CHALMERS
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Git Tutorial

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Overview

- version control
- basic git (command line)
- exercises!

- Ask whenever confused

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Version Control

- **Issue**: Files with long, complicated history.
  Want to keep different versions:

```
Report_v3_comments_2018_01_05.docx
experiment_pipeline_10_2017_11_05.sh
```

- **Compound issue:** Other people work on them too

- Programs like **git** (version control systems) keep track of changes made by different people

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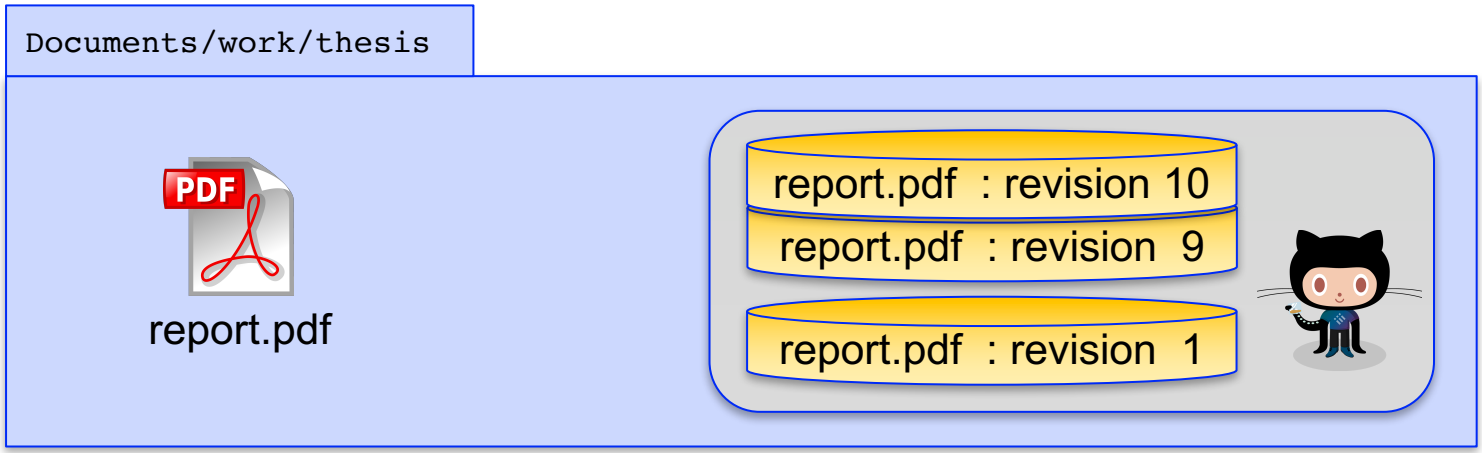
Git Concepts

- a git project is called a ***repository*** or ***repo*** = directory with history
- a repo contains a collection of snapshots (called ***revisions***) of the directory:



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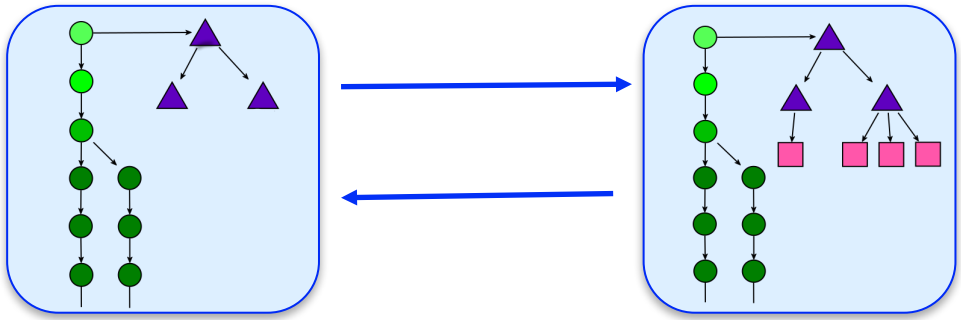
Git Concepts

- revisions are connected in ***branches***, reflecting file evolution

clone 1



clone 2

- repos are *decentralized*
  - Each ***clone*** contains everything (all revisions + history)
  - Changes can be passed between clones

