Data Science

Session 2 - Collaborative development


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introduction-to-data-science

Introduction

What did we do last time?

The CRISP-DM method

Cross-**I**ndustry **S**tandard **P**rocess for **D**ata **M**ining

- ➔ Published in 1999
- ➔ Common in the industry
- ➔ Still relevant today

The CRISP-DM method to carry out data-driven projects

(Image source: Wikipedia)

Course outline

Data science course

Session 1: Understanding data

Session 2: Collaborative development

Session 3: Preparing data - Managing missing data

Session 4: Preparing data - Dimensionality reduction

Session 5: Imbalanced data and deidentification

Session 6: Working with text

Machine learning course

What the f*** does this have to do with Data Science?

Why learn about collaborative development in a Data Science course?

Data scientists produce code

- Research is pointless if you are not able to share your code with the people who will deploy it

Data scientists do not work alone

- Research is pointless if you are the only one who can understand it

Version control systems are everywhere in the industry

- Even as a manager, it is good to understand how your tech team manages their code

Open source projects are more and more popular

- Platforms like GitHub and GitLab are what allow open source projects to grow

It's a good way to collect your works in class :)

- I do need to evaluate your practicals. I'm sorry.

What are version control systems?

What are version control systems?

They are systems that allow the management of different versions for one or several files.

Simplify code storage

Simplify code versioning

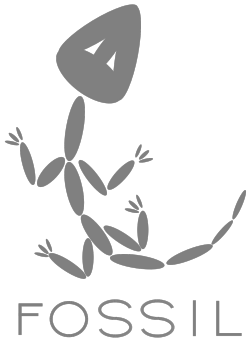
Keep a history of changes

Parallelize work

Vocabulary : Git, GitHub, GitLab and more

What is the difference?

Vocabulary : Git, GitHub, GitLab and more

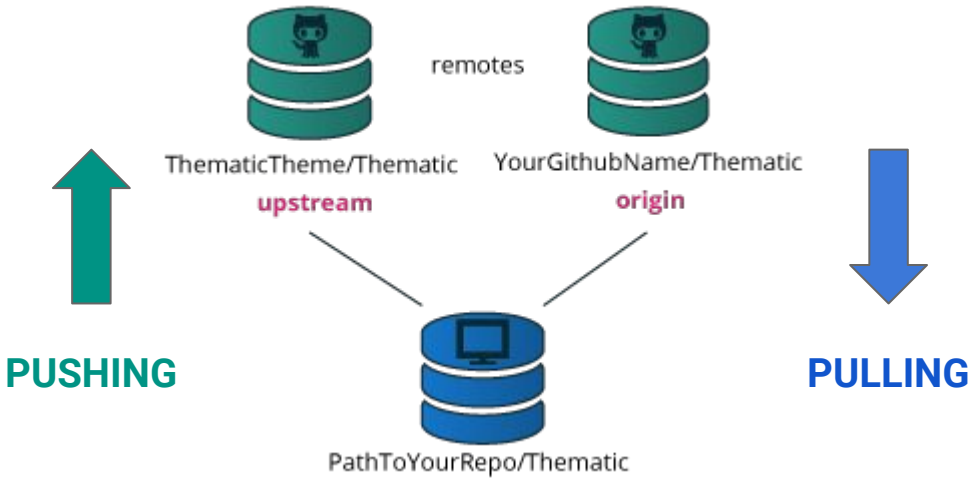


Version control systems

Services to store git projects

Fundamental git concepts

Repositories and remotes



A **git repository** contains a `.git` folder

A **remote** is a **repository** hosted on the cloud.

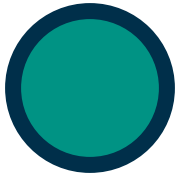
NOTHING IS UPLOADED TO THE REMOTE UNTIL YOU PUSH IT YOURSELF!

You do not need a remote to work with git.

Your local code can have **several remotes.**

A **fork** is an **independent copy** of a repository.

