



# Introduction to Git

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# Introduction

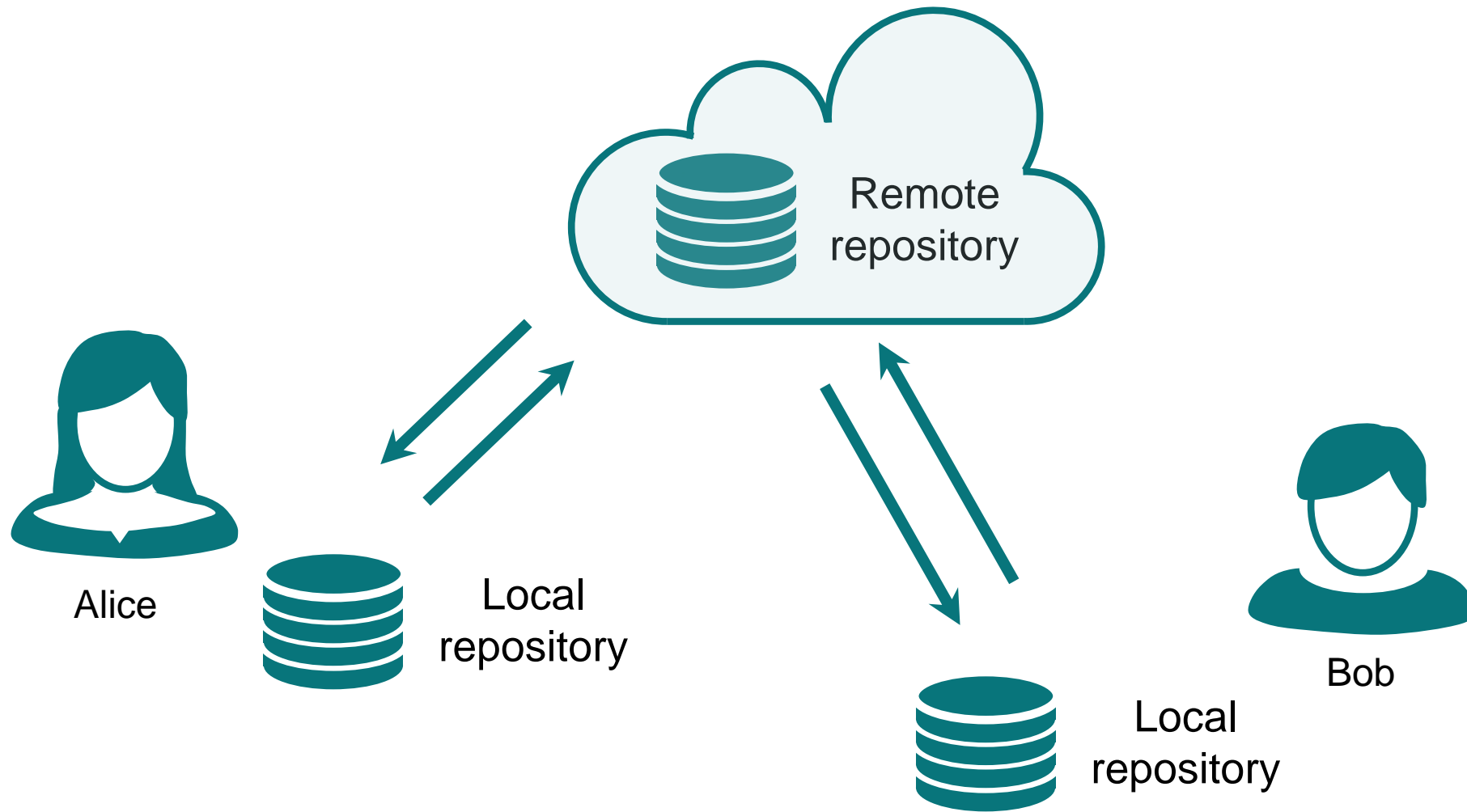


Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

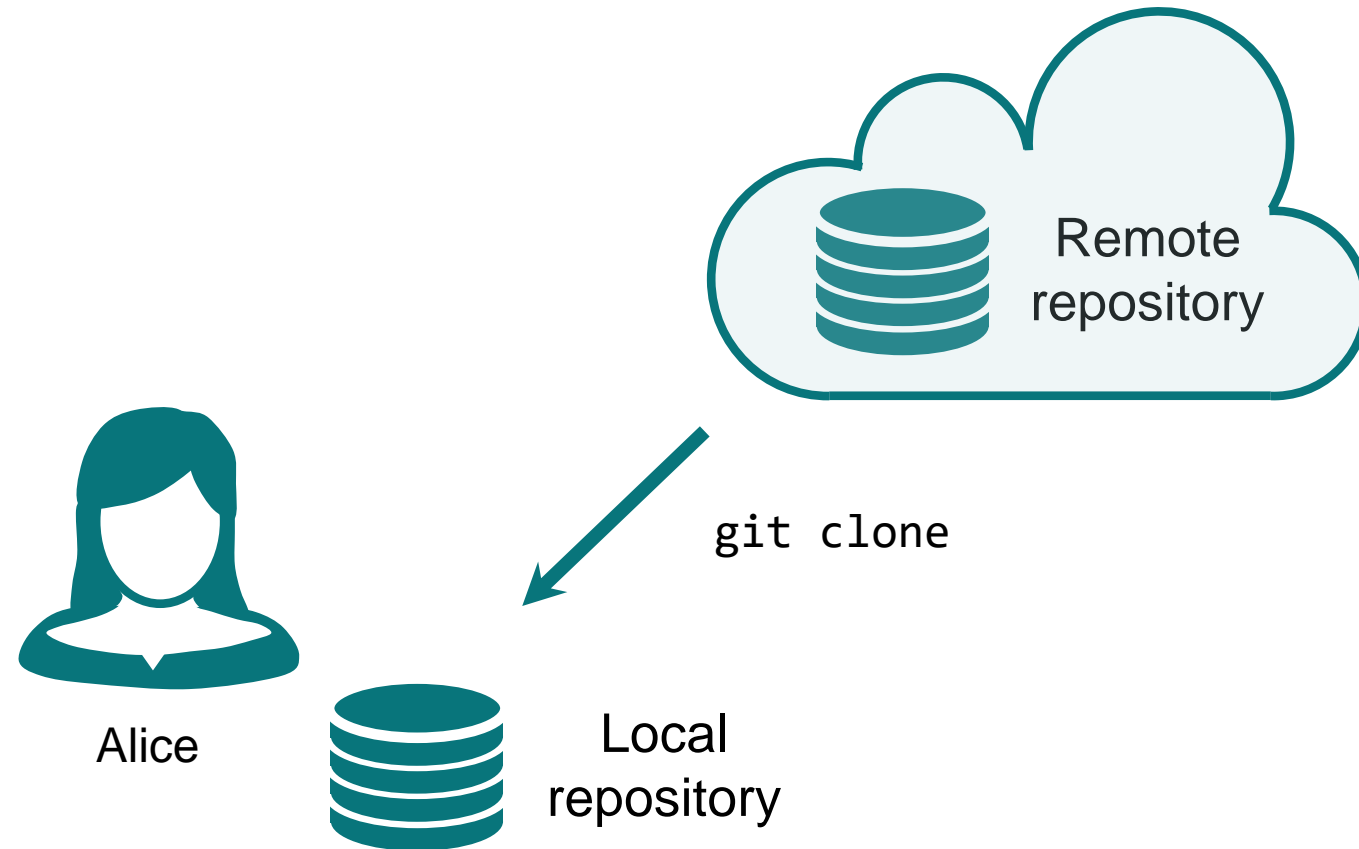
Git was originally authored by Linus Torvalds in 2005 for development of the Linux kernel, with other kernel developers contributing to its initial development. Since 2005, Junio Hamano has been the core maintainer.



