After HW#0

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Introduce

After HW#0, you already know how to push files to Gitlab.

But you still need to know that Git is not only pushing the file to the cloud like Google Drive, you still need to consider its current version and repository version in Github or Gitlab.

In the following section, I'll introduce some step and how step works.

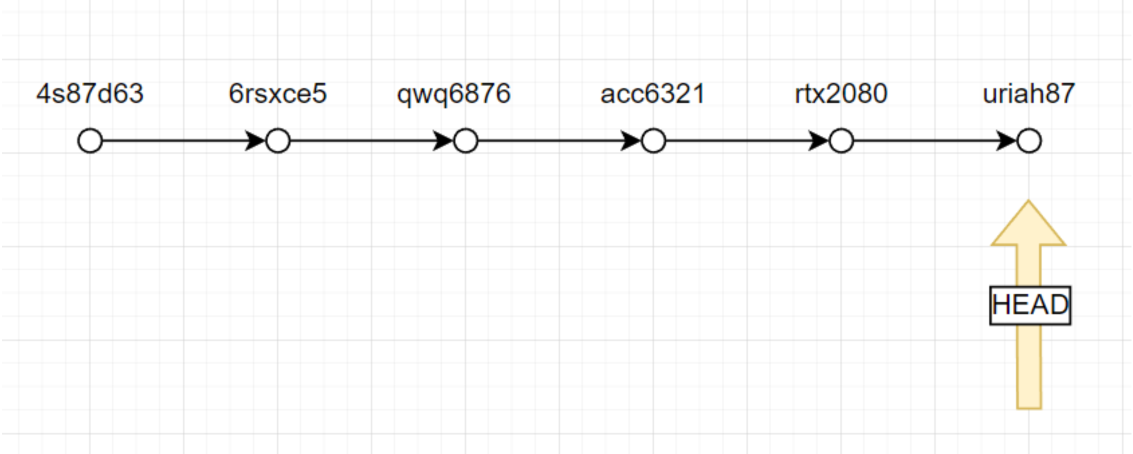
What's Git?

Git is free and open source software for distributed version control: tracking changes in any set of files, usually used for coordinating work among programmers collaboratively developing source code during software development.

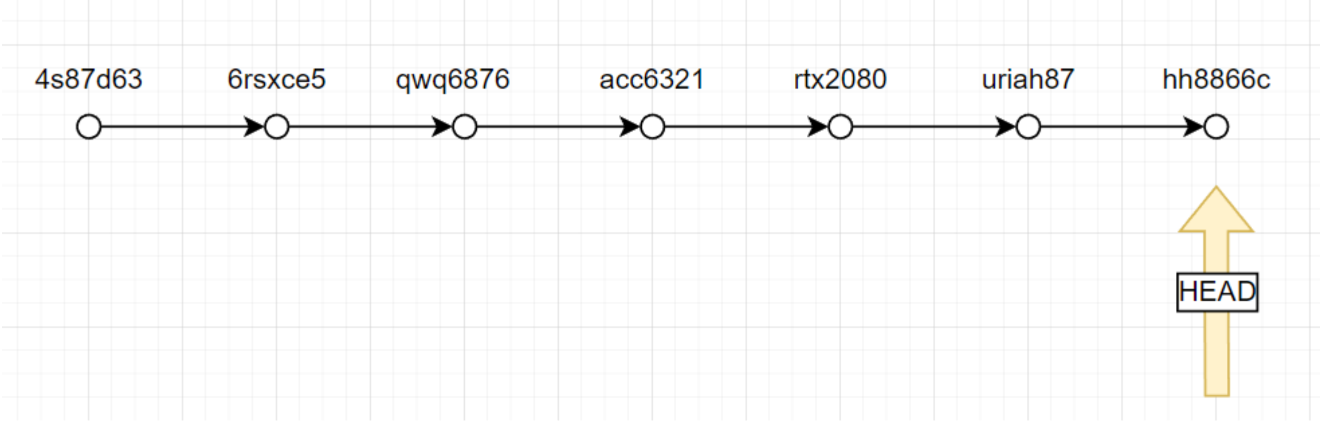
You can use Git to complete a repository with multiple collaborators or store code on GitHub or Gitlab, it will be a useful tool to backup, store, backtrack, and merge the code in the repository.

