Git

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SWPP Practice Session
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Assignment

- TBA this week

- Check our website
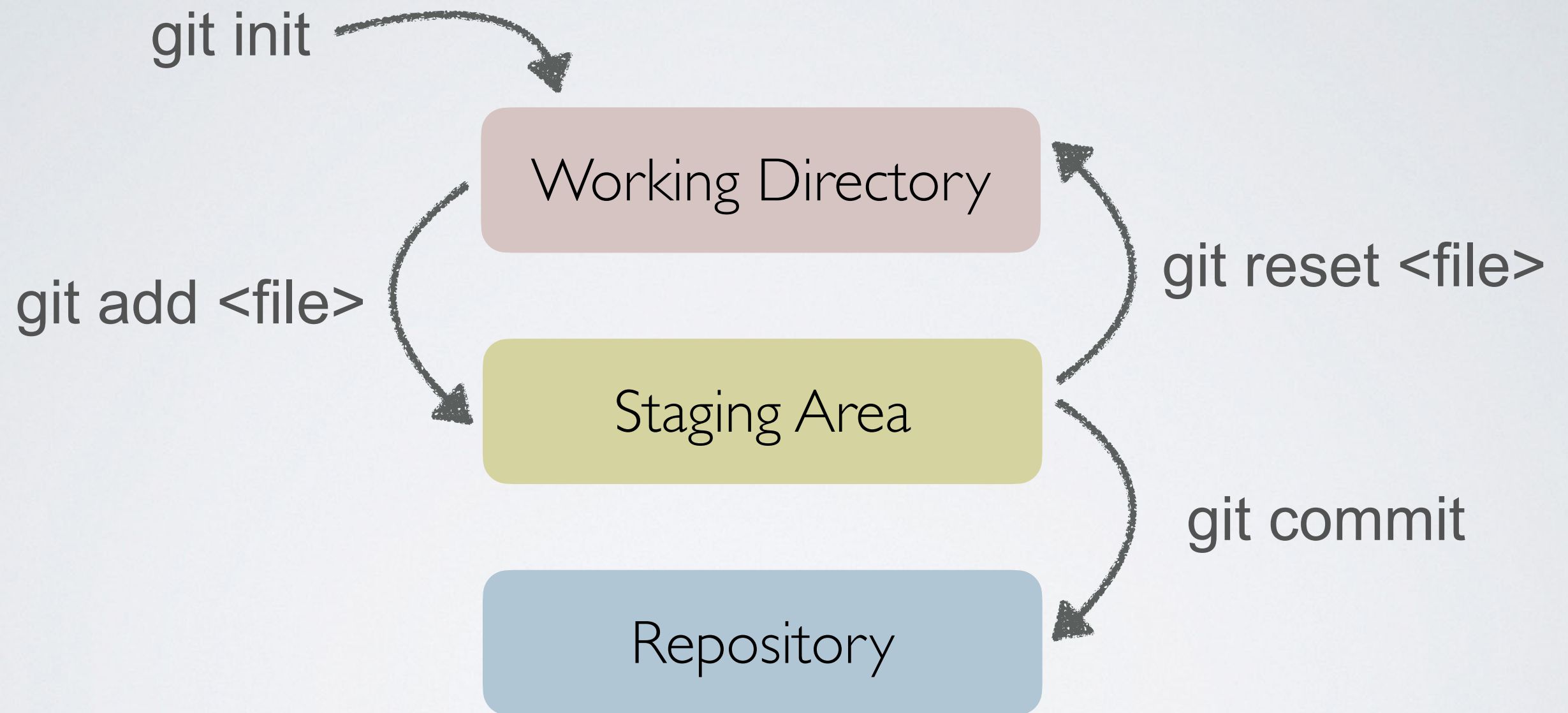 https://github.com/snu-sf-class/swpp202101

Git & GitHub

- Git: a version control software

- GitHub: a web service hosting git repositories

  - helps collaboration (access control, issues, pull requests)

  - Bitbucket, GitLab, …

Let's Install Git!

