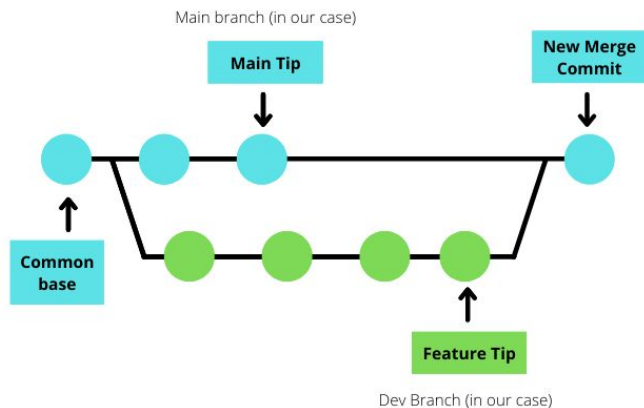


# 第八章 三方合并

## (Three Way Merges)

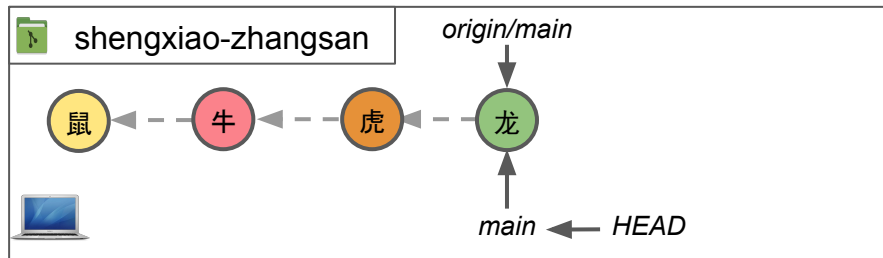
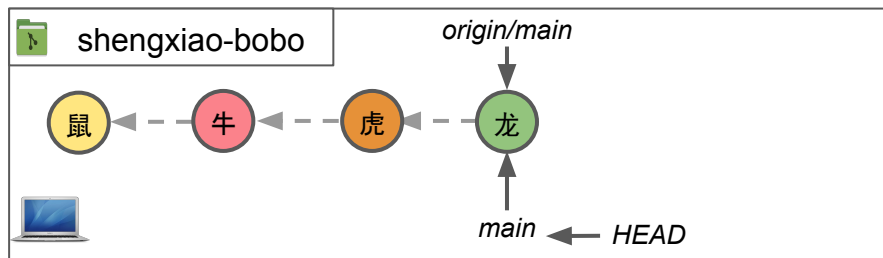
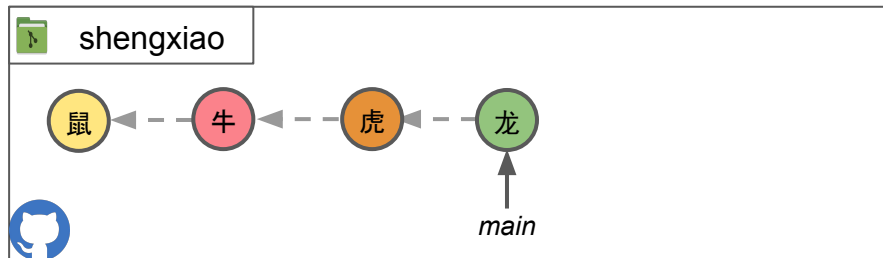


# 内容大纲

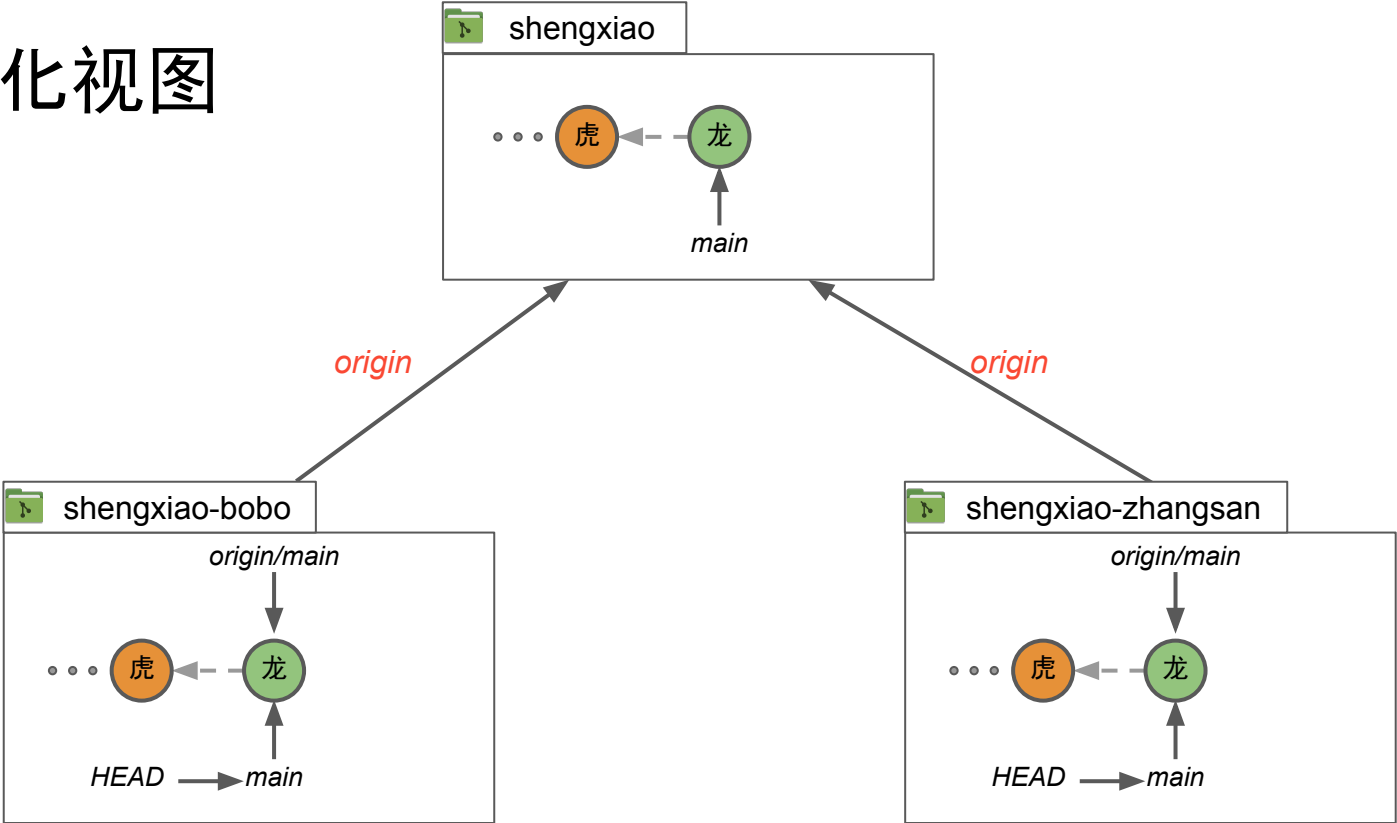
- 三方合并(Three-Way Merge)
- 为本地分支设定上游分支(upstream branch)
- Pull拉取(合并)