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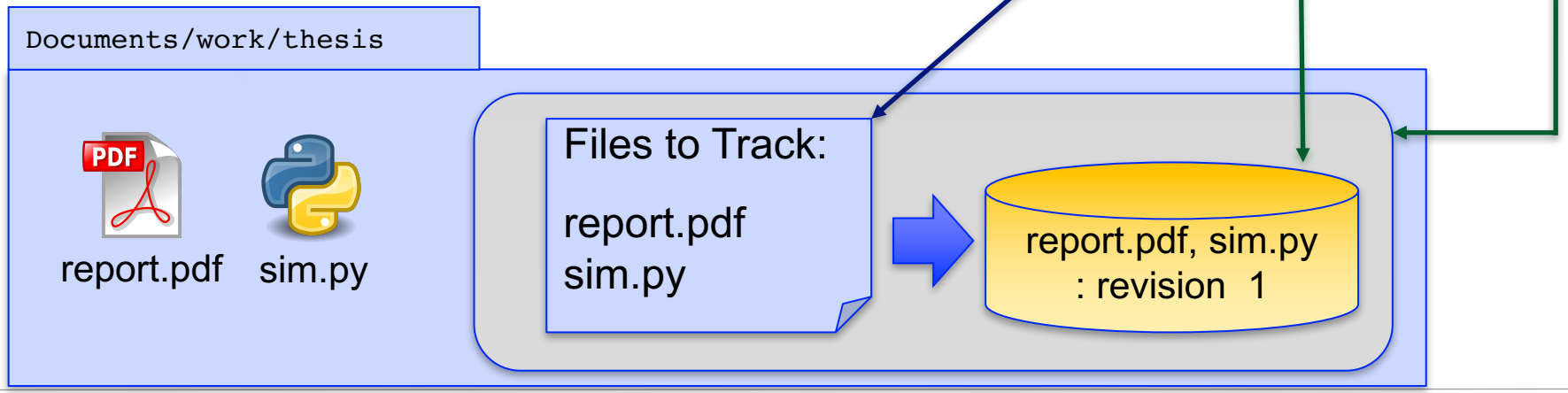
Creating a Repo and Recording Changes

0) Initializing the repo inside your project directory `git init`
1) Instruct git to start tracking files `git add`
2) Commit list of files-to-track into a revision `git commit`



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Exercise 1

- **10** minutes
- Go to `goo.gl/QVrbJp`
- Notes are good-to-know info only

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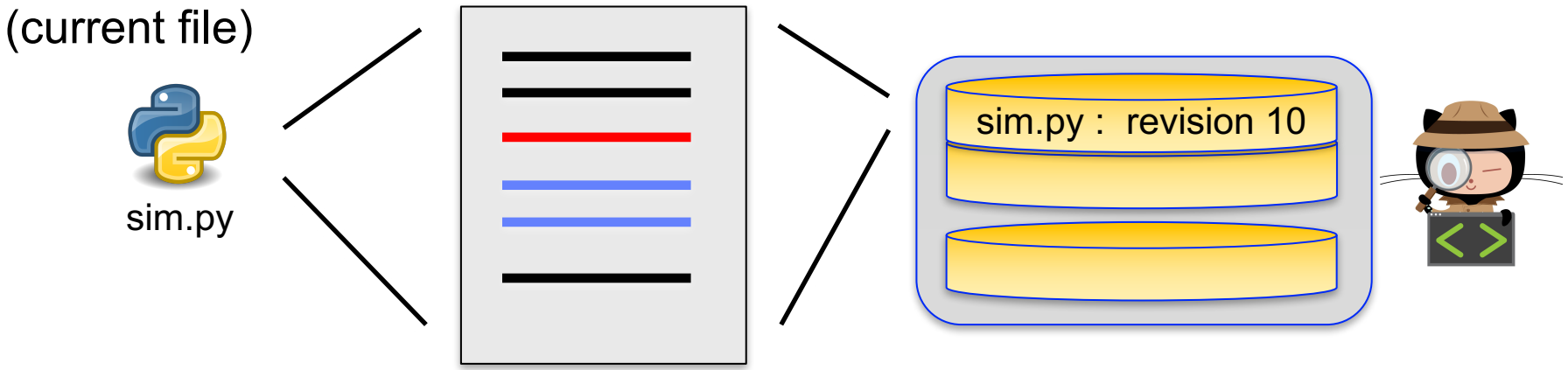
Making and Committing Changes

- Git reports what changed since latest revision: `git status`
- Differences can be inspected: `git diff`