- See https://git-scm.com/book/en/v2/Getting-Started-Installing-Git

- Init

- Commit

- Branch

- Merge

- Rebase

Git 101

Git Init & Commit

- Initialize a repository with empty commit using '**git init**'

- Add a file '**hello.cpp**' and see '**git status**'

- Stage the file by running '**git add hello.cpp**'

- Then, run '**git commit**'

- See '**git log**'

Make a Branch Food

- Branch 'food': Let's print your favorite food

- **git branch food**   # create a new branch 'food'

- **git checkout food**   # checkout to 'food'

- **git add hello.cpp**   # after updating it

- **git commit**

- **git checkout master** # go back to master

Make a Branch Drink

- Branch 'drink': Let's print your favorite drink

- **git checkout -b drink**   # short for branch & checkout

- **git add hello.cpp**

- **git commit**

- **git checkout master**

Merge Food

- **git branch**   # should be 'master'
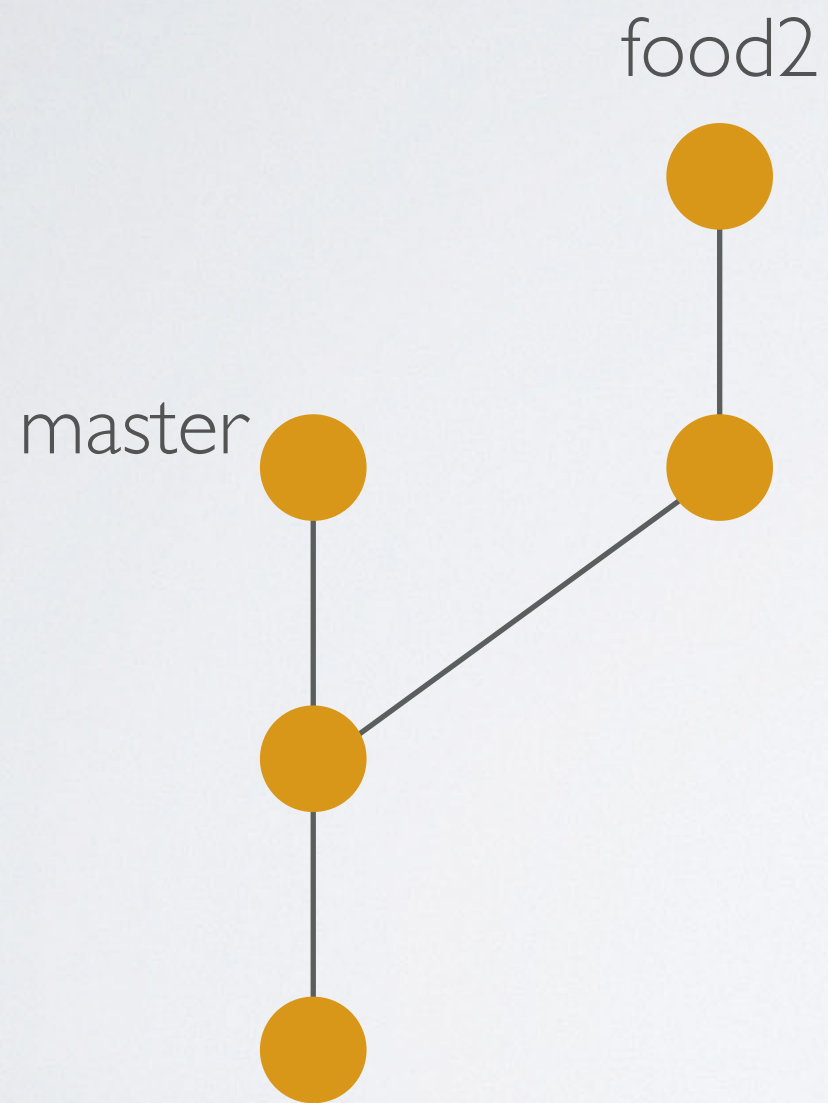
- **git merge food**

