

# Curso de Introducción a Git y GitHub

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# Programa

## DÍA 1

- Importancia del versionado y documentación de software [teoría]
- Qué es Git y la plataforma GitHub [teoría]
- Primeros pasos en Git y GitHub, [práctica]
  - Instalación de Git
  - Configuración de Git, archivos básicos

## DÍA 2

- Iniciación a Git [práctica]
  - Crear repositorios
  - Control de cambios y versionado
  - Restaurar versiones previas ("checkout" y "restore")
  - Ramificaciones ("branches") del código
  - Actualizar el repositorio local y remoto

## DÍA 3

- Fusión y resolución de conflictos [práctica]
  - Fusión de ramificaciones
  - Resolución de conflictos
- Código colaborativo en GitHub [práctica]
  - Creación de copias ("forks")
  - Sugerencias de cambios ("Pull requests")

# Qué es Git?

GIT - the stupid **content tracker**

- "git" can mean anything, depending on your mood.
  - random three-letter combination that is pronounceable, and not actually used by any common UNIX command. The fact that it is a mispronunciation of "get" may or may not be relevant.
  - stupid. contemptible and despicable. simple. Take your pick from the dictionary of slang.
  - "Global Information Tracker": you're in a good mood, and it actually works for you. Angels sing, and a light suddenly fills the room.
  - "Goddamn Idiotic Truckload of sh\*t": when it breaks

<https://github.com/git/git/blob/master/README.md>

# Qué es Git

- 'git' is British slang for "pig headed, think they are always correct, argumentative".
- Linus Torvalds: "I'm an egotistical bastard, and I name all my projects after myself. First 'Linux', now 'Git'".



[https://git.wiki.kernel.org/index.php/GitFaq#Why\\_the\\_.27Git.27\\_name.3F](https://git.wiki.kernel.org/index.php/GitFaq#Why_the_.27Git.27_name.3F)

# Por qué Git

- Sistema de versionado y control de contenidos
  - Código
  - Datos
  - Texto
- Características
  - Rápido
  - **Diseño sencillo**
  - Desarrollo no lineal - en ramas paralelas
  - **Totalmente distribuido**
  - Capaz de manejar grandes proyectos eficientemente (núcleo “kernel” de Linux)

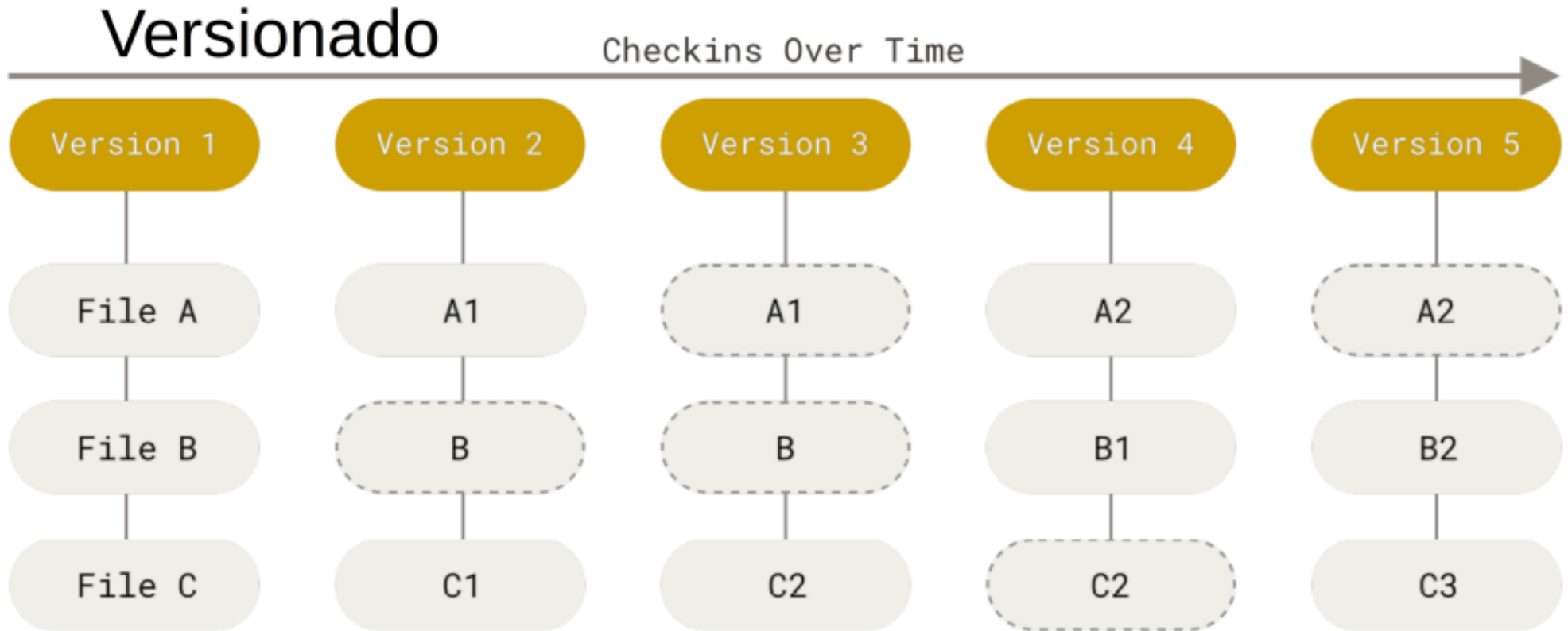
# Por qué Git

- Sistema de versionado y control de contenidos
  - Código
  - Datos

## FUNDAMENTAL DOCUMENTAR CÓDIGO Y SUS CAMBIOS

- **Diseño sencillo**
- Desarrollo no lineal - en ramas paralelas
- **Totalmente distribuido**
- Capaz de manejar grandes proyectos eficientemente (núcleo “kernel” de Linux)

