

Операционные системы

Продвинутое использование git

Матевосян Оганес Назаретович

23 февраля 2025

Российский университет дружбы народов, Москва, Россия

Цели и задачи работы

Получение навыков правильной работы с репозиториями git.

- 1 Выполнить работу для тестового репозитория.
- 2 Преобразовать рабочий репозиторий в репозиторий с git-flow и conventional commits.

Процесс выполнения лабораторной работы

```
onmatevosyan@onmatevosyan:~$ pnpm setup
Appended new lines to /home/onmatevosyan/.bashrc

Next configuration changes were made:
export PNPM_HOME="/home/onmatevosyan/.local/share/pnpm"
case ":$PATH:" in
  *:$PNPM_HOME:* ) ;;
  *) export PATH="$PNPM_HOME:$PATH" ;;
esac

To start using pnpm, run:
source /home/onmatevosyan/.bashrc
onmatevosyan@onmatevosyan:~$ source ~/.bashrc
onmatevosyan@onmatevosyan:~$ █
```

Рис. 1: Node.js

```
onmatevosyan@onmatevosyan:~$  
onmatevosyan@onmatevosyan:~$ pnpm add -g commitizen
```

Update available! 9.13.0 → 10.4.1.
Changelog: <https://github.com/pnpm/pnpm/releases/tag/v10.4.1>
Run "pnpm self-update" to update.

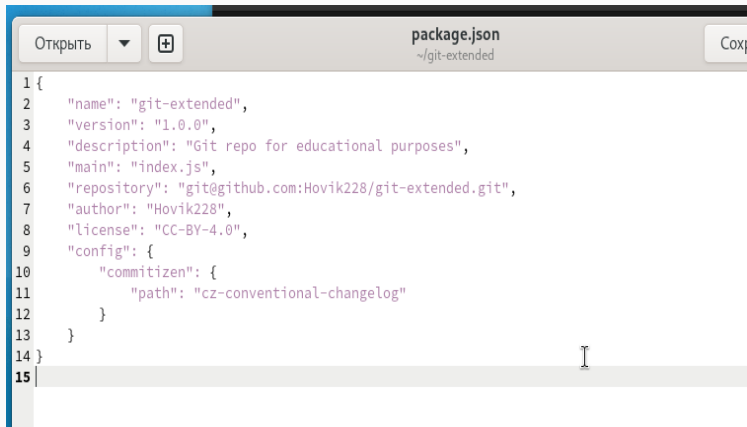
Follow @pnpmjs for updates: <https://x.com/pnpmjs>

```
  
WARN 2 deprecated subdependencies found: glob@7.2.3, inflight@1.0.6  
Packages: +151  
+++++  
Progress: resolved 151, reused 0, downloaded 151, added 151, done  
  
/home/onmatevosyan/.local/share/pnpm/global/5:  
+ commitizen 4.3.1  
  
Done in 6.6s  
onmatevosyan@onmatevosyan:~$
```

Рис. 2: установка commitizen

```
onmatevosyan@onmatevosyan:~$  
onmatevosyan@onmatevosyan:~$ pnpm add -g standard-changelog  
WARN 2 deprecated subdependencies found: glob@7.2.3, inflight@1.0.6  
Packages: +39  
+++++  
Progress: resolved 190, reused 151, downloaded 39, added 39, done  
  
/home/onmatevosyan/.local/share/pnpm/global/5:  
+ standard-changelog 6.0.0  
  
Done in 4.5s  
onmatevosyan@onmatevosyan:~$
```

Рис. 3: установка standard-changelog



The image shows a code editor window with the title 'package.json' and the path '~/git-extended'. The editor contains the following JSON code:

```
1 {  
2   "name": "git-extended",  
3   "version": "1.0.0",  
4   "description": "Git repo for educational purposes",  
5   "main": "index.js",  
6   "repository": "git@github.com:Hovik228/git-extended.git",  
7   "author": "Hovik228",  
8   "license": "CC-BY-4.0",  
9   "config": {  
10     "commitizen": {  
11       "path": "cz-conventional-changelog"  
12     }  
13   }  
14 }  
15 |
```

The code is displayed with line numbers on the left. A cursor is visible at the end of line 15.

