

Gestion de versions avec Git

Pinebook - octobre 2021







Objectifs

- Découvrir, et prendre Git en main
- Comprendre et appliquer le "Git Workflow"
- Quelques commandes avancées de Git

Quelques commandes shell Linux au passage!

THIS IS GIT. IT TRACKS COLLABORATIVE WORK ON PROJECTS THROUGH A BEAUTIFUL DISTRIBUTED GRAPH THEORY TREE MODEL. COOL. HOU DO WEUSE IT? NO IDEA. JUST MEMORIZE THESE SHELL COMMANDS AND TYPE THEM TO SYNC UP. IF YOU GET ERRORS, SAVE YOUR WORK ELSEWHERE, DELETE THE PROJECT, AND DOUNLOAD A FRESH COPY.

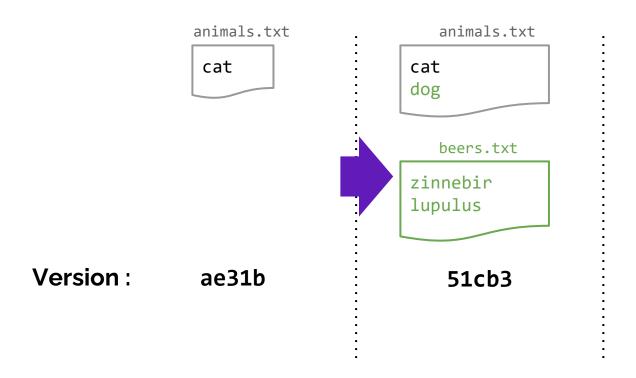
Pourquoi Git?

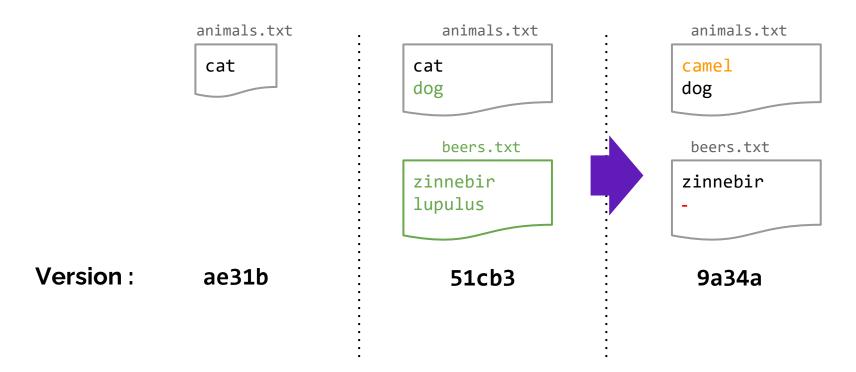
- Très répandu (utilisé pour le kernel linux notamment)
- Structurer son travail en version
- Git est complètement distribué
- Très complet et puissant
- Permet de travailler facilement en groupe

Hello Git!



Version: ae31b

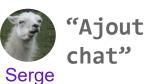




animals.txt

Version: ae31b

Message:



cat dog

zinnebir lupulus

beers.txt

51cb3



animals.txt

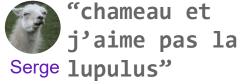
dog

beers.txt

zinnebir

_

9a34a





Historique

 Comment le projet a changé ?



Personnes

 Travailler à plusieurs sur le même projet



Modifications

- Quoi ?
- Quand?
- Pourquoi ?

Composant de base: le commit

9a34a ab89e

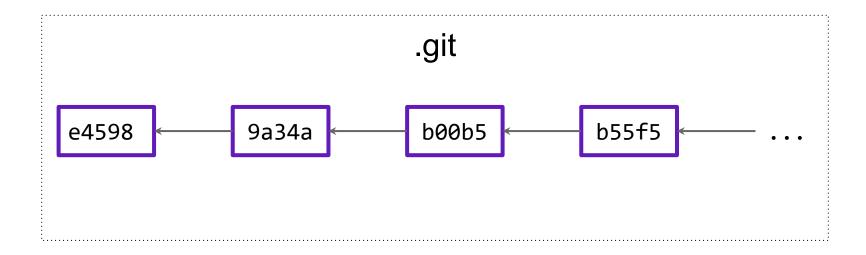
Parent	e321a
Auteur	Donald
Message	Code a tremendous wall
Date	2015-06-16
Tree	

Parent 9a34a Auteur Donald Make code great Message again **Date** 2017-01-20 **Tree** [structure interne de git]

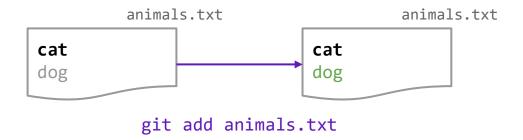
Un commit est un ensemble de modifications

