COMP1531

⚽ Teamwork

2.1 - Git - Team Usage

In this lecture

Why?

- Git is primarily useful when working with others, and working with others effectively is important

What?

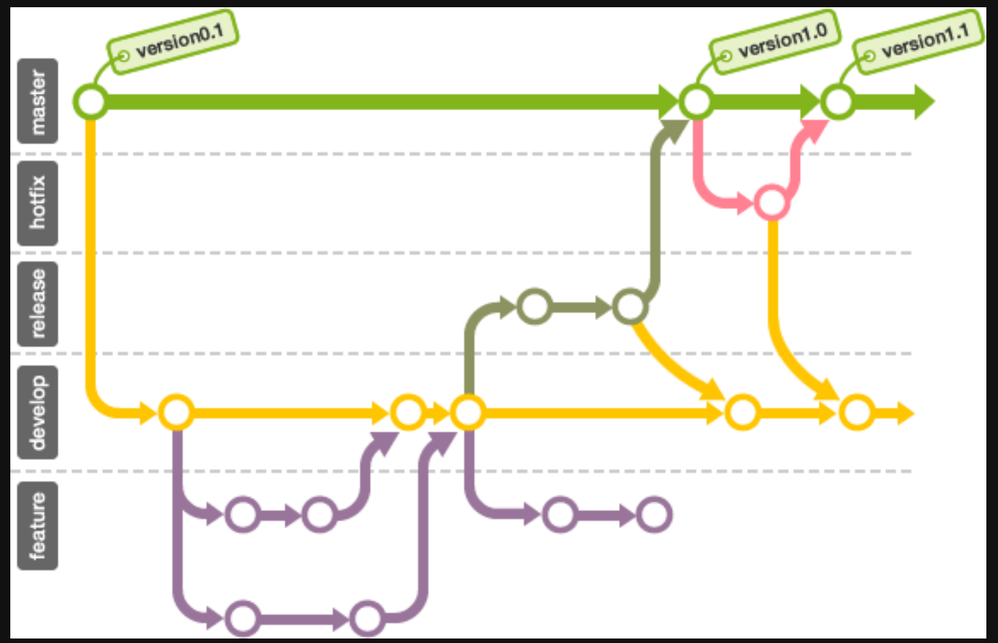
- Branching
- Merging
- Merge Requests

Live Demo

Most of today's explanations will be covered via a live demo. If you want to follow a written guide, then please checkout Atlassian's git guide.

The git tree model

- Git can be understood as a tree-like structure.
- Git is a collection of commits.
- Each **commit** has one parent. Each **commit** can have multiple children (i.e. **branches**)
- A **branch** essentially is just a pointer to a particular commit.
- To try and bring two separate **branches** together onto the same commit is a process of "**merging**"



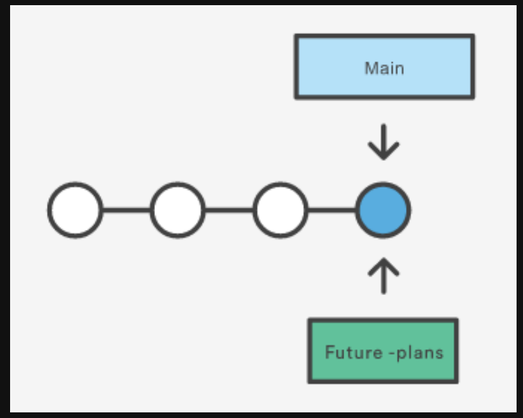
Source: https://github.com/frappe/charts/issues/180

Branches

Your "master" branch is just a pointer to a particular commit on master (usually the latest).

You can create your own branch if you want to continue on a separate thread of working, unrelated to the master branch.

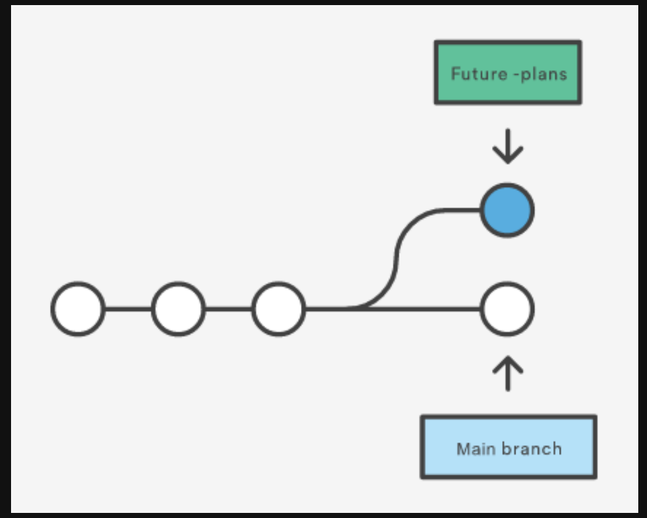
```
1 git checkout -b new_branch_name
```



Branches

This then allows you to continue making commits on a separate "branch".

There is no limit for the number of branches you can have in a repository.



Branches

Your local repository can also "check out" (work with) a single branch at a time. You can swap between branches using the checkout command.