Рис. 4: package.json

Использование commitizen

```
onmatevosyan@onmatevosyan:~/git-extended$
onmatevosyan@onmatevosyan:~/git-extended$ git add .
onmatevosyan@onmatevosyan:~/git-extended$ git cz
cz-cli@4.3.1, cz-conventional-changelog@3.3.0

? Select the type of change that you're committing: chore: Other changes that don't modify src or test files
? What is the scope of this change (e.g. component or file name): (press enter to skip)
? Write a short, imperative tense description of the change (max 93 chars):
  (4) test
? Provide a longer description of the change: (press enter to skip)

? Are there any breaking changes? No
? Does this change affect any open issues? No
[master 54e88ba] chore: test
1 file changed, 15 insertions(+)
create mode 100644 package.json
onmatevosyan@onmatevosyan:~/git-extended$ git push
Перечисление объектов: 4, готово.
Подсчет объектов: 100% (4/4), готово.
При сжатии изменений используется до 8 потоков
Сжатие объектов: 100% (3/3), готово.
Запись объектов: 100% (3/3), 488 байтов | 244.00 КиБ/с, готово.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:Hovik228/git-extended.git
5b95065..54e88ba master -> master
onmatevosyan@onmatevosyan:~/git-extended$
```

Рис. 5: Отправка

```
onmatevosyan@onmatevosyan:~/git-extended$
onmatevosyan@onmatevosyan:~/git-extended$ git flow init

Which branch should be used for bringing forth production releases?
- master
Branch name for production releases: [master]
Branch name for "next release" development: [develop]

How to name your supporting branch prefixes?
Feature branches? [feature/]
Bugfix branches? [bugfix/]
Release branches? [release/]
Hotfix branches? [hotfix/]
Support branches? [support/]
Version tag prefix? []
Hooks and filters directory? [/home/onmatevosyan/git-extended/.git/hooks]
onmatevosyan@onmatevosyan:~/git-extended$ git branch
* develop
  master
onmatevosyan@onmatevosyan:~/git-extended$ git push --all
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'develop' on GitHub by visiting:
remote:   https://github.com/Hovik228/git-extended/pull/new/develop
remote:
To github.com:Hovik228/git-extended.git
 * [new branch]      develop -> develop
onmatevosyan@onmatevosyan:~/git-extended$
```

Рис. 6: Инициализация и загрузка изменений

```
onmatevosyan@onmatevosyan:~/git-extended$
onmatevosyan@onmatevosyan:~/git-extended$ git branch --set-upstream-to=origin/develop develop
branch 'develop' set up to track 'origin/develop'.
onmatevosyan@onmatevosyan:~/git-extended$ git flow release start 1.0.0
Переключились на новую ветку «release/1.0.0»

Summary of actions:
- A new branch 'release/1.0.0' was created, based on 'develop'
- You are now on branch 'release/1.0.0'

Follow-up actions:
- Bump the version number now!
- Start committing last-minute fixes in preparing your release
- When done, run:

    git flow release finish '1.0.0'

onmatevosyan@onmatevosyan:~/git-extended$ standard-changelog --first-release
✓ created CHANGELOG.md
✓ output changes to CHANGELOG.md
onmatevosyan@onmatevosyan:~/git-extended$ git add CHANGELOG.md
onmatevosyan@onmatevosyan:~/git-extended$ git commit -am 'chore(site): add changelog'
[release/1.0.0 2f0c2e1] chore(site): add changelog
1 file changed, 4 insertions(+)
create mode 100644 CHANGELOG.md
onmatevosyan@onmatevosyan:~/git-extended$ git flow release finish 1.0.0
Переключились на ветку «master»
Эта ветка соответствует «origin/master».
Merge made by the 'ort' strategy.
CHANGELOG.md | 4 +++
1 file changed, 4 insertions(+)
create mode 100644 CHANGELOG.md
Уже на «master»
```