How does Git commit and push work?

Assuming we have only one branch and have multiple times of push, the graph of git history will be like the below photo.

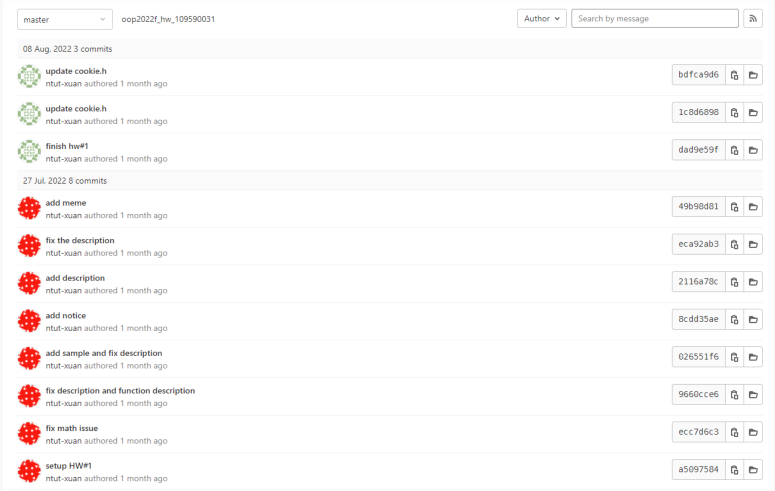


So if we change some file, commit and push again, the new node will append to the current HEAD node.



You can find the history/graph on the repository history/graph page.

In the following two photos, you can use the graph to realize the commit.



08 Aug, 2022 3 commits

update cookie.h
ntut-xuan authored 1 month ago
bdfca9d6

update cookie.h
ntut-xuan authored 1 month ago
1c8d6898

finish hw#1
ntut-xuan authored 1 month ago
dad9e59f

27 Jul, 2022 8 commits

add meme
ntut-xuan authored 1 month ago
49b98d81

fix the description
ntut-xuan authored 1 month ago
eca92ab3

add description
ntut-xuan authored 1 month ago
2116a78c

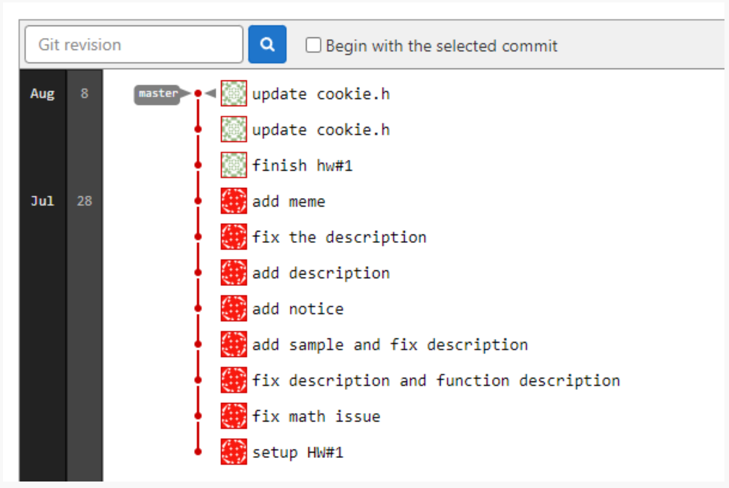
add notice
ntut-xuan authored 1 month ago
8cdd35ae

add sample and fix description
ntut-xuan authored 1 month ago
026551f6

fix description and function description
ntut-xuan authored 1 month ago
9660cce6

fix math issue
ntut-xuan authored 1 month ago
ecc7d6c3

setup HW#1
ntut-xuan authored 1 month ago
a5097584



```
update cookie.h
update cookie.h
finish hw#1
add meme
fix the description
add description
add notice
add sample and fix description
fix description and function description
fix math issue
setup HW#1
```

Push Rejected

Must the repository HEAD node be equal to the local HEAD node? The answer is **No**.

You can commit and push files on Gitlab/Github page, or use command-line tools like PowerShell, git bash, WSL...

So every time you commit and push the file, the repository HEAD node will update to the newer HEAD node.

If the HEAD node does not equal the repository HEAD node you remote, it will reject your commit by the following message.