Depuis le commit précédent

Repository

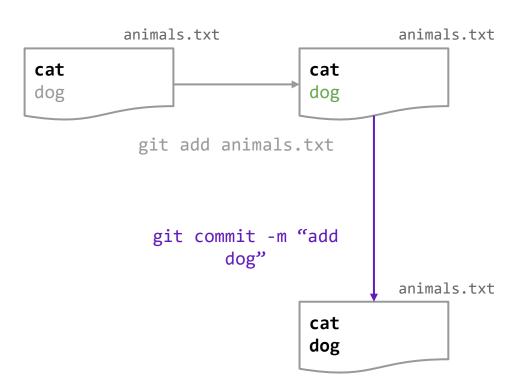


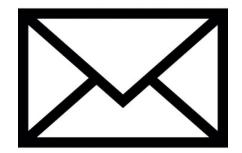
Staging area



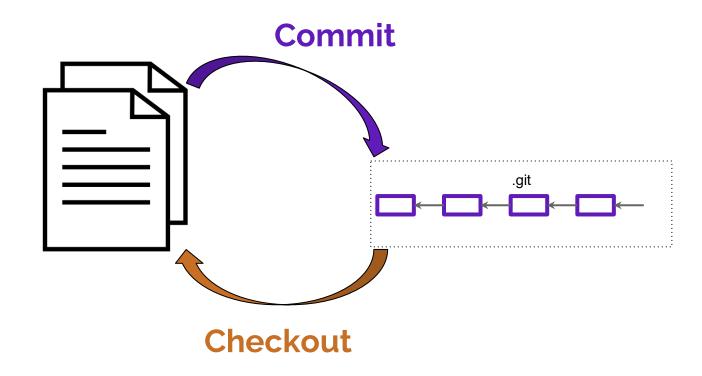


Staging area





Checkout

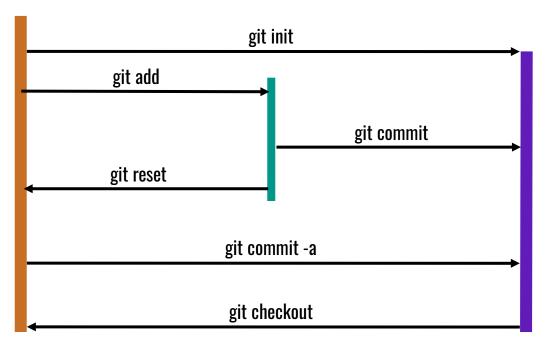


Déroulement d'un commit

Working directory (Fichiers dans dossier courant)

Staging area (Modifications en préparation)

Repository (Modifications enregistrées)



Perdu?

- git status: Afficher l'état actuel des fichiers et du repository
- git diff: Afficher les modifications courantes
- git log: Afficher l'historique

Commandes courantes

- git add -p: Ajouter interactivement les modifications par morceau
- git add fichier.txt: Ajouter toutes les modifications de fichier.txt
- git add *.txt: Ajouter toutes les modifications des fichiers .txt

- git commit -a: Enregistrer toutes les modifications d'un coup
- EDITOR="gedit" git commit: Utiliser GEdit pour écrire le message de commit
- git commit -m "message": Passer le message de commit directement

- git config [--global] user.name "nom": Indiquerson nom
- git config [--global] user.email "em@il": Indiquerson email

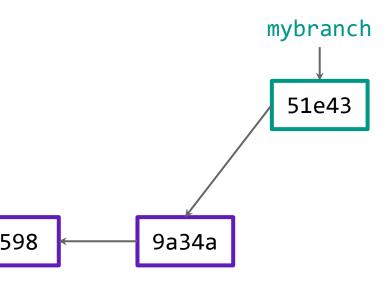
Show time!

- Créer un repo dans un projet
- Ajouter un commit
- Consulter l'historique
- Ajouter d'autres commits
- Revenir à un état précédent

```
# Création d'un projet
mkdir git workshop
cd git_workshop
echo "Toutouyoutou" > chanson.txt
# Création d'un repo
git init
# Commit
git add chanson.txt
git commit -m "<message>"
# Voir l'historique
git log
git checkout <commit hash>
```

