

Операционные системы

Продвинутое использование git

Богдан Гаряев

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1. Цели и задачи работы

Цель лабораторной работы

Получение навыков правильной работы с репозиториями git.

Задачи лабораторной работы

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

2. Процесс выполнения лабораторной работы



Node.js

```
bgaryaev@bgaryaev:~$  
bgaryaev@bgaryaev:~$ pnpm setup  
Appended new lines to /home/bgaryaev/.bashrc  
  
Next configuration changes were made:  
export PNPM_HOME="/home/bgaryaev/.local/share/pnpm"  
case ":$PATH:" in  
  *":$PNPM_HOME:"*) ;;  
  *) export PATH="$PNPM_HOME:$PATH" ;;  
esac  
  
To start using pnpm, run:  
source /home/bgaryaev/.bashrc  
bgaryaev@bgaryaev:~$ source ~/.bashrc  
bgaryaev@bgaryaev:~$ █
```

Рисунок 1: Node.js

commitizen

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

Update available! 10.27.0 → 10.30.1.
Changelog: https://pnpm.io/v/10.30.1
To update, run: pnpm self-update

[|]

WARN 2 deprecated subdependencies found: glob@7.2.3, inflight@1.0.6
Packages: +149
+-----+
Progress: resolved 149, reused 0, downloaded 149, added 149, done

/home/bgaryaev/.local/share/pnpm/global/5:
+ commitizen 4.3.1

Done in 2.8s using pnpm v10.27.0
bgaryaev@bgaryaev:~$
```

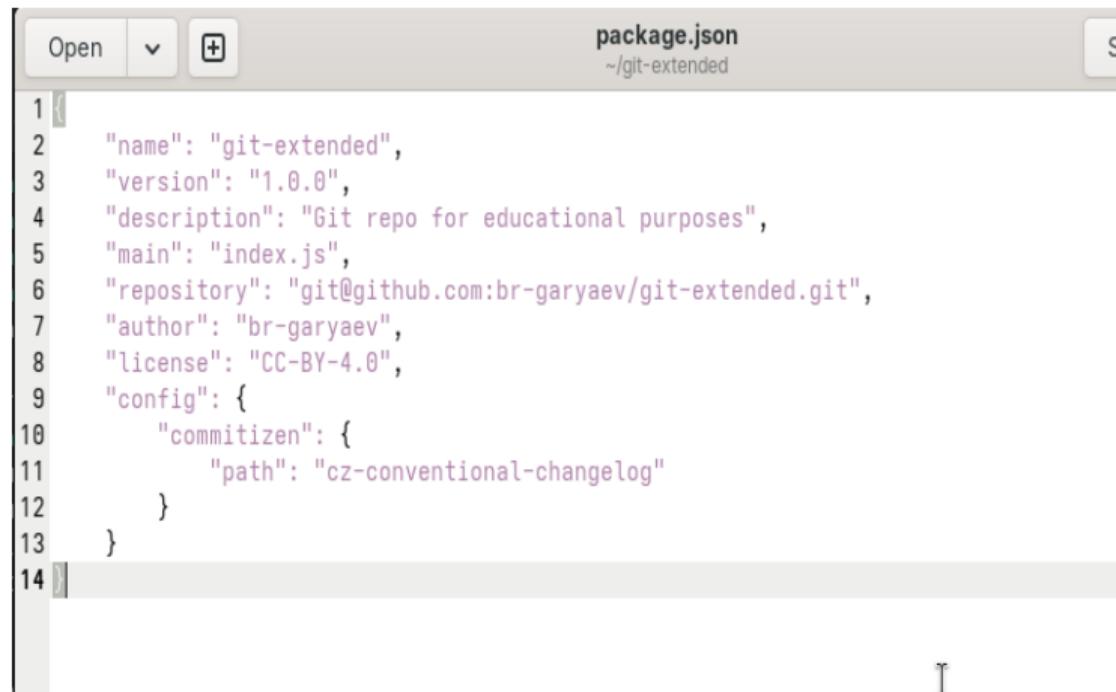
Рисунок 2: установка commitizen

standard-changelog

```
bgaryaev@bgaryaev:~$  
bgaryaev@bgaryaev:~$ pnpm add -g standard-changelog  
WARN 2 deprecated subdependencies found: glob@7.2.3, inflight@1.0.6  
Packages: +32  
+-----  
Progress: resolved 181, reused 149, downloaded 32, added 32, done  
  
/home/bgaryaev/.local/share/pnpm/global/5:  
+ standard-changelog 7.0.1  
  
Done in 2.8s using pnpm v10.27.0  
bgaryaev@bgaryaev:~$
```

Рисунок 3: установка standard-changelog

package.json



The screenshot shows a code editor window with the title bar "package.json" and the path "~/git-extended". The editor interface includes standard buttons for "Open", "Save", and "New". The code itself is a JSON object with the following structure:

```
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:br-garyaeve/git-extended.git",
7   "author": "br-garyaeve",
8   "license": "CC-BY-4.0",
9   "config": {
10     "commitizen": {
11       "path": "cz-conventional-changelog"
12     }
13   }
14 }
```

Рисунок 4: package.json

Использование commitizen

```
bgaryaev@bgaryaev:~/git-extended$ git add .
bgaryaev@bgaryaev:~/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 803897d] chore: test
 1 file changed, 14 insertions(+)
  create mode 100644 package.json
bgaryaev@bgaryaev:~/git-extended$ git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 1.11 KiB | 1.11 MiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:br-garyaev/git-extended.git
  7060da5..803897d master -> master
bgaryaev@bgaryaev:~/git-extended$ █
```

Рисунок 5: Отправка

git-flow