# Overview

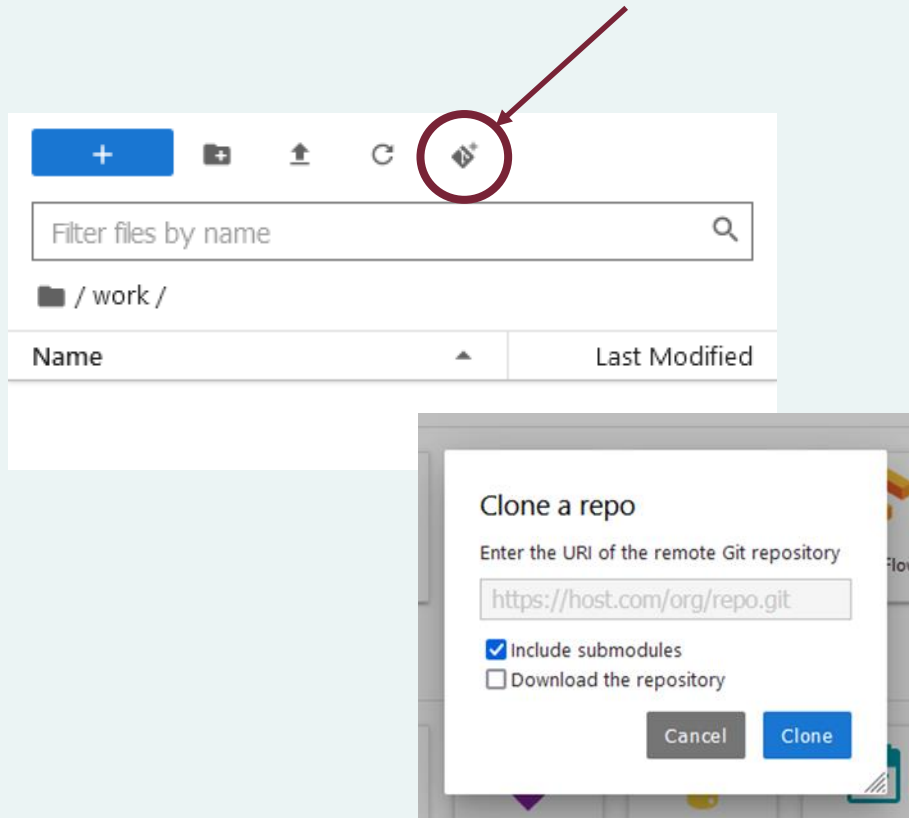


# Git clone



# Git clone

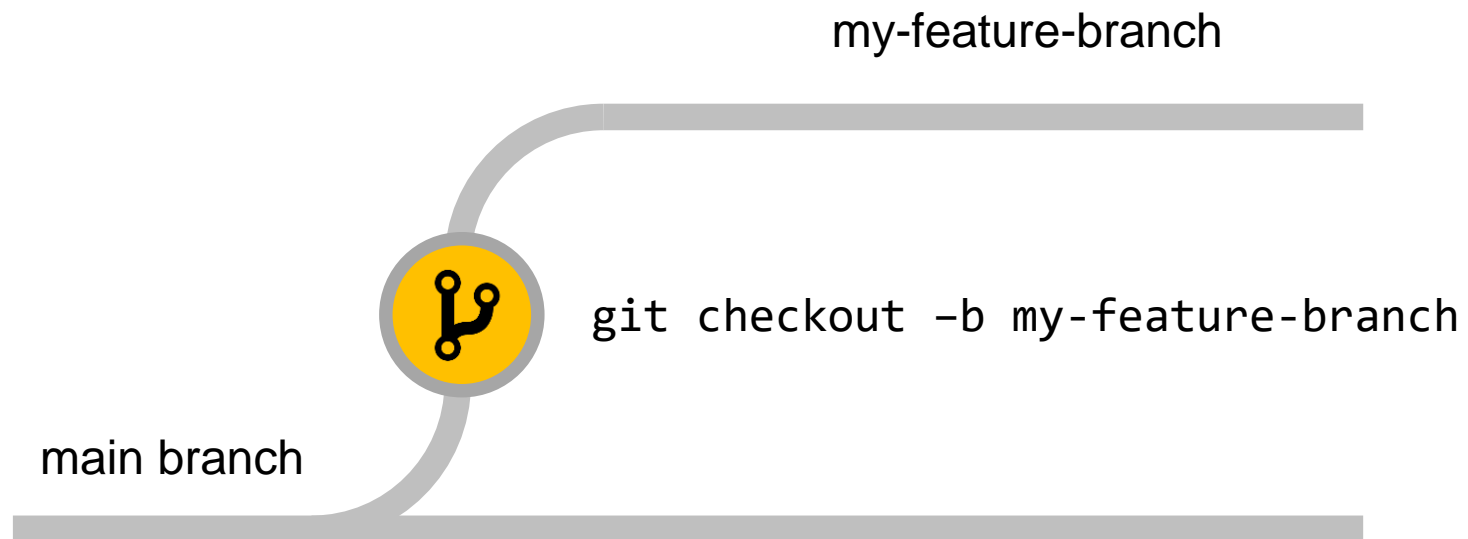
## JupyterLab GUI



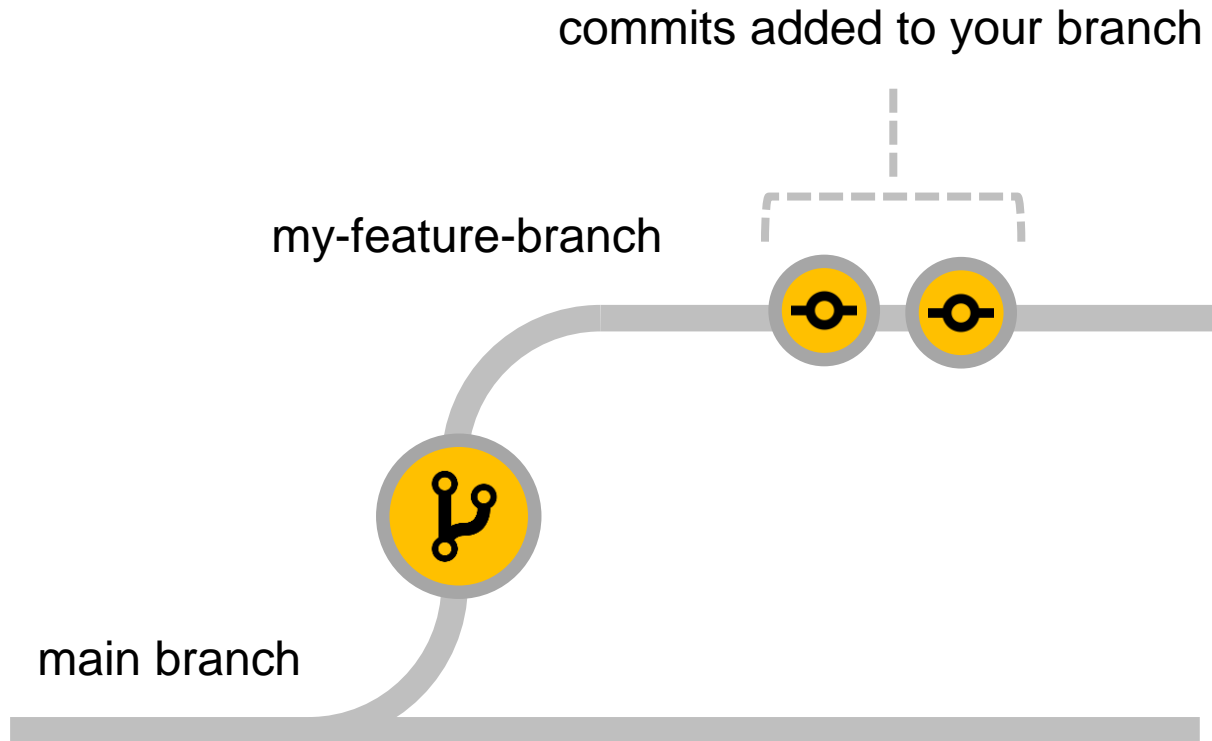
## Terminal

```
git clone https://github.com/concordia-grad-computing-seminars/data-engineering.git
```

# Creating your own branch



# Making commits to your branch



Changes you want to track in your branch can be recorded in your local repository by commits

Commits happen in two steps:

1. Adding the file with changes to the staging area:

```
git add <file>
```

2. Committing all files inside the staging area:

```
git commit -m "Commit message"
```

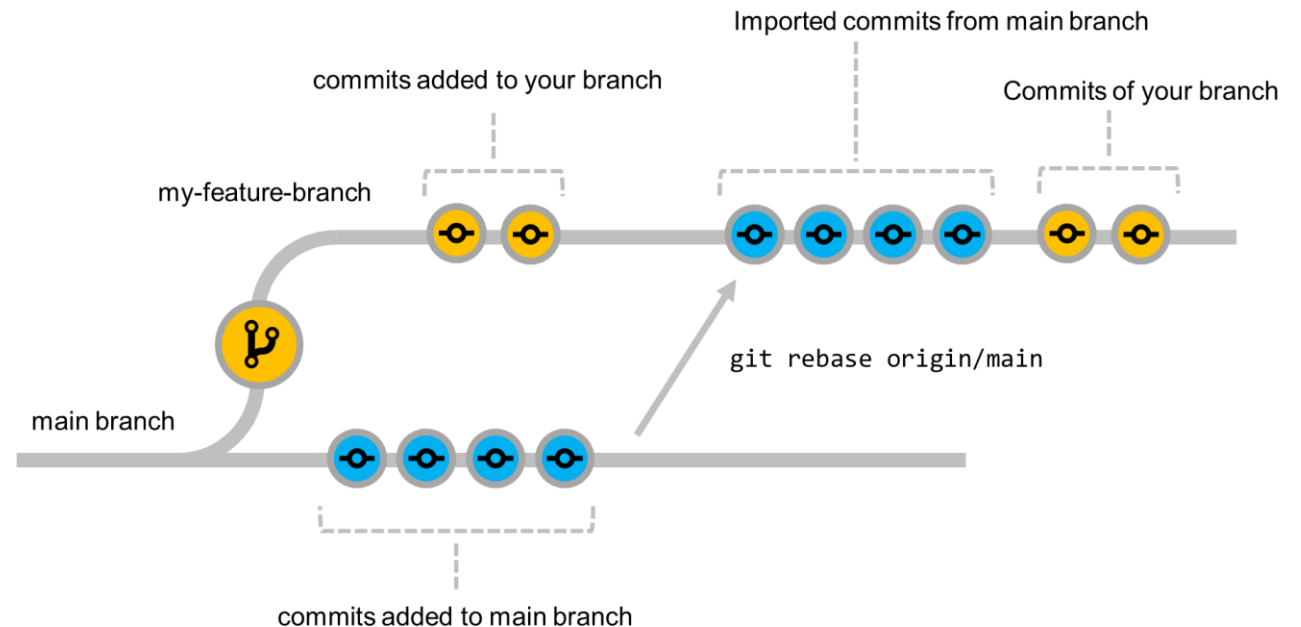
# Lost ?

- When working with git it is very common to loose track of what exactly is committed / changed /staged etc...
- Other operations too can add to the confusion (we will soon see more of them)
- Your best friend to know what is the status of your local repository and suggestions on what should be done is the command:

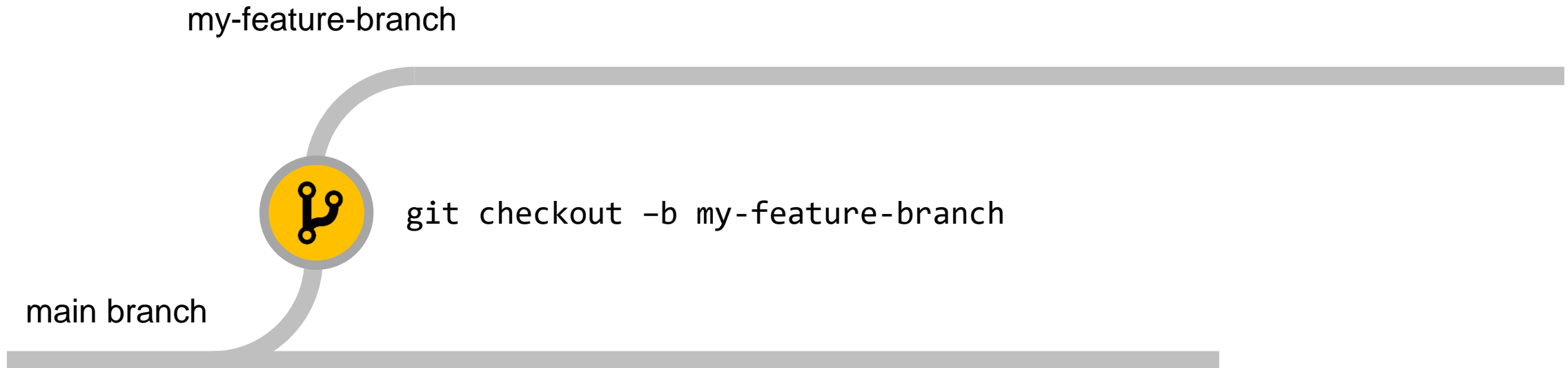
```
git status
```



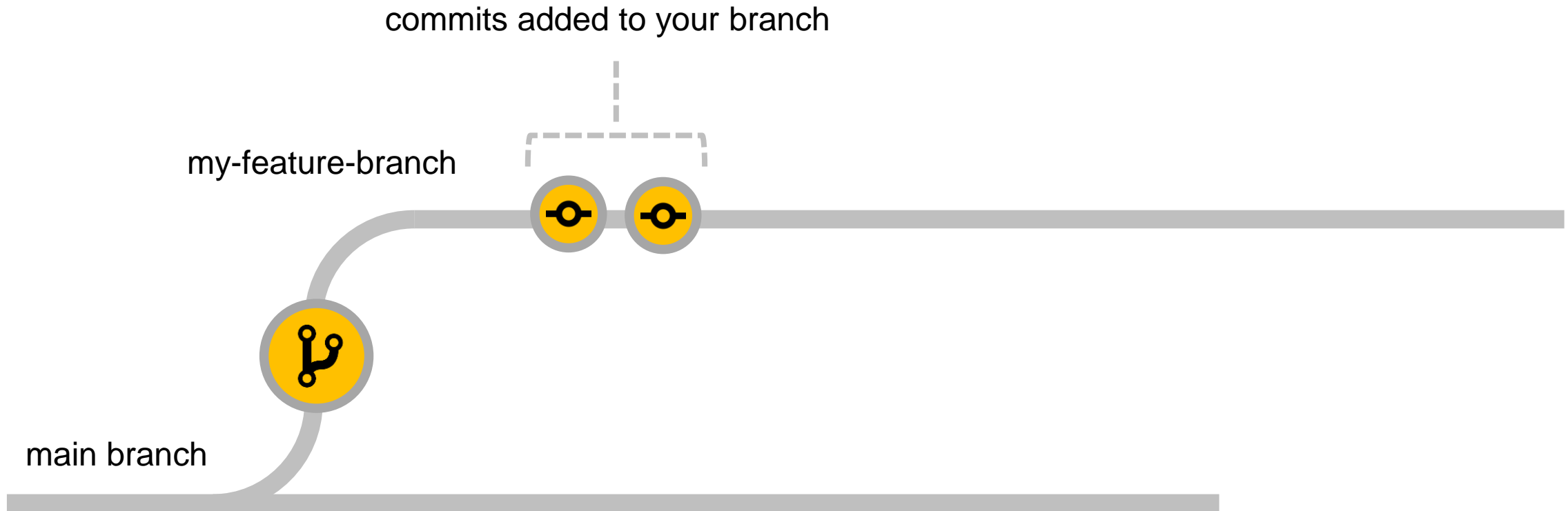
# Keeping your local repository in sync with remote repository