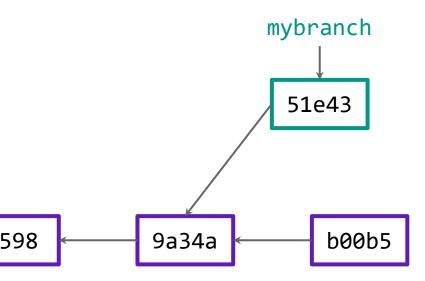


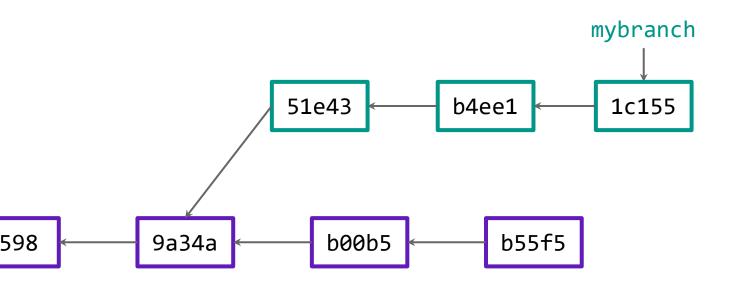
git branch <nom>

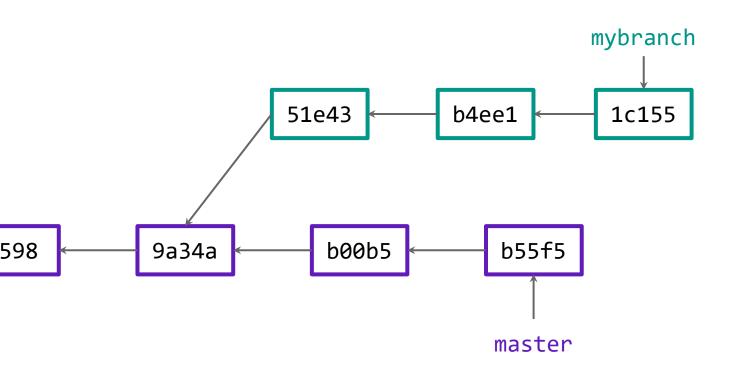


Une branche est un nom qui pointe sur un commit

Qui avance lorsqu'on commit sur la branche

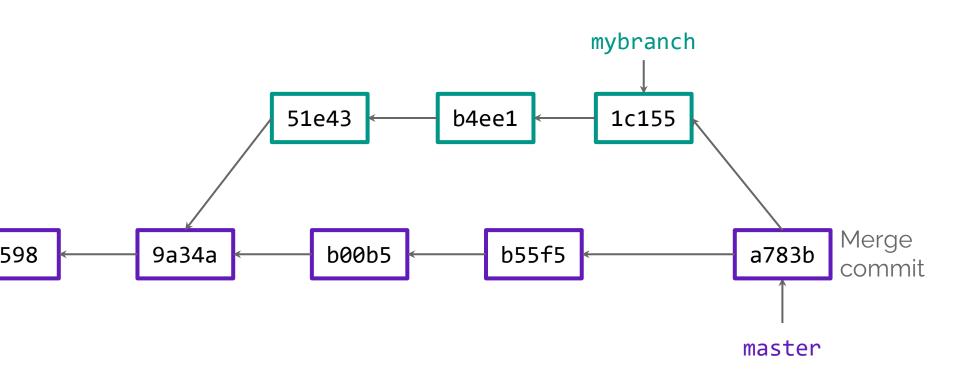






Merge

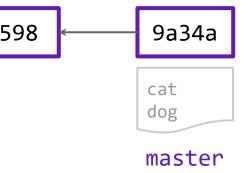
git merge <nom>



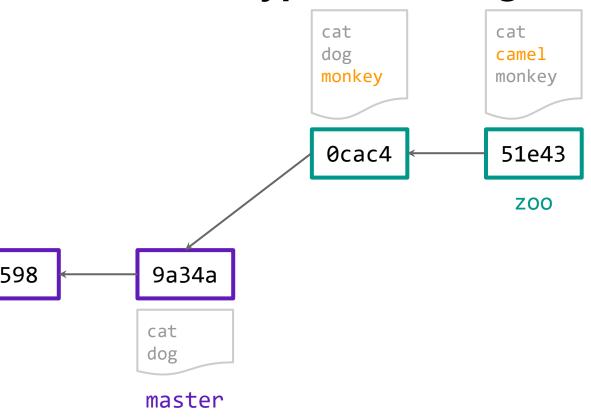
Un merge est un commit

Qui a plusieurs parents

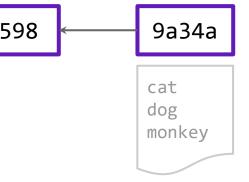
Fast-forward

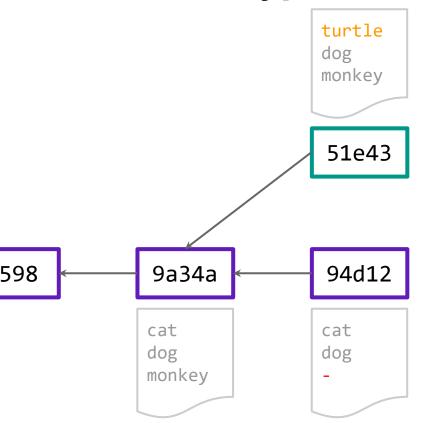


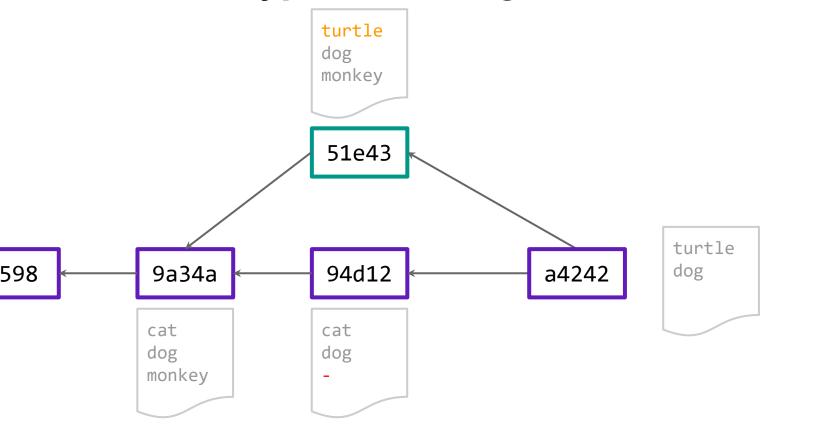
Fast-forward

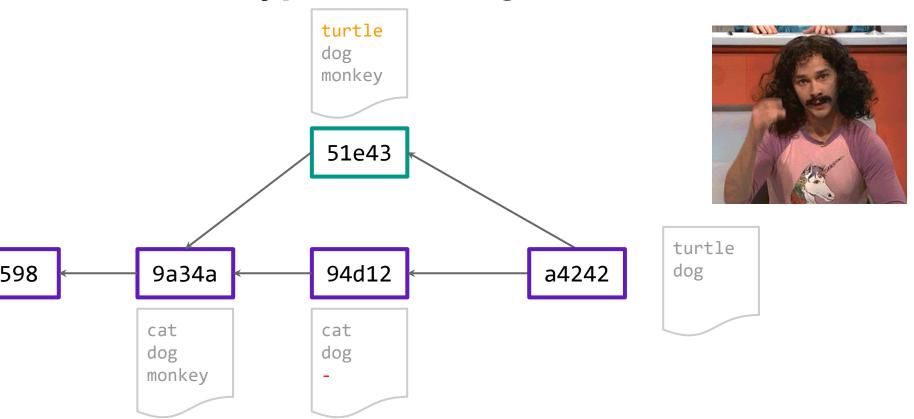


Fast-forward Différents types de merge cat cat dog camel monkey monkey 0cac4 51e43 **Z00** cat camel 51e43 9a34a 598 monkey master cat dog