Histories, commits and branches

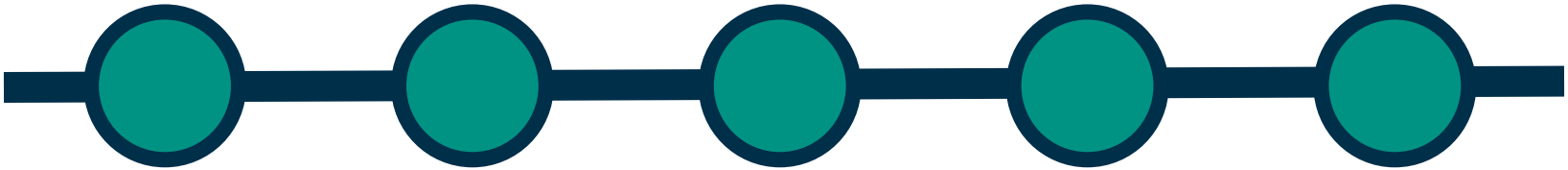


```
Commit 0000000000000000001
Author: Joe Mama <joe.mama@centralelille.fr>
Date: Fri Jul 27 15:29:25 2023
Message: Create slide 15 for GitHub session
+          slide15
-          slide25
renamed    slide11 > slide 12
```

A **commit** is a list of changes.

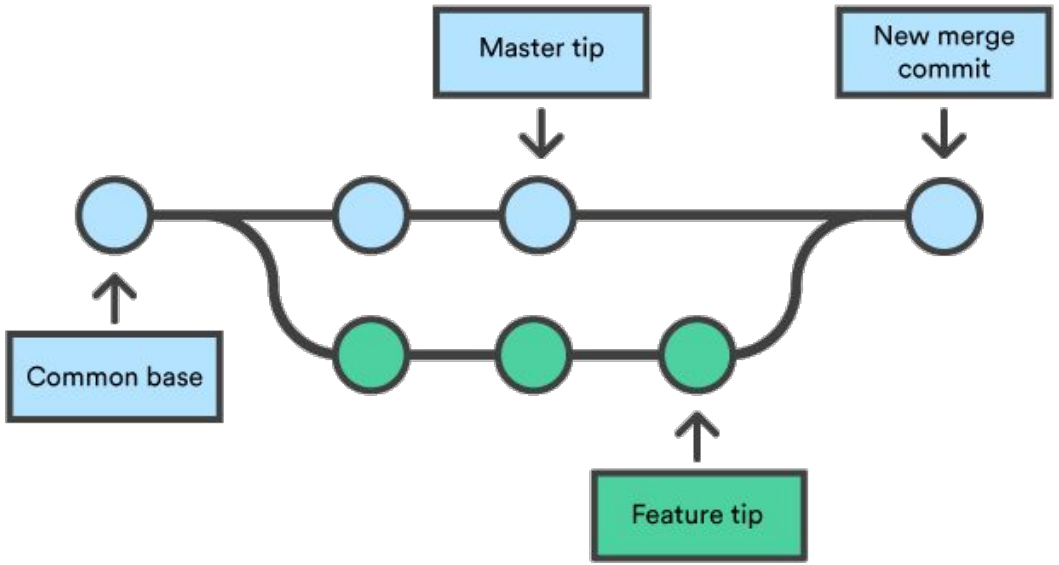
Committing your work is **saving a version of the repository**.

Histories, commits and branches



A **branch** is a sequence of commits.
They are a convenient way to manage your commits and their history.