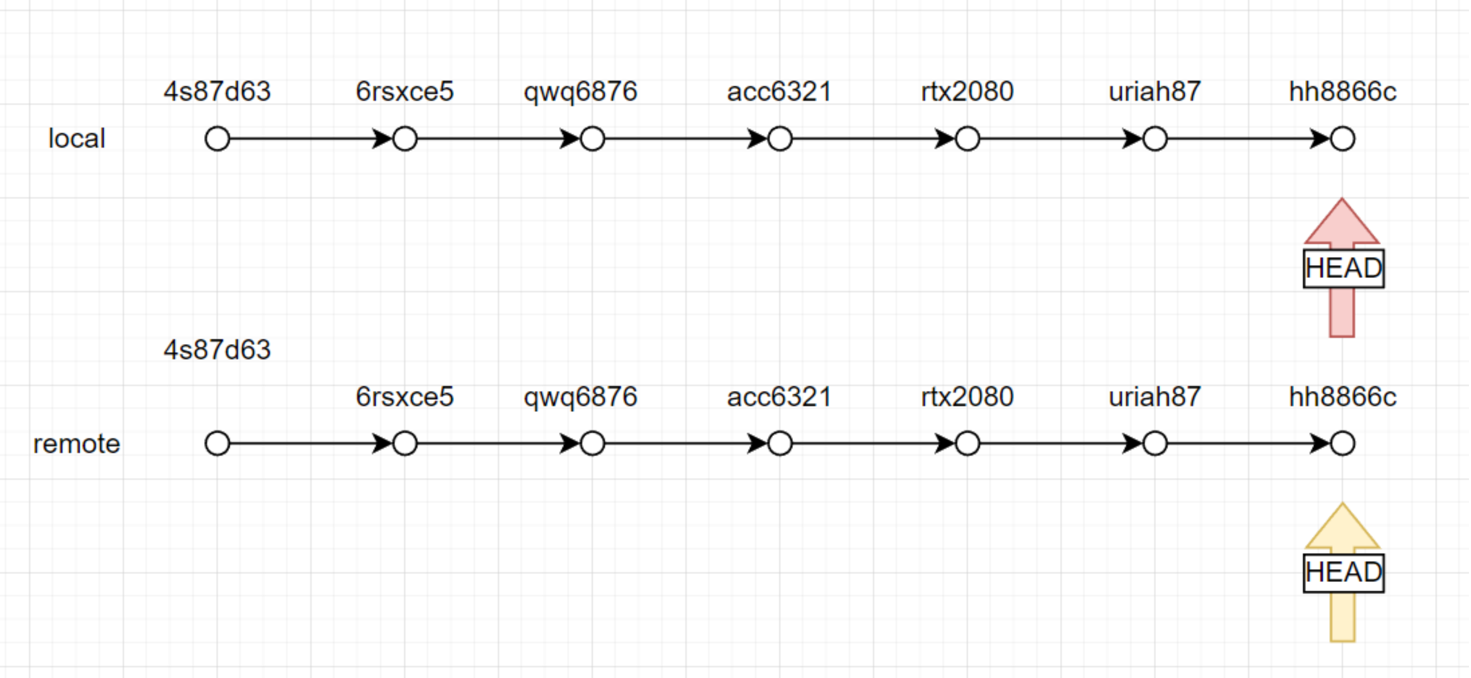
```
$ git push
To https://github.com/ntut-xuan/qwq.git
 ! [rejected] master -> master (non-fast-forward)
error: failed to push some refs to 'git@......git'
```

See the following example to help you realize push rejected.

