

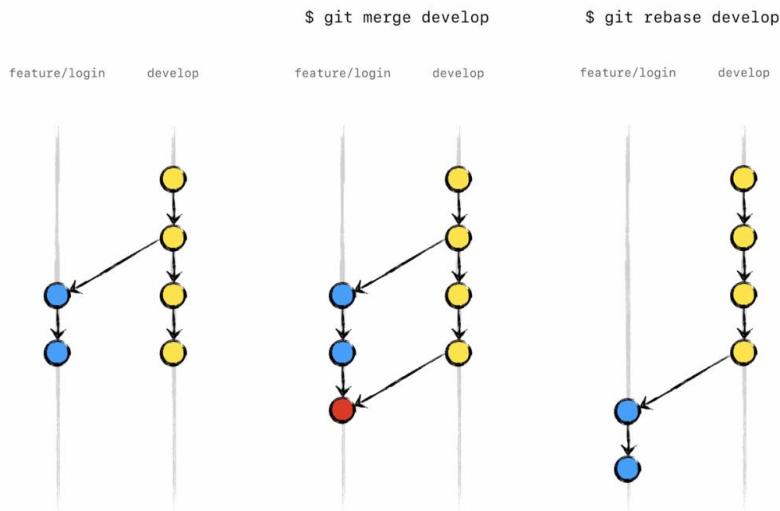
AGENDA

Today we will learn:

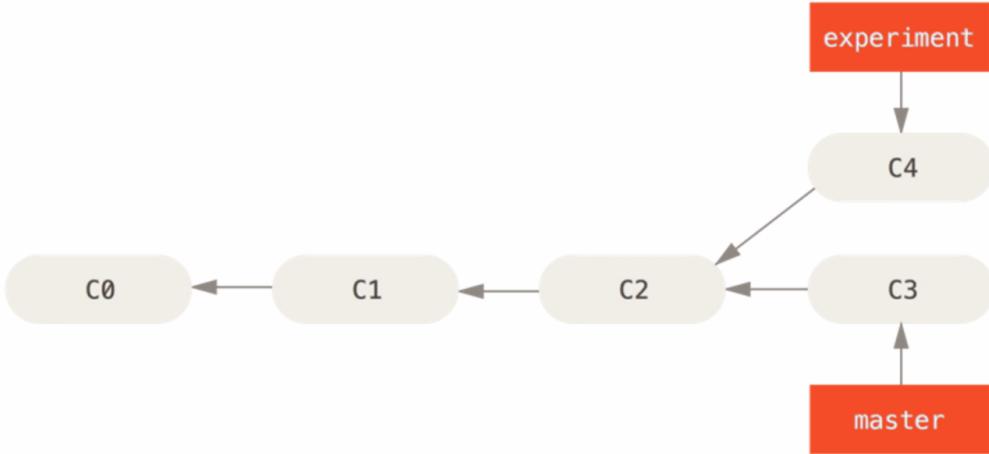
- What is git rebase
- When to apply rebasing
- Rebase VS Merge
- How to keep git tree clean
- How to resolve conflicts during the rebasing
- git rebase --continue
- Force update & --force-with-lease
- Four rules of happy work with git ☺