# Cómo funciona Git

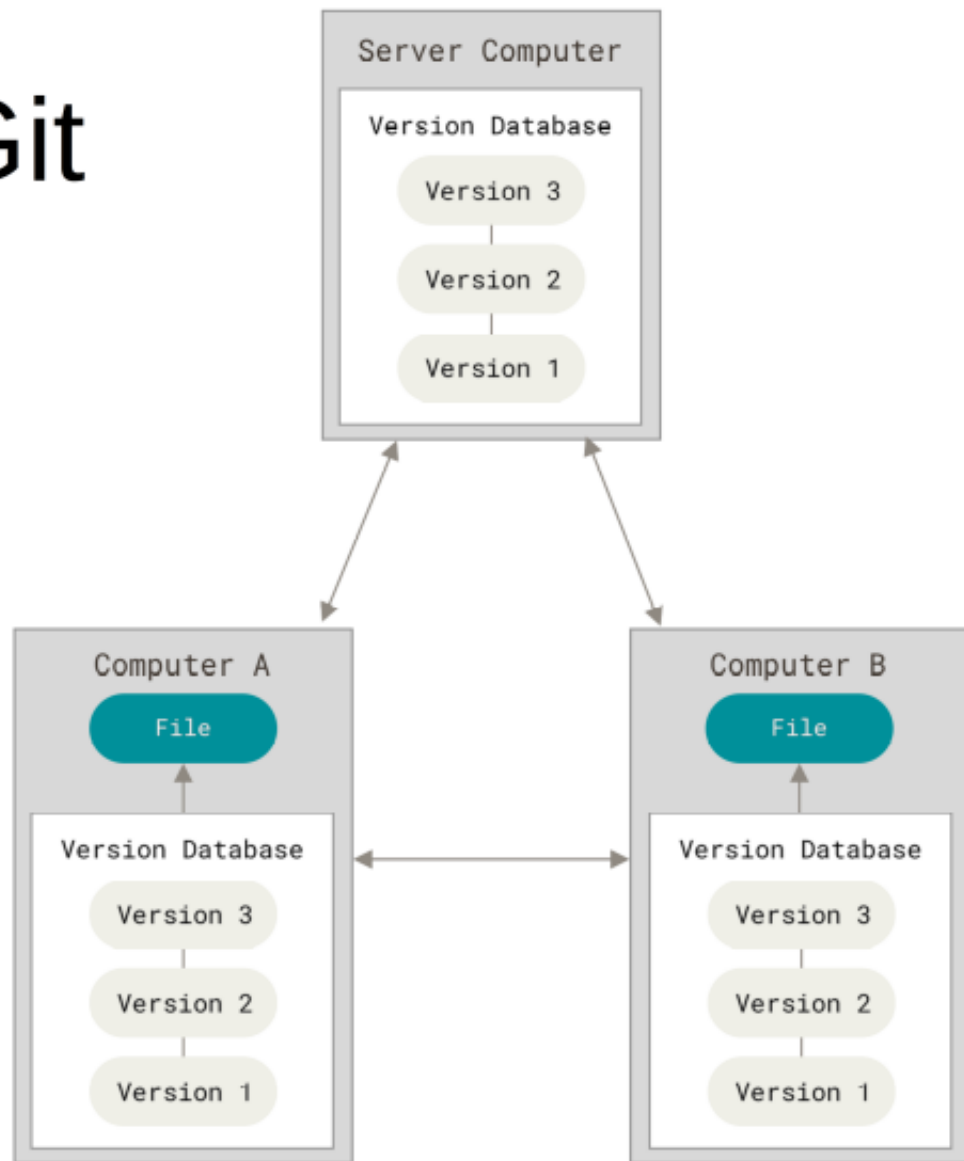


# Cómo funciona Git

## Distribución descentralizada

- Cada repositorio local es una réplica / copia de seguridad
- Si el servidor falla cualquier otra copia local puede usarse como reemplazo

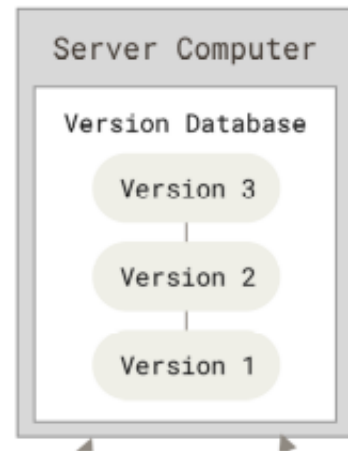
Chacon & Straub (2021) Pro Git





# Qué es GitHub

- Plataforma online de repositorios Git
  - Hace la función de servidor remoto del código
- Propiedad de Microsoft
  - Con ánimo de lucro
- Ayuda:
  - Trabajo colaborativo
  - Diseminación de código abierto
  - Herramientas para la difusión



Chacon & Straub (2021) Pro Git



## Free

The basics for individuals  
and organizations

- ① Unlimited public/private repositories
- ① 2,000 automation minutes/month  
Free for public repositories
- ① 500MB of Packages storage  
Free for public repositories
- ① Community support

\$0 per month

[Join for free](#)

MOST POPULAR

## Team

Advanced collaboration for  
individuals and organizations

- ← Everything included in Free, plus...
- ① Protected branches
- ① Multiple reviewers in pull requests
- ① Draft pull requests
- ① Code owners
- ① Required reviewers
- ① Pages and Wikis
- ① 3,000 automation minutes/month  
Free for public repositories
- ① 2GB of Packages storage  
Free for public repositories
- ① Web-based support

\$4 per user/month

[Continue with Team](#)

¡NI CASO!

## Enterprise

Security, compliance,  
and flexible deployment

- ← Everything included in Team, plus...
- ① Automatic security and version updates
- ① SAML single sign-on
- ① Advanced auditing
- ① GitHub Connect
- ① 50,000 automation minutes/month  
Free for public repositories
- ① 50GB of Packages storage  
Free for public repositories
- EXCLUSIVE ADD-ONS
- ① Token, secret, and code scanning
- ① Premium support

\$21 per user/month

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[Start a free trial](#)

# Git y GitHub

- Puedes usar sin problema Git sin necesidad de GitHub
- Si usas GitHub es recomendable conocer Git
- Alternativas a GitHub
  - GitLab, Bitbucket
  - ... servidor propio

# Add-ons de GitHub

- Generación de DOIs
  - <https://zenodo.org/>
  - <https://guides.github.com/activities/citable-code/>
- Documentación de software online
  - <https://readthedocs.org/>
  - <https://github.com/readthedocs/readthedocs.org>
- Servicio de páginas web
  - <https://pages.github.com/>



# Mis “Mandamientos” de Git

- Adaptado de PEP 20 -- The Zen of Python
  - Beautiful is better than ugly.
  - Explicit is better than implicit.
  - Simple is better than complex.
  - Complex is better than complicated.
  - Flat is better than nested.
  - Readability counts.
  - Special cases aren't special enough to break the rules.
  - Errors should never pass silently.
  - Now is better than never.
  - Although never is often better than *\*right\** now.