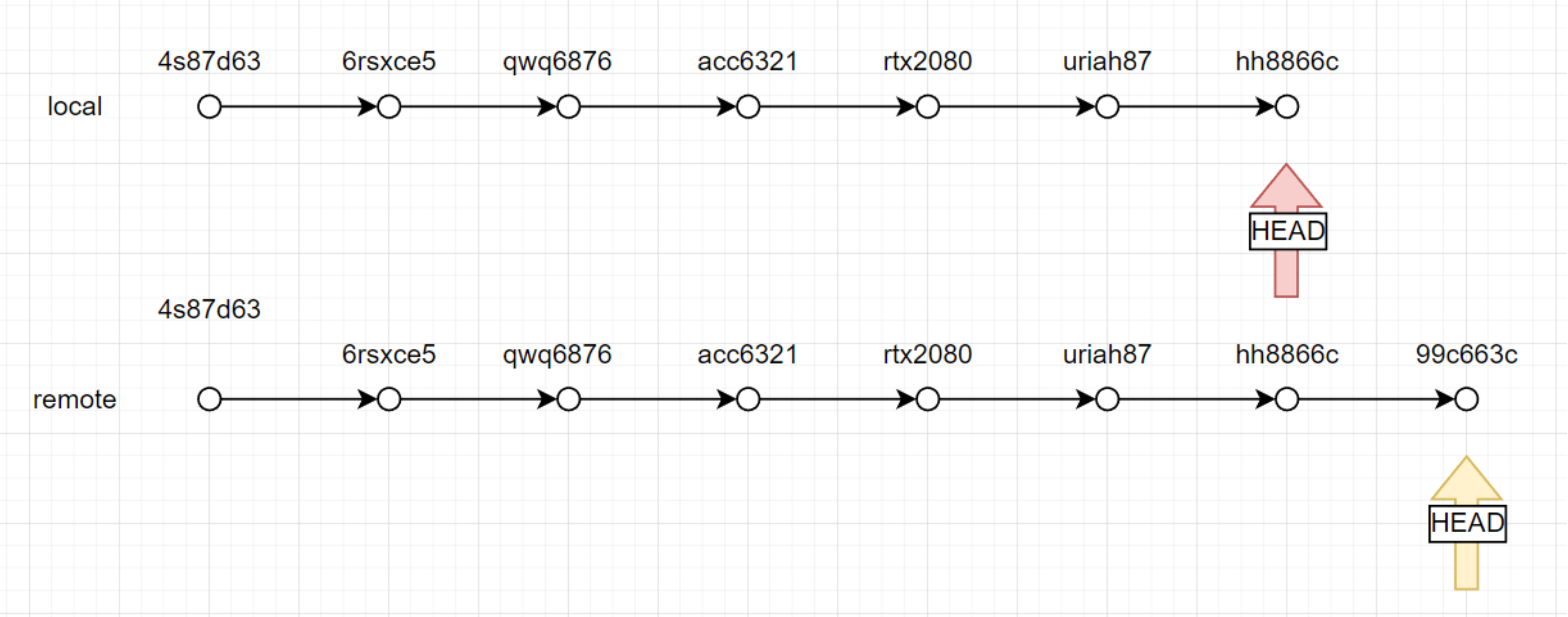
Example

Describe

Imagine that we have local-side (on the directory) and remote-side (for example, GitLab or GitHub) git, and we have the following version-control graph.



