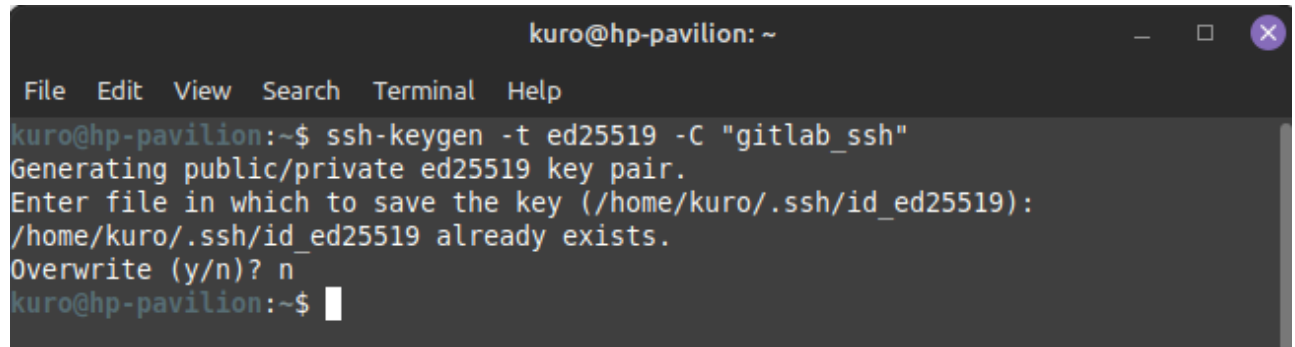# System and Network Administration - Lab 13 - Git and GitLab CI/CD

> Jaffar Totanji - j.totanji@innopolis.university
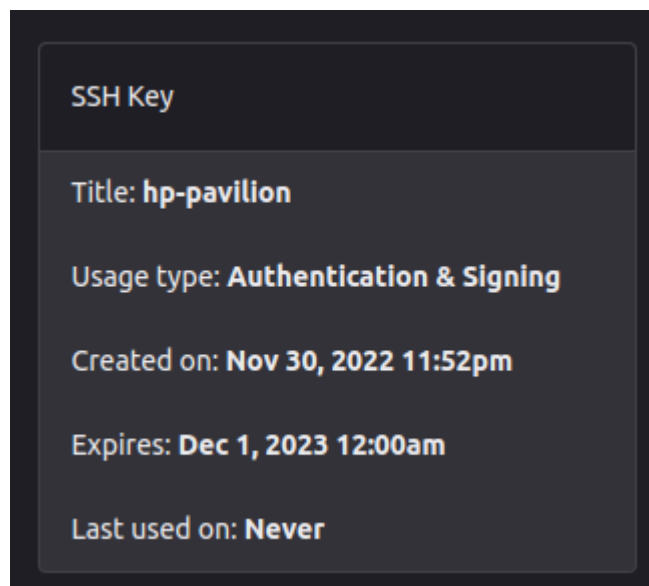
Questions to answer:

1. We first need to generate an SSH key using `ssh-keygen`

Then we can simply add the key to Gitlab under `Profile -> Preferences -> SSH Keys`:

2. Squashing commits is the act of rewriting your commit history such that changes from one commit are added to its parent commit. This helps to maintain a clean and lean commit history before sharing one's work with team members or other people.

3.
   - **Rebase**: When merging a branch onto another branch, we're essentially telling Git to make it look as though we checked out to the other branch cleanly, then did all our owrk starting from there. That results in a clean, conceptually simple package of changes that can then be reviewed by someone. We can repeat this process again when there are new changes on the other branch, and we will always end up with a clean set of changes on the tip of the branch.

   - **Merge**: When merging a branch into another, we tie the two branch histories together. If we do this again later with more changes, we begin to create a somewhat "dirty" trail of histories

which contains some of our own changes, and then some of the changes made on the other, original branch and so on.