<https://www.python.org/dev/peps/pep-0020/>



<https://vimeo.com/329001211>

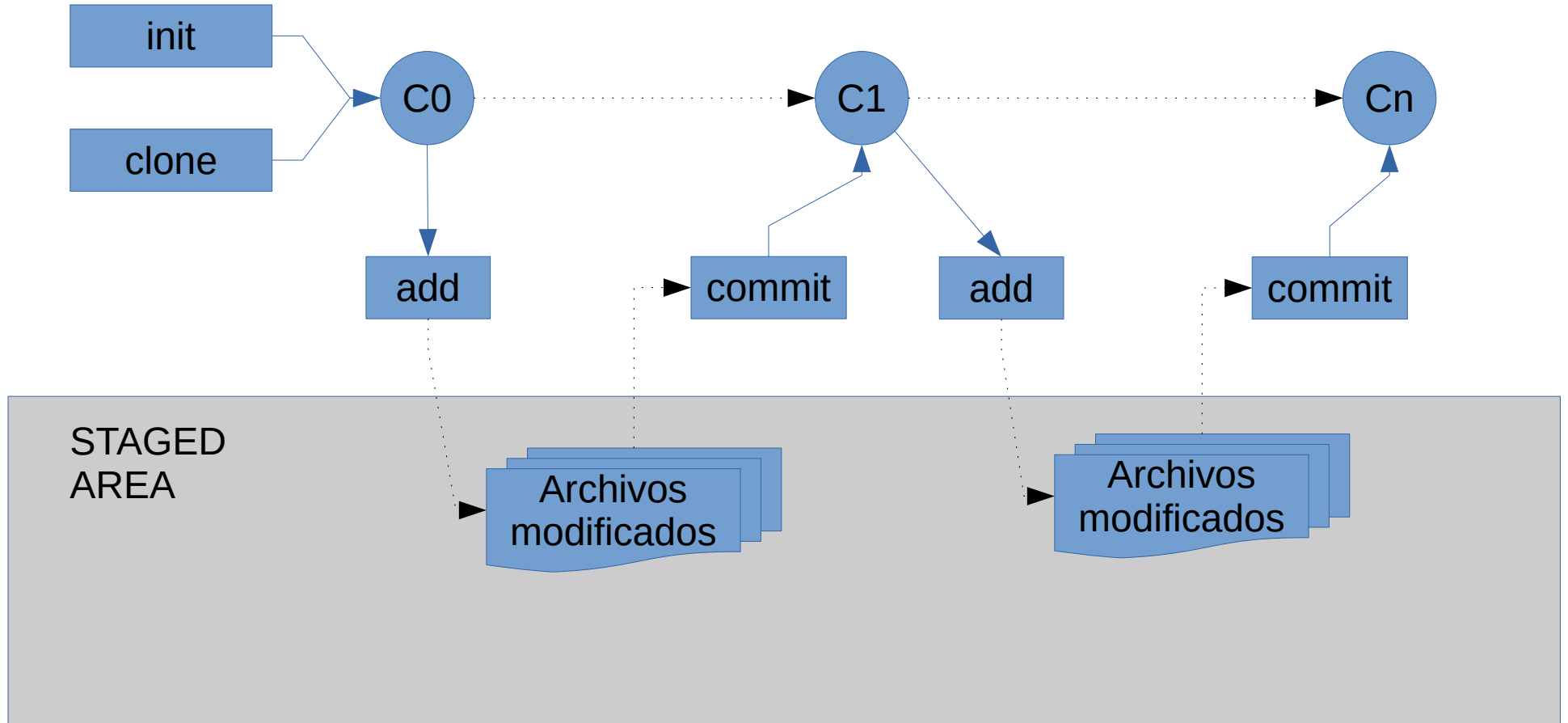
# Documentación y legibilidad

“Code is more often read than written” (Guido van Rossum)

**Máximo 80 caracteres por línea**

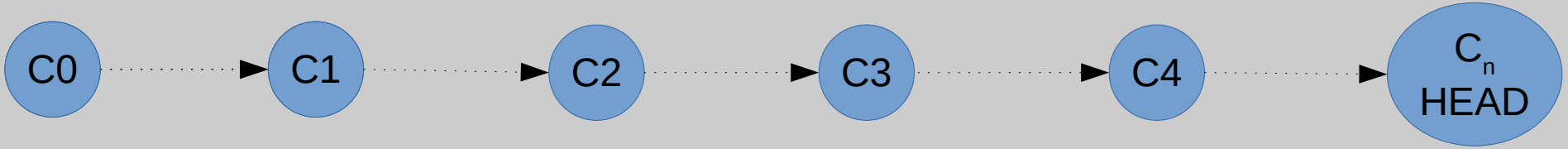
- Python
  - Guía de estilo del código: <https://www.python.org/dev/peps/pep-0008/>
  - Guía de estilo de Numpy docstrings: <https://numpydoc.readthedocs.io/en/latest/format.html>
- R
  - Roxygen2 docstrings: <https://github.com/r-lib/roxygen2>
- C
  - Guía de estilos para Python: <https://www.python.org/dev/peps/pep-0007/>

# Primeros Pasos: versionado



# Primeros Pasos: repositorio local y remoto

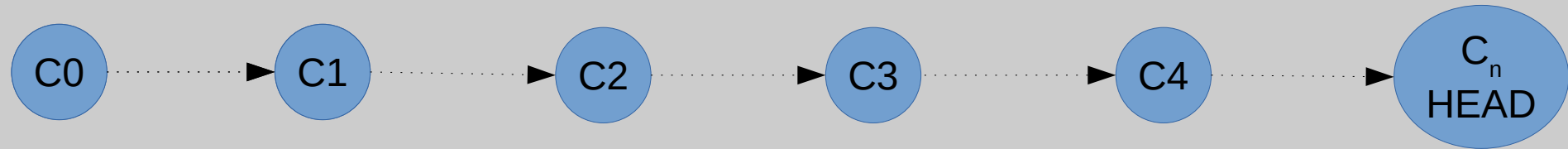
local



push

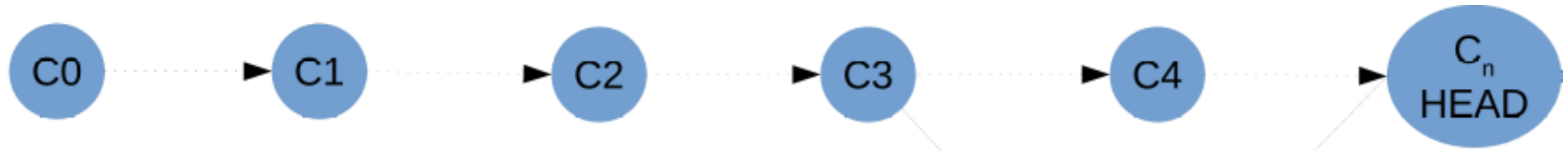
fetch / pull

GitHub





# Primeros Pasos: control de cambios



## C3 vs HEAD

Lorem ipsum dolor setsit amet, consectetur adipiscing elit.