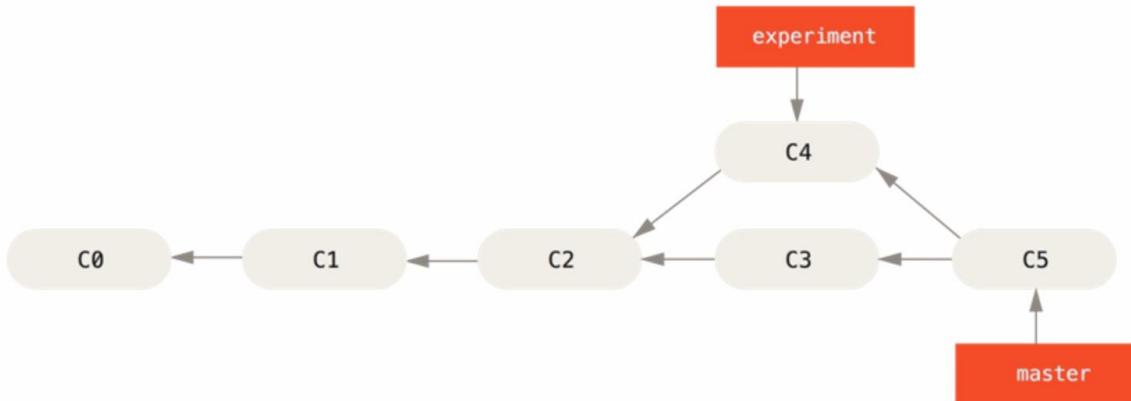
git merge VS git rebase



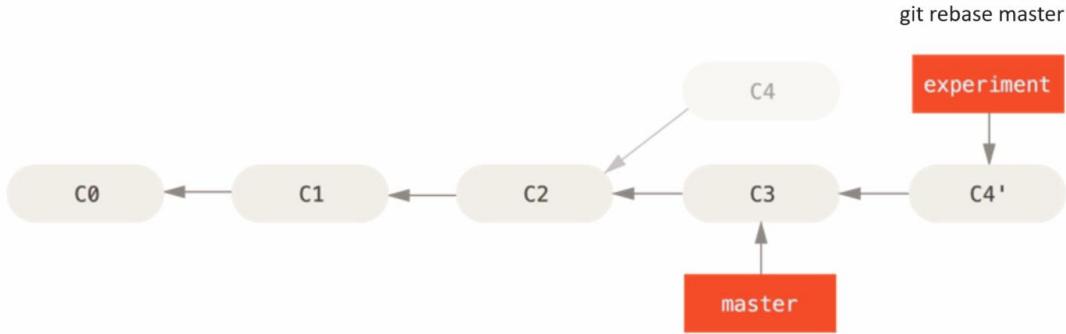
Diverged branches



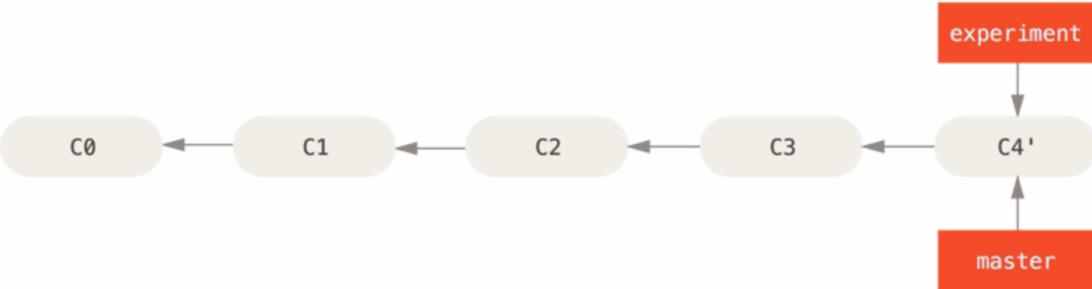
Merging branches



Git rebasing



Fast-forwarding

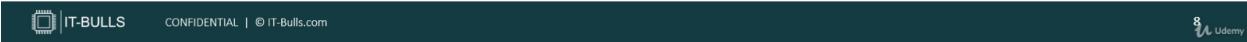


git rebase VS git pull --rebase

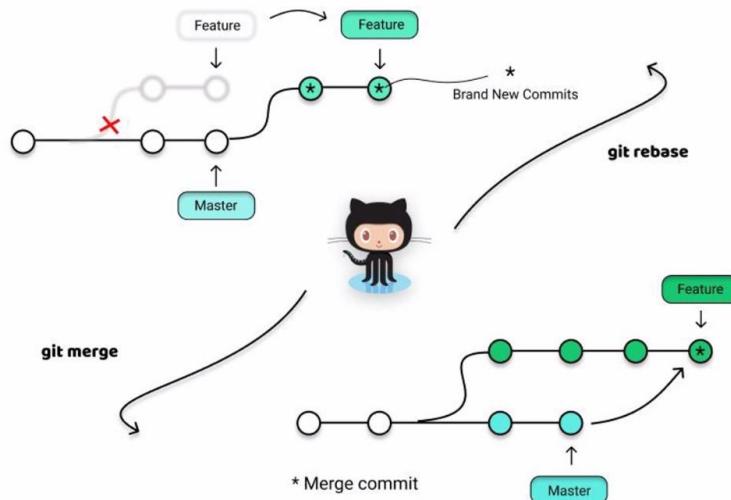
git rebase

VS

git pull --rebase



What to use? Merge or Rebase?



```
MINGW64/c/Users/Andrii_Piatakha/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git log -3
commit 8d3dbfd0d8a59866e3c55839e4b9cfdb44fd2084 (HEAD -> TA0005_home_carousel, origin/TA0005_home_carousel)
Merge: 4c34371 e50bada
Author: Andrii Piatakha <andrii.piatakha@example.com>
Date:   Mon Oct 26 23:32:09 2020 +0200

    Merge branch 'master' of github.com:AndriiPiatakha/learnit_git into TA0005_home_carousel

commit e50bada77002b2c0a25fe1919a3c8c8ee54a4d3d (origin/master, origin/HEAD)
Author: Andrii Piatakha <andrii.piatakha@example.com>
Date:   Mon Oct 26 23:23:32 2020 +0200

    Login popup during login

commit 4c34371fcfbf2a5c623ccebb04cbdbaf3a8fe0f3
Author: Andrii Piatakha <andrii.piatakha@example.com>
Date:   Mon Oct 26 23:27:26 2020 +0200

    carousel on the home page

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ |
```



```
MINGW64/c/Users/Andrii_Piatakha/Desktop/Lern IT - Git/src
Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git reset --hard HEAD~1
HEAD is now at 4c34371 carousel on the home page
Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ |
```

1. Reset will reset files to a specific revision/point.
2. Hard will take changes from other position and then removes files from there.
3. Head is the head pointer of git to last commit
4. ~1 means we set file commit to 1

```
MINGW64:/c/Users/Andrii_Piatakha/Desktop/Lern IT - Git/src
Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git reset --hard HEAD~1
HEAD is now at 4c34371 carousel on the home page

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git log -3
commit 4c34371fcfbf2a5c623ccebb04cbdbaf3a8fe0f3 (HEAD -> TA0005_home_carousel)
Author: Andrii Piatakha <andrii.piatakha@example.com>
Date:   Mon Oct 26 23:27:26 2020 +0200

    carousel on the home page

commit 82db11923d82840adb0cbeec04ca4b59449ab3f0 (master)
Author: Andrii Piatakha <andrii.piatakha@example.com>
Date:   Sun Oct 25 22:58:03 2020 +0200

    html file was created for the sake of the demo during merge conflicts lesson

commit 7675198b865f6685fc1b20bb1b3c9324782d6cc4
Author: Andrii Piatakha <andrii.piatakha@example.com>
Date:   Sat Oct 24 20:52:31 2020 +0300

    Cart Management is implemented

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ |
```

```
MINGW64:/c/Users/Andrii_Piatakha/Desktop/Lern IT - Git/src
Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src/styles (TA0005_home_carousel)
$ cd ..

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git pull --rebase origin master
From github.com:AndriiPiatakha/learnit_git
 * branch            master      -> FETCH_HEAD
error: could not apply 4c34371... carousel on the home page
Resolve all conflicts manually, mark them as resolved with
"git add/rm <conflicted_files>", then run "git rebase --continue".
You can instead skip this commit: run "git rebase --skip".
To abort and get back to the state before "git rebase", run "git rebase --abort".
Could not apply 4c34371... carousel on the home page
Auto-merging src/webcontent/home.html
CONFLICT (content): Merge conflict in src/webcontent/home.html

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)|REBASE 1/
$
```