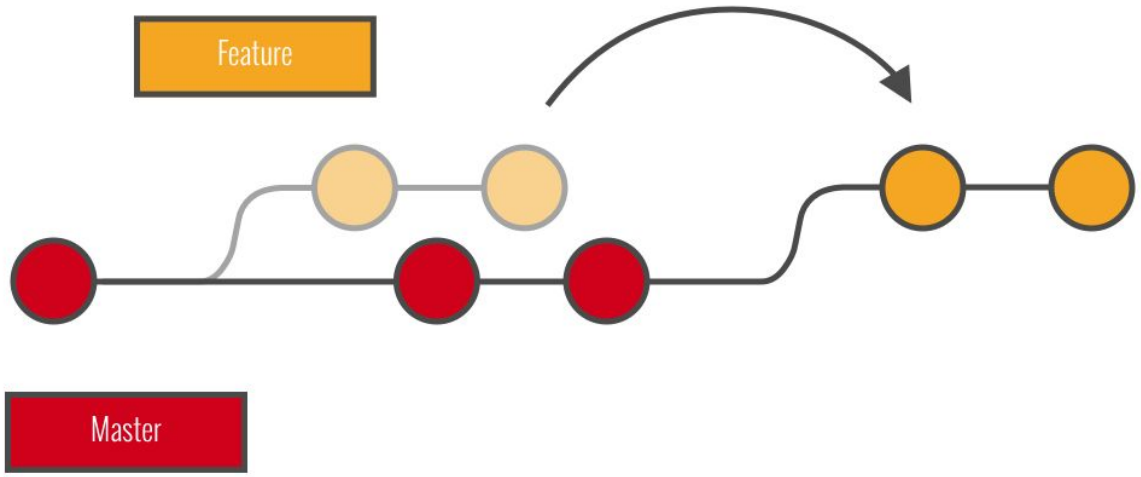
Managing branches



Branches can be created from other branches to work in parallel.

Bringing back commits from a branch to the other is called **merging**.

Managing branch histories



Rebasing a branch is **redefining its origin** by rewriting the commit history.

It can help having a **clean history**.

It can however generate **conflicts**.

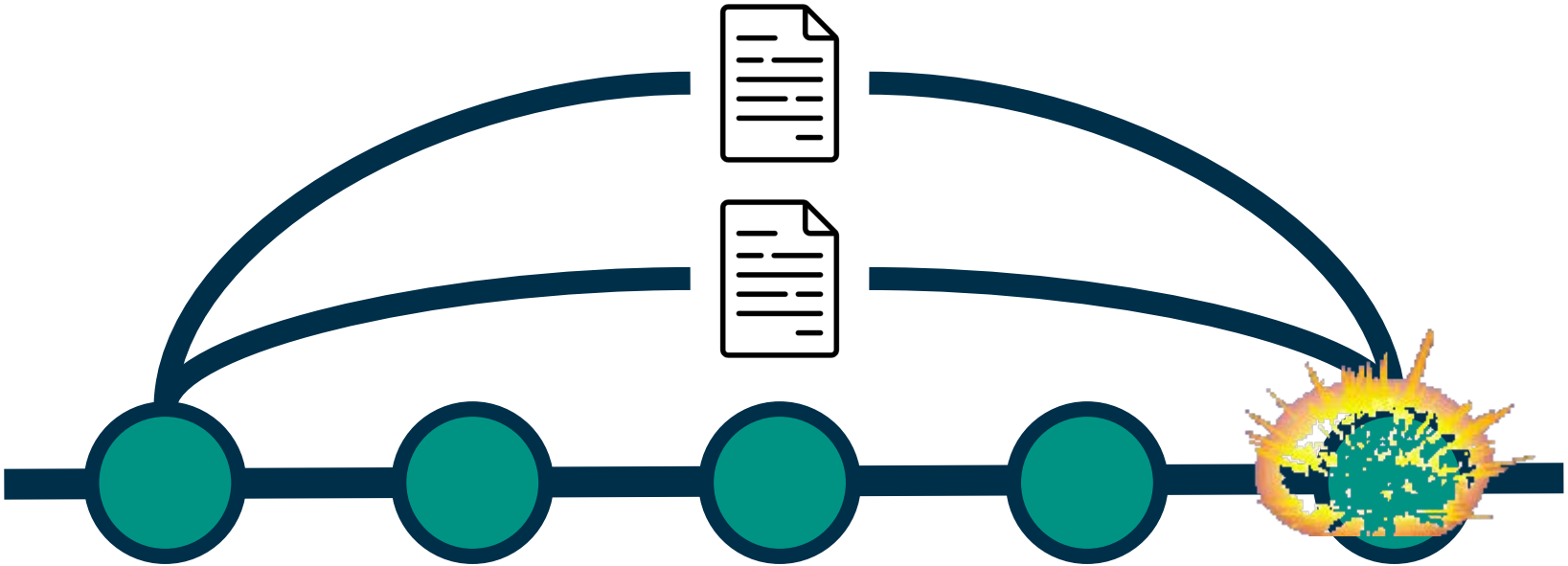


NEVER CHANGE A SHARED BRANCH'S HISTORY

You WILL regret it. Force push responsibly.