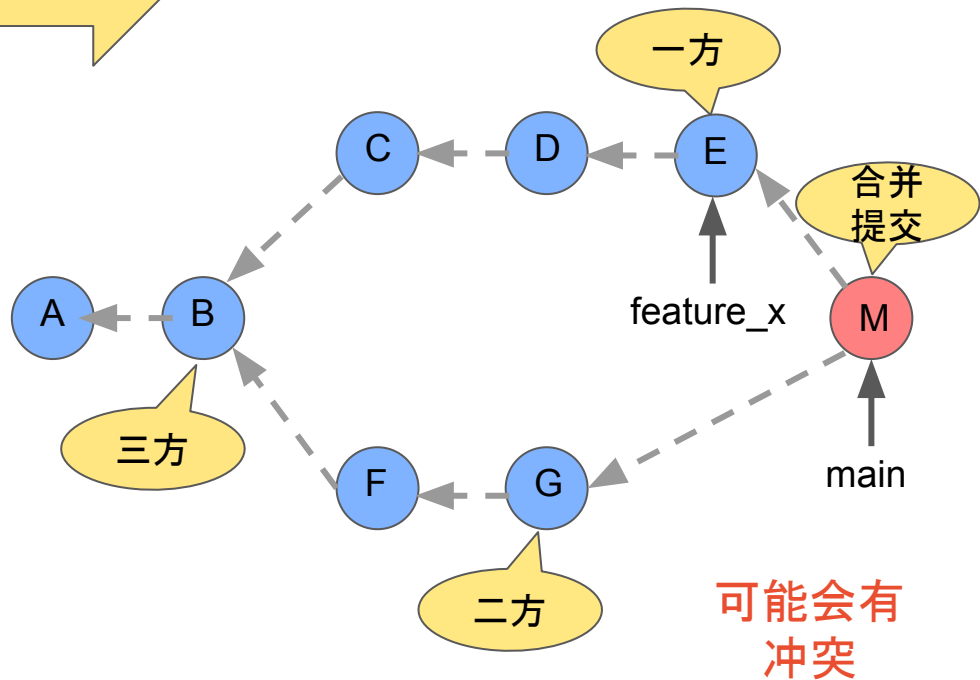
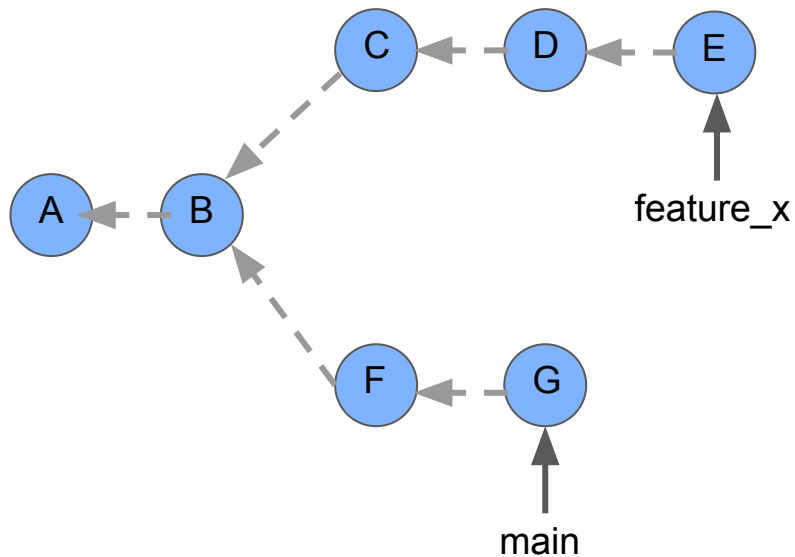
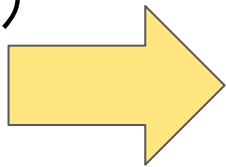
# 当前本地 和远程仓库 完整情况



# 简化视图



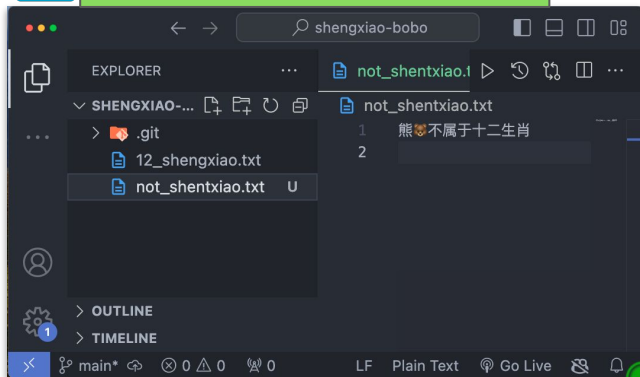
# 三方合并示意图(有分叉)



# 波波准备三方合并场景 (shengxiao-bobo)

1

## 1. 添加第二个文件和熊 🐻



2

## 2. add & commit

```
shengxiao-bobo -- boboweike@bobos-Mac -- .shengxiao-bobo -- :zsh -- 70x17
→ shengxiao-bobo git:(main) * git status
On branch main
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    not_shentxiao.txt

nothing added to commit but untracked files present (use "git add" to track)
→ shengxiao-bobo git:(main) * git add not_shentxiao.txt
→ shengxiao-bobo git:(main) * git commit -m "熊"
[main 85a17ec] 熊
1 file changed, 1 insertion(+)
create mode 100644 not_shentxiao.txt
→ shengxiao-bobo git:(main) *
```

