59a97b7
\| Merge: 09cab39 e9f64b7
| | Author: yliu224 <yliu224@ncsu.edu>
| |
:
```

# Git Terminology

- Stage: put files to the “ready to commit” stage
- Commit: take a snapshot of current state
- Repository: container with tracked files and their history

# Git States



# Demo 1: Create a Local Repo

- Initialize a git repository in the folder
- Track a new file
- Check the status of the repository
- Commit the latest tracked files
- Edit files to make files to modified state
- Check the differences from previous commit
- Stage the modified files
- Commit the modified files

# What is GitHub

- The Biggest Matching Website for Engineers in the World

# What is GitHub

- One of the Biggest git Hosting Website in the World
- Just Acquired by Microsoft
- Lots of Open Source Projects
- Similar Services: bitbucket, gitlab

## python / cpython

 Watch ▾ 906     Star 19,259     Fork 6,439

 Code     Pull requests 847

 Insights

The Python programming language <https://www.python.org/>

 102,041 commits

 8 branches

 363 releases

 610 contributors

Branch: master ▾

New pull request

Create new file

Upload files

Find file

Clone or download ▾

## golang / go

 Watch ▾

3,072

 Unstar

45,546

 Fork

6,214

 Code

 Issues 3,617

 Pull requests 57

 Wiki

 Insights

The Go programming language <https://golang.org>

programming-language

language

go

 37,421 commits

 30 branches

 215 releases

 1,122 contributors

Branch: master ▾

New pull request

Create new file

Upload files

Find file

Clone or download ▾

Repositories	423K
Code	305M
Commits	3M
Issues	1M
Marketplace	7
Topics	824
Wikis	230K
Users	30K

Languages	
JavaScript	243,799
HTML	63,605
CSS	18,463
PHP	7,662
TypeScript	6,444
Java	4,325
Python	3,098
Ruby	2,917
CoffeeScript	1,954
C#	1,645