```
bgaryaev@bgaryaev:~/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? [] v
Hooks and filters directory? [/home/bgaryaev/git-extended/.git/hooks]
bgaryaev@bgaryaev:~/git-extended$ git branch
* develop
  master
bgaryaev@bgaryaev:~/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/br-garyaev/git-extended/pull/new/develop
remote:
To github.com:br-garyaev/git-extended.git
 * [new branch]      develop -> develop
bgaryaev@bgaryaev:~/git-extended$
```

Рисунок 6: Инициализация и загрузка изменений

git-flow

```
bgaryaev@bgaryaev:~/git-extended$ git branch --set-upstream-to=origin/develop develop
branch 'develop' set up to track 'origin/develop'.
bgaryaev@bgaryaev:~/git-extended$ git flow release start 1.0.0
Switched to a new branch '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'

bgaryaev@bgaryaev:~/git-extended$ standard-changelog --first-release
bgaryaev@bgaryaev:~/git-extended$ git add CHANGELOG.md
bgaryaev@bgaryaev:~/git-extended$ git commit -am 'chore(site): add changelog'
[release/1.0.0 05c1043] chore(site): add changelog
 1 file changed, 4 insertions(+)
 create mode 100644 CHANGELOG.md
bgaryaev@bgaryaev:~/git-extended$ git flow release finish 1.0.0
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
Merge made by the 'ort' strategy.
 CHANGELOG.md | 4 +++
 1 file changed, 4 insertions(+)
 create mode 100644 CHANGELOG.md
```

Рисунок 7: Завершение релиза

Отправим данные на github

```
bgaryaev@bgaryaev:~/git-extended$ git push --all
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 8 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (5/5), 2.67 KiB | 2.67 MiB/s, done.
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:br-garyaev/git-extended.git
  803897d..87c6ad8  develop -> develop
  803897d..87ca232  master -> master
bgaryaev@bgaryaev:~/git-extended$ git push --tags
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 155 bytes | 155.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:br-garyaev/git-extended.git
 * [new tag]      v1.0.0 -> v1.0.0
bgaryaev@bgaryaev:~/git-extended$ gh release create v1.0.0 -F CHANGELOG.md
https://github.com/br-garyaev/git-extended/releases/tag/v1.0.0
bgaryaev@bgaryaev:~/git-extended$
```

Рисунок 8: Отправка

Объединение веток

```
bgaryaev@bgaryaev:~/git-extended$ git flow feature start feature_branch
Switched to a new branch '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

bgaryaev@bgaryaev:~/git-extended$ touch test2
bgaryaev@bgaryaev:~/git-extended$ git flow feature finish feature_branch
Switched to branch 'develop'
Your branch is up to date with 'origin/develop'.
Already up to date.
Deleted branch feature/feature_branch (was 87c6ad8).

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'

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

Рисунок 9: Объединение веток

git-flow

```
Summary of actions:
- Release branch 'release/1.2.3' has been merged into 'master'
- The release was tagged 'v1.2.3'
- Release tag 'v1.2.3' has been back-merged into 'develop'
- Release branch 'release/1.2.3' has been locally deleted
- You are now on branch 'develop'

bgaryaev@bgaryaev:~/git-extended$ git push --all
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 8 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 2.78 KiB | 2.78 MiB/s, done.
Total 6 (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:br-garyaev/git-extended.git
  87c6ad8..d0af5c7  develop -> develop
  87ca232..52f3a54  master -> master
bgaryaev@bgaryaev:~/git-extended$ git push --tags
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 156 bytes | 156.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:br-garyaev/git-extended.git
 * [new tag]      v1.2.3 -> v1.2.3
bgaryaev@bgaryaev:~/git-extended$ gh release create v1.2.3 -F CHANGELOG.md
https://github.com/br-garyaev/git-extended/releases/tag/v1.2.3
bgaryaev@bgaryaev:~/git-extended$
```

Рисунок 10: Завершение релиза

Подготовка рабочего репозитория

```
bgaryaev@bgaryaev:~/work/study/2025-2026/Операционные системы/2026-1--study--os-intro$ git add .
bgaryaev@bgaryaev:~/work/study/2025-2026/Операционные системы/2026-1--study--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)
? 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 a444705] chore: test
  1 file changed, 11 insertions(+), 11 deletions(-)
bgaryaev@bgaryaev:~/work/study/2025-2026/Операционные системы/2026-1--study--os-intro$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 1.11 KiB | 1.11 MiB/s, done.
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:br-garyaev/2026-1--study--os-intro.git
  3157bb7..a444705  master -> master
bgaryaev@bgaryaev:~/work/study/2025-2026/Операционные системы/2026-1--study--os-intro$
```

Рисунок 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 'v1.0.0'
- Release tag 'v1.0.0' has been back-merged into 'develop'
- Release branch 'release/1.0.0' has been locally deleted
- You are now on branch 'develop'

bgaryaev@bgaryaev:~/work/study/2025-2026/Операционные системы/2026-1--study--os-intro$ git push --all
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 8 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 2.75 KiB | 2.75 MiB/s, done.    I
Total 5 (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:br-garyaev/2026-1--study--os-intro.git
  a444705..dbbd8ba  develop -> develop
  a444705..b5a3a38  master -> master

bgaryaev@bgaryaev:~/work/study/2025-2026/Операционные системы/2026-1--study--os-intro$ git push --tags
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 156 bytes | 156.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:br-garyaev/2026-1--study--os-intro.git
 * [new tag]      v1.0.0 -> v1.0.0
bgaryaev@bgaryaev:~/work/study/2025-2026/Операционные системы/2026-1--study--os-intro$
```

Рисунок 12: Завершение релиза

3. Выводы по проделанной работе

Вывод

Мы приобрели практические навыки взаимодействия с дополнительными функциями гитхаб.