

Mastering git

Lesson 6 – last one 🎉🎉🎉

Irina Gulina

Tomas Tomecek

Any questions or
suggestions?

We do have questions!

We do have questions!

1. What's the difference between **plain**, **--soft** and **--hard reset**?

We do have questions!

2. What's wrong with this commit title?

"aDDED new best functionality in this commmmmit: implementing option --foobar."

We do have questions!

2. What's wrong with this commit title?

"aDDED new best functionality in this commmmmit: implementing option --foobar."

"Add option --foobar"

We do have questions!

3. What's the difference between **fetch** and **pull**

We do have questions!

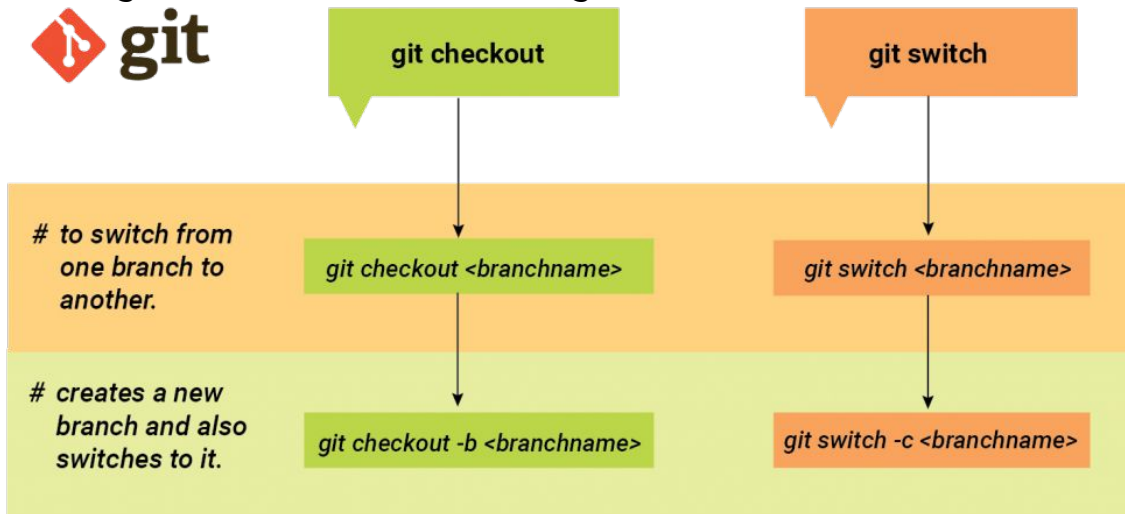
4. What does **push** do?

We do have questions!

5. What does **force push** do?

Homework 2 review

- ▶ Diagram, pull/add upstream/push origin
- ▶ Still push from the main branch
- ▶ Add changes, and only then creating a new branch and switching there
- ▶ Mind commit titles
- ▶ Use checkout -b
- ▶ PR example (next slide)



Homework 2 review

PR title: add image to readme

Commits: Delete readme title as the logo says the same thing
Better logo resolution
New logo
Better resolution of image
Upload image
Add image

Homework 2 review

PR title: add image to readme

Commits: Delete readme title as the logo says the same thing

Better logo resolution

New logo

Better resolution of image

Upload image

Add image

←-- what image of two previous commits?

←-- is it the same image? Diff add/upload?

←--- what image?

Homework 3 review

- ▶ Not specified 100% - great that you ask questions!
- ▶ Commit authorship:
commit c5cb7fc0eb25bf49d0f6c4f4e1769a16ed97ed05
Author: Tomas Tomecek <ttomecek@redhat.com>
AuthorDate: Tue Sep 27 14:20:53 2022 +0200
Commit: Jakub Hanko <xhanko1@mail.muni.cz>
CommitDate: Sat Oct 22 19:39:47 2022 +0200

bump dependencies

Signed-off-by: Tomas Tomecek <ttomecek@redhat.com>

Homework 4 review

- ▶ We will provide a general feedback via email after the deadline

Today's class

- ▶ git blame, cherry-pick, submodule
- ▶ git aliases, shell aliases, shell prompt
- ▶ CI/CD, git hooks
- ▶ project issues
- ▶ fetching pull/merge requests (+ rebasing merge requests)
- ▶ tig (or git interfaces in general)
- ▶ Labs:
 - tig
 - git config + aliases
 - check out a PR