3

## 3. git log

```
shengxiao-bobo -- git log -- git -- less -- git log -- 70x17
commit 85a17ec08c6742b4d2f91eab9c58c33d0325e213 (HEAD -> main)
Author: bobo <bobo@boboweike.cn>
Date: Thu Oct 31 22:31:24 2024 +0800

    熊

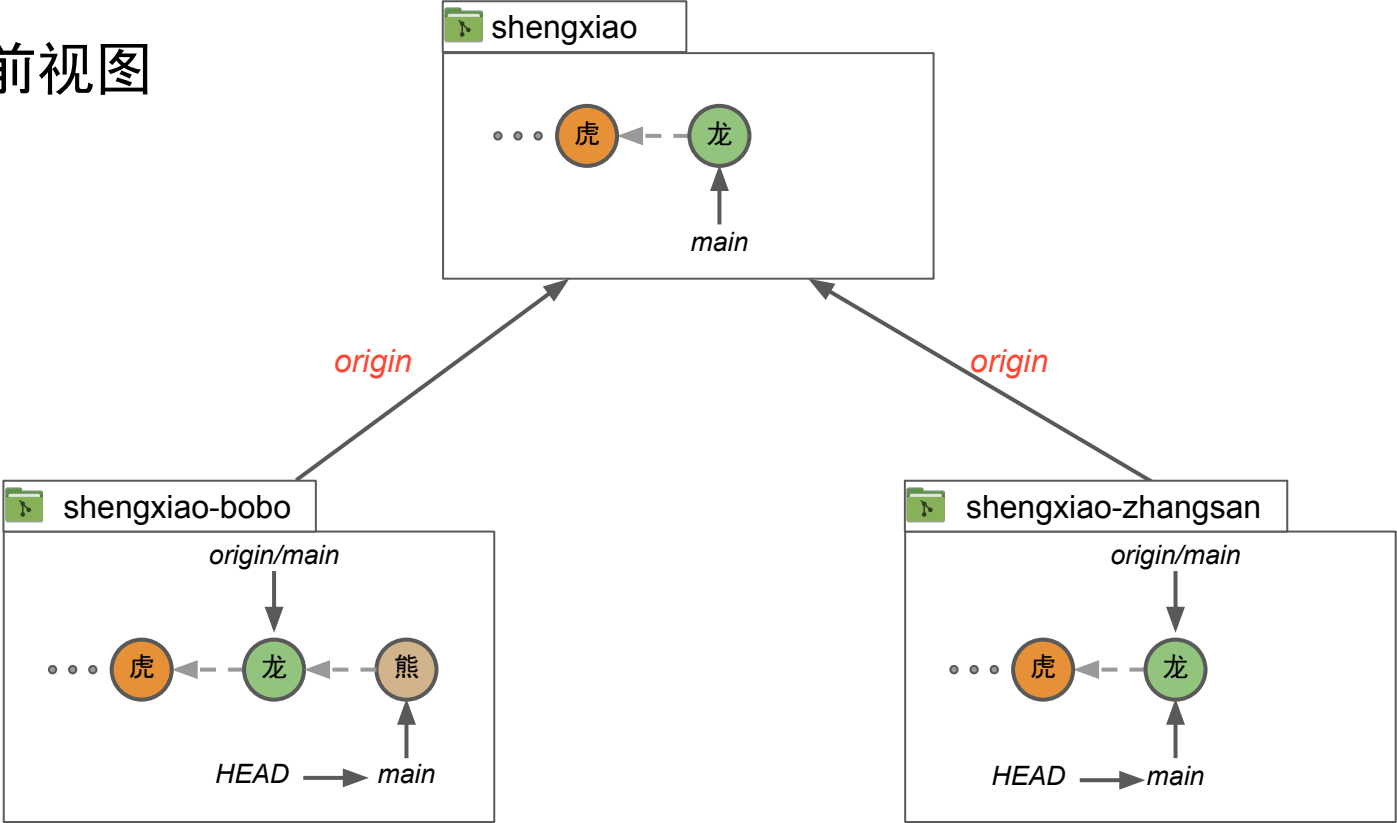
commit ae0726079d29818f7cfe7169f54020fd84d149a0 (origin/main)
Author: bobo <bobo@boboweike.cn>
Date: Wed Oct 16 12:09:47 2024 +0800

    龙

commit 9508fc1f62ab16bcb32654bf448c9e53f23e5d72
Author: bobo <bobo@boboweike.cn>
Date: Sun Oct 13 15:27:26 2024 +0800

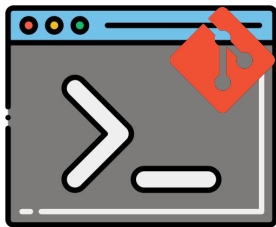
:
```

当前视图



# 命令 ~ 设定上游分支

- ***git branch -u <shortname>/<branch-name>***
  - 为当前本地分支设定上游分支
  - 设定后, **git push/pull**时无需指定远程分支名
  - **git clone**时自动设定上游分支





# 为本地main分支指定上游分支(shengxiao-bobo)

1

git branch -vv

```
shengxiao-bobo — git branch -vv — git — less - git bran...
* main 85a17ec 熊
~
~
~
(END)
```

3

git branch -vv

```
shengxiao-bobo — git branch -vv — git — less - git branch -vv — 51x5
* main 85a17ec [origin/main: ahead 1] 熊
~
~
~
(END)
```

2

git branch -u origin/main

```
shengxiao-bobo — boboweike@bobos-Mac — ..hengxiao-bobo — -zsh — 55x5
→ shengxiao-bobo git:(main) git branch -u origin/main
branch 'main' set up to track 'origin/main'.
→ shengxiao-bobo git:(main)
```

# push到远程仓库 (shengxiao-bobo)

## 1 git push

```
shengxiao-bobo — boboweike@bobos-Mac — ..shengxiao-bobo — -zsh — 57x11
→ shengxiao-bobo git:(main) git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 10 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 304 bytes | 304.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/bytevigor/shengxiao.git
   ae07260..85a17ec main -> main
→ shengxiao-bobo git:(main)
```

## 2 git log

```
shengxiao-bobo — git log — git — less — git log — 63x15
commit 85a17ec08c6742b4d2f91eab9c58c33d0325e213 (HEAD -> main,
origin/main)
Author: bobo <bobo@boboweike.cn>
Date: Thu Oct 31 22:31:24 2024 +0800

    熊

commit ae0726079d29818f7cfe7169f54020fd84d149a0
Author: bobo <bobo@boboweike.cn>
Date: Wed Oct 16 12:09:47 2024 +0800

    龙

commit 9508fc1f62ab16bcb32654bf448c9e53f23e5d72
:
```