It's generally good practice to ensure you have no staged or unstaged changes on your branch before swapping to another.

```
1 git checkout branch_to_swap_to
```

Merging

The process of "incorporating work on another branch into mine" is known as merging. The two most common cases of merging you'll see are:

- Merging master into *your work* whilst you develop on it (so you're integrated small changes often, rather than a big change suddenly)
- Merging your work into *master* once your branch is stable enough to merge into master

The merge command let's you **specify the branch you want merged into your current branch.**

```
1 git merge master
```

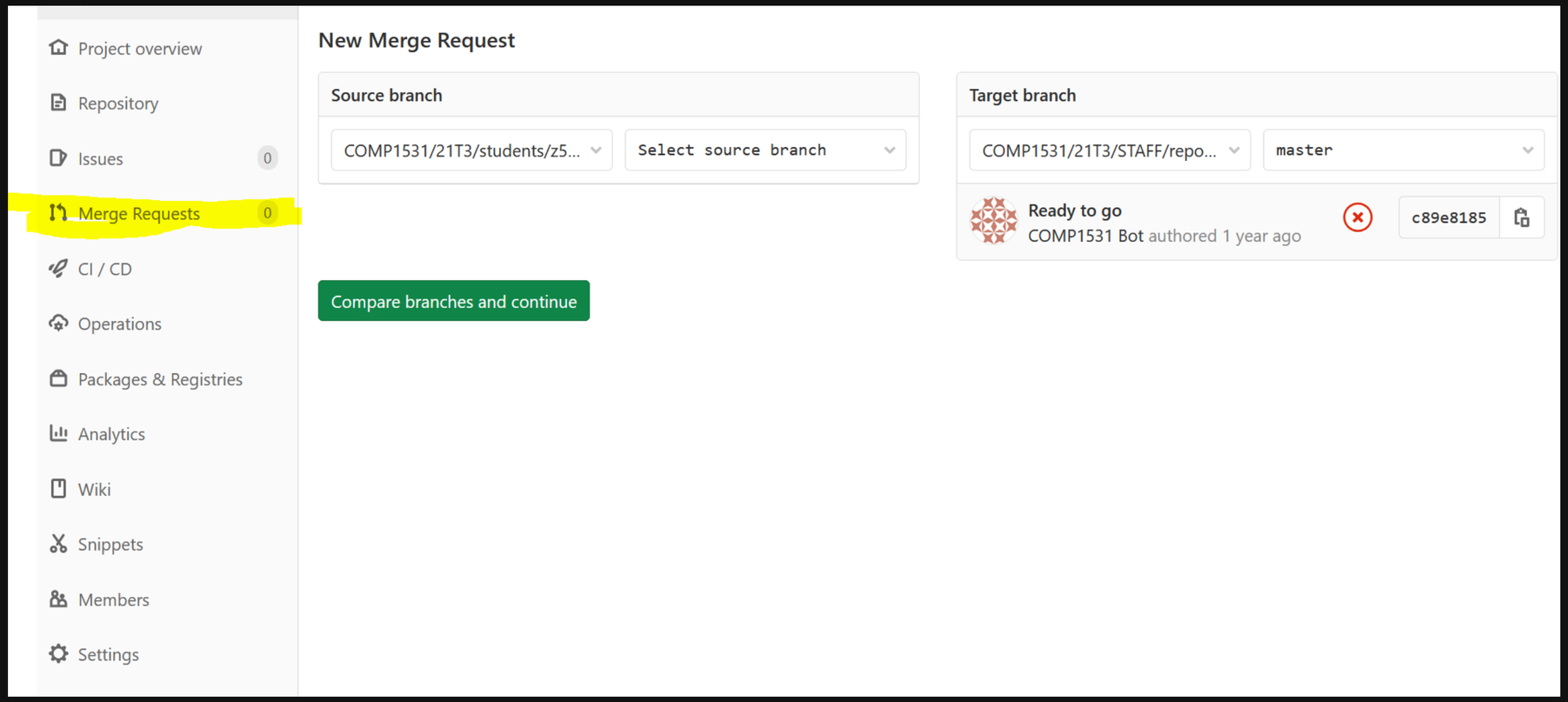
Merging

The following describe a scenarios of scenarios with respect to merging between your working branch and master

#	Commits made on your branch	Commits made on master branch	Command & Outcome
1	Yes	No	Nothing to do
2	No	Yes	*from your branch, git merge master* Will "fast forward" merge (i.e. simply bring your branch pointer to the same commit as master, effectively no merge)
3	No	Yes	*from your branch, git merge master* Will "fast forward" merge (i.e. simply bring master's branch to the same commit as your branch, effectively no merge)
4	Yes	Yes	*from your branch, git merge master* Will merge master into your branch, but a merge commit will get made (either automatically or manually)
5	Yes	Yes	*from master branch, git merge your_branch* Will merge your branch into master, but a merge commit will get made (either automatically or manually)

Merge Requests

In most industries, you cannot merge your branch into master via the command line. Instead, we allow our git site (e.g. gitlab) to do this via a **Merge Request** (a web-based GUI that helps manage merges into master)



Feedback