Thank you for your suggestions from discussion forum (sorry we are not covering worktrees 😊)

git blame

display of author metadata attached to specific committed lines in a file

git blame NAME_OF_THE_FILE

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If we want to know more about the commit, what command we can use?

git blame

display of author metadata attached to specific committed lines in a file

git blame NAME_OF_THE_FILE

If we want to know more about the commit, what command we can use?

git log -p SHA-1

git show SHA-1

git blame

display of author metadata attached to specific committed lines in a file

git blame -e NAME_OF_THE_FILE

git blame -L startLineNumber,endLineNumber filePath

git blame -w NAME_OF_THE_FILE

git cherry-pick

Pick a commit by reference and append to the current working HEAD

a - b - c - d Main
 \
 e - f - g Feature

a - b - c - d - f Main
 \
 e - f - g Feature

When may it be useful?

What is the danger of using it?

git submodule

allows to keep a git repository as a subdirectory of another git repository

.

git submodule

allows to keep a git repository as a subdirectory of another git repository

- ▶ When an external component is changing too fast.
- ▶ When an external component isn't updated very often
- ▶ When a piece of the project is delegated to a third party and you want to integrate their work at a specific time or release.

Sometimes, it's the best way to create and manage internal packages or manage changing micro services

git submodule

allows to keep a git repository as a subdirectory of another git repository

- Points to a specific commit, not to a ref or branch
- Static, not updated automatically when a host repo is updated

git submodule

allows to keep a git repository as a subdirectory of another git repository

- ▶ Copy past code of another project
- ▶ Include as a dependency through the package management

git submodule

allows to keep a git repository as a subdirectory of another git repository

git submodule add URL NAME

git submodule add https://gitlab.com/user-name/repo my-submodule

.git submodule

```
[submodule "my-submodule"]  
  path = my-submodule  
  url = https://gitlab.com/user-name/repo
```

my-submodule

Those are new files on the project and needed to be committed.

git submodule

allows to keep a git repository as a subdirectory of another git repository

git submodule init

git submodule update

git clone --recurse-submodules URL

git push --recurse-submodules=check

Continuous Integration (CI)

Why?

- ▶ Run tests once a pull request is created or updated
- ▶ Run tests once a pull request is merged
- ▶ GitHub example →



vinzenz testing: Start using GH Actions for unit tests (#719) ... ✓

1 contributor

38 lines (36 sloc) | 1.28 KB

```
1 name: Unit Tests
2 on:
3   push:
4     branches:
5       - main
6   pull_request:
7     branches:
8       - main
9
10 jobs:
11   test:
12     name: Run unit tests in containers
13     runs-on: ubuntu-latest
14     strategy:
15       fail-fast: false
16     matrix:
17       scenarios:
18         - name: Run unit tests with python3.9 on el8
19           python: python3.9
20           container: ubi8
```

How?

- ▶ GitHub Checks interface

Release 0.15.0 #795



Merged

MichalHe merged 1 commit into

oamg:main

from

pirat89:new-release



on Aug 23



Conversation 2



Commits 1



Checks 12



Files changed 6



Release 0.15.0 558d299 ▾

Unit Tests

on: pull_request

✓ Run unit tests in containers (Ru...

✓ Run unit tests in containers (Ru...

✓ Run unit tests in containers (Ru...