4.

```
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ touch commit_2.txt
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git add .
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git commit -m "commit 2"
[testbranch 52fcb40] commit 2
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 commit_2.txt
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git push
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 269 bytes | 269.00 KiB/s, done.
Total 2 (delta 0), reused 0 (delta 0)
remote:
remote: To create a merge request for testbranch, visit:
remote:   https://gitlab.com/KuroHata7/lab_13_repo/-/merge_requests/new?merge_request%5Bsource_branch%5D=testbranch
remote:
To gitlab.com:KuroHata7/lab_13_repo.git
   a9dcdb9..52fcb40  testbranch -> testbranch
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ touch commit_3.txt
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git add .
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git commit -m "commit 3"
[testbranch 73ccf89] commit 3
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 commit_3.txt
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git push
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 220 bytes | 220.00 KiB/s, done.
Total 2 (delta 1), reused 0 (delta 0)
remote:
remote: To create a merge request for testbranch, visit:
remote:   https://gitlab.com/KuroHata7/lab_13_repo/-/merge_requests/new?merge_request%5Bsource_branch%5D=testbranch
remote:
To gitlab.com:KuroHata7/lab_13_repo.git
   52fcb40..73ccf89  testbranch -> testbranch
```

```
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git log
commit 73ccf89d16ac45f880a4ce7d989e18c097906117 (HEAD -> testbranch, origin/testbranch)
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 03:56:16 2022 +0300

    commit 3

commit 52fcb40c8d9858f6446e4ea554097d21ff69e53d
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 03:55:59 2022 +0300

    commit 2

commit a9dcdb95fb51ab79c8dc8620eda69817814ad839
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 03:55:35 2022 +0300

    commit 1

commit 1fc4c33d7018aa14b48dcd769850420c936bc79e (origin/main, origin/HEAD, main)
Author: Jaffar Totanji <jaafarti@gmail.com>
Date:   Thu Dec 1 00:53:29 2022 +0000
```

```
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git rebase -i HEAD~3
Successfully rebased and updated refs/heads/testbranch.
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git log
commit f88f062071333bdd669eaf31dddc6434149f8848 (HEAD -> testbranch)
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 03:56:16 2022 +0300

    commit 3

commit a110cfd18390cbeda7d39a2a84f24750f82eb30c
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 03:55:59 2022 +0300

    commit 2

commit 1fc4c33d7018aa14b48dcd769850420c936bc79e (origin/main, origin/HEAD, main)
Author: Jaffar Totanji <jaafarti@gmail.com>
Date:   Thu Dec 1 00:53:29 2022 +0000

    Initial commit
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$
```

```
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git checkout main
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ touch commit_main.txt
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git add .
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git commit -m "commit to main"
[main 756ecaf] commit to main
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 commit_main.txt
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git push -u origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 12 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 278 bytes | 278.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To gitlab.com:KuroHata7/lab_13_repo.git
   1fc4c33..756ecaf  main -> main
Branch 'main' set up to track remote branch 'main' from 'origin'.
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git rebase testbranch
First, rewinding head to replay your work on top of it...
Applying: commit to main
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git log
commit e419acc738255d3d47b6f78881bf1643601e3435 (HEAD -> main)
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 04:00:00 2022 +0300

    commit to main

commit f88f062071333bdd669eaf31dddc6434149f8848 (testbranch)
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 03:56:16 2022 +0300

    commit 3

commit a110cfd18390cbeda7d39a2a84f24750f82eb30c
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 03:55:59 2022 +0300

    commit 2

commit 1fc4c33d7018aa14b48dcd769850420c936bc79e
Author: Jaffar Totanji <jaafarti@gmail.com>
Date:   Thu Dec 1 00:53:29 2022 +0000

    Initial commit
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$
```

```
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git merge testbranch
Already up to date.
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$ git log main
commit e419acc738255d3d47b6f78881bf1643601e3435 (HEAD -> main)
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 04:00:00 2022 +0300

    commit to main                          5 / 5

commit f88f062071333bdd669eaf31dddc6434149f8848 (testbranch)
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 03:56:16 2022 +0300

    commit 3

commit a110cfd18390cbeda7d39a2a84f24750f82eb30c
Author: Jaffar <jacepac264@gmail.com>
Date:   Thu Dec 1 03:55:59 2022 +0300

    commit 2

commit 1fc4c33d7018aa14b48dcd769850420c936bc79e
Author: Jaffar Totanji <jaafarti@gmail.com>
Date:   Thu Dec 1 00:53:29 2022 +0000

    Initial commit
kuro@hp-pavilion:~/zaker/sna/lab_13/lab_13_repo$
```

5. No solution.

End of exercises