

Software Engineering: Tutorial 2

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November 4th, 2022

Agenda

1. Discuss most the common errors in the last homework
2. Brief recap of Git Branching
3. Do some exercises on <https://learngitbranching.js.org/>
4. Homework 2 discussion

Homework discussion

Task 1

2. Welche Dateien befinden sich in der Working Area nach dem mit A markierten Befehl? Welche in der Staging Area?

- Staging Area: `foo.txt`
- Working Area: `bar.txt`, `foo.txt`

3. Wie wird ein Commit (konzeptuell) von git repräsentiert?

A snapshot of the staging area is hashed together with the commit message, author and a timestamp. A new references is created, pointing from the new commit to its parent.

4. Wie sieht der Commit-Graph aus?

`'HEAD -> main -> "Last commit" -{parent}-> "Bad commit message"`

Task 2

- Wie kann man `Student.scala` wieder auf den Zustand der Staging Area zurücksetzen?
 - `$ git restore Student.scala`
 - `$ git checkout Student.scala`

Relevant StackOverflow Answer:

<https://stackoverflow.com/a/3044694>

- Wie kann man `Student.scala` im Index wieder auf den Zustand von HEAD zurücksetzen?
 - `$ git restore --staged Student.scala`
 - `$ git restore --staged --worktree Student.scala`
 - `$ git reset Student.scala`
 - `$ git checkout HEAD Student.scala`

Task 2

- Wie kann man schauen, welche Änderungen zur Staging Area hinzugefügt wurden?

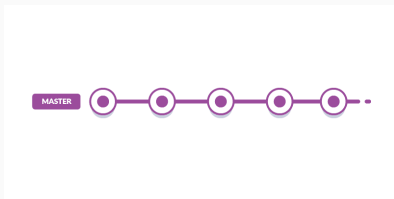
```
$ git diff --staged
```

Git Branching

- Branches are for grouping development efforts into logically separable units
- There are different possible workflows teams can use to organize their development process
 - Feature Branch Workflow
 - Gitflow Workflow

Workflows: Basic

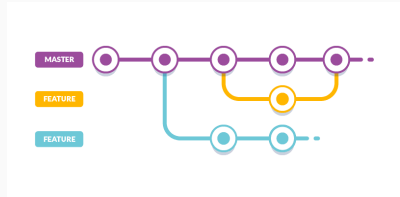
- Usually found on small repository with a handful of developers
- Cannot be used in production
- Plenty of merge errors bound to happen



Source: <https://buddy.works/blog/5-types-of-git-workflows>

Workflows: Feature Branch

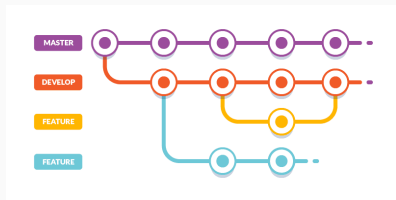
- The main branch is always production-ready
- Feature branches are used for making changes to main
- If the feature is tested, it may be merged into main



Source: <https://buddy.works/blog/5-types-of-git-workflows>

Workflows: Gitflow

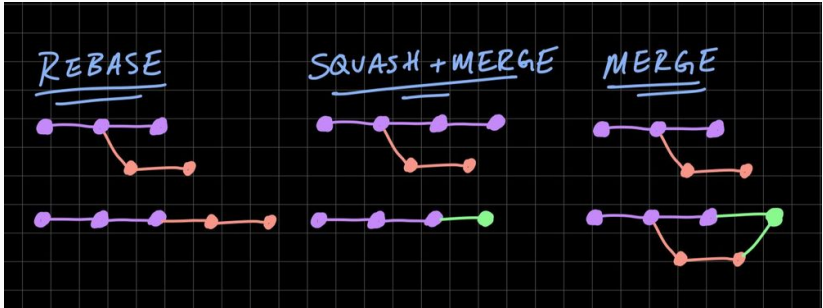
- The main branch is only used for new releases
- Features for new releases are gathered on the develop branch
- New feature branches, branch from the develop branch
- Besides the develop branch, only hotfixes directly branch off from main



Source: <https://buddy.works/blog/5-types-of-git-workflows>

Git Merging

merge vs. rebase vs. squash



<https://matt-rickard.com/squash-merge-or-rebase>

- merge creates a merge commit pointing to both parents
- rebase rewrites the history of the other branch on top of main
 - Information of branch-off is lost
- squash is something between a merge and a rebase
 - multiple commits are squashed into one. The squashed commit is added on top of main

- Exercises: <https://learngitbranching.js.org>
- Sandbox: <https://learngitbranching.js.org/?NODEMO>