Packit-as-a-Service

✓ rpm-build:epel-7-ppc64le

✓ rpm-build:epel-7-x86_64

✓ rpm-build:epel-8-x86_64

Run unit tests in containers (Run unit tests with python3.9 on el8, python3.9, ubi8)

succeeded on Aug 23 in 1m 43s

> ✓ Set up job

> ✓ Checkout code

> ✓ Set main to origin/main

✓ Run unit tests with python3.9 on el8

```
1 ▶ Run script -e -c /bin/bash -c 'TERM
opt=seccomp=unconfined -t leapp-test
tests/Containerfile.ubi8 res/contain
```

git hooks

- ▶ “Git has a way to fire off custom scripts when certain important actions occur.”
- ▶ `.git/hooks/`
- ▶ Client side, Server side hooks

pre-commit

- ▶ <https://pre-commit.com/>
- ▶ Run checks & linters locally
- ▶ Fix code before committing
- ▶ Run them during the CI process as well
- ▶ `ls .git/hooks/pre-commit`

packit / packit · #1747

queued at: 2022-10-19 11:19:09

total time to completion: 29.6s

- queue (93ms)
- mergeable check (910ms)
- clone (735ms)
- ci config (1ms)
- pull image (196µs)
- build (2.9s)
- download (3.2s)
- run (21.8s)

```

pyupgrade.....Passed
black.....Passed
prettier.....Passed
check for added large files.....Passed
check python ast.....Passed
check builtin type constructor use.....Passed
check docstring is first.....Passed
check that executables have shebangs.....Passed
check for merge conflicts.....Passed
check for broken symlinks.....Passed
check yaml.....Passed
detect private key.....Passed
fix end of files.....Passed
mixed line ending.....Passed
trim trailing whitespace.....Passed
flake8.....Passed
mypy.....Passed

```

Efficient git

git aliases

- ▶

```
$ cat ~/.gitconfig
```

```
[alias]
```

```
co = commit
```
- ▶

```
git co -m 'this is a commit'
```
- ▶ less typing \o/

shell aliases

- ▶ `$ cat ~/.bashrc // or ~/.zshrc // or ...`

```
alias g=git
```

```
alias gc=git commit --verbose
```

- ▶ `g co -m 'this is a commit'`

- ▶ `gc -m 'this is also a commit'`

- ▶ even less typing

```
\  /  
\o/
```

git blame

display of author metadata attached to specific committed lines in a file

git blame NAME_OF_THE_FILE

git who, git history, git praise → how to add an alias?

git blame

display of author metadata attached to specific committed lines in a file

git blame NAME_OF_THE_FILE

git who, git history, git praise → how to add an alias?

git config --global alias.history blame

git config --global alias.who blame

git config --global alias.praise blame

git status in your shell prompt

- ▶ [tt@cashew]\$ cat ~/.bashrc
export GIT_PS1_SHOWDIRTYSTATE=y
source /usr/share/git-core/contrib/completion/git-prompt.sh
export PS1='[\u@\h \W\$(__git_ps1 " (%s)")]\\$ '
- ▶ [tt@cashew git-repo (oct-copr-storage-move *)]\$ vim README.md
- ▶ no typing
 \ /
 \ /
 \o/

Text-mode interface for git

- ▶ `$ tig`
- ▶ <https://github.com/jonas/tig>
- ▶ `git log`, `git add`, `git branch -a`, `git blame` on elephant steroids

Check out a pull request locally (why)

- Why?
 - Review the code locally
 - Try the code
 - Cherry-pick commits

Check out a pull request locally (how)

- ▶

```
$ cat ~/.gitconfig
```

```
[remote "origin"]  
    fetch = +refs/pull/*/head:refs/remotes/origin/pr/*  
[remote "upstream"]  
    fetch = +refs/pull/*/head:refs/remotes/upstream/pr/*
```
- ▶

```
git fetch origin pull/ID/head:BRANCH_NAME
```

```
git fetch origin pull/978/head:my_branch
```

```
git switch my_branch
```

fetch all by default**fetch only one**

git Issues

git issues

a lightweight issue-tracking system that is available in all repositories

The screenshot shows the GitHub web interface for the `ansible/ansible` repository. The top navigation bar includes links for Code, Issues (663), Pull requests (332), Actions, Projects (14), Security, and Insights. The Issues tab is active, displaying a search bar with the query `is:issue is:open` and filters for 602 labels and 3 milestones. A green 'New issue' button is visible.