## 3 push后github仓库

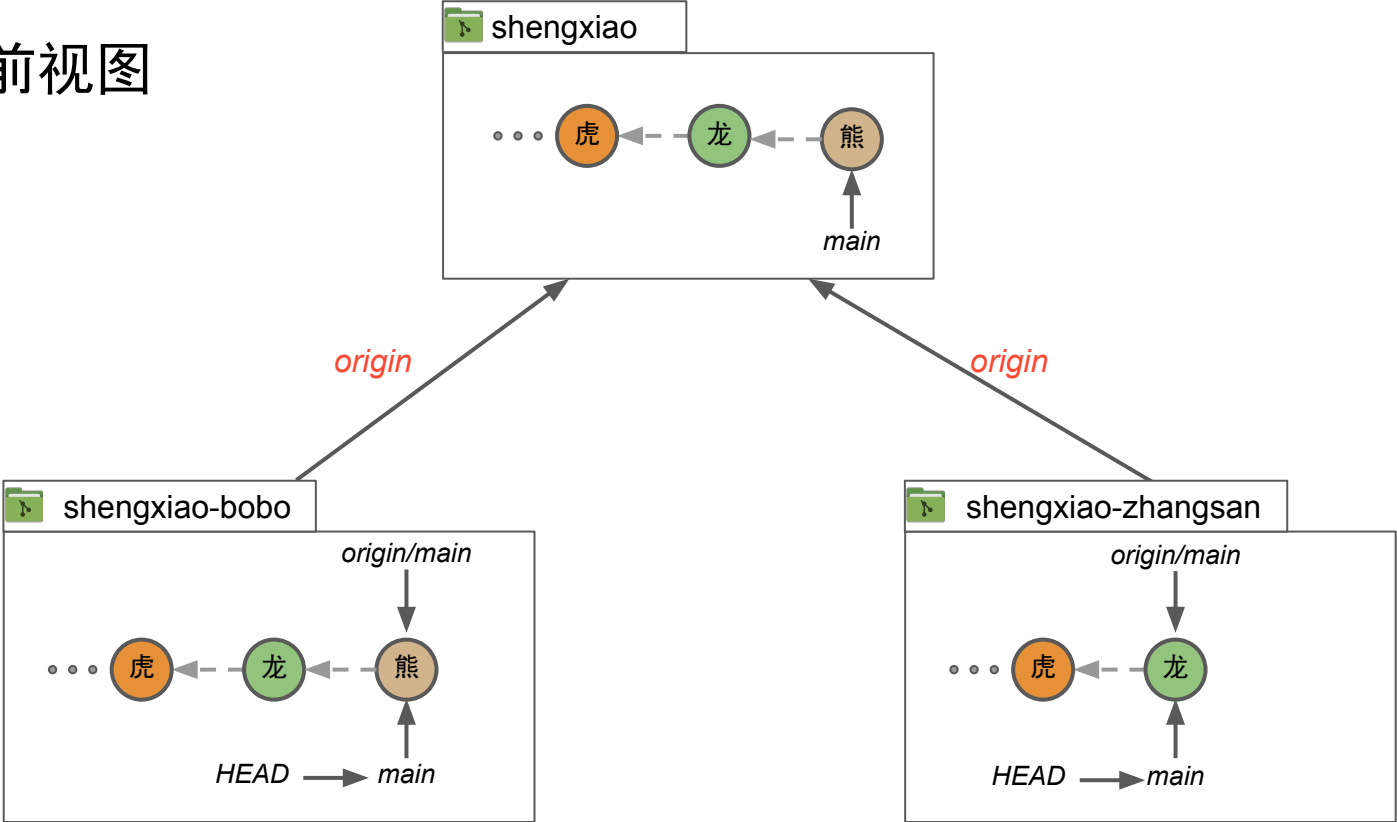
shengxiao Private Edit Pins Unwatch 1

main 1 Branch Tags Go to file Add file Code

bobo 熊 85a17ec · 30 minutes ago 5 Commits

12_shengxiao.txt	龙	2 weeks ago
not_shentxiao.txt	熊	29 minutes ago

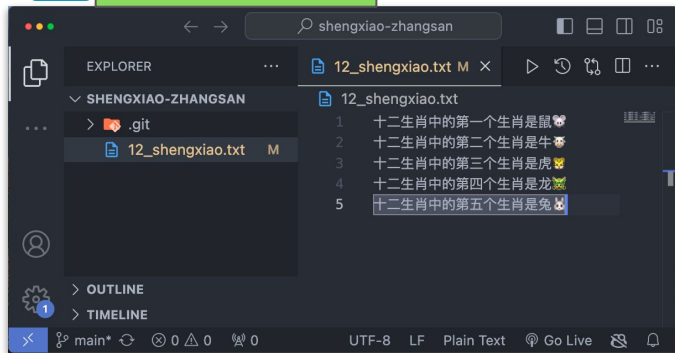
当前视图



# 张三准备三方合并场景 (shengxiao-zhangsan)

1

添加生肖兔 🐰



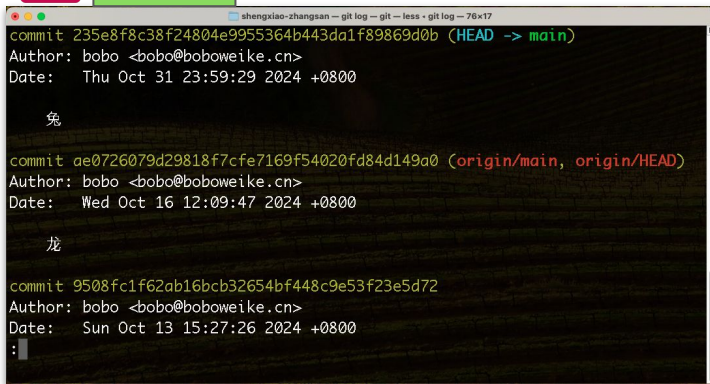
2

git add & git commit



3

git log



# git push 失败(shengxiao-zhangsan)

1

git push

```
shengxiao-zhangsan ~ boboweike@bobos-Mac ~ ..xiao-zhangsan ~ - zsh - 72x14
→ shengxiao-zhangsan git:(main) git push
To https://github.com/bytevigor/shengxiao.git
 ! [rejected]        main -> main (fetch first)
error: failed to push some refs to 'https://github.com/bytevigor/shengxiao.git'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
→ shengxiao-zhangsan git:(main)
```