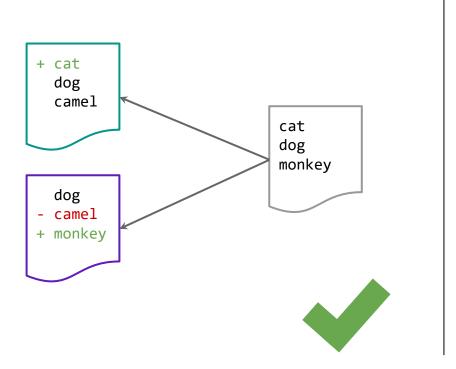


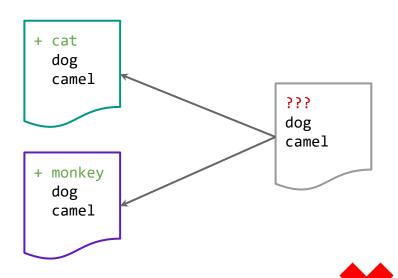


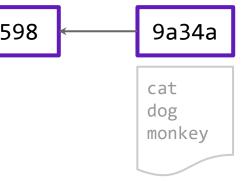


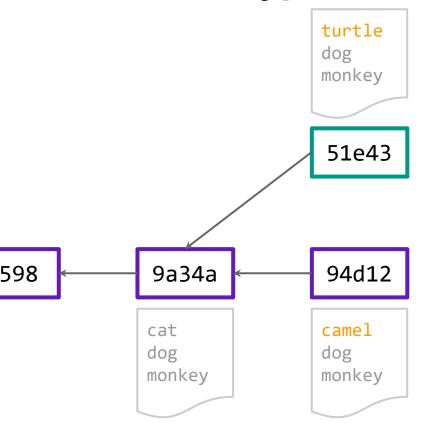


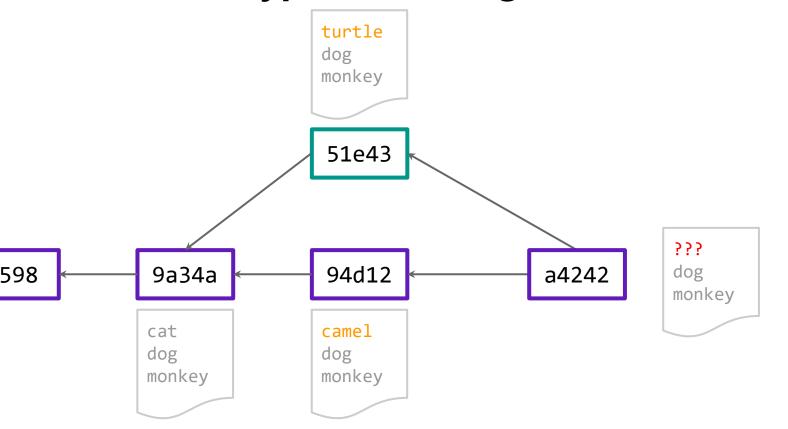
Merge automatique?

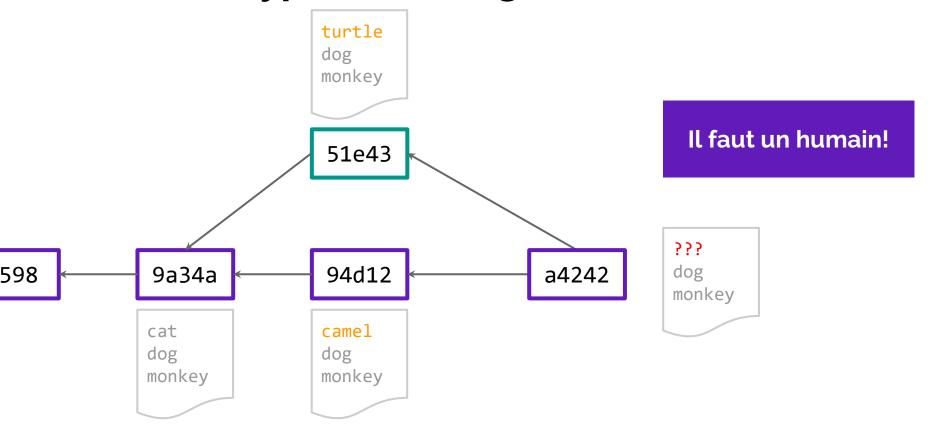










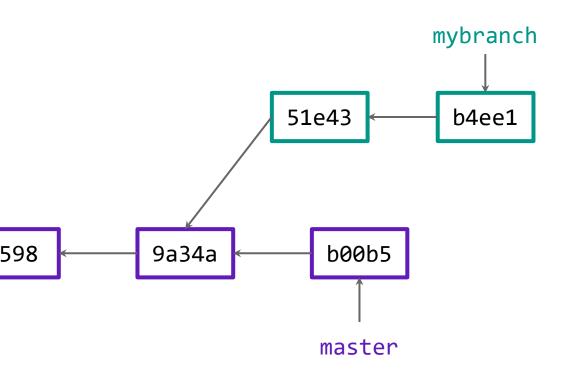


Résolution de conflit

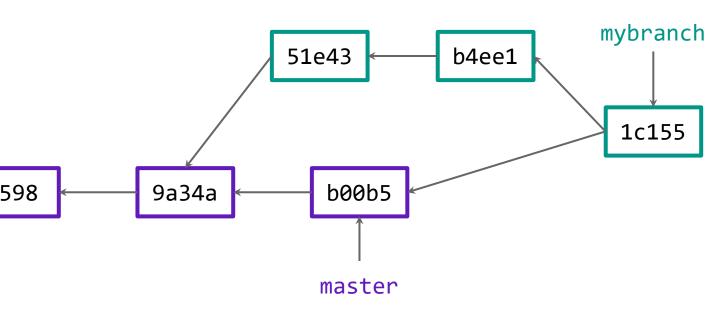
```
$ git status
# On branch branch-b
# You have unmerged paths.
   (fix conflicts and run "git commit")
 Unmerged paths:
    (use "git add ..." to mark resolution)
 both modified: animals.txt
no changes added to commit (use "git add"
and/or "git commit -a")
```

```
<<<<<< HEAD
camel
======
turtle
dog
monkey
>>>>>> zoo
```

