



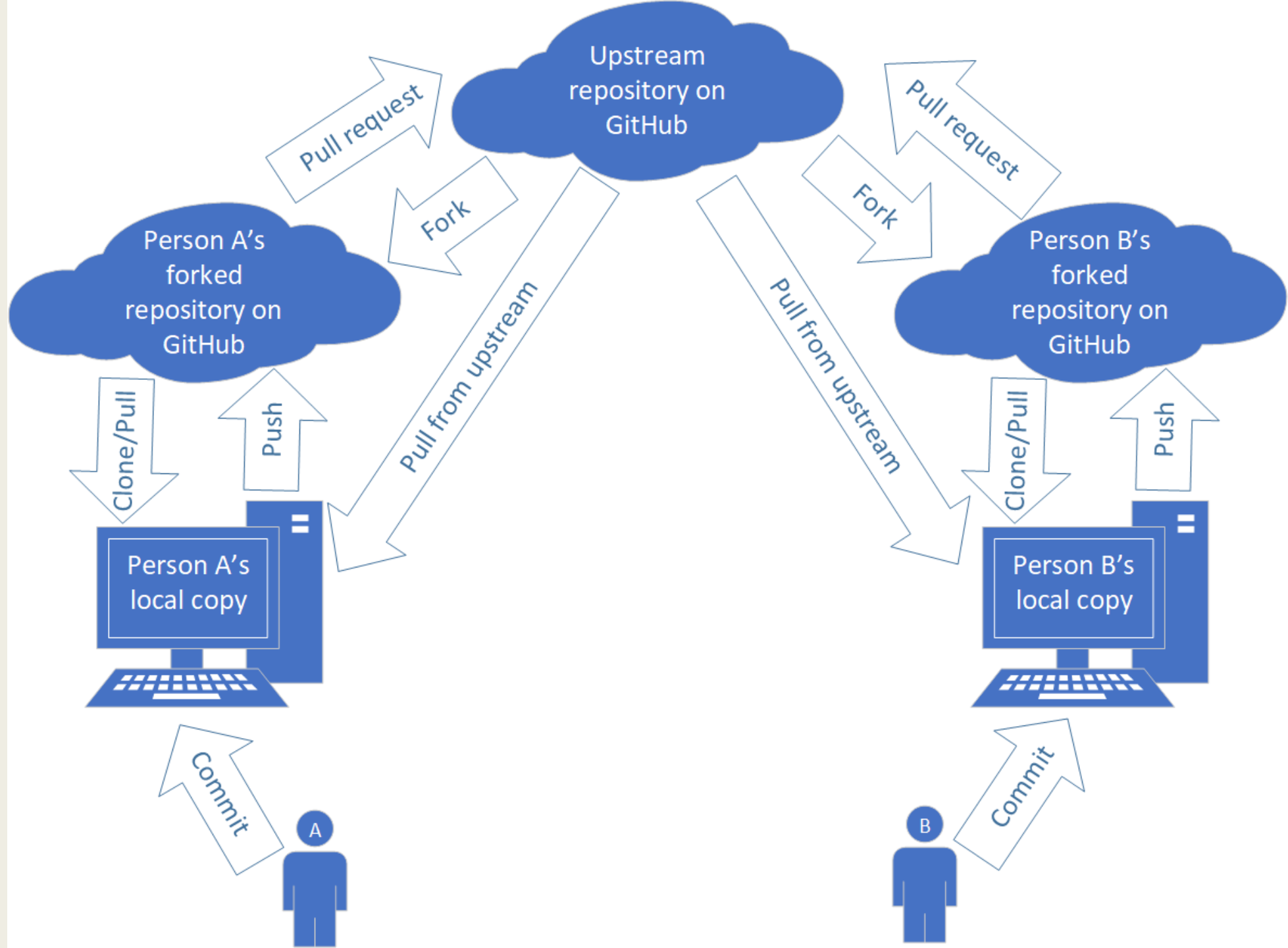
# VERSION CONTROL WITH GIT/GITHUB

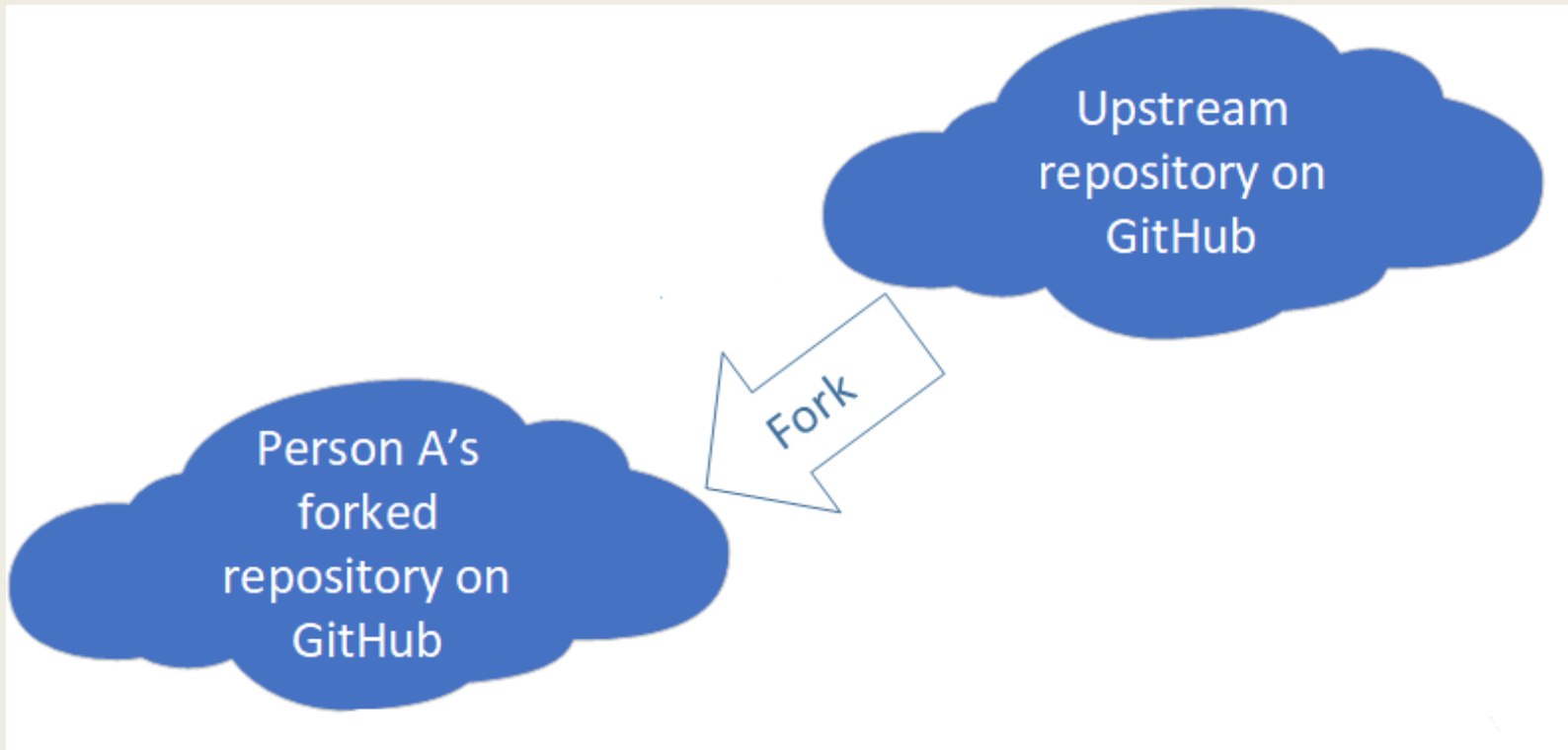


# Why use version control?

- Track changes to code over time
- Back up each version of the code
- Annotate each change
- Share code with others
- Formal framework for working collaboratively with others