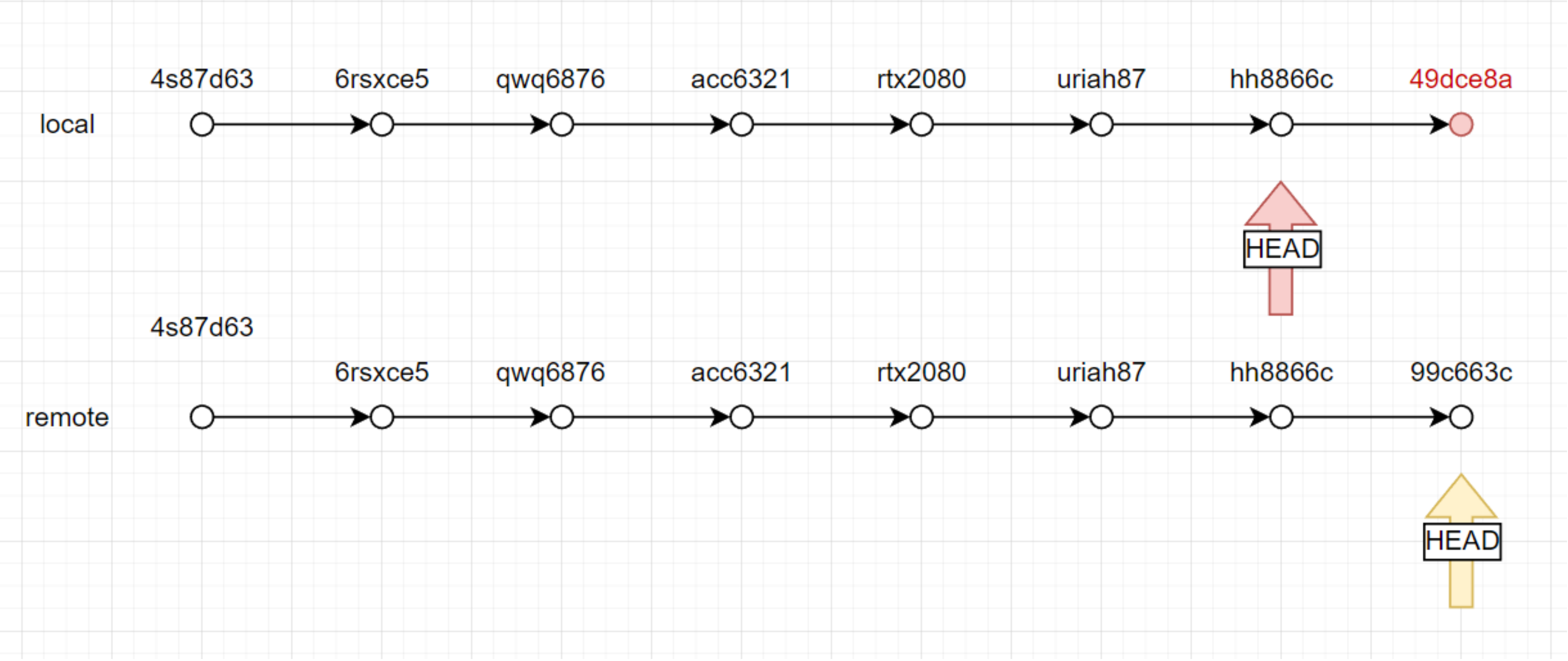
Next step, we commit and push a change on the Gitlab page, so remote-side HEAD will append a new node.



Next step, we change some files, commit and push to remote.

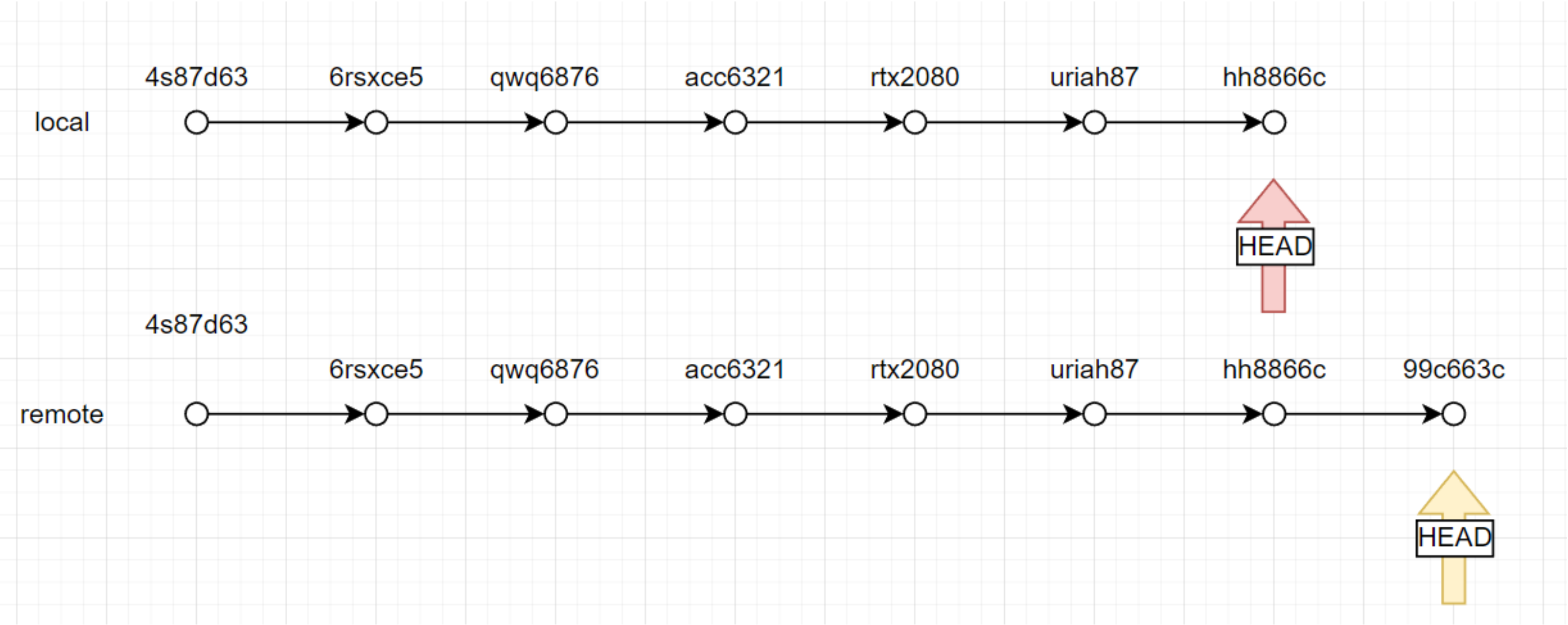
But it must be failed because the remote HEAD node is not equal to the local HEAD node.