(Tip) merge master dans la branche locale

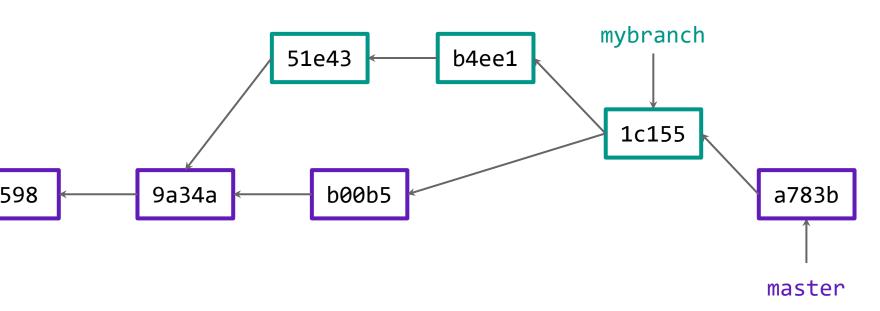


(Tip) merge master dans la branche locale



git checkout mybranch & git merge master

(Tip) merge master dans la branche locale



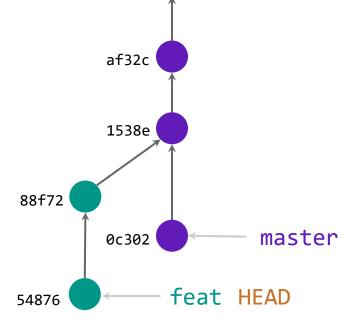
git checkout master & git merge mybranch

Les branches sont pratiquement gratuites

Faites-en souvent

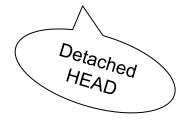
La branche HEAD

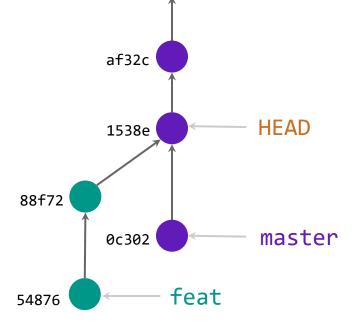
git checkout feat



La branche HEAD

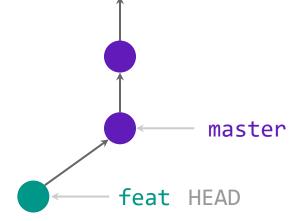
git checkout 1538e



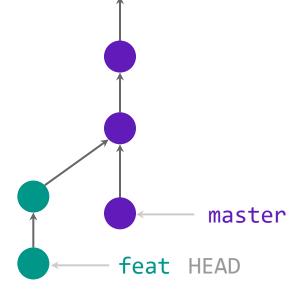




git branch feat 1

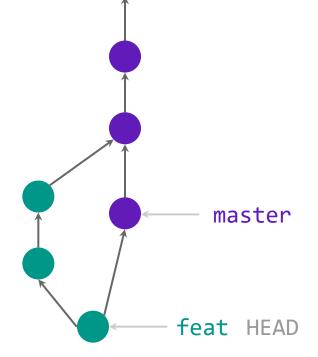


git branch feat 1



git branch feat 1

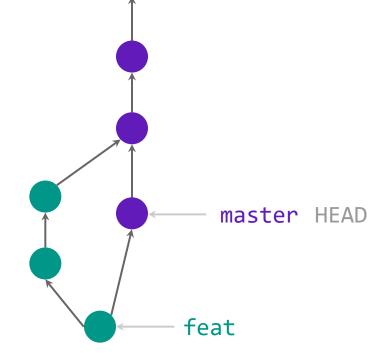
git merge master 2



git branch feat 1

git merge master 2

git checkout master 3

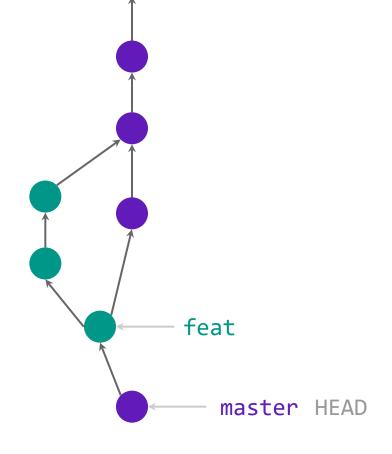


git branch feat 1

git merge master 2

git checkout master 3

git merge feat 4

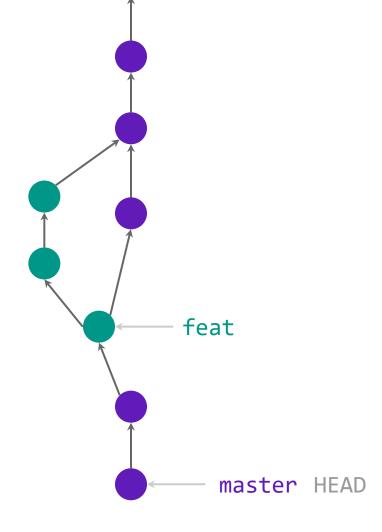


git branch feat 1

git merge master 2

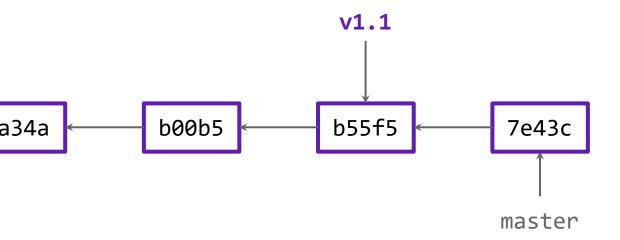
git checkout master 3

git merge feat 4



Tags

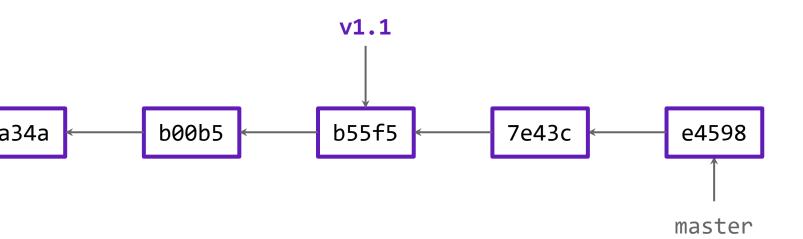
git tag v1.1



Un tag est un nom qui pointe sur un commit

Et pointera toujours sur ce commit

Tags



Show time!