Quisque quis ante eu orci ullamcorper maximus.

Duis varius orci non turpis bibendum auctor.

Etiam sagittis masa id tellus sollicitudin, condimentesum finibus purus volutpat.

Donec rhoncus lacus sed nisl pretium dignissim.

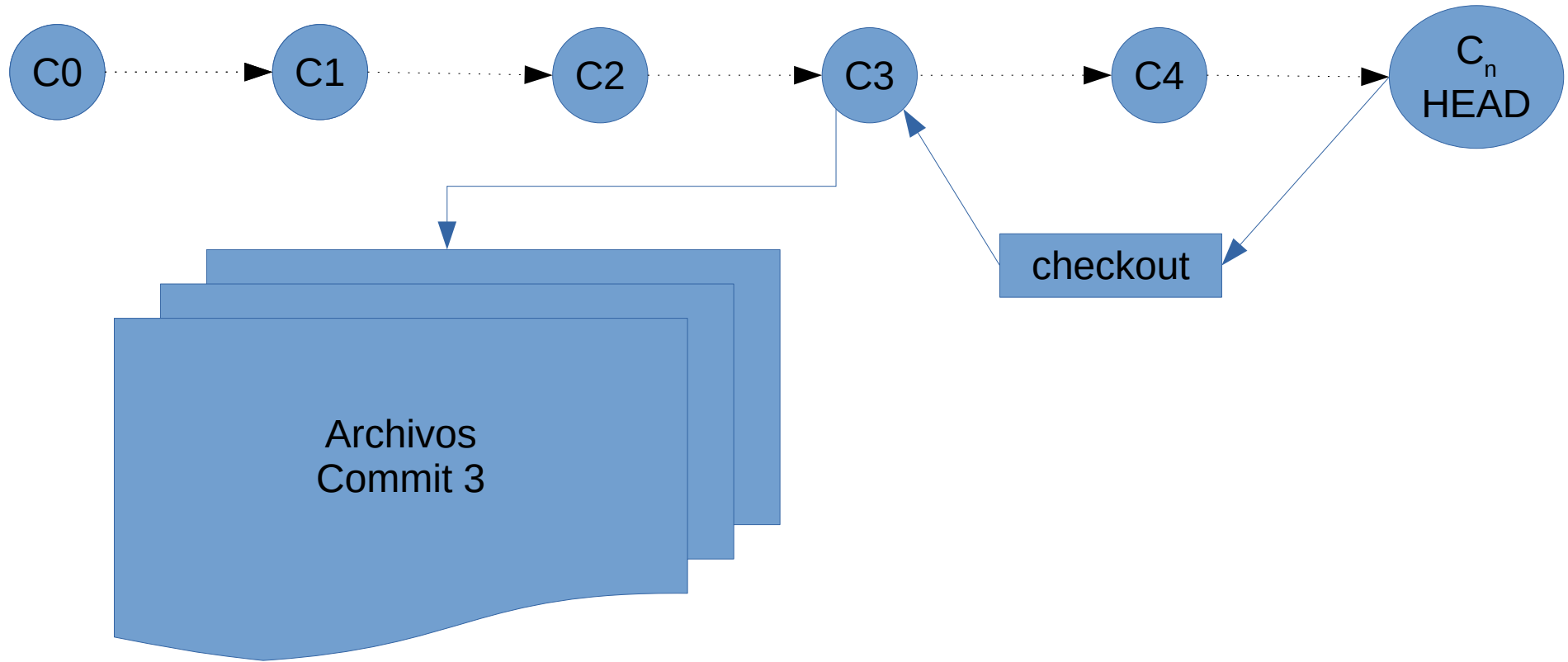
Nam efficitur ipsum at justo laoreet, eu consequat est venenatis

diff

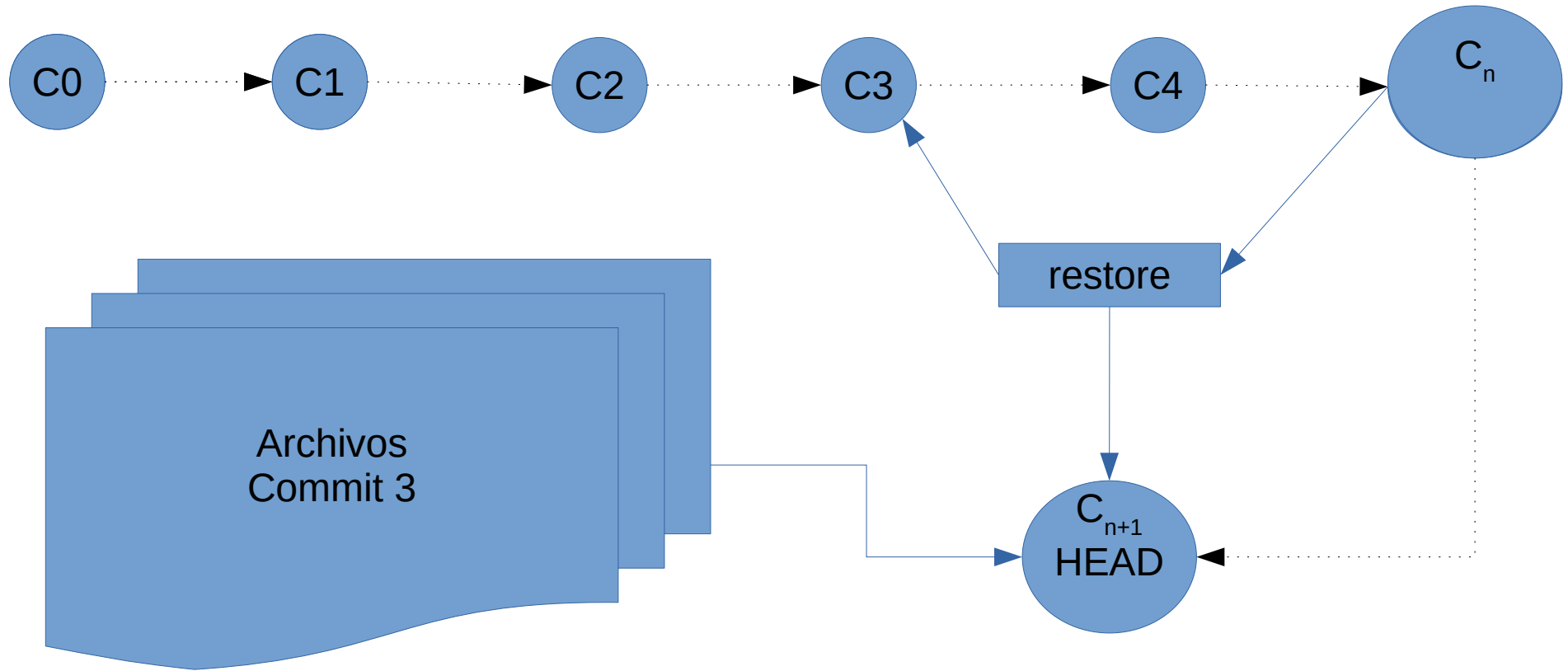
```
graph TD; C3((C3)) --> diff[diff]; Cn((Cn HEAD)) --> diff; diff --> C3;
```