2

git log

```
shengxiao-zhangsan ~ git log -- git -- less - git log -- 76x17
commit 235e8f8c38f24804e9955364b443da1f89869d0b (HEAD -> main)
Author: bobo <bobo@boboweike.cn>
Date: Thu Oct 31 23:59:29 2024 +0800

兔

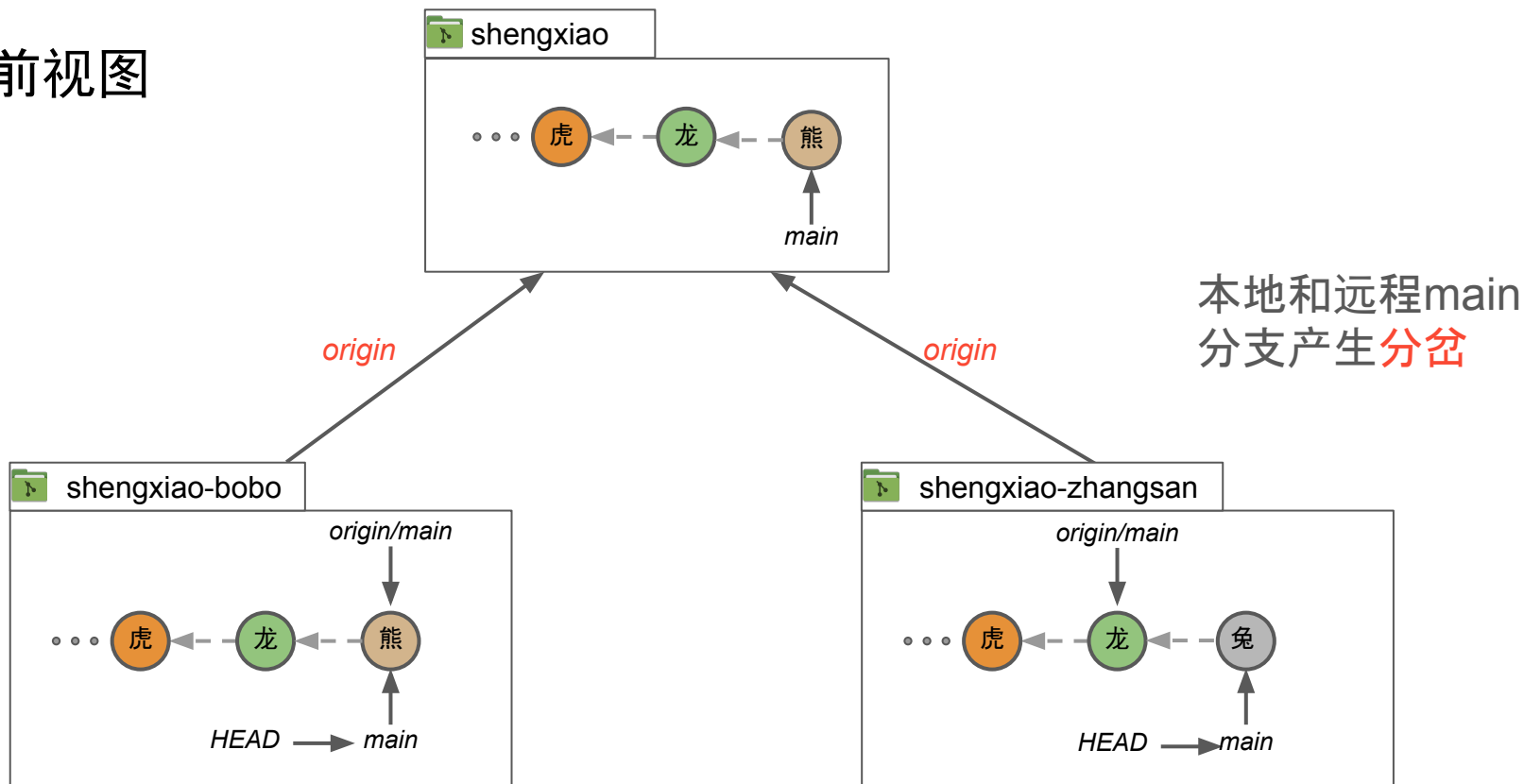
commit ae0726079d29818f7cfe7169f54020fd84d149a0 (origin/main, origin/HEAD)
Author: bobo <bobo@boboweike.cn>
Date: Wed Oct 16 12:09:47 2024 +0800

龙

commit 9508fc1f62ab16bcb32654bf448c9e53f23e5d72
Author: bobo <bobo@boboweike.cn>
Date: Sun Oct 13 15:27:26 2024 +0800

:
```

## 当前视图



# 执行三方合并(Three Way Merge)

## 1 git fetch

```
shengxiao-zhangsan git:(main) git fetch
remote: Enumerating objects: 4, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 3 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 284 bytes | 94.00 KiB/s, done.
From https://github.com/bytevigor/shengxiao
   ae07260..85a17ec  main       -> origin/main
shengxiao-zhangsan git:(main)
```

## 2 git merge origin/main

```
shengxiao-zhangsan git merge origin/main - vi - git merge origin/main - 72x9
Merge remote-tracking branch 'origin/main'
# Please enter a commit message to explain why this merge is necessary,
# especially if it merges an updated upstream into a topic branch.
#
# Lines starting with '#' will be ignored, and an empty message aborts
# the commit.
~
~
:wq
```

输入:wq  
保存

```
shengxiao-zhangsan git:(main) git merge origin/main
Merge made by the 'ort' strategy.
 not_shentxiao.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 not_shentxiao.txt
shengxiao-zhangsan git:(main)
```

## 3 git log

```
shengxiao-zhangsan git log --git --less - git log -- 76x22
commit 032ce5608ef0e09384c3b272570c790106ed434c (HEAD -> main)
Merge: 235e8f8 85a17ec
Author: bobo <bobo@boboweike.cn>
Date:   Fri Nov 1 20:42:26 2024 +0800

    Merge remote-tracking branch 'origin/main'

commit 235e8f8c38f24804e9955364b443da1f89869d0b
Author: bobo <bobo@boboweike.cn>
Date:   Thu Oct 31 23:59:29 2024 +0800

    兔

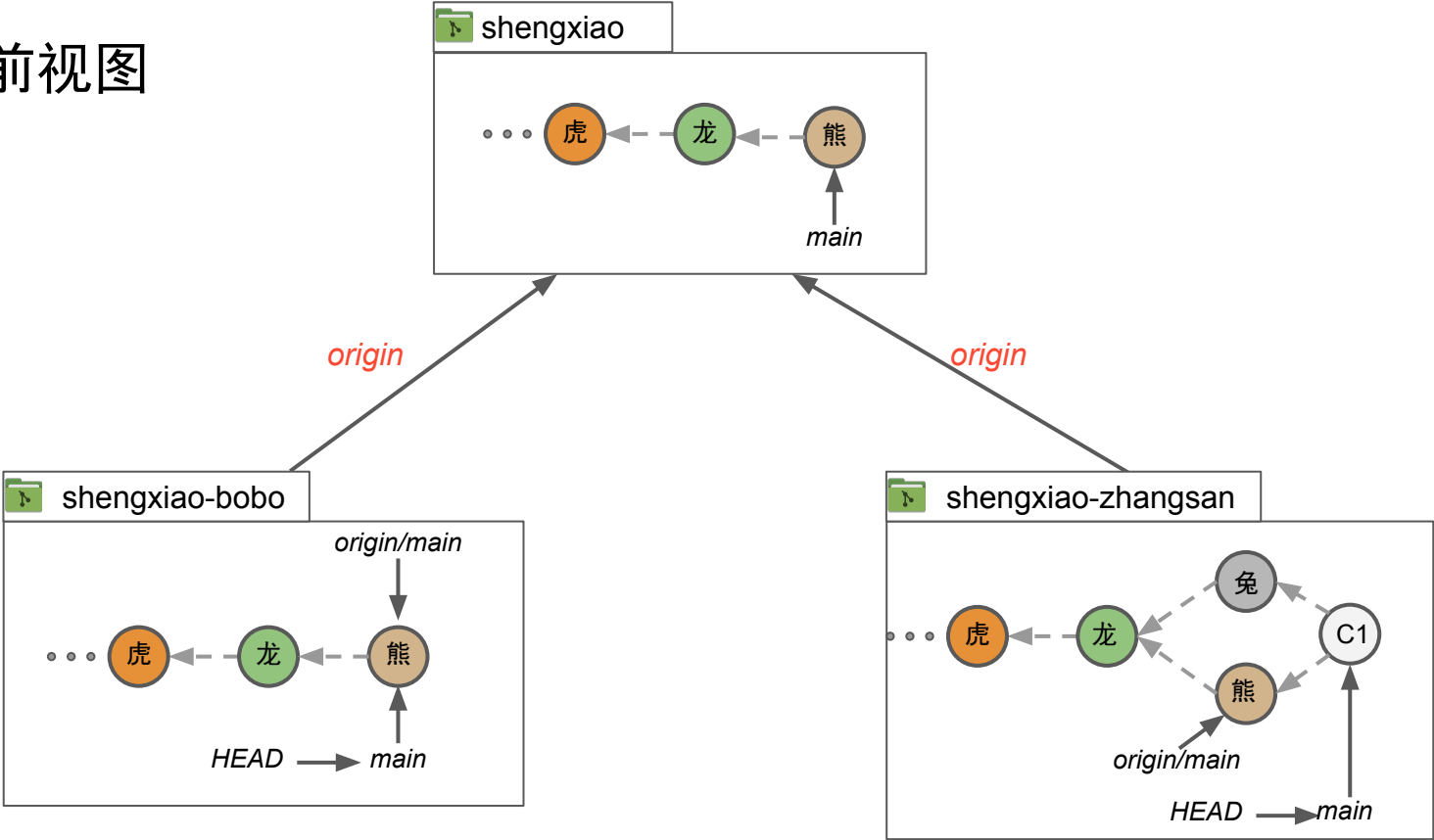
commit 85a17ec08c6742b4d2f91eab9c58c33d0325e213 (origin/main, origin/HEAD)
Author: bobo <bobo@boboweike.cn>
Date:   Thu Oct 31 22:31:24 2024 +0800

    熊

commit ae0726079d29818f7cfe7169f54020fd84d149a0
Author: bobo <bobo@boboweike.cn>
:
```