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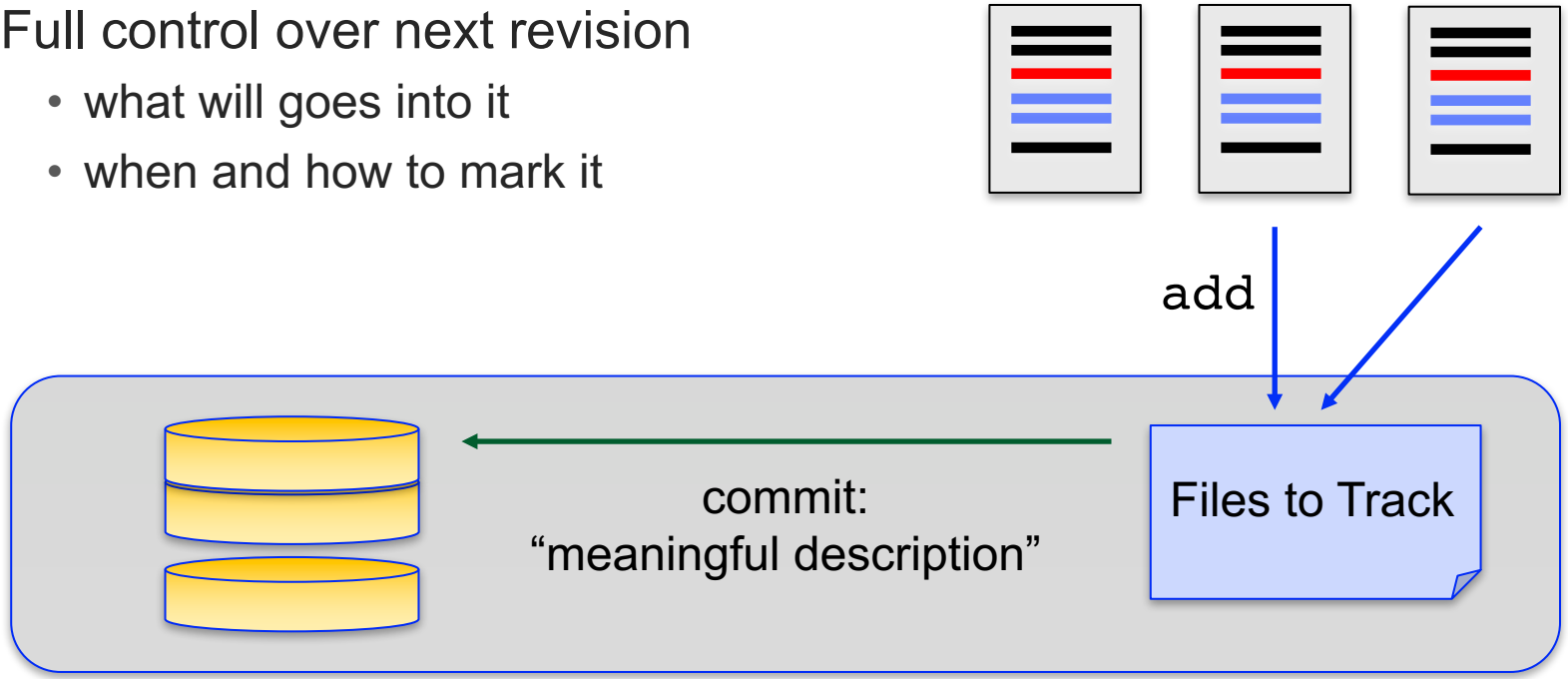
Making and Committing Changes

- Full control over next revision
  - what will goes into it
  - when and how to mark it



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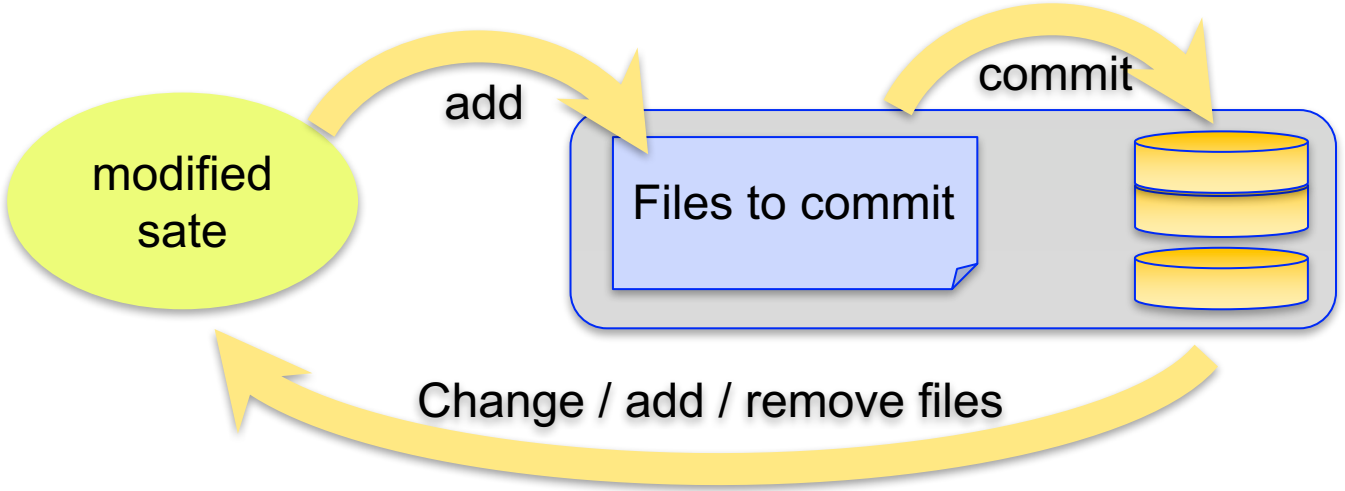
Typical Work Loop



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Exercise 2

- **15** minutes

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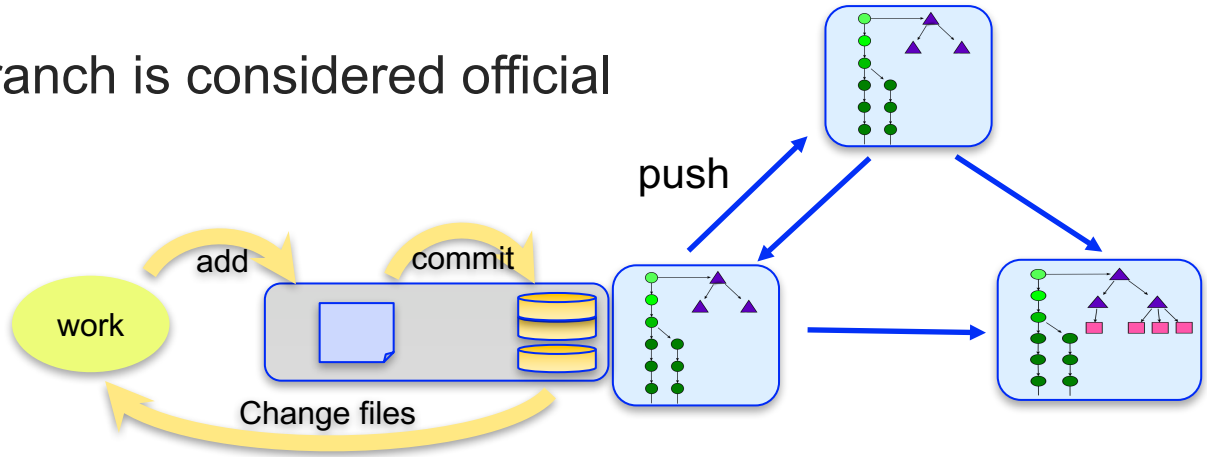
Collaborating

- Convention:

  one repo and one branch is considered official



- Collaborators:
  - clone from this repo
  - work
  - ***push*** their contributions to it

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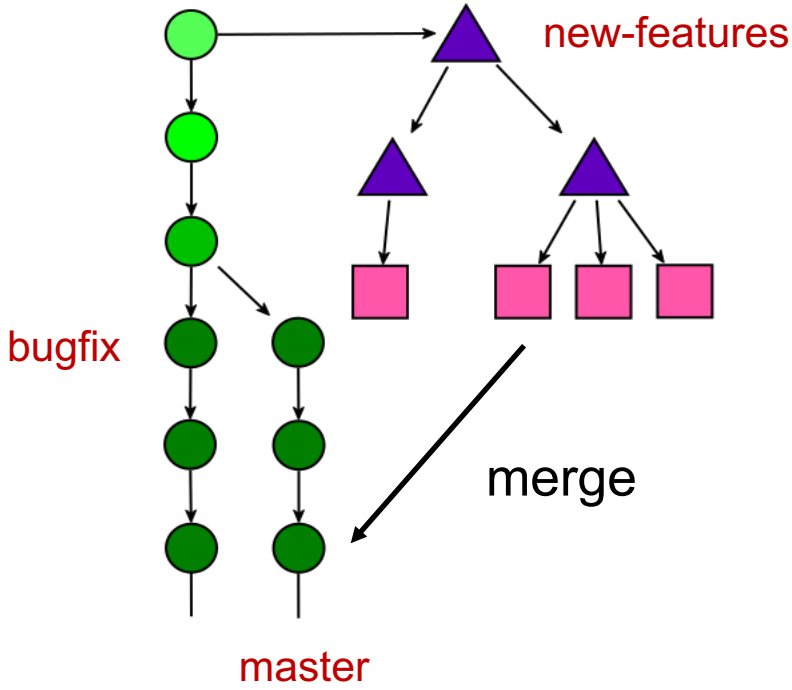
Collaborating

- Work usually done on branches:
  - maintain separation of interest
    (e.g. ”development” vs “bug fixing”)
  - isolate changes
    (e.g. “experimental” branch)



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Exercise 3

- **10** minutes

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Wrap-up

- Do use git to track your work – even if working alone
- Don’t be afraid to break things! Almost always possible to recover.
- Complex tool but daily routine involves only a handful of commands

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Thank you!

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