- **git log**

Merge Drink

- **git merge drink**
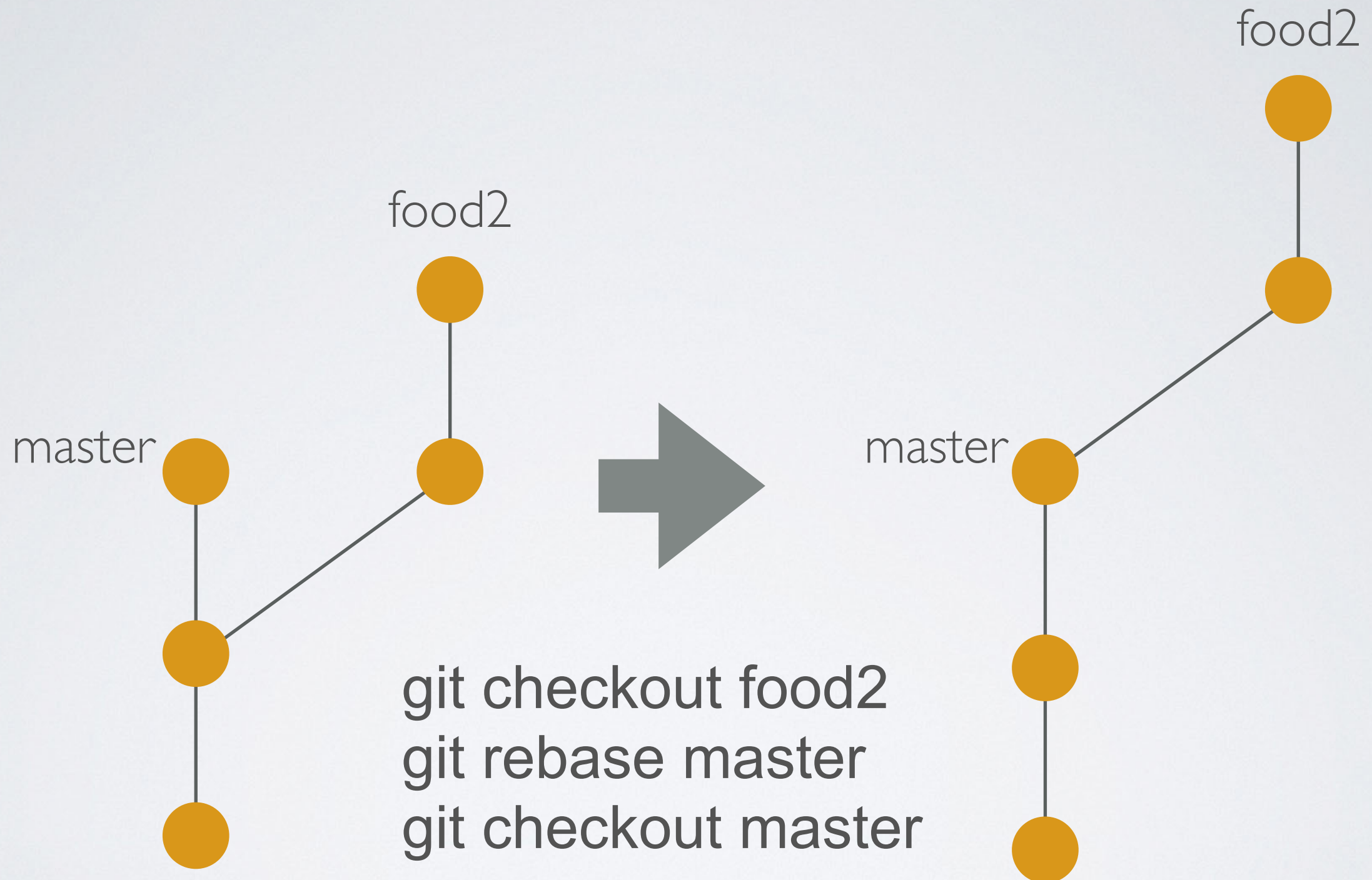
- Fix conflict

- **git add hello.cpp**

- **git commit**

Merge Commits Are Ugly!