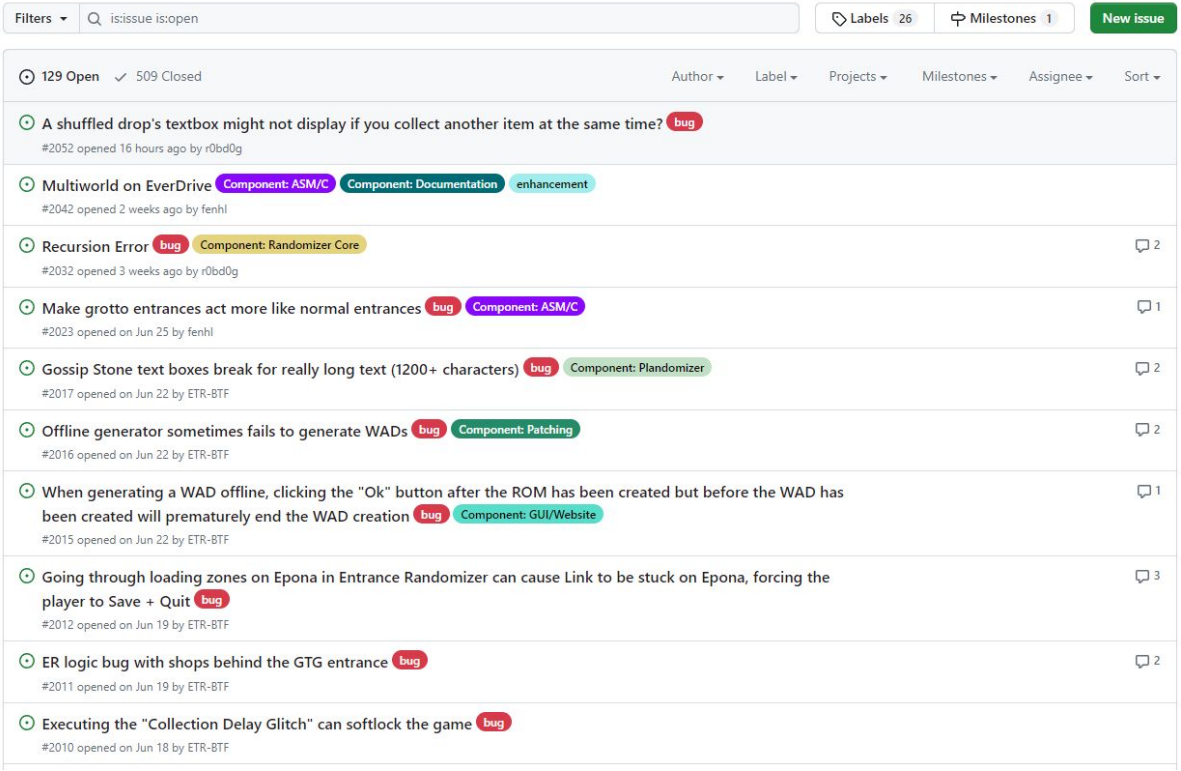
Managing conflicts



Conflicts happen when **histories do not match**.
This happens when **several people change the same file** and try to merge their work.