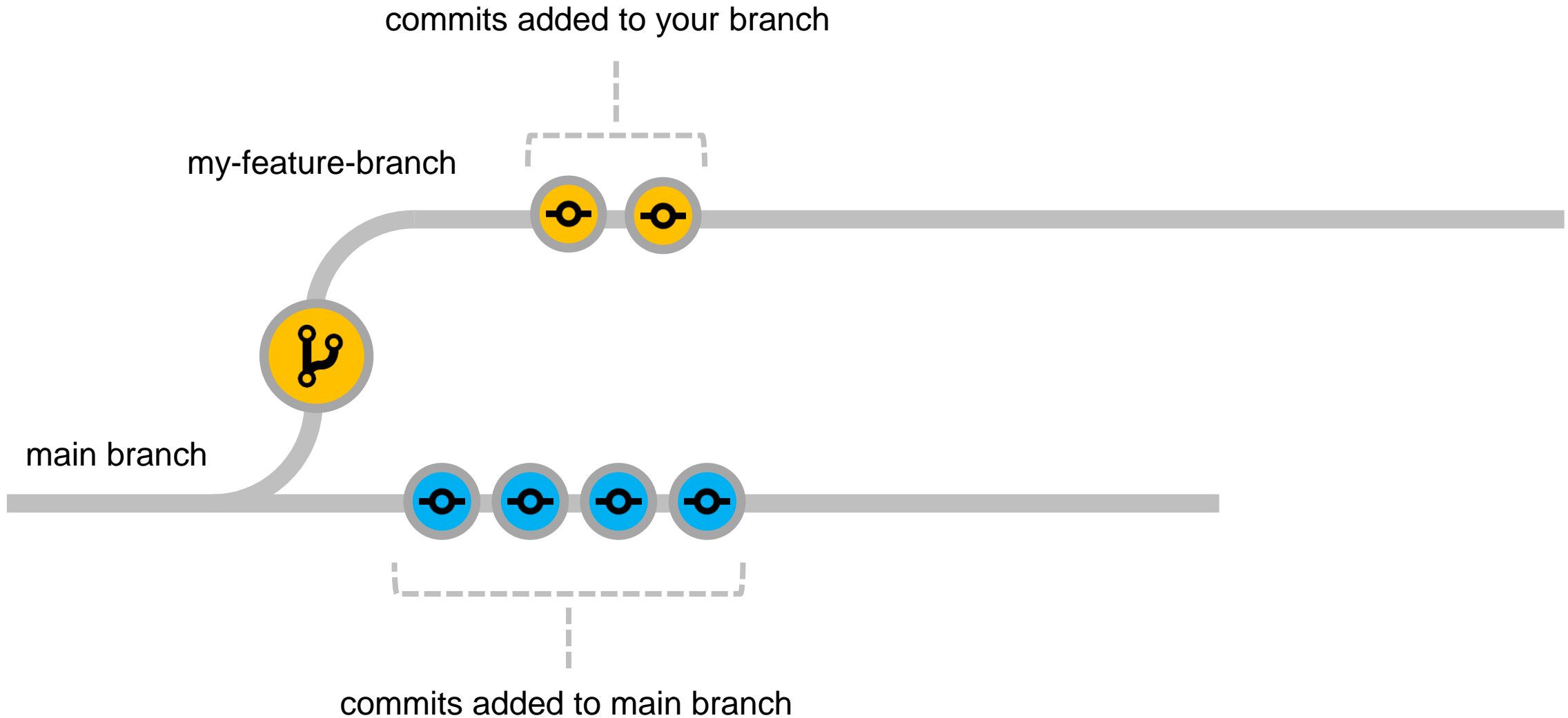
# Creating your own branch



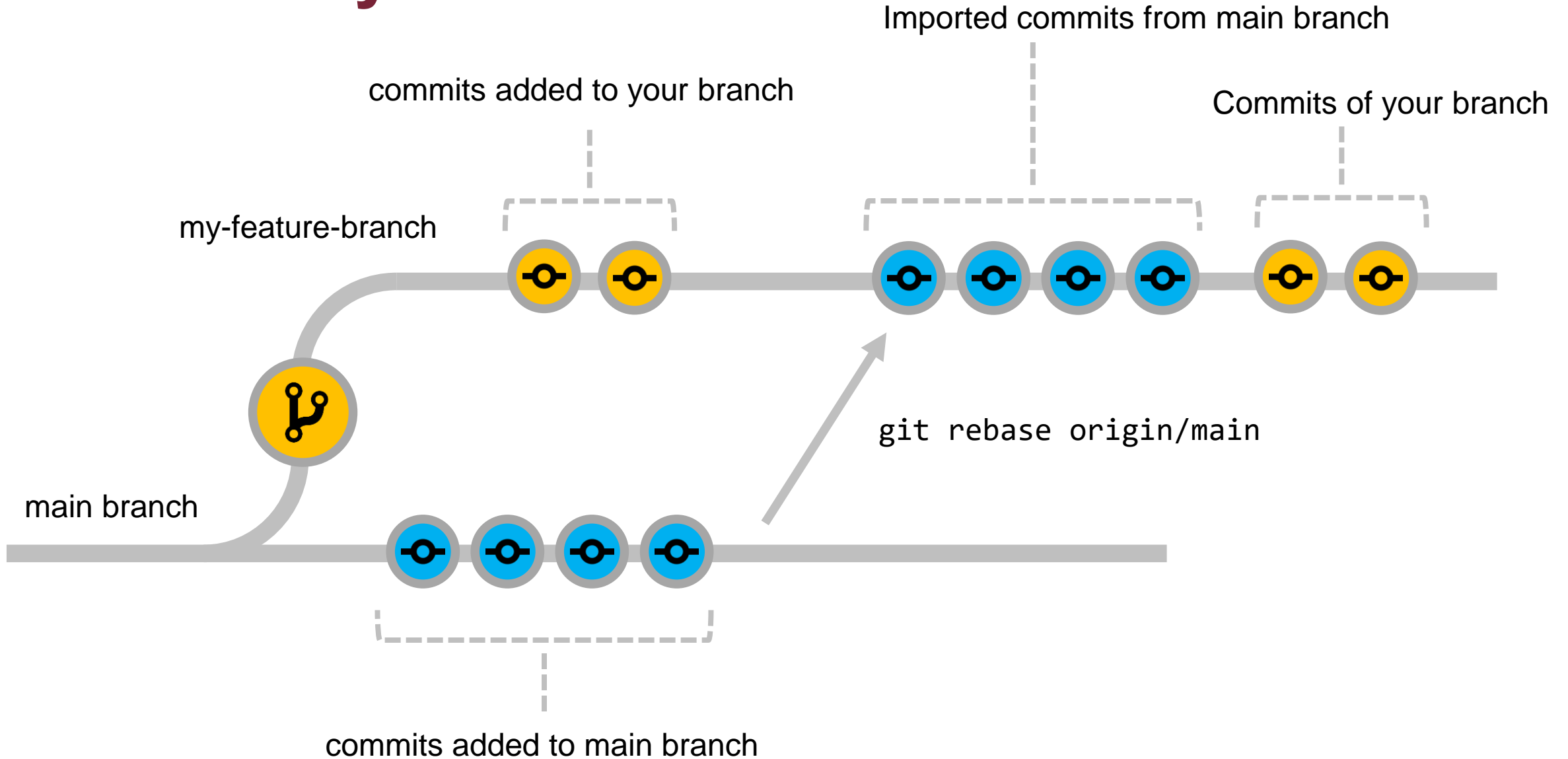
# Making commits to your branch



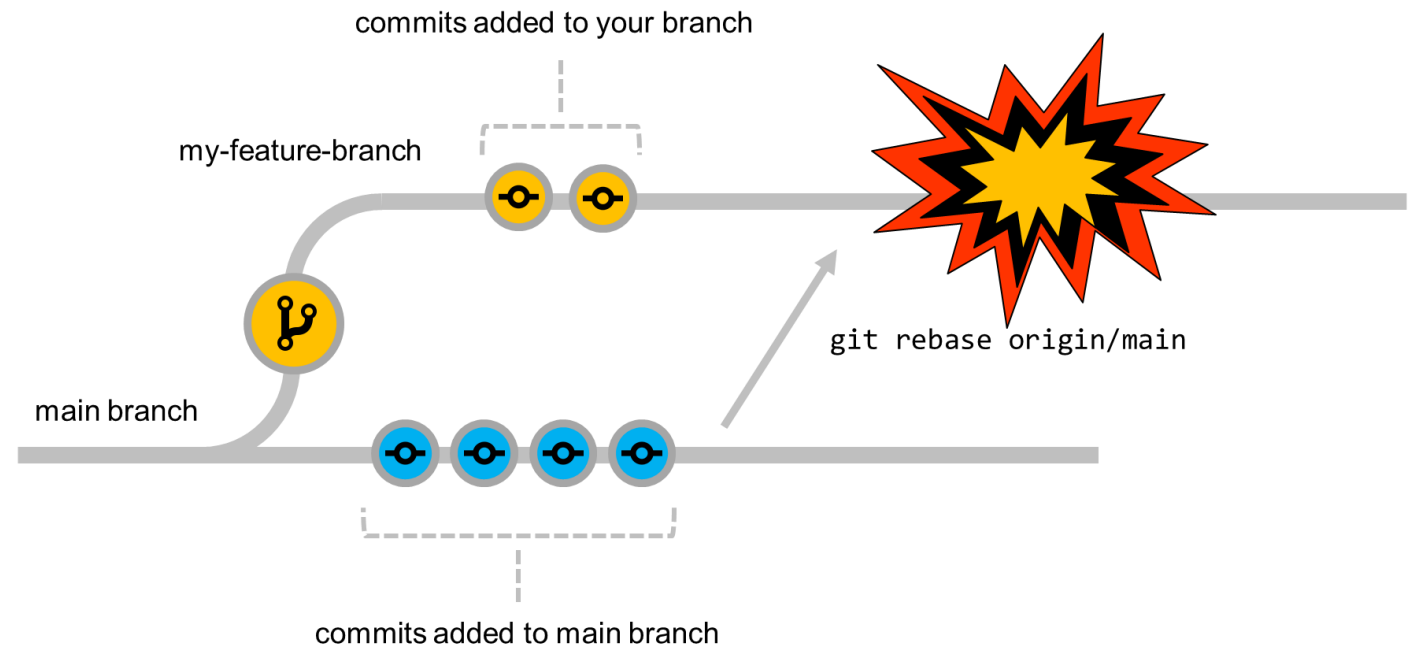
# Commits added to main branch



# Rebase your branch



# Resolving conflicts during rebase



# Possible conflicts during rebase

- Delete conflicts
  - A file you have modified was deleted on the main branch
- Merge conflicts
  - A file has modifications from you and the main branch and these modifications are conflicting

# Resolving conflicts during rebase

- Read message(s) from git
- Use `git status` to guide you
- If you need to start over use:  
`git rebase --abort`
- If too complex to resolve conflicts (e.g. when addressing conflicts with jupyter notebooks) consider this approach:
  - Copy your version of the file to another file/location
  - Force accepting the version from origin/main:  
`git checkout --ours <file_to_get_from_main_branch>`
  - Compare the two file versions and solve conflicts



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