# An example Git/GitHub workflow





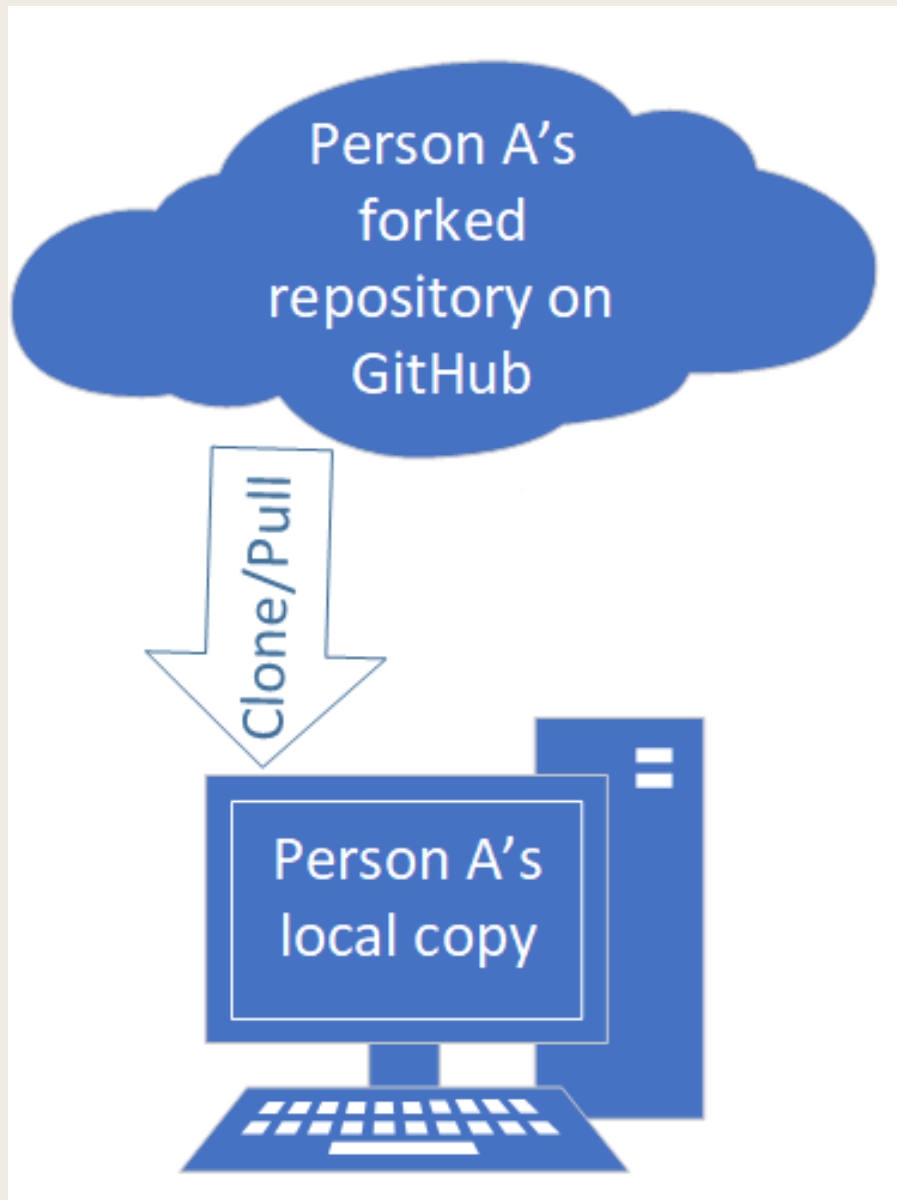
repository – the set of files that make up the project and are tracked by Git

remote – a version of the repository stored on the web

upstream repository – the “main” version of the repository everyone will work from and submit changes to