A diagram showing the diff process. Two arrows point from nodes C3 and Cn (HEAD) to a blue rectangular box labeled 'diff'. An arrow points from the 'diff' box back to node C3.

# Primeros Pasos: restaurado

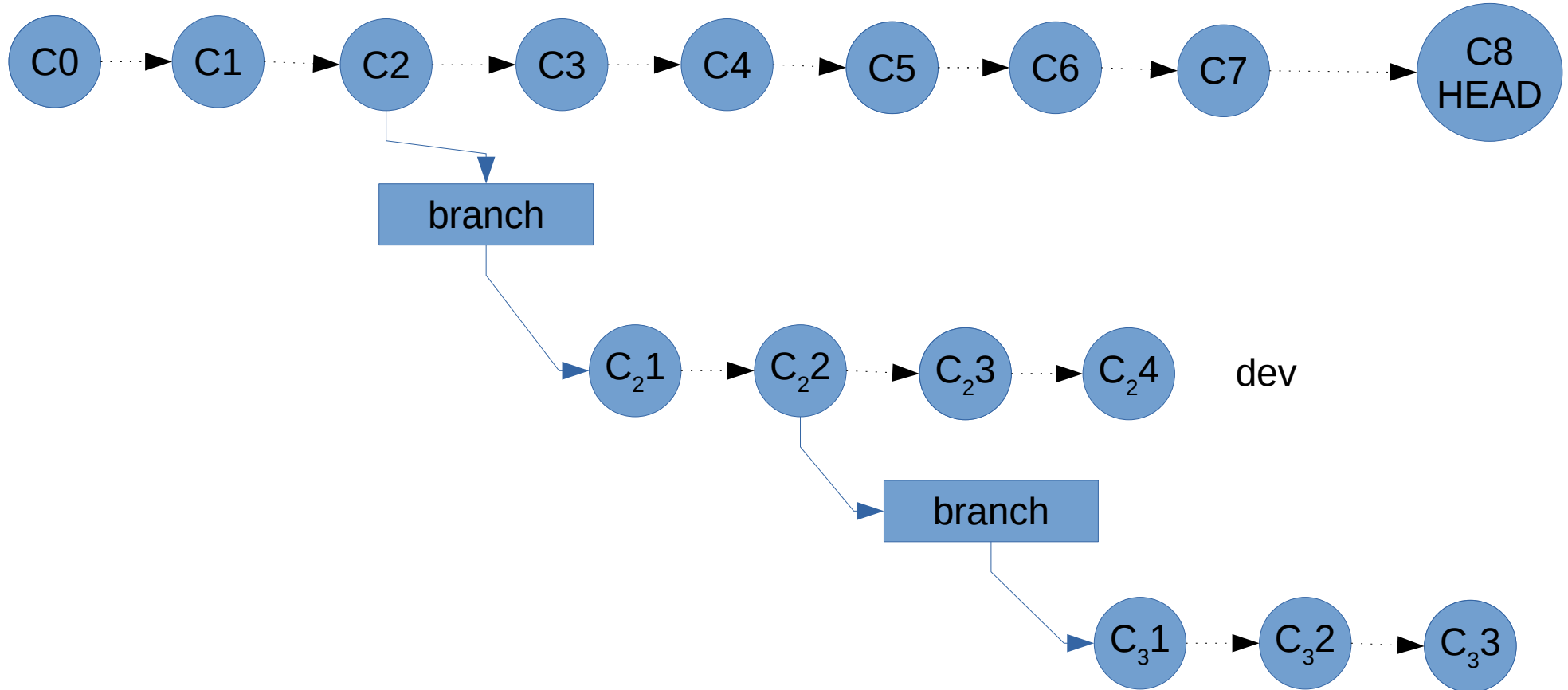


# Primeros Pasos: restaurado



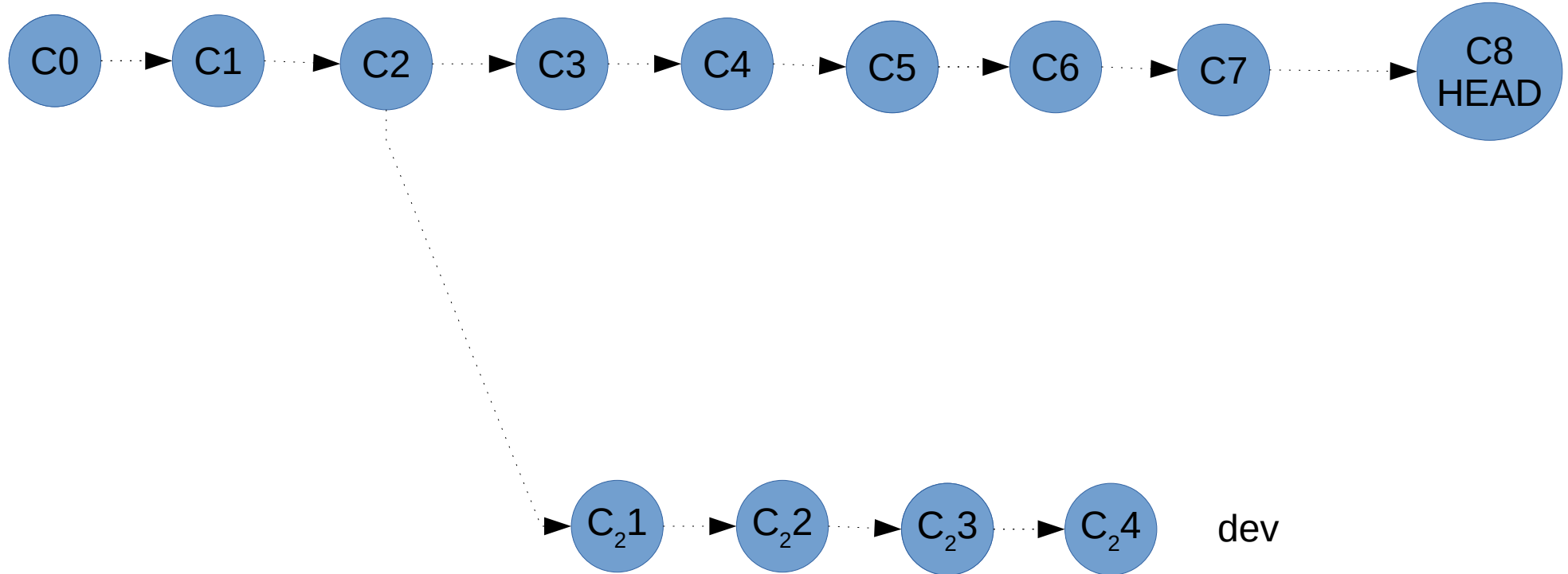
# Primeros Pasos: ramas

main

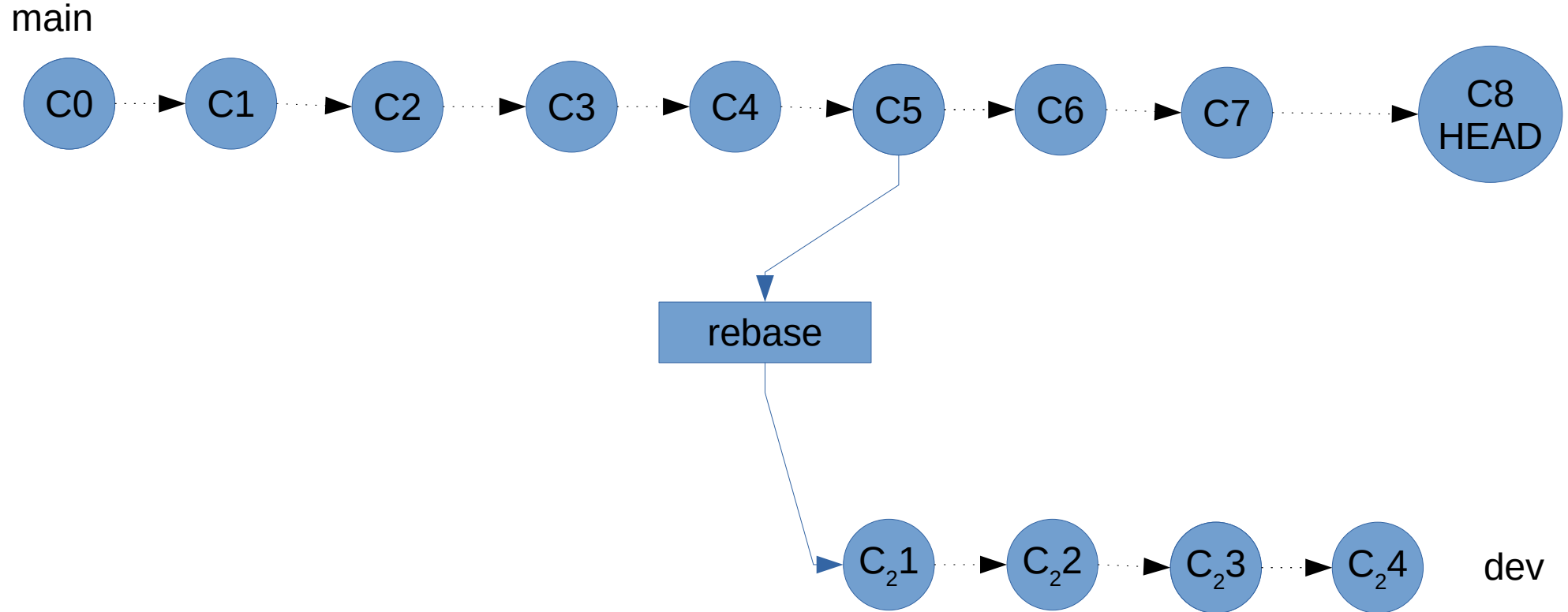


# Fusionado: rebase

main

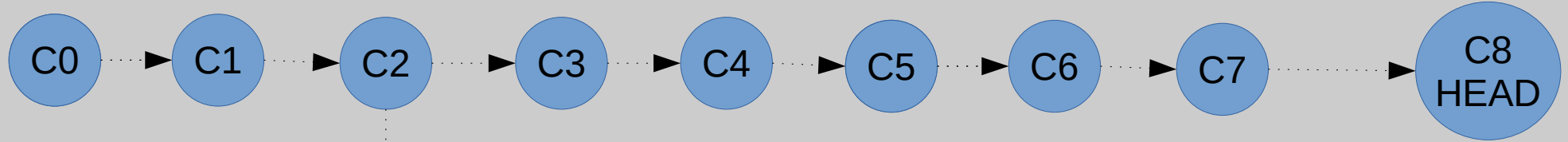


# Fusionado: rebase

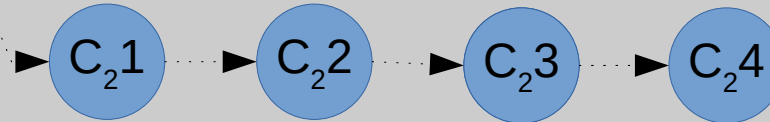