## JavaScript

JavaScript is an object-oriented programming language used alongside HTML and CSS to give functionality to web pages.

[See topic](#)

### 423,242 repository results

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#### [airbnb/javascript](#)

JavaScript Style Guide



JavaScript

★ 74.7k

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#### [GitbookIO/javascript](#)

GitBook teaching programming basics with Javascript

★ 1.7k

Apache-2.0 license Updated 22 days ago

#### [trekhleb/javascript-algorithms](#)

Algorithms and data structures implemented in JavaScript with explanations and links to further readings



JavaScript

★ 33.8k

# Extreme Storage & Computer Architecture Laboratory



Extreme Storage & Computer Architecture Laboratory at NC State University

<http://www.escalab.org>

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New

## WiGig\_benchmarks Private

benchmark code for WiGig project

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C TeX Python C++  
SystemVerilog

## WirelessDataCenter Private

C++ 1 Updated 6 days ago



## 2019ASPLOS-OpenWVR Private

TeX Updated 8 days ago



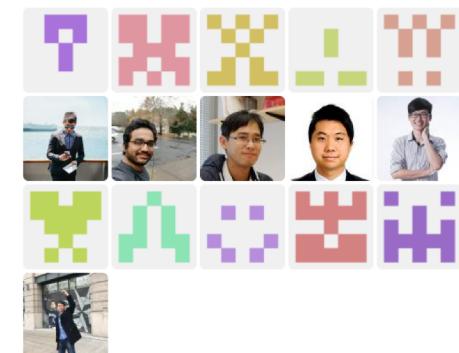
## 2019HPCA-Kannon Private

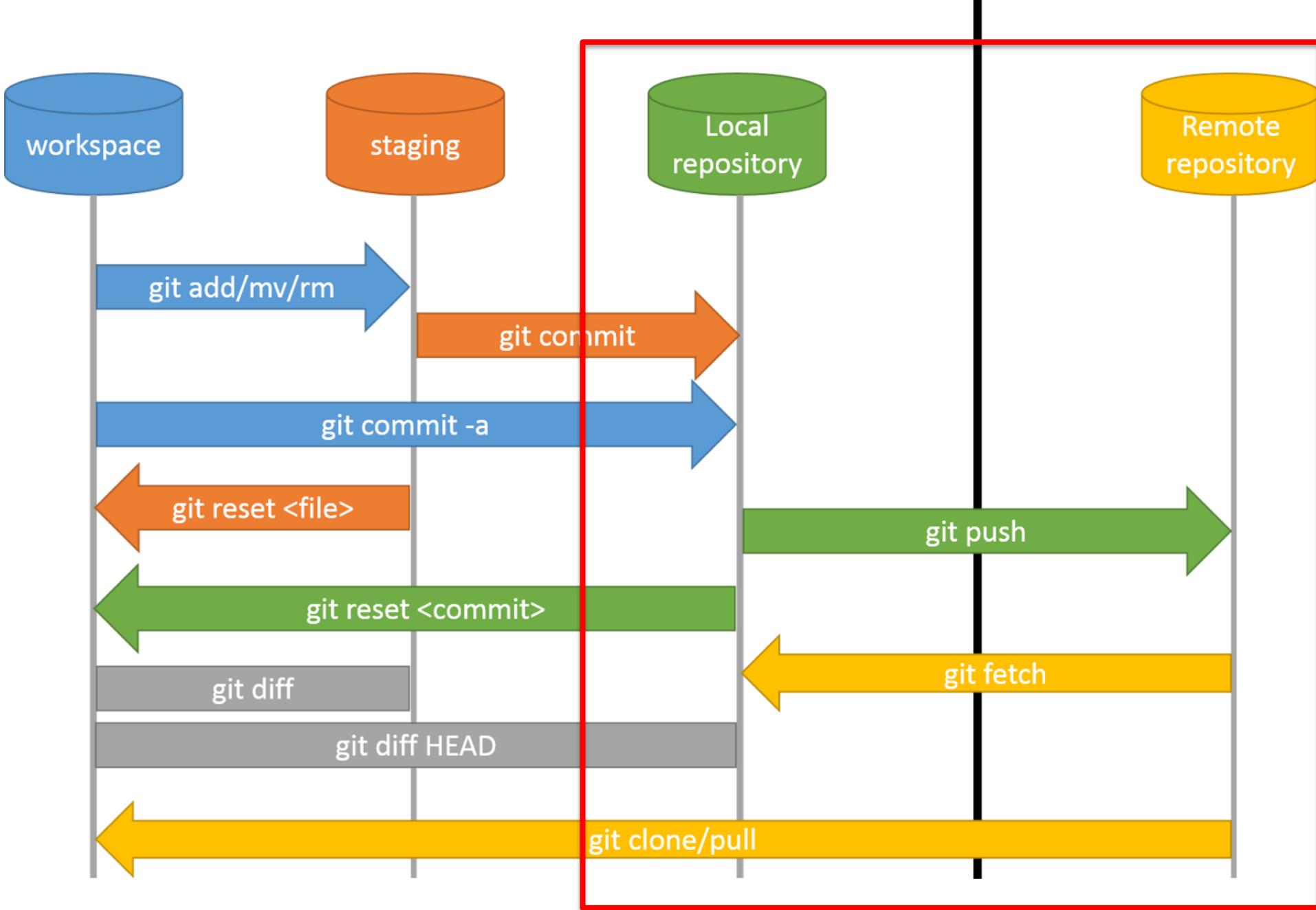
TeX Updated 12 days ago



### People

24 >





# Demo 2: Create a Remote Repo

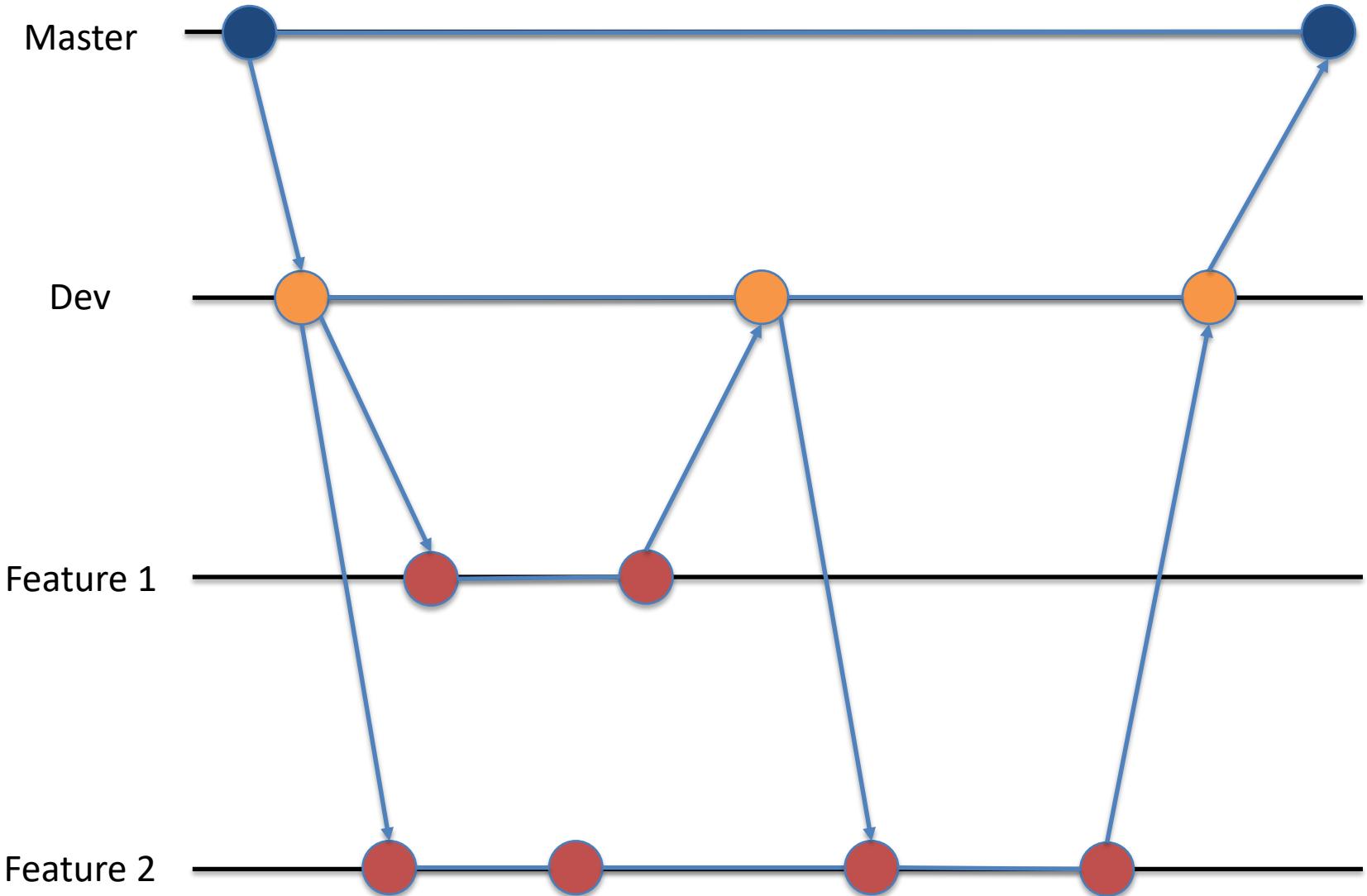
- create a new repo on GitHub
- link the local repo to the remote repo
- push the branch history to the remote

# Git-flow

- One of the Git Branching Models
- Separated Branch Functionalities:
  - Feature: A Specific Functionality or A Use Case
  - Develop: Product with merged unstable features
  - Master: Stable version of product
- Still Based on Git

# Git Terminology

- Branch: parallel universe



# Demo 3: Collaborate with Others

- clone a repo from remote to local