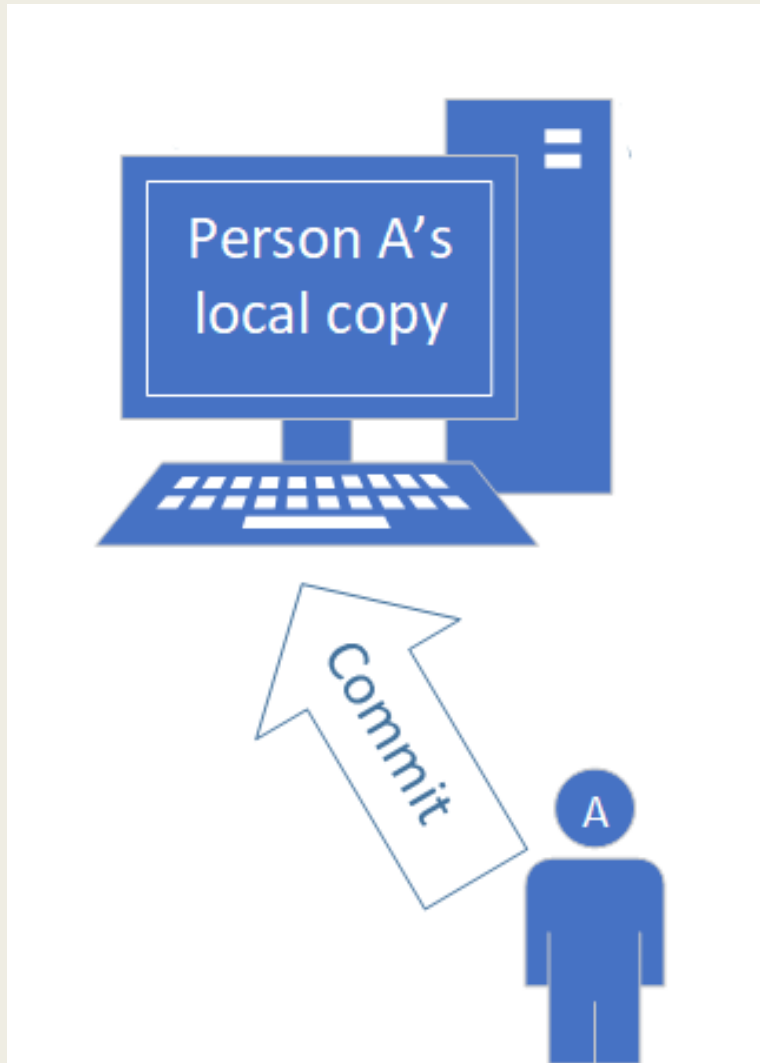
## Fork

- Create our own remote copy of the upstream repository to make changes to.
- We don't want to make changes directly on the main repository, so we make a copy to work on. Our changes can be reconciled with the upstream version later.
- Go to the upstream repository on GitHub, and click the “Fork” button.



## Clone/Pull

- Copy our forked repository onto our computer so we can work on it in RStudio.
- Go to our forked repository on GitHub, click the “Clone or download” button and copy the URL.
- In RStudio, make a new project (File > New project). Select “Version Control”. Select “Git”. Copy the URL into the box. Browse to a folder where we’ll keep the repository. Click “Create project”