# Fusionado: merge

main

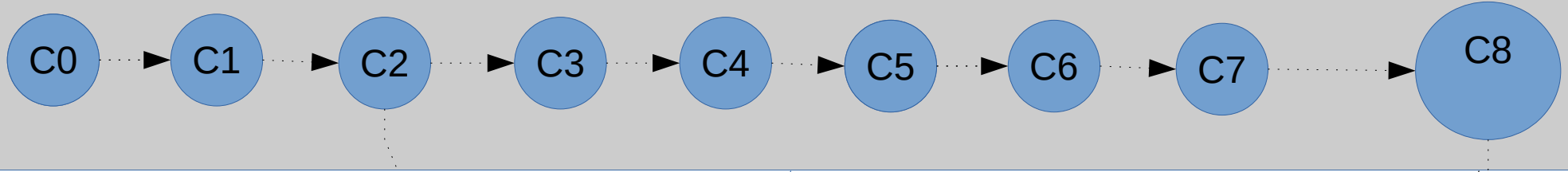


dev

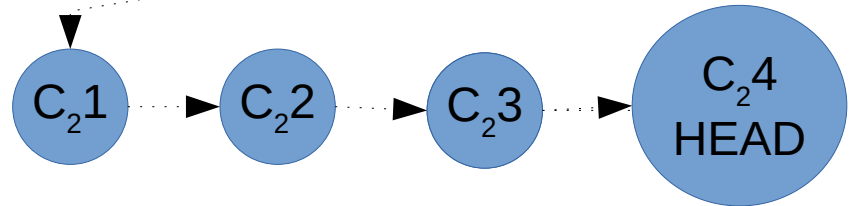


# Fusionado: merge

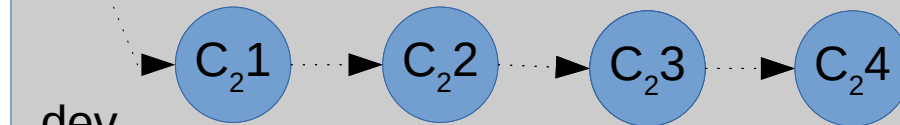
main



merge



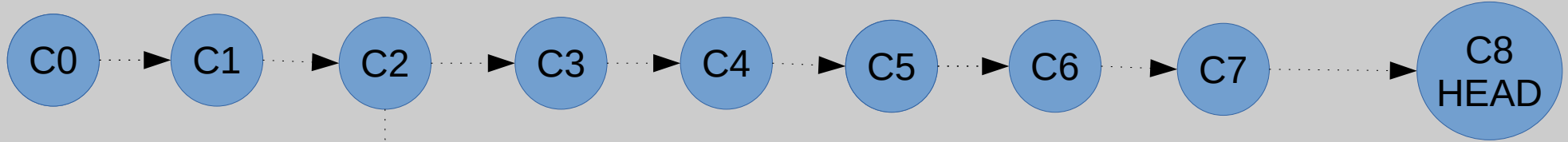
dev





# Fusionado: resolución de conflictos

main



C2:

...  
spam eggs bacon and spam  
...

C3:

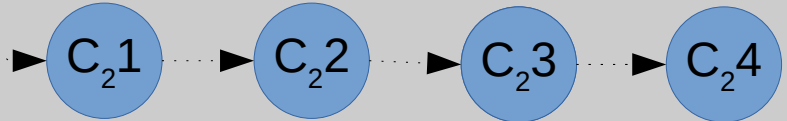
...  
spam egg spam egg and spam  
...

C<sub>2</sub>1:

...  
spam spam spam egg and spam  
...