 Ajouter des modifications sur une autre branche

```
git checkout master
git branch refrain
git checkout refrain

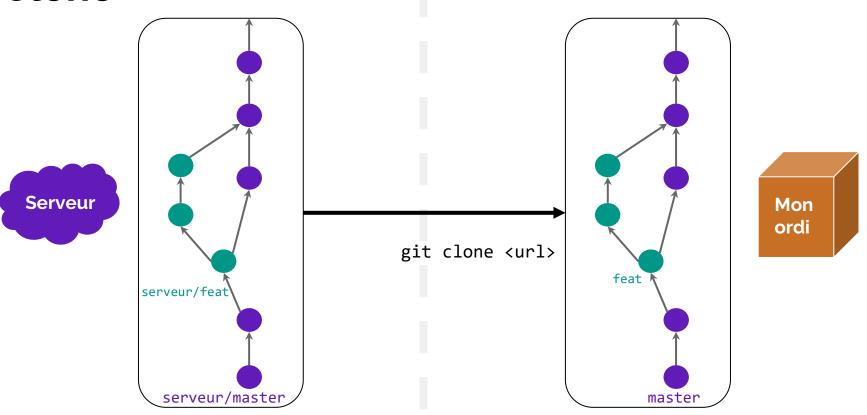
echo "tralala" >> chanson.txt
git add chanson.txt
git commit -m "[add] refrain"
git checkout master
```

git merge refrain

+

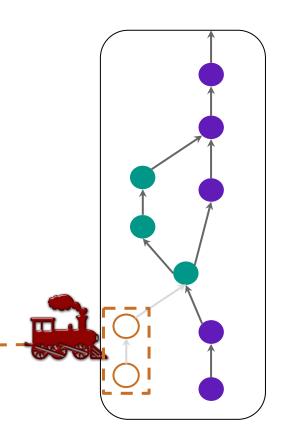
Git sur la toile

Clone



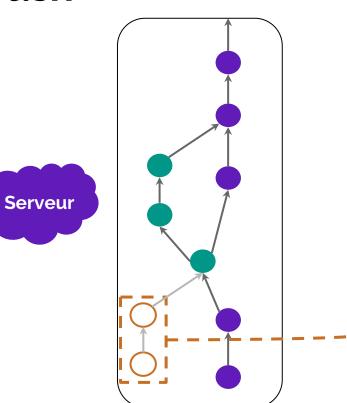
Pull

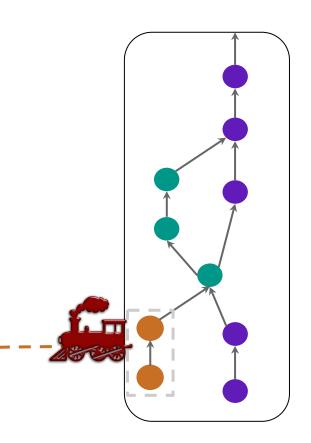
Serveur





Push



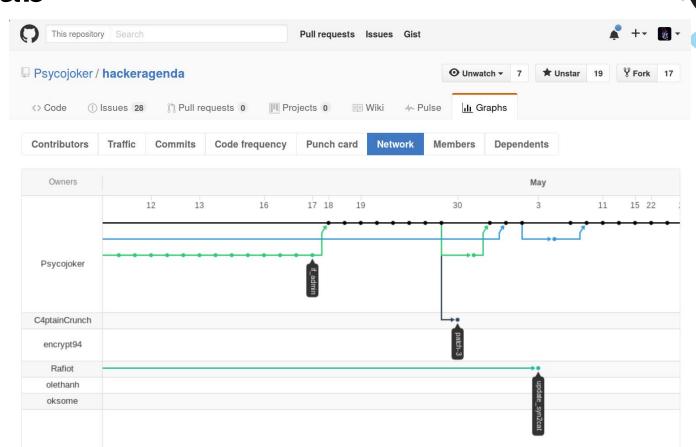




Terminologie

- **Remote**: Repo distant
- **Fetch**: Copie de commits distants dans un repo local
- Pull: Fetch (+ merge)
- **Push**: Envoi de commits sur un repo distant
- Remote update: Mettre à jour les références locales sur un repo distant
- Commit-ish: Un hash de commit, ou un nom pointant dessus (branche, tag)
 - La plupart des opérations sont définies dessus: checkout, push, pull, ...

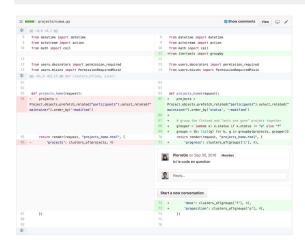
GitHub

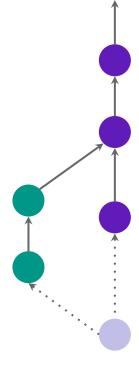


Pull Requests



- amélioré le crachage
- traduction en péruvien
- fixé la fourrure

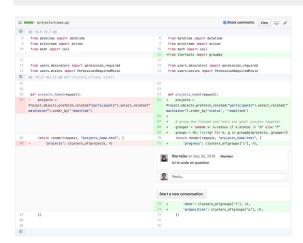


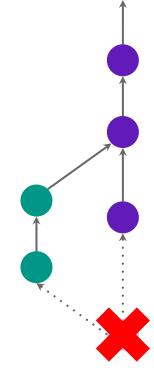


Pull Requests



- amélioré le crachage
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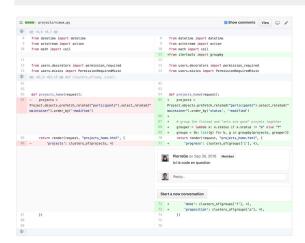
non lol t nul xD