Рис. 7: Завершение релиза

Отправим данные на github

```
onmatevosyan@onmatevosyan:~/git-extended$  
onmatevosyan@onmatevosyan:~/git-extended$  
onmatevosyan@onmatevosyan:~/git-extended$ git push --all  
Перечисление объектов: 6, готово.  
Подсчет объектов: 100% (6/6), готово.  
При сжатии изменений используется до 8 потоков  
Сжатие объектов: 100% (4/4), готово.  
Запись объектов: 100% (5/5), 561 байт | 187.00 КиБ/с, готово.  
Total 5 (delta 2), reused 0 (delta 0), pack-reused 0 (from 0)  
remote: Resolving deltas: 100% (2/2), done.  
To github.com:Hovik228/git-extended.git  
    54e88ba..4499d4c  develop -> develop  
    54e88ba..029c439  master -> master  
onmatevosyan@onmatevosyan:~/git-extended$ git push --tags  
Перечисление объектов: 1, готово.  
Подсчет объектов: 100% (1/1), готово.  
Запись объектов: 100% (1/1), 160 байтов | 160.00 КиБ/с, готово.  
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)  
To github.com:Hovik228/git-extended.git  
    * [new tag]          1.0.0 -> 1.0.0  
onmatevosyan@onmatevosyan:~/git-extended$ gh release create v1.0.0 -F CHANGELOG.md  
https://github.com/Hovik228/git-extended/releases/tag/v1.0.0  
onmatevosyan@onmatevosyan:~/git-extended$
```

Рис. 8: Отправка

```
34c600a17029c439 master -> master
onmatevosyan@onmatevosyan:~/git-extended$ git push --tags
Перечисление объектов: 1, готово.
Подсчет объектов: 100% (1/1), готово.
Запись объектов: 100% (1/1), 160 байтов | 160.00 КиБ/с, готово.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:Hovik228/git-extended.git
 * [new tag]      1.0.0 -> 1.0.0
onmatevosyan@onmatevosyan:~/git-extended$ gh release create v1.0.0 -F CHANGELOG.md
https://github.com/Hovik228/git-extended/releases/tag/v1.0.0
onmatevosyan@onmatevosyan:~/git-extended$
onmatevosyan@onmatevosyan:~/git-extended$ git flow feature start feature_branch
Переключились на новую ветку «feature/feature_branch»

Summary of actions:
- A new branch 'feature/feature_branch' was created, based on 'develop'
- You are now on branch 'feature/feature_branch'

Now, start committing on your feature. When done, use:

    git flow feature finish feature_branch

onmatevosyan@onmatevosyan:~/git-extended$ touch test2
onmatevosyan@onmatevosyan:~/git-extended$ git flow feature finish feature_branch
Переключились на ветку «develop»
Эта ветка соответствует «origin/develop».
Уже актуально.
Ветка feature/feature_branch удалена (была 4499d4c).

Summary of actions:
- The feature branch 'feature/feature_branch' was merged into 'develop'
- Feature branch 'feature/feature_branch' has been locally deleted
- You are now on branch 'develop'

onmatevosyan@onmatevosyan:~/git-extended$
```

