

Операционные системы

Продвинутое использование git

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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

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

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

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

Рис. 1: Node.js

```
shahinduniamaliev@shahinduniamaliev:~$ 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/shahinduniamaliev/.local/share/pnpm/global/5:
+ commitizen 4.3.1

Done in 3.1s
shahinduniamaliev@shahinduniamaliev:~$
```

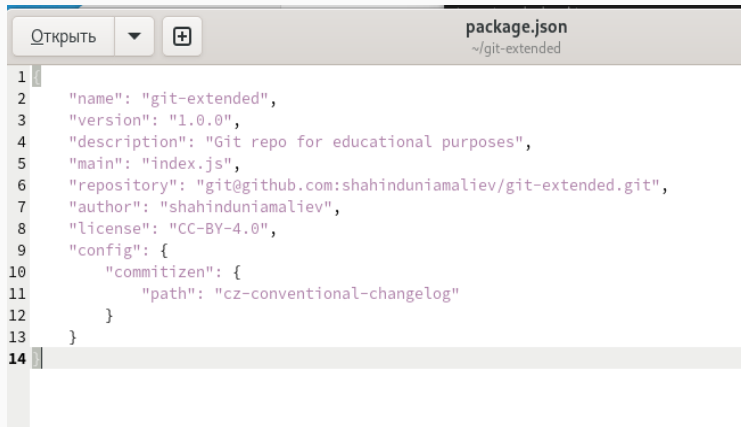
Рис. 2: установка commitizen

```
shahinduniamaliev@shahinduniamaliev:~$ 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/shahinduniamaliev/.local/share/pnpm/global/5:
+ standard-changelog 6.0.0

Done in 2.3s
shahinduniamaliev@shahinduniamaliev:~$
```

Рис. 3: установка standard-changelog



The image shows a code editor window with a tab titled "package.json" and a subtitle "~/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:shahinduniamaliev/git-extended.git",  
7   "author": "shahinduniamaliev",  
8   "license": "CC-BY-4.0",  
9   "config": {  
10     "commitizen": {  
11       "path": "cz-conventional-changelog"  
12     }  
13   }  
14
```

Рис. 4: package.json

Использование commitizen

```
shahinduniamaliev@shahinduniamaliev:~/git-extended$ gedit package.json
shahinduniamaliev@shahinduniamaliev:~/git-extended$ git add .
shahinduniamaliev@shahinduniamaliev:~/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 cd12f37] chore: test
 1 file changed, 14 insertions(+)
 create mode 100644 package.json
shahinduniamaliev@shahinduniamaliev:~/git-extended$ git push
Перечисление объектов: 4, готово.
Подсчет объектов: 100% (4/4), готово.
При сжатии изменений используется до 4 потоков
Сжатие объектов: 100% (3/3), готово.
Запись объектов: 100% (3/3), 1.13 КиБ | 1.13 МБ/с, готово.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:shahinduniamaliev/git-extended.git
 7dea6a4..cd12f37  master -> master
shahinduniamaliev@shahinduniamaliev:~/git-extended$
```

Рис. 5: Отправка

```
shahinduniamaliev@shahinduniamaliev:~/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/shahinduniamaliev/git-extended/.git/hooks]
shahinduniamaliev@shahinduniamaliev:~/git-extended$ git branch
* develop
  master
shahinduniamaliev@shahinduniamaliev:~/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/shahinduniamaliev/git-extended/pull/new/develop
remote:
To github.com:shahinduniamaliev/git-extended.git
* [new branch]      develop -> develop
shahinduniamaliev@shahinduniamaliev:~/git-extended$
```

Рис. 6: Инициализация и загрузка изменений