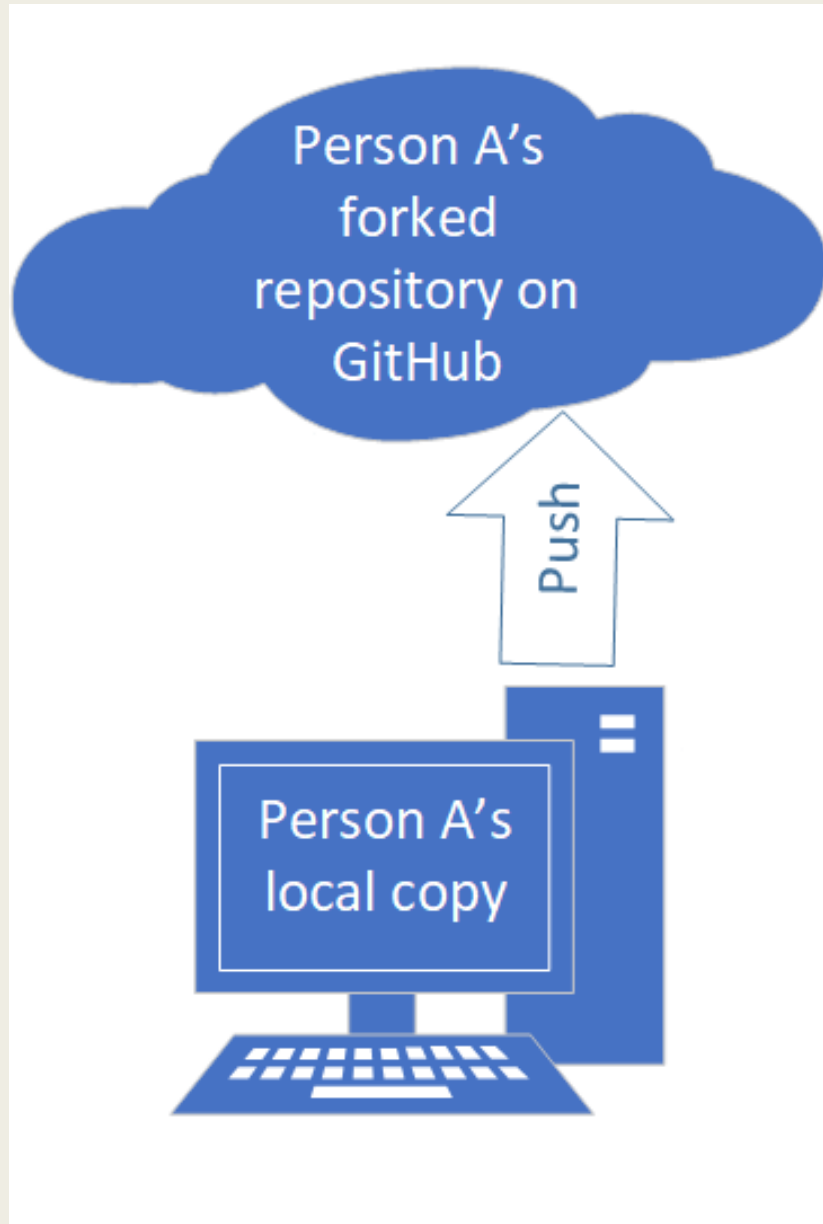
## Commit

- Make changes to our local version, annotate, and save them to be tracked by Git.
- In RStudio, make a change to our local version. In the “Git” tab, click “Commit”.  
Stage files for the commit by checking the corresponding box. Enter a brief commit message in the box describing the changes. Click the “Commit” button.

commit – a set of changes made to a repository

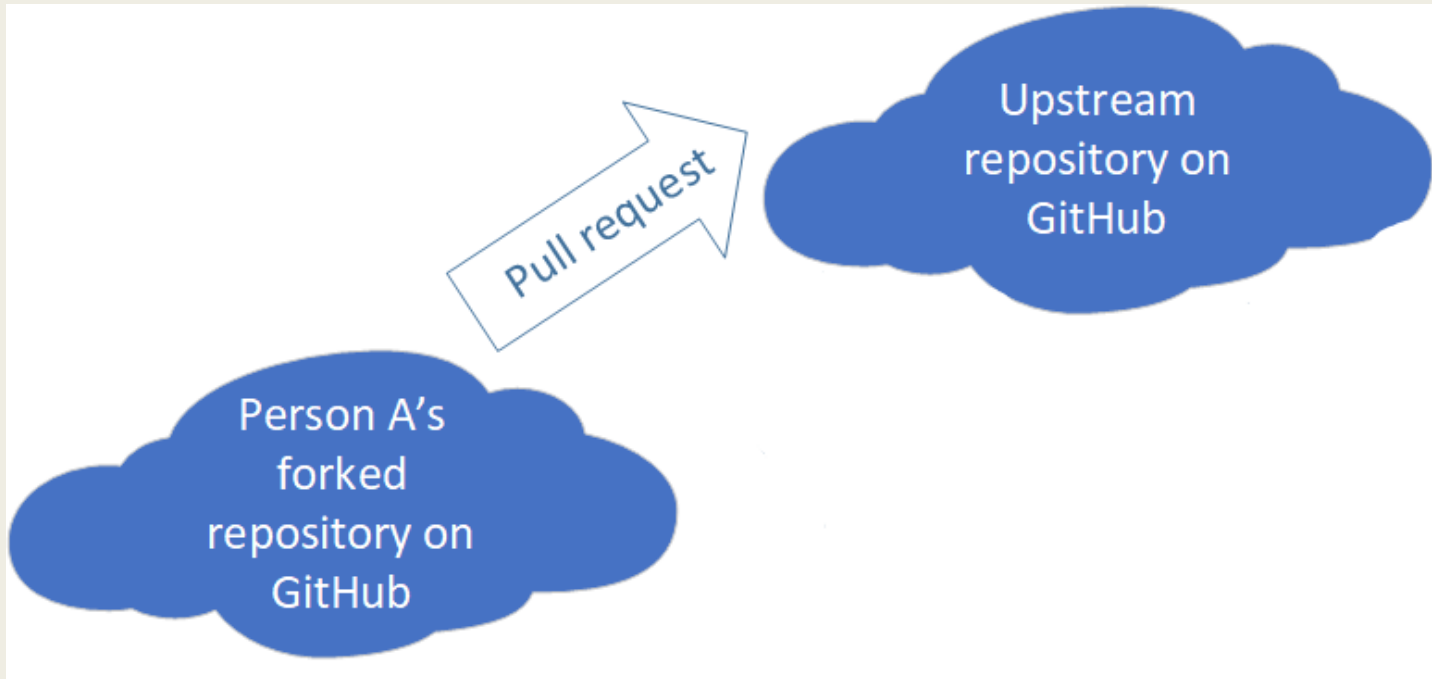
stage – indicate which files should be included in the commit

commit message – a brief (one sentence) message describing the changes included in the commit