- switch between branches
- create/publish your own local branch
- pull the latest branch history from remote
- merge dev branch to your own branch

# What Conflicts Look Like

- Multiple Users Modified the Same Line of the Same File

```
1  <<<<< HEAD
2
3  Here is the original change.
4  =====
5  Here is the modified change.
6  >>>>> 58326c301d09b58f3ac23d616e73f7b478424cc5
7
```

# Demo 4: Fix Conflicts

- Search “====”
- Choose what to keep, what to discard
- “git add” to stage changes
- “git commit” to commit staged changes
- “git push” to push local changes to remote

# Pull Request

- Let other know what changes you made and review
- Leave a record to trace

The Go programming language <https://golang.org>

programming-language language go

37,421 commits 30 branches 215 releases 1,122 contributors

Branch: master ▾ New pull request Create new file Upload files Find file Clone or download ▾

# Demo 5: Pull Request

- Create a new "pull request" on GitHub
- Choose correct branches to merge from/to
- Leave details
- Choose reviewers

# What to Review

- Coding Style
- Logic
- Redundancy
- Better Functions to Use
- Anything You Are Concerned/Confused

# Takeaways

- Always Develop on Your Own Branches
- Always Commit When You Do Any Changes
- Always Pull From Remote Whenever You Start to Work
- Always Create a PR for Others to Review and Merge
- Always Ask When You Have Any Questions

# Tutorials

- <https://try.github.io/>
- <https://www.atlassian.com/git/tutorials>

# References

- <https://git-scm.com/book/en/v2/Getting-Started-About-Version-Control>
- <https://help.github.com/articles/resolving-a-merge-conflict-using-the-command-line/>
- <https://nvie.com/posts/a-successful-git-branching-model/>
- <https://www.atlassian.com/git/tutorials/comparing-workflows/gitflow-workflow>

# Q & A