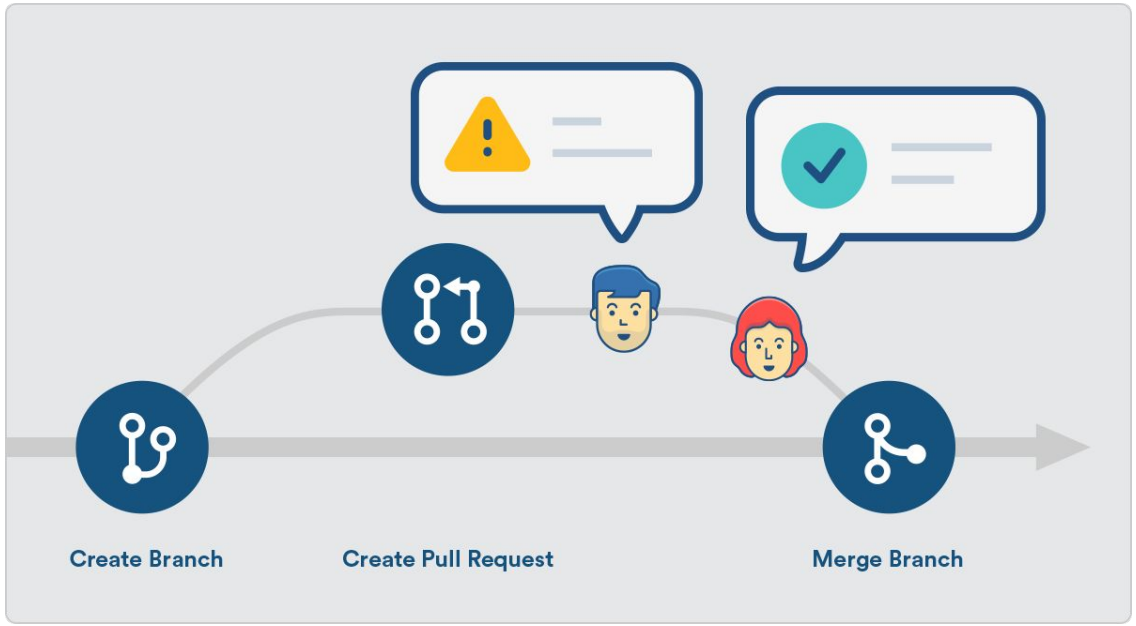
Using git collaboratively

Issues



Issues are akin to **tasks**.

Pull requests

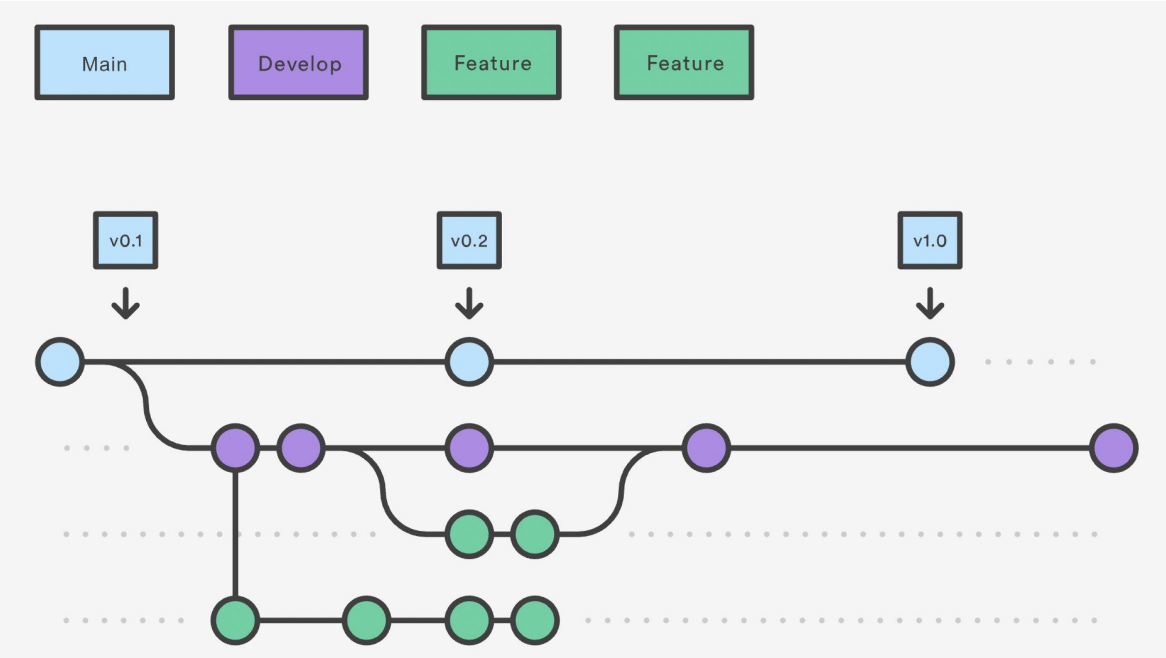


Pull requests are a **communication tool** between developers.