The issue list shows 663 open issues and 30,212 closed issues. The issues are sorted by default. The first five issues are:

- apt module with cache_valid_time does not update when cache was never updated before** (affects_2.13, bug, module, needs_verified, P3). #79206 opened 17 hours ago by tumbl3w33d. 3 comments.
- Update endoflife.date** (affects_2.15, docs, has_pr, on_hold). #79190 opened 4 days ago by mariolenz. 1 task done. 2 comments.
- Link to meetup page on community page on docsite is 404** (affects_2.15, docs, docsite, has_pr). #79188 opened 4 days ago by felixfontein. 1 task done. 2 comments.
- Unable to install collection with type: git** (affects_2.13, bug, has_pr, P3). #79168 opened 6 days ago by kennedyjosh. 1 task done. 1 comment.
- Documentation about required installed tools on the remote host?** (affects_2.15, docs, has_pr). #79146 opened 10 days ago by KoendG. 1 task done. 1 pull request, 9 comments.

The bottom issue is partially visible:


- Unexpected exception while installing collections from requirements.yml file** (affects_2.13, bug, has_pr, traceback). #79109 opened 14 days ago by kennedyjosh. 1 task done. 1 pull request, 6 comments.


git issues

a lightweight issue-tracking system that is available in all repositories


- ▶ Small? Go defaults
- ▶ More traffic? Introduce templates, labels
 - Avoid duplicates
 - Add structure, be specific
- ▶ Vulnerability reports
- ▶ Triage and close issues
 - Labels
 - By responsibility
 - Non triages
 - NeedInfo
 - HelpWanted
 - Mention people
 - Assign


git issues

 **ansible** / **ansible** Public


Watch 2k 

[Code](#) [Issues](#) 663 [Pull requests](#) 332 [Actions](#) [Projects](#) 14 [Security](#) [Insights](#)




 **Bug report**
Create a report to help us improve

[Get started](#)

 **Documentation Report**
Ask us about docs



[Get started](#)

 **Feature request**
Suggest an idea for this project


[Get started](#)

Report a security vulnerability
Please review our security policy for more details

[View policy](#)

 **Security bug report** 
Please learn how to report security vulnerabilities here. For all security related bugs, email security@ansible.com instead of using this issue tracker and you will receive a prompt response. For more information, see https://docs.ansible.com/ansible/latest/community/reporting_bugs_and_features.html

[Open](#)

 **Ansible Code of Conduct**
♥ Be nice to other members of the community. © Behave.

[Open](#)

Lab

- ▶ cherry-pick, blame
- ▶ Fetching pull requests
- ▶ Aliases
- ▶ tig

Final homework (5)

Repo: <https://github.com/fedora-infra/statusfpo>

Questions to answer

1. How many commits were merged into main between July 1st and August 30th 2022?
 2. Who introduced "Bodhi upgrade to 5.7.0"?
 3. Find at least one person who proposed a pull request from their main or master branch.
 4. Find one commit that you think should have better title or body and tell us how and why?
 5. What pull request title and body would you set to report an outage via this repository?
 6. Which commits changed README.md?
 7. Find a commit that fails CI and provide us with at least 2 sentences what went wrong.
 8. Find a commit with 2 parent commits.
- + The Course Survey - Google Form sent separately

Final homework (5)

- ▶ Submit a text file <UCO>_<surname>.txt
- ▶ For every question, send us all commands you ran to find out the answer.
- ▶ The file syntax:

```
# Question 1
```

```
command 1
```

```
command 2
```