If you doing the push action, the two control-version graphs must not sync, therefore the push will be rejected.



Solution

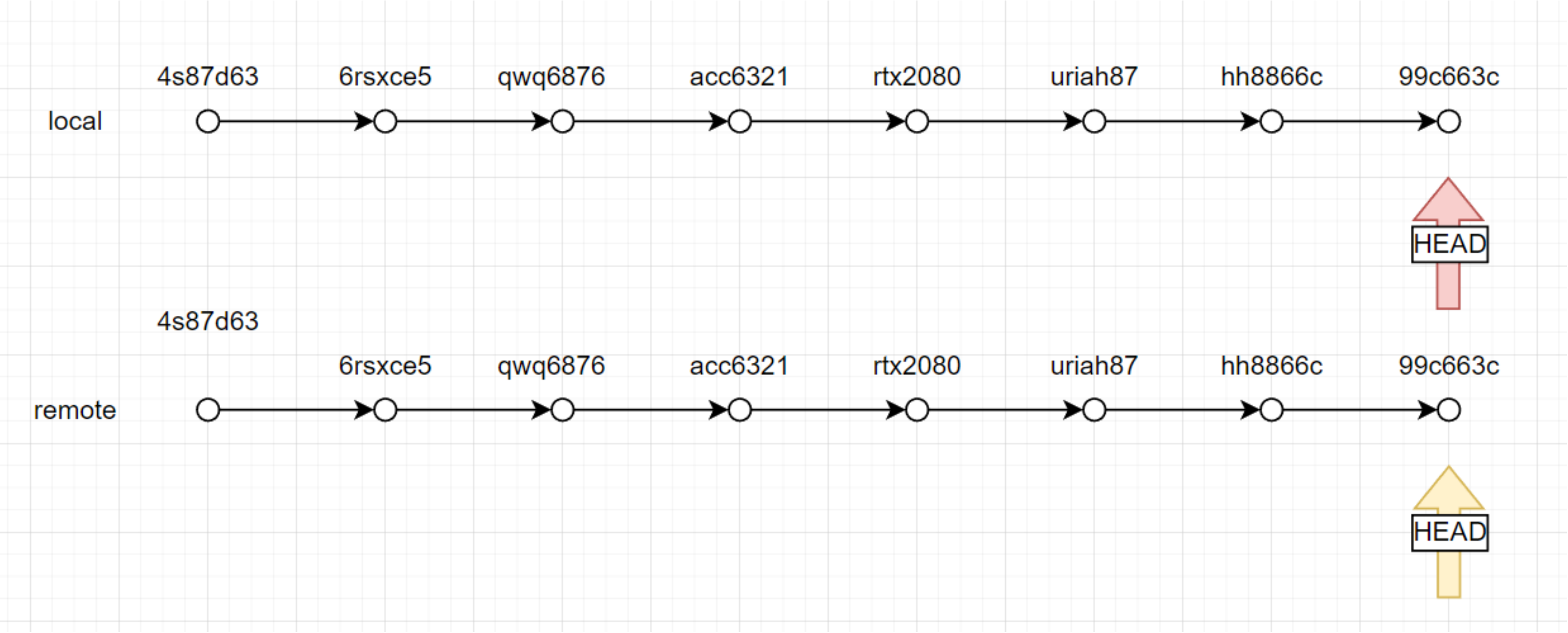
Every time you commit/push, you must make sure that the current local-side version-control graph is the same as the remote-side graph, so you can pull the remote-side update to the local side.