Рис. 9: Объединение веток

```
Summary of actions:
- Release branch 'release/1.2.3' has been merged into 'master'
- The release was tagged '1.2.3'
- Release tag '1.2.3' has been back-merged into 'develop'
- Release branch 'release/1.2.3' has been locally deleted
- You are now on branch 'develop'

onmatevosyan@onmatevosyan:~/git-extended$ git push --all
Перечисление объектов: 9, готово.
Подсчет объектов: 100% (9/9), готово.
При сжатии изменений используется до 8 потоков
Сжатие объектов: 100% (6/6), готово.
Запись объектов: 100% (6/6), 762 байта | 254.00 КиБ/с, готово.
Total 6 (delta 2), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (2/2), completed with 1 local object.
To github.com:Hovik228/git-extended.git
  4499d4c..15e9c73  develop -> develop
  029c439..af1b710  master -> master
onmatevosyan@onmatevosyan:~/git-extended$ git push --tags
Перечисление объектов: 1, готово.
Подсчет объектов: 100% (1/1), готово.
Запись объектов: 100% (1/1), 161 байт | 161.00 КиБ/с, готово.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:Hovik228/git-extended.git
 * [new tag]          1.2.3 -> 1.2.3
onmatevosyan@onmatevosyan:~/git-extended$ gh release create v1.2.3 -F CHANGELOG.md
https://github.com/Hovik228/git-extended/releases/tag/v1.2.3
onmatevosyan@onmatevosyan:~/git-extended$
```

Рис. 10: Завершение релиза

Подготовка рабочего репозитория

```
onmatevosyan@onmatevosyan:~/work/study/2024-2025/Операционные системы/os-intro$ gedit package.json
onmatevosyan@onmatevosyan:~/work/study/2024-2025/Операционные системы/os-intro$ git add .
onmatevosyan@onmatevosyan:~/work/study/2024-2025/Операционные системы/os-intro$ git cz
cz-cli@4.3.1, cz-conventional-changelog@3.3.0

? Select the type of change that you're committing: chore:  Other changes that don't modify src or test files
? What is the scope of this change (e.g. component or file name): (press enter to skip) test
? Write a short, imperative tense description of the change (max 87 chars):
  (4) test
? Provide a longer description of the change: (press enter to skip)

? Are there any breaking changes? No
? Does this change affect any open issues? No
[master 99215b1] chore(test): test
 1 file changed, 14 insertions(+)
 create mode 100644 package.json
onmatevosyan@onmatevosyan:~/work/study/2024-2025/Операционные системы/os-intro$ git push
Перечисление объектов: 4, готово.
Подсчет объектов: 100% (4/4), готово.
При сжатии изменений используется до 8 потоков
Сжатие объектов: 100% (3/3), готово.
Запись объектов: 100% (3/3), 488 байтов | 244.00 КиБ/с, готово.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To github.com:Hovik228/os-intro.git
 d457062..99215b1 master -> master
onmatevosyan@onmatevosyan:~/work/study/2024-2025/Операционные системы/os-intro$
```

Рис. 11: package.json и коммит

Подготовка рабочего репозитория

```
Summary of actions:
- Release branch 'release/1.0.0' has been merged into 'master'
- The release was tagged '1.0.0'
- Release tag '1.0.0' has been back-merged into 'develop'
- Release branch 'release/1.0.0' has been locally deleted
- You are now on branch 'develop'

onmatevosyan@onmatevosyan:~/work/study/2024-2025/Операционные системы/os-intro$ git push --all
Перечисление объектов: 7, готово.
Подсчет объектов: 100% (7/7), готово.
При сжатии изменений используется до 8 потоков
Сжатие объектов: 100% (5/5), готово.
Запись объектов: 100% (5/5), 622 байта | 311.00 КиБ/с, готово.
Total 5 (delta 3), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (3/3), completed with 1 local object.
To github.com:Hovik228/os-intro.git
   99215b1..a77ccb8  develop -> develop
   99215b1..87ff7f1  master -> master

onmatevosyan@onmatevosyan:~/work/study/2024-2025/Операционные системы/os-intro$ git push --tags
Перечисление объектов: 1, готово.
Подсчет объектов: 100% (1/1), готово.
Запись объектов: 100% (1/1), 158 байтов | 158.00 КиБ/с, готово.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:Hovik228/os-intro.git
 * [new tag]         1.0.0 -> 1.0.0
onmatevosyan@onmatevosyan:~/work/study/2024-2025/Операционные системы/os-intro$
```

Рис. 12: Завершение релиза

Выводы по проделанной работе

Мы приобрели практические навыки взаимодействия с дополнительными функциями гитхаб.