Udemy

remove conflict manually and then

```
MINGW64:/c/Users/Andrii_Piatakha/Desktop/Lern IT - Git/src
 * branch            master      -> FETCH_HEAD
error: could not apply 4c34371... carousel on the home page
Resolve all conflicts manually, mark them as resolved with
"git add/rm <conflicted_files>", then run "git rebase --continue".
You can instead skip this commit: run "git rebase --skip".
To abort and get back to the state before "git rebase", run "git rebase --abort".
Could not apply 4c34371... carousel on the home page
Auto-merging src/webcontent/home.html
CONFLICT (content): Merge conflict in src/webcontent/home.html

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)|REBASE 1/
$ nano webcontent/home.html

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)|REBASE 1/
$ git add .

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)|REBASE 1/
$ git rebase --continue
hint: Waiting for your editor to close the file...
unix2dos: converting file C:/Users/Andrii_Piatakha/Desktop/Lern IT - Git/.git/COMMIT_EDITMSG to DOS format...
dos2unix: converting file C:/Users/Andrii_Piatakha/Desktop/Lern IT - Git/.git/COMMIT_EDITMSG to Unix format...
[detached HEAD 297df6a] carousel on the home page
 2 files changed, 1 insertion(+)
   create mode 100644 src/styles/carousel.css
Successfully rebased and updated refs/heads/TA0005_home_carousel.

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ |
```

Udemy

```

MINGW64/c/Users/Andrii_Piatakha/Desktop/Lern IT - Git/src
Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git push
To github.com:AndriiPiatakha/learnit_git.git
 ! [rejected]      TA0005_home_carousel -> TA0005_home_carousel (non-fast-forward)
error: failed to push some refs to 'github.com:AndriiPiatakha/learnit_git.git'
hint: Updates were rejected because the tip of your current branch is behind
hint: its remote counterpart. Integrate the remote changes (e.g.
hint: 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$
```

here it shows rejected because history of remote branch and local branch is now different

Remote git history

carousel on the home page #11

Open AndriiPiatakha wants to merge 2 commits into `master` from `TA0005_home_carousel`

Conversation 0 Commits 2 Checks 0 Files changed 2

Commits on Oct 26, 2020

- carousel on the home page**
Andrii Piatakha committed 2 days ago
- Merge branch 'master' of github.com/AndriiPiatakha/learnit_git into T...
Andrii Piatakha committed 2 days ago

local git history

```
MINGW64:/c/Users/Andrii_Piatakha/Desktop/Lern IT - Git/src
Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git push
To github.com:AndriiPiatakha/learnit_git.git
 ! [rejected]         TA0005_home_carousel -> TA0005_home_carousel (non-fast-forward)
error: failed to push some refs to 'github.com:AndriiPiatakha/learnit_git.git'
hint: Updates were rejected because the tip of your current branch is behind
hint: its remote counterpart. Integrate the remote changes (e.g.
hint: 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git log -2
commit 297df6aa733bd474c2562d53961489428b1da672 (HEAD -> TA0005_home_carousel)
Author: Andrii Piatakha <andrii.piatakha@example.com>
Date:   Mon Oct 26 23:27:26 2020 +0200

    carousel on the home page

commit e50bada77002b2c0a25fe1919a3c8c8ee54a4d3d (origin/master, origin/HEAD)
Author: Andrii Piatakha <andrii.piatakha@example.com>
Date:   Mon Oct 26 23:23:32 2020 +0200

    login popup during login
```