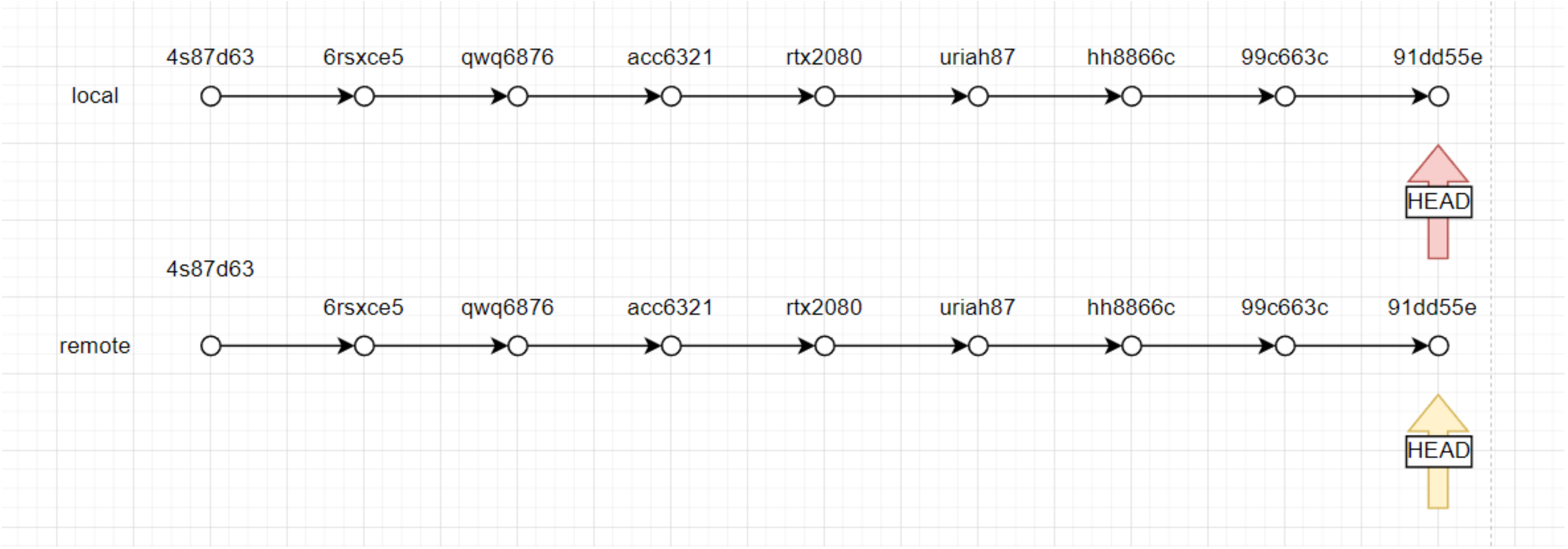
In this situation, you can pull the remote-side update, using:

```
$ git pull
```

and the file on the local side will update as same as the remote side, also the version-control graph will update.



Once you pull the version into the newest version, you can change the file in local, commit and push.



So the two graphs will sync.

Pull Rejected

In the previous section, we talk about the push rejected, and know pull-command will update the file.

But, how pull-action update file?

If I change the file, the file still update as same as the remote-side file? The answer is **No**.

When you execute the pull-command, the file must be as same as the current version of the local-side.

It means, your file must be as same as your last commit on the local-side, or you will receive pull-rejected.

```
$ git pull web master:master
From /Users/uriah-xuan/oop
 ! [rejected]        master     -> master  (non-fast-forward)
error: Your local changes to the following files would be overwritten by merge...
```

The solution is **you need to commit the current change, and doing pull again, merge change to the remote side.**

You may solve conflict when you merge file, commit and push again.

We will skip the section about how the merge action work.