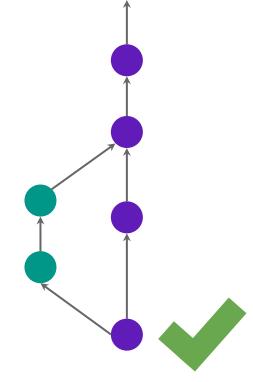


Pull Requests



- amélioré le crachage
- traduction en péruvien
- fixé la fourrure



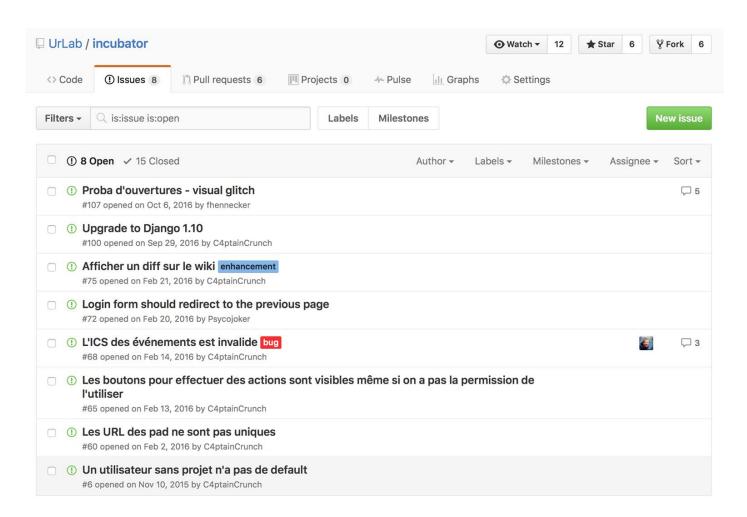


tro pgm c ok

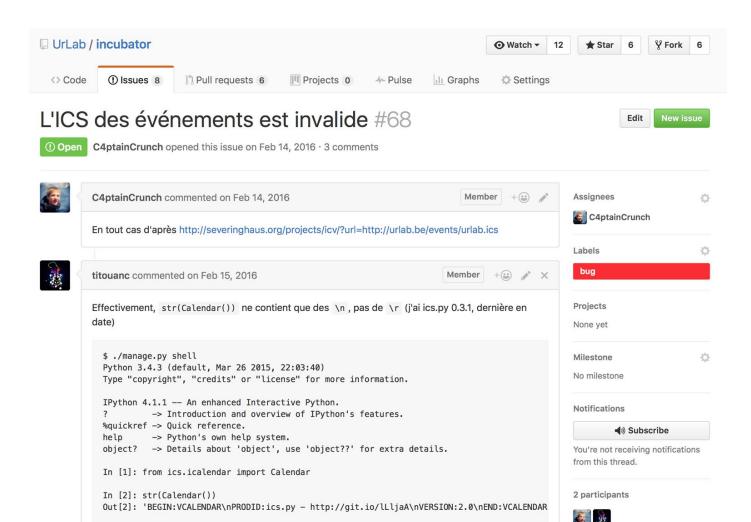


Issues

- Bugs Requests



Issues



Show time!

https://github.com/urlab/wsgit2021

- Regardez les issues
- Ajoutez un commentaire dessus
- Donnez votre impression
- Ouvrez une pull request pour les résoudre

Git avancé

Gitignore

- Un fichier nommé .gitignore commité dans le repo
- Indique les noms de fichiers que git doit ignorer
 - Fichiers de configuration locaux ou fichiers privés
 - Résultats intermédiaires de compilation
 - o Paquets de dépendances, ...

.gitignore

```
*.pyc
ve/
local_config.py
*.aux
*.log
```

Git under the hood

Tree

Blob 23f42 (animals.txt)

Blob

cat

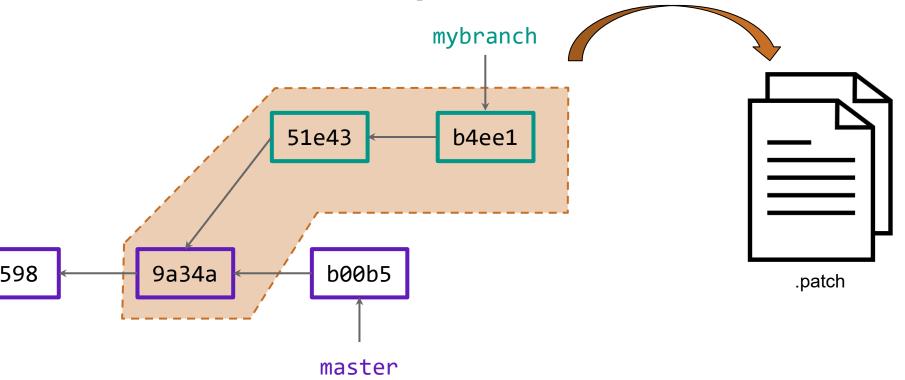


Parent 9a34a **Auteur** Donald Make code great Message again Date 2017-01-20 **Tree** [structure interne de git]

Aliases

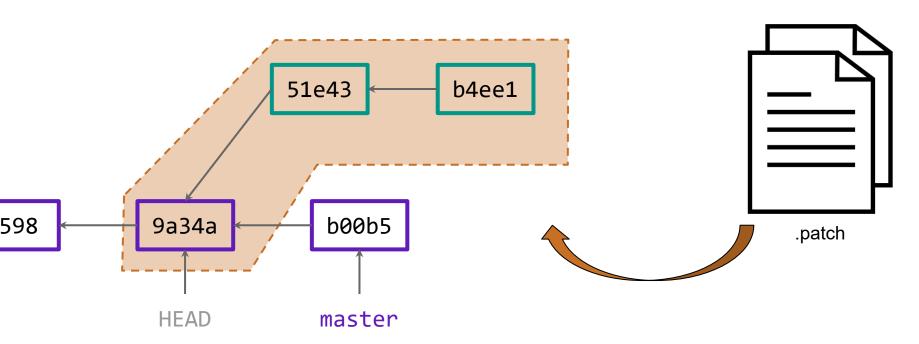
- Avoir des noms de commandes plus courts
 - o git config [--global] alias.co checkout
- Avoir des commandes plus complexes
 - o git config [--global] alias.hist "log --all --graph -pretty=format:'%Cred%h%Creset -%C(yellow)%d%Creset %s %Cgreen(%cr) %C(bold
 blue)<%an>%Creset' --abbrev-commit"
- Enregistrés dans le fichier .gitconfig
- Les préférences peuvent aussi être gittées!