```
shahinduniamaliyev@shahinduniamaliyev:~/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'

shahinduniamaliyev@shahinduniamaliyev:~/git-extended$ standard-changelog --first-release
✓ created CHANGELOG.md
✓ output changes to CHANGELOG.md
shahinduniamaliyev@shahinduniamaliyev:~/git-extended$ git add CHANGELOG.md
shahinduniamaliyev@shahinduniamaliyev:~/git-extended$ git commit -am 'chore(site): add changelog'
[release/1.0.0 fb8f7c5] chore(site): add changelog
1 file changed, 4 insertions(+)
 create mode 100644 CHANGELOG.md
shahinduniamaliyev@shahinduniamaliyev:~/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»
Ваша ветка опережает «origin/master» на 2 коммита.
(используйте «git push», чтобы опубликовать ваши локальные коммиты)
```

Рис. 7: Завершение релиза

Отправим данные на github

```
shahinduniamaliyev@shahinduniamaliyev:~/git-extended$  
shahinduniamaliyev@shahinduniamaliyev:~/git-extended$ git push --all  
Перечисление объектов: 6, готово.  
Подсчет объектов: 100% (6/6), готово.  
При сжатии изменений используется до 4 потоков  
Сжатие объектов: 100% (4/4), готово.  
Запись объектов: 100% (5/5), 2.69 КиБ | 2.69 МиБ/с, готово.  
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)  
To github.com:shahinduniamaliyev/git-extended.git  
  cd12f37..34323b9  develop -> develop  
  cd12f37..fd91fe0  master -> master  
shahinduniamaliyev@shahinduniamaliyev:~/git-extended$ git push --tags  
Перечисление объектов: 1, готово.  
Подсчет объектов: 100% (1/1), готово.  
Запись объектов: 100% (1/1), 165 байтов | 165.00 КиБ/с, готово.  
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)  
To github.com:shahinduniamaliyev/git-extended.git  
  * [new tag]          1.0.0 -> 1.0.0  
shahinduniamaliyev@shahinduniamaliyev:~/git-extended$ gh release create v1.0.0 -F CHANGELOG.md  
https://github.com/shahinduniamaliyev/git-extended/releases/tag/v1.0.0  
shahinduniamaliyev@shahinduniamaliyev:~/git-extended$
```

Рис. 8: Отправка

Объединение веток

```
shahinduniamaliyev@shahinduniamaliyev:~/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

shahinduniamaliyev@shahinduniamaliyev:~/git-extended$ touch test2
shahinduniamaliyev@shahinduniamaliyev:~/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 34323b9).

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'

shahinduniamaliyev@shahinduniamaliyev:~/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'

shahinduniamaliev@shahinduniamaliev:~/git-extended$ git push --all
Перечисление объектов: 9, готово.
Подсчет объектов: 100% (9/9), готово.
При сжатии изменений используется до 4 потоков
Сжатие объектов: 100% (6/6), готово.
Запись объектов: 100% (6/6), 2.81 КиБ | 2.81 МБ/с, готово.
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:shahinduniamaliev/git-extended.git
   34323b9..d0f4d1b  develop -> develop
   fd91fe0..b2d5b94  master -> master

shahinduniamaliev@shahinduniamaliev:~/git-extended$ git push --tags
Перечисление объектов: 1, готово.
Подсчет объектов: 100% (1/1), готово.
Запись объектов: 100% (1/1), 166 байтов | 166.00 КиБ/с, готово.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:shahinduniamaliev/git-extended.git
   * [new tag]         1.2.3 -> 1.2.3

shahinduniamaliev@shahinduniamaliev:~/git-extended$ gh release create v1.2.3 -F CHANGELOG.md
https://github.com/shahinduniamaliev/git-extended/releases/tag/v1.2.3
shahinduniamaliev@shahinduniamaliev:~/git-extended$
```

Рис. 10: Завершение релиза

Подготовка рабочего репозитория

```
}
shahinduniamaliev@shahinduniamaliev:~/work/study/2024-2025/Операционные системы/os-intro$ gedit package.json

shahinduniamaliev@shahinduniamaliev:~/work/study/2024-2025/Операционные системы/os-intro$ git add .
shahinduniamaliev