They allow for:

- Better code quality
- Knowledge sharing
- Communication

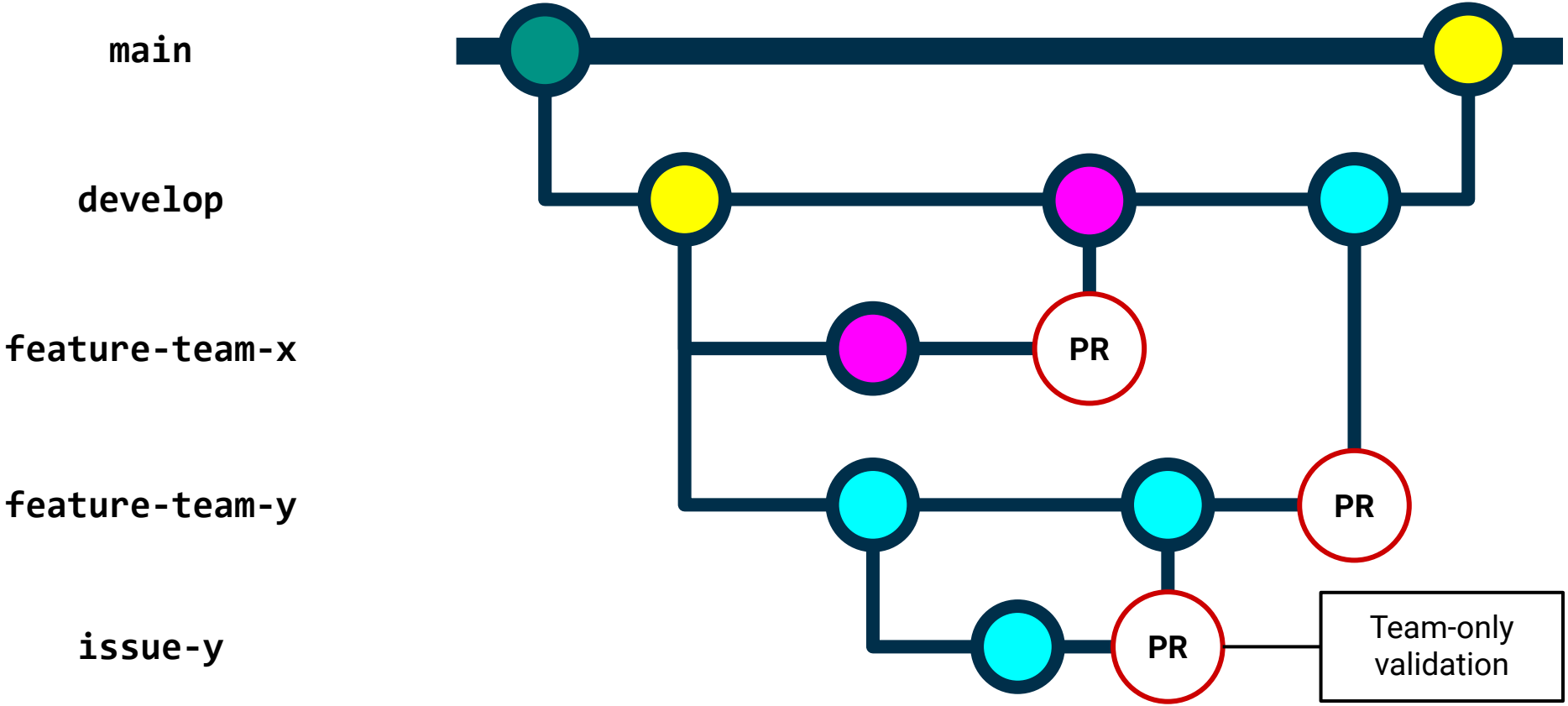
Defining a git flow



Git flows are **conventions** within development teams to mange their repository.

Practical work

Let’s build a mock app with Git!



The mock project’s git flow

How we will use GitHub as a class

`practicals-2023-2024`

`main`

`session_name-name1-name2`

1. **Create a branch** from `main` with name `session-x-name1-name2` (e.g. `01_understanding_data-salem-salem`)
2. **Create a folder** with name `name1-name2` within the relevant folder (e.g. `01_understanding_data/salem-salem`)
3. Upload your work within the folder you created
4. Create a pull request for the practical

Respecting these conventions is part of the evaluation!

Don’t forget to upload your work!

Debrief

Debrief

https://forms.gle/z2zarAiDR8E5verp6