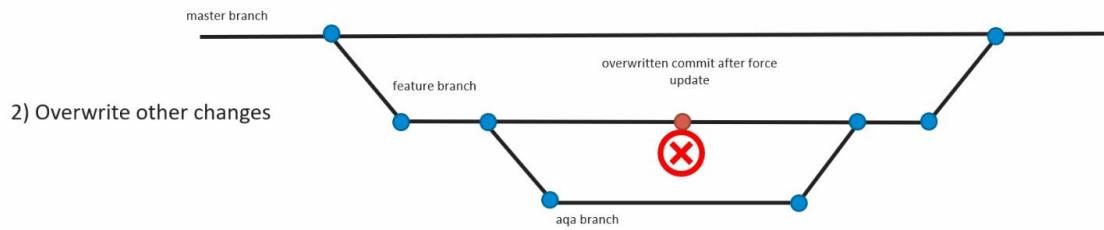
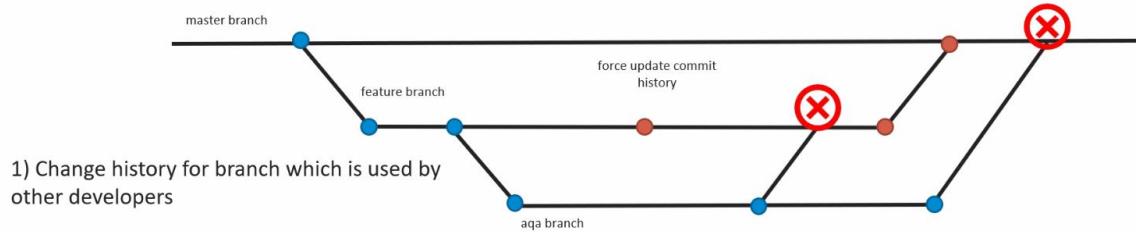
, here we see both are different.

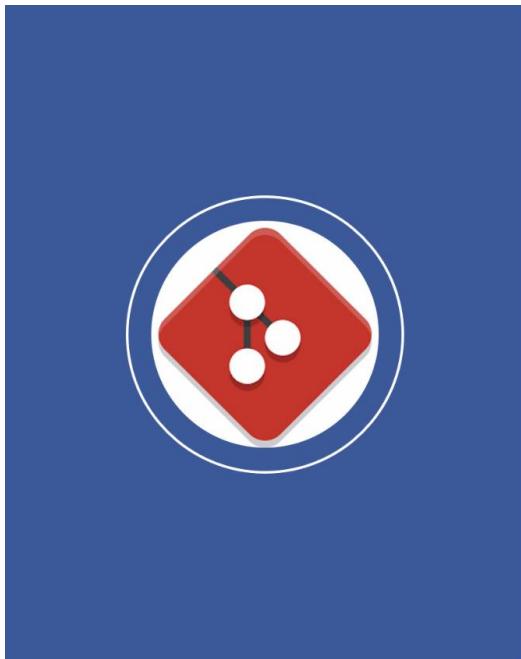
So now we need to tell git which version is correct

```
MINGW64:/c/Users/Andrii_Piatakha/Desktop/Lern IT - Git/src
Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git push -f
```

'f' means forced update. It updates remote branch by local branch in this case

Force update risks





FOUR RULES OF HAPPY WOTK WITH GIT

by Andrii Piatakha

1. Always create branches from the master
2. Force update and change commit history
only on your branches
3. Use --force-with-lease instead of -f
4. Always rebase on the origin master branch
before creating a pull request

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MINGW64:/c/Users/Andrii.Piatakha/Desktop/Lern IT - Git/src (TA0005_home_carousel)

```
Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$ git push --force-with-lease
Enumerating objects: 11, done.
Counting objects: 100% (11/11), done.
Delta compression using up to 8 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (6/6), 516 bytes | 258.00 KiB/s, done.
Total 6 (delta 3), reused 1 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (3/3), completed with 3 local objects.
To github.com:AndriiPiatakha/learnit_git.git
 + 8d3dbfd...297df6a TA0005_home_carousel -> TA0005_home_carousel (forced update)

Andrii_Piatakha@EPUAKHAW1357 MINGW64 ~/Desktop/Lern IT - Git/src (TA0005_home_carousel)
$
```

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The screenshot shows a GitHub pull request page for a repository named 'AndriiPiatakha / learnit_git'. The pull request is titled 'carousel on the home page #11' and is in the 'Open' state. It has one commit from the 'master' branch into the 'TA0005_home_carousel' branch. The commit message is 'carousel on the home page' and was made by Andrii Piatakha 4 minutes ago. The commit hash is 297df6a. The page includes standard GitHub navigation links like Code, Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, and Settings.

here we see only 1 commit remain