dev



# Fusionado: resolución de conflictos

egg and bacon

egg sausage and bacon

egg and spam

egg bacon and spam

egg bacon sausage and spam

spam bacon sausage and spam

spam egg spam spam spam bacon and spam

>>>>>>>HEAD

**spam egg spam egg and spam**

=====

**spam spam spam egg and spam**

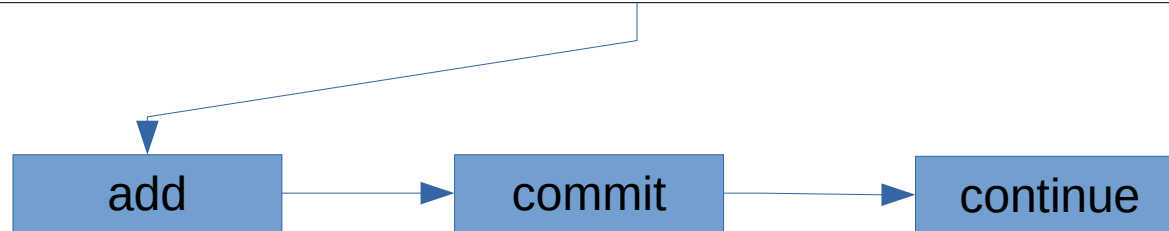
<<<<<<<C<sub>2</sub>1

spam spam spam spam spam spam baked beans spam spam spam spam and spam

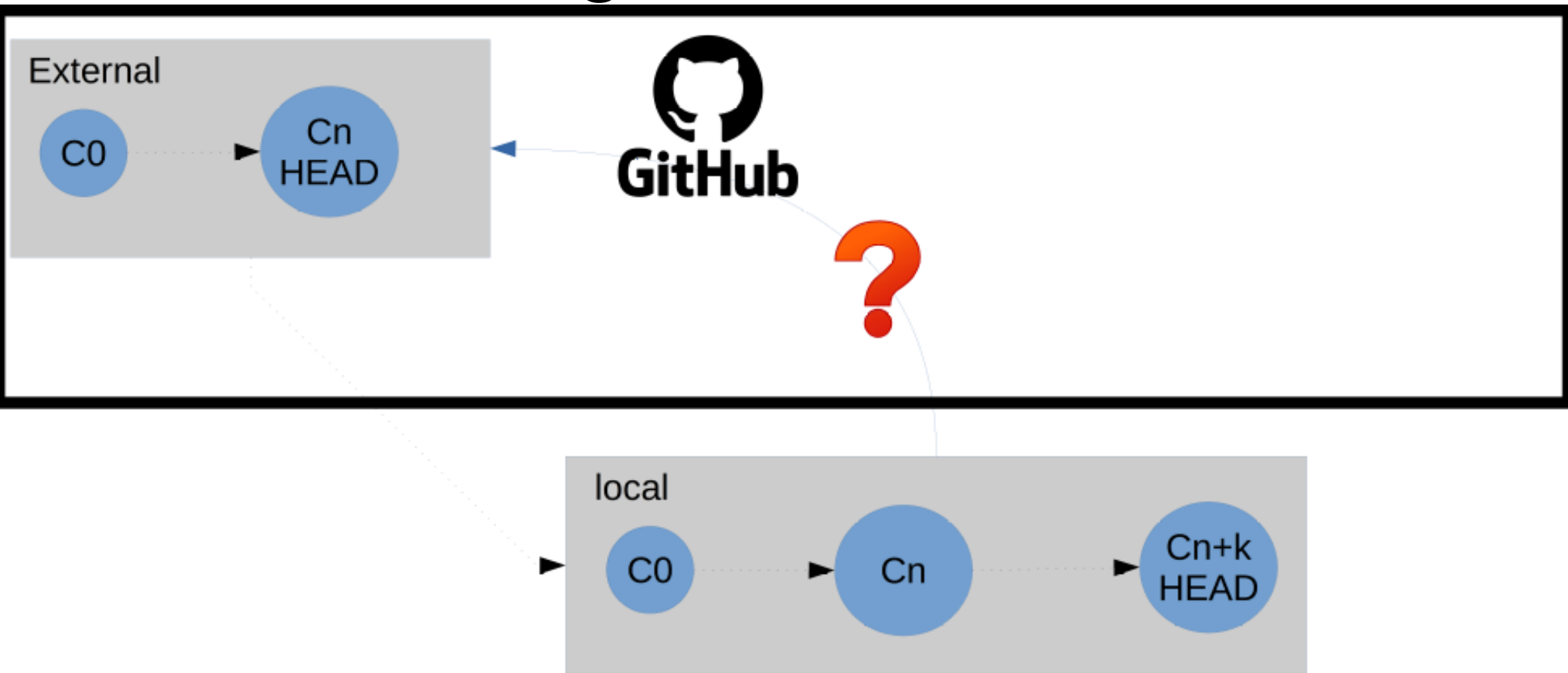
lobster termidor aux crevettes with a mornay sauce garnished with truffle pate, brandy and a fried egg on top and spam