ort = 三方合并

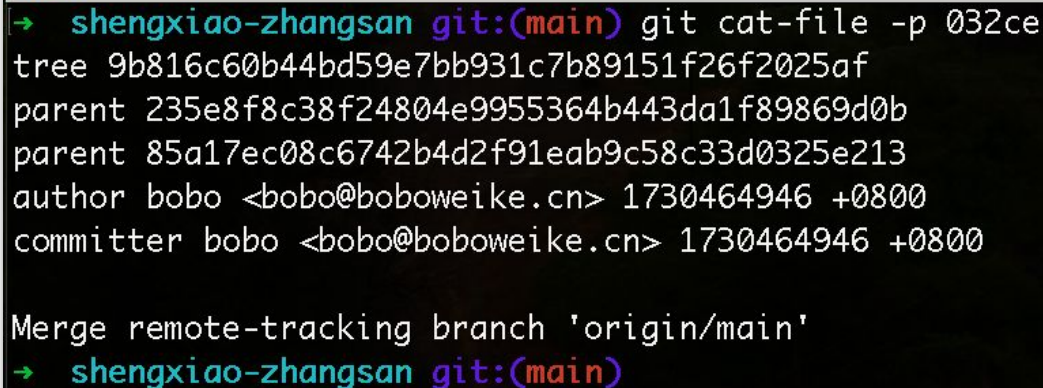
当前视图





## 查看C1提交的父提交(shengxiao-zhangsan)

```
git cat-file -p 032ce
```

A terminal window with a dark background and light-colored text. The window title bar shows 'shengxiao-zhangsan — boboweike@bobos-Mac — ..xiao-zhangsan — -zsh — 56x10'. The prompt is '→ shengxiao-zhangsan git:(main)'. The command 'git cat-file -p 032ce' has been executed, and the output is displayed in a monospaced font. The output shows the commit tree, parent hashes, author information, and committer information. At the bottom, it indicates a merge from the 'origin/main' branch, followed by the prompt '→ shengxiao-zhangsan git:(main)' again.

```
shengxiao-zhangsan — boboweike@bobos-Mac — ..xiao-zhangsan — -zsh — 56x10  
→ shengxiao-zhangsan git:(main) git cat-file -p 032ce  
tree 9b816c60b44bd59e7bb931c7b89151f26f2025af  
parent 235e8f8c38f24804e9955364b443da1f89869d0b  
parent 85a17ec08c6742b4d2f91eab9c58c33d0325e213  
author bobo <bobo@boboweike.cn> 1730464946 +0800  
committer bobo <bobo@boboweike.cn> 1730464946 +0800  
  
Merge remote-tracking branch 'origin/main'  
→ shengxiao-zhangsan git:(main)
```

# push到远程仓库(shengxiao-zhangsan)

## 1 git push

```
shengxiao-zhangsan — boboweike@bobos-Mac — ..xiao-zhangsan — zsh — 68x11
→ shengxiao-zhangsan git:(main) git push
Enumerating objects: 9, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 10 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (5/5), 576 bytes | 576.00 KiB/s, done.
Total 5 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/bytevigor/shengxiao.git
  85a17ec..032ce56  main -> main
→ shengxiao-zhangsan git:(main)
```