Patchs manuels (export)



git format-patch 9a34a...b4ee1

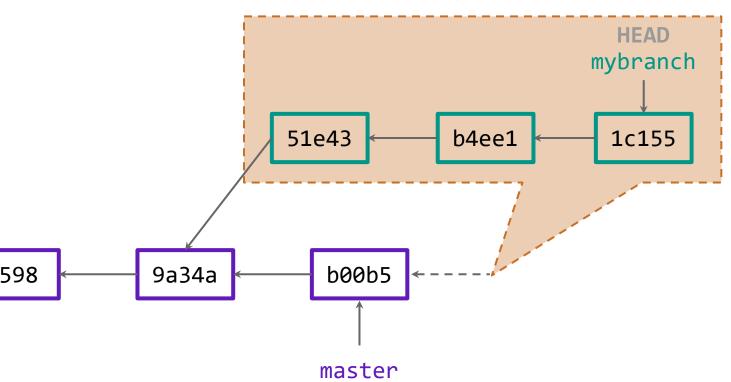
Patchs manuels (import)



git apply-patch name.patch

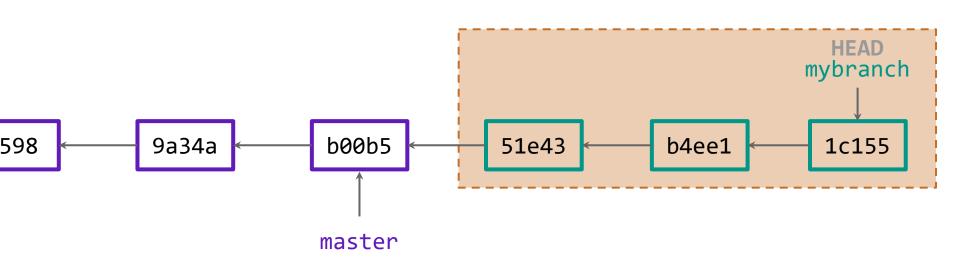
Rebase

git checkout mybranch



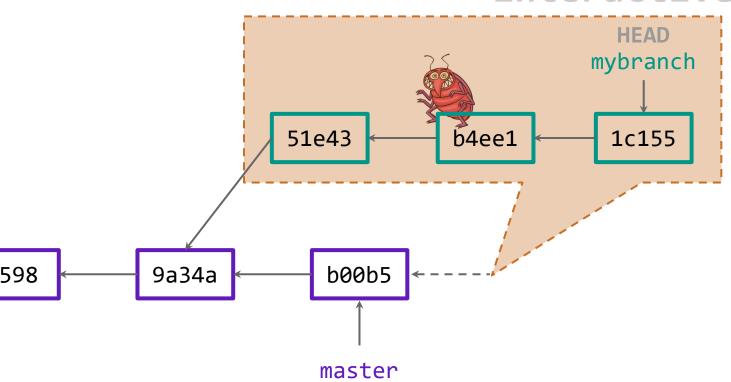
Rebase

git rebase master



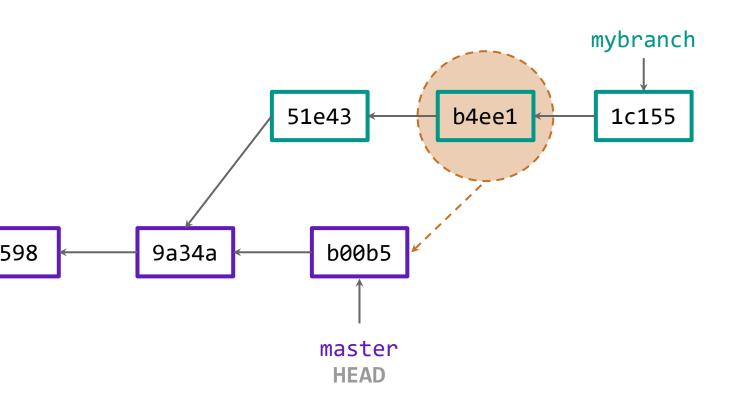
Rebase interactif

git rebase -- interactive master



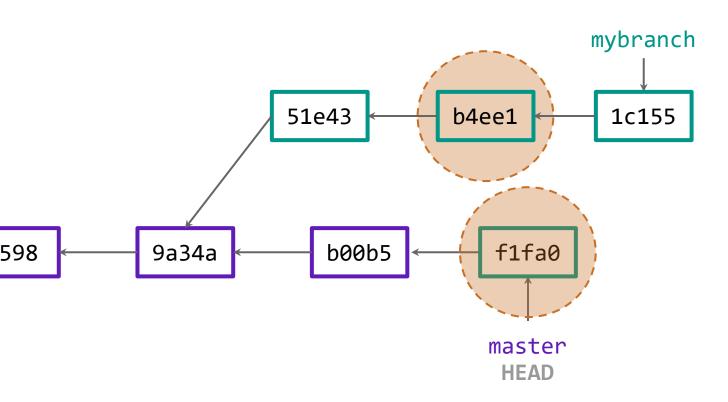
git cherry-pick b4ee1

cherry-pick



git cherry-pick b4ee1

cherry-pick



In case of fire



- 1. git commit
 - 2. git push