# Fusionado: resolución de conflictos

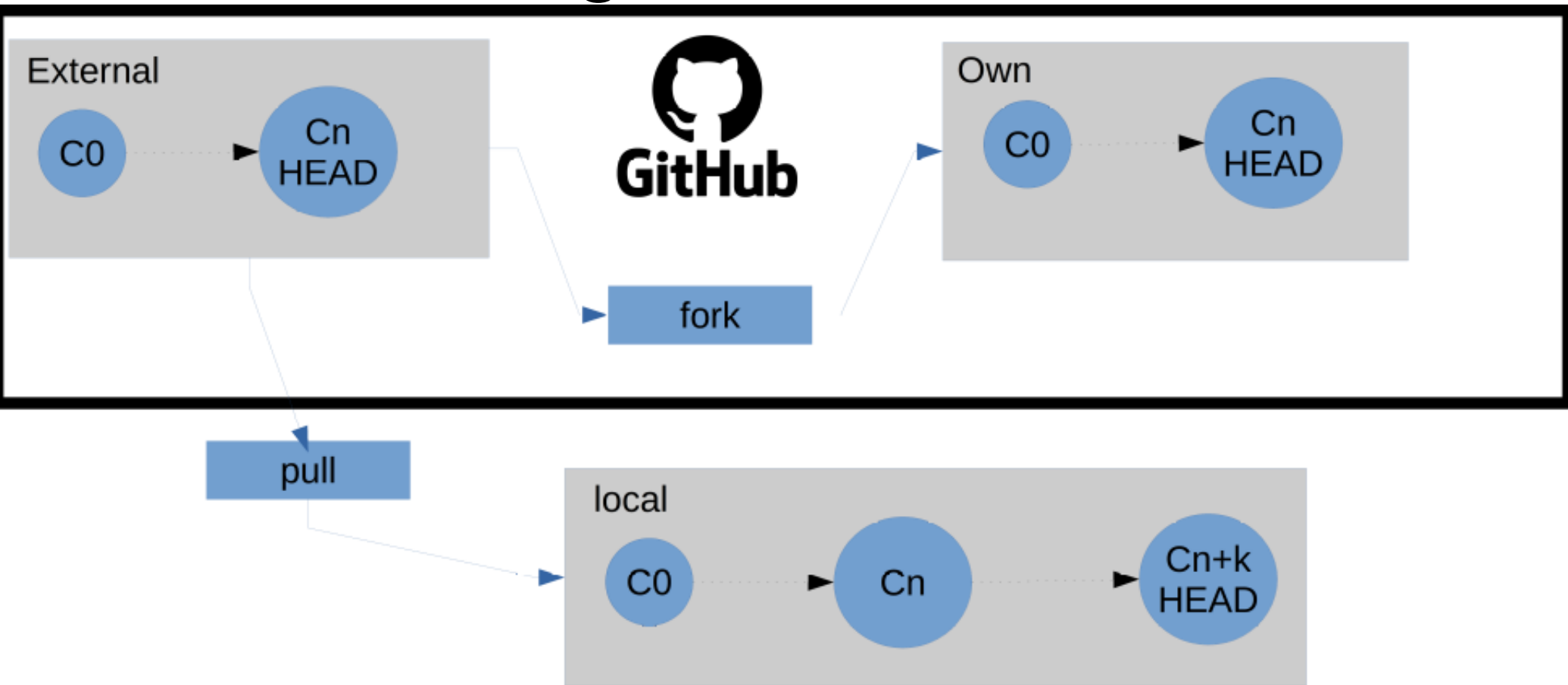
egg and bacon  
egg sausage and bacon  
egg and spam  
egg bacon and spam  
egg bacon sausage and spam  
spam bacon sausage and spam  
spam egg spam spam spam bacon and spam  
**spam spam spam egg and spam**  
spam spam spam spam spam spam baked beans spam spam spam spam and spam  
lobster termidor aux crevettes with a mornay sauce garnished with truffle pate, brandy and a fried egg on top and spam



# Código colaborativo



# Código colaborativo



# Código colaborativo