- Can we make the history of master linear after merge?
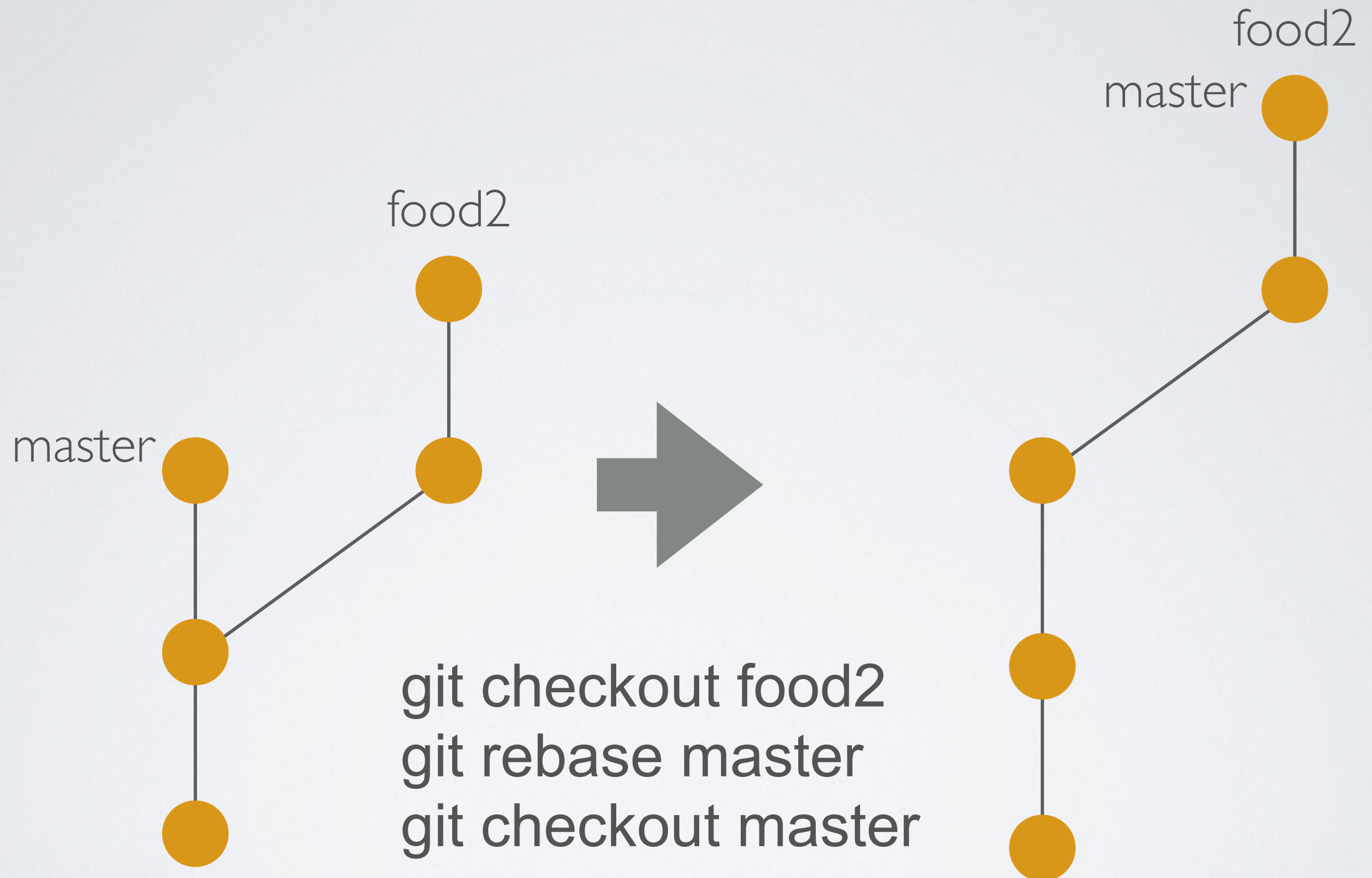
- Yes, but you should do '**git rebase**' first

REBASE

food2

master

REBASE

git checkout food2
git rebase master
git checkout master

REBASE

food2

master

git checkout food2
git rebase master
git checkout master

food2

master

Now, '**git merge food2**' does not make a merge commit

Git Rebase Is Useful

- '**git rebase -i**' allows you to edit commit history

- Change commit messages, delete commits, etc..

Git

- git init <directory>
    - initializes a new git repository
- git status
    - shows the status of changes
- git add <file>
    - stages a change
- git commit
    - saves the snapshot
- git log
    - shows commit log (history)
- git branch <branch>
    - shows existing branches (without <branch> specified), create new branch
- git checkout <branch>
    - checkouts to a branch
- git merge <branch>
    - merges the specified branch to the current one
- git rebase <branch>
    - rebases the specified branch to the current one

Interacting With Remote Repositories

- git remote add <repo>

- git remote remove <remote>

- git remote -v

- git remote rename <repo1> <repo2>

- git push

- git fetch

- git pull = fetch + merge

- git clone <repo>

Getting Branches From Remote Repo

- After clone, '**git branch**' won't show food/drink branches

- You need to checkout them from remote

- **git branch -a**

- **git checkout -b food origin/food**

- **git checkout -b drink origin/drink**

Other Useful Commands

- git commit --amend

  - modifies last commit

- git branch -D <branch>

  - deletes a branch

- git reset <commit>

  - resets to a commit

- git blame <file>

  - shows last commit/person who modified each line of a file

- git diff

  - shows differences made

- git cherry-pick

  - applies selected changes

Tips

- Reference: https://git-scm.com/docs

- Use '.**gitignore**' file!
  see: https://git-scm.com/docs/gitignore

- Configure your local git (username & email)
  see: https://git-scm.com/book/en/v2/Customizing-Git-Git-Configuration

- Change default editor for git

  see: https://stackoverflow.com/questions/2596805/how-do-i-make-git-use-the-editor-of-my-choice-for-commits