## Push

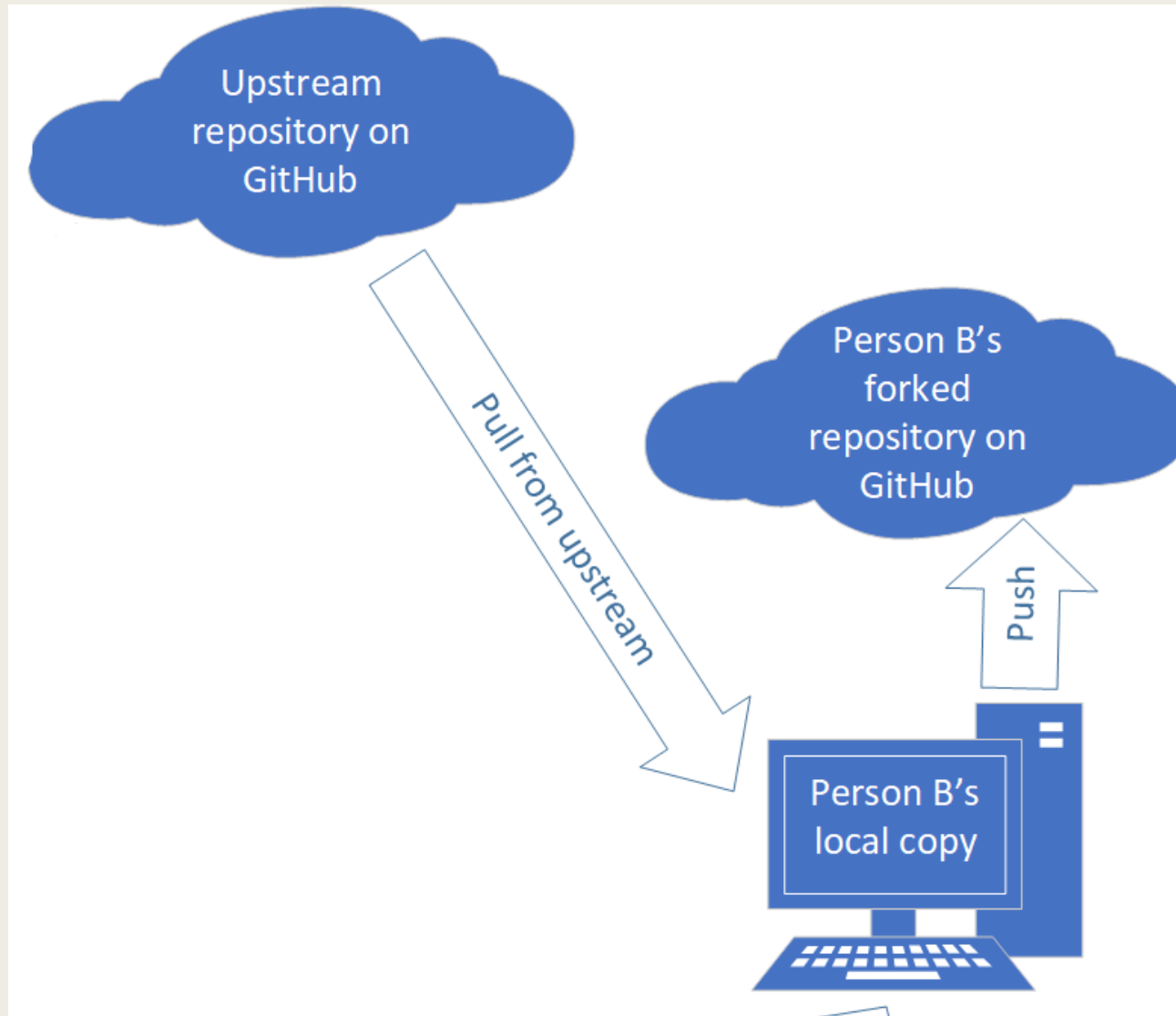
- Save one or more commits to our forked repository on the web.
- In RStudio, click the “Push” button. We may have to type our GitHub login information.



## Pull request

- Request to have the changes we made to our local repository included in the upstream repository.
- Go to our forked repository on the web and click “New pull request.” Click “Create pull request.” Enter a message describing our changes. Submit pull request. The owner of the upstream repository will review the changes and complete the pull request if the changes look good.





## Pull from upstream

- After our pull request is accepted in the upstream repository, a colleague may want to pull those changes into their version.
- They could [set up the upstream repository](#) in Git and pull from the upstream. To save to their forked copy, they would push the changes to the forked repository.