## 2 git log

```
shengxiao-zhangsan — git log — git — less + git log — 62x23
commit 032ce5608ef0e09384c3b272570c790106ed434c (HEAD -> main,
  origin/main, origin/HEAD)
Merge: 235e8f8 85a17ec
Author: bobo <bobo@boboweike.cn>
Date:   Fri Nov 1 20:42:26 2024 +0800

    Merge remote-tracking branch 'origin/main'

commit 235e8f8c38f24804e9955364b443da1f89869d0b
Author: bobo <bobo@boboweike.cn>
Date:   Thu Oct 31 23:59:29 2024 +0800

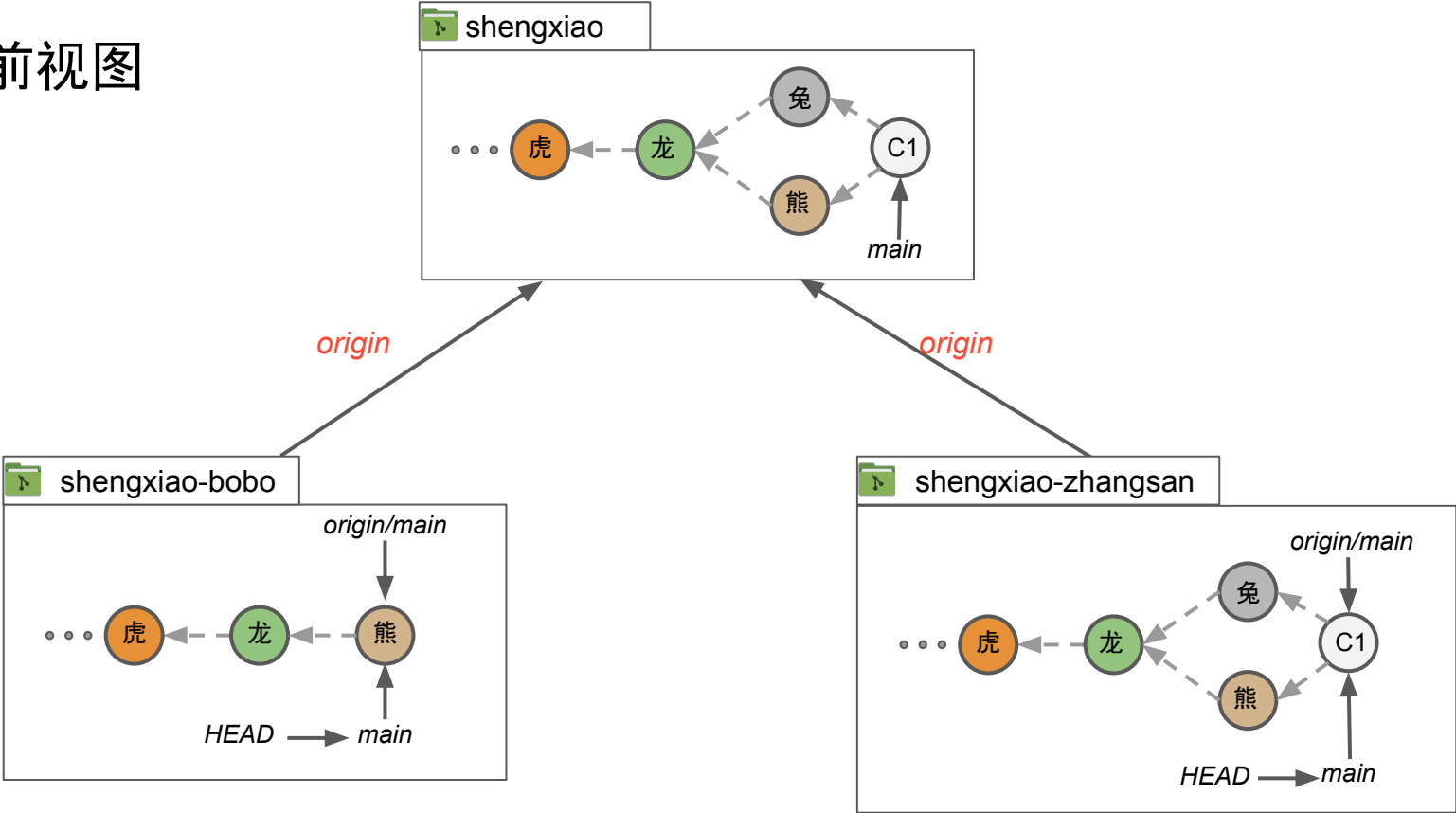
    兔

commit 85a17ec08c6742b4d2f91eab9c58c33d0325e213
Author: bobo <bobo@boboweike.cn>
Date:   Thu Oct 31 22:31:24 2024 +0800

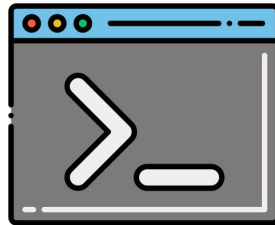
    熊

commit ae0726079d29818f7cfe7169f54020fd84d149a0
Author: bobo <bobo@boboweike.cn>
:
```

当前视图



# 命令~pull拉取(合并)



- ***git pull <shortname> <branch\_name>***
  - 从和shortname对应的远程仓库的branch\_name分支中，拉取变更并合并入本地当前分支
- ***git pull***
  - 如果和本地当前分支对应的上游分支已经设定，那么拉取变更并合并入本地当前分支
- ***fetch和pull该如何选择？***
  - 如果本地和远程分支没有分叉，则使用git pull进行快进合并
  - 否则分两步合并，先git fetch，然后视情况做merge(--no-rebase) or rebase(--rebase)
  - 本课程只在满足快进合并条件时才用git pull

git pull = git fetch +

git merge  
OR  
git rebase

1

git log

```
shengxiao-bobo -- git log -- git -- less -- git log -- 62x16
commit 85a17ec08c6742b4d2f91eab9c58c33d0325e213 (HEAD -> main,
origin/main)
Author: bobo <bobo@boboweike.cn>
Date: Thu Oct 31 22:31:24 2024 +0800

    熊

commit ae0726079d29818f7cfe7169f54020fd84d149a0
Author: bobo <bobo@boboweike.cn>
Date: Wed Oct 16 12:09:47 2024 +0800

    龙

commit 9508fc1f62ab16bcb32654bf448c9e53f23e5d72
Author: bobo <bobo@boboweike.cn>
:
```

3

git log

```
shengxiao-bobo -- git log -- git -- less -- git log -- 62x23
commit 032ce5608ef0e09384c3b272570c790106ed434c (HEAD -> main,
origin/main)
Merge: 235e8f8 85a17ec
Author: bobo <bobo@boboweike.cn>
Date: Fri Nov 1 20:42:26 2024 +0800

    Merge remote-tracking branch 'origin/main'

commit 235e8f8c38f24804e9955364b443da1f89869d0b
Author: bobo <bobo@boboweike.cn>
Date: Thu Oct 31 23:59:29 2024 +0800

    兔

commit 85a17ec08c6742b4d2f91eab9c58c33d0325e213
Author: bobo <bobo@boboweike.cn>
Date: Thu Oct 31 22:31:24 2024 +0800

    熊

commit ae0726079d29818f7cfe7169f54020fd84d149a0
Author: bobo <bobo@boboweike.cn>
:
```

## 波波pull拉取合并 (shengxiao-bobo)

2

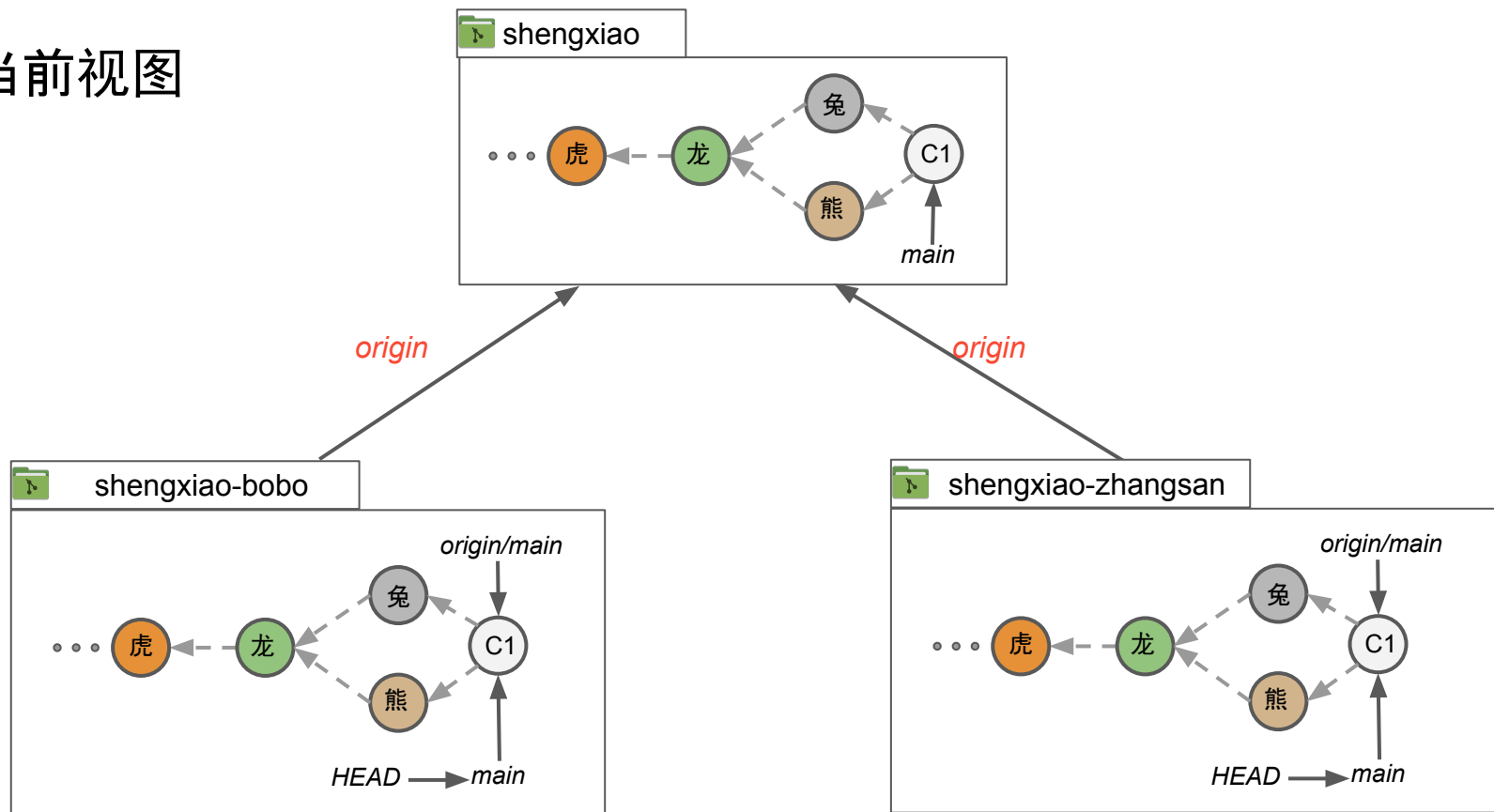
git pull

拉取

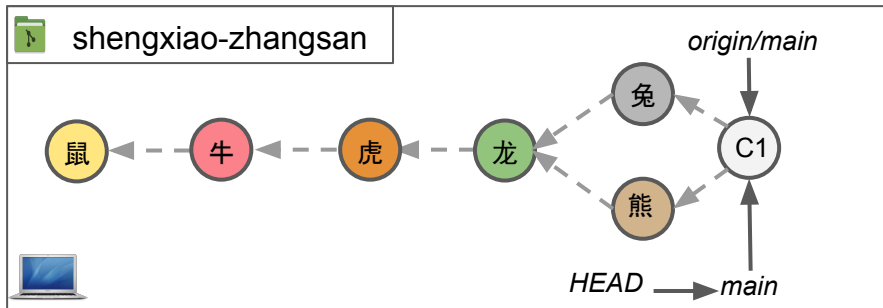
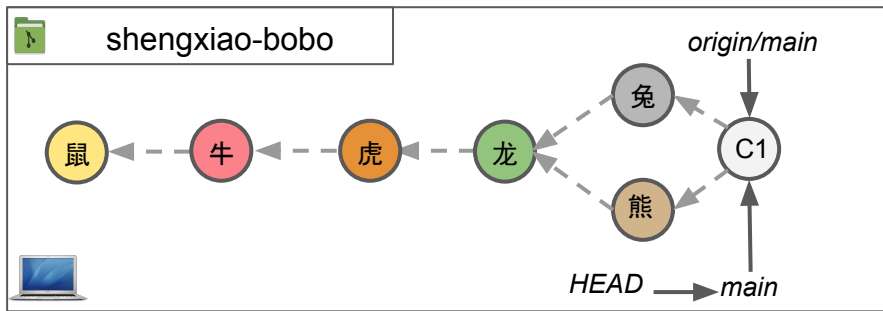
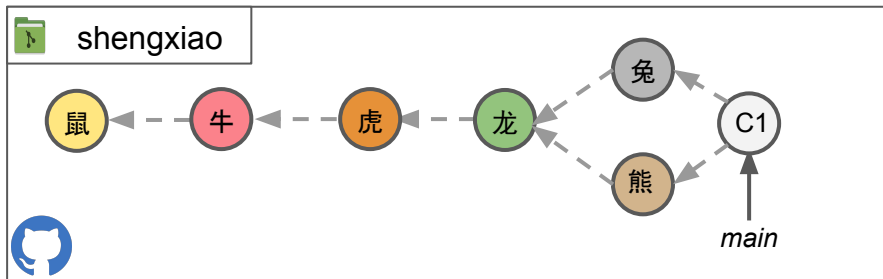
合并

```
shengxiao-bobo -- boboweike@bobos-Mac -- zsh -- 62x16
shengxiao-bobo git:(main) git pull
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (8/8), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 5 (delta 1), reused 5 (delta 1), pack-reused 0 (
from 0)
Unpacking objects: 100% (5/5), 556 bytes | 111.00 KiB/s, done.
From https://github.com/bytevigor/shengxiao
   85a17ec..032ce56  main       -> origin/main
Updating 85a17ec..032ce56
Fast-forward
 12_shengxiao.txt | 1 +
 1 file changed, 1 insertion(+)
shengxiao-bobo git:(main)
```

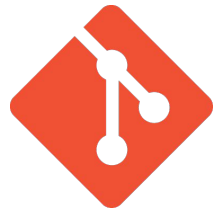
## 当前视图



# 当前本地 和远程仓库 完整情况



# 小结和预告



- 本课小结

- 本地和远程分支产生了分叉(diverge)
- 演示三路合并: `git fetch` -> `git merge` -> vi编辑合并消息
- 如何设定上游分支 -> 直接push/pull
- 演示了 `git pull`
  - `git pull` = `git fetch` + `git merge(or rebase)`
  - 建议满足快进合并条件时才采用

- 下节预告

- 三路合并+合并冲突