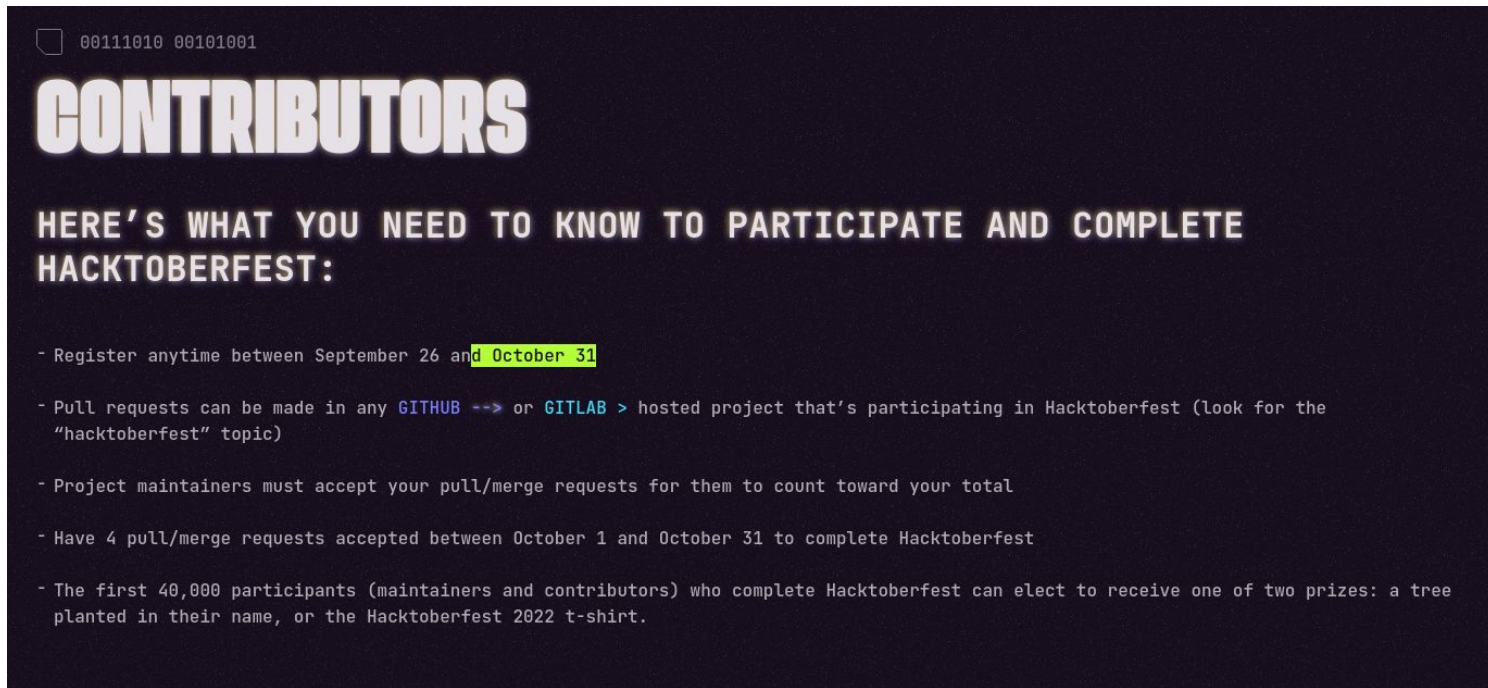
```
Answer/Text comment
```

```
---
```

```
# Question 2
```

```
command 2
```

Bonus task - example <https://hacktoberfest.com/>



00111010 00101001

CONTRIBUTORS

HERE'S WHAT YOU NEED TO KNOW TO PARTICIPATE AND COMPLETE HACKTOBERFEST:

- Register anytime between September 26 and **October 31**
- Pull requests can be made in any **GITHUB** --> or **GITLAB** > hosted project that's participating in Hacktoberfest (look for the "hacktoberfest" topic)
- Project maintainers must accept your pull/merge requests for them to count toward your total
- Have 4 pull/merge requests accepted between October 1 and October 31 to complete Hacktoberfest
- The first 40,000 participants (maintainers and contributors) who complete Hacktoberfest can elect to receive one of two prizes: a tree planted in their name, or the Hacktoberfest 2022 t-shirt.

Beer with the teachers

- ▶ Wednesday, November 2nd?
- ▶ Time?
- ▶ Place?

Course schedule

SEPTEMBER							OCTOBER							NOVEMBER						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
28	29	30	31	1	2	3	25	26	27	28	29	30	1	30	31	1	2	3	4	5
4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12
11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19
18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26
25	26	27	28	29	30	1	23	24	25	26	27	28	29	27	28	29	30	1	2	3

Close X

HW#	1	2	3	4	5	Bonus Task
Deadline	12.10	19.10	26.10	2.11	9.11	13.11

In Red - lecture dates

Course grade: November 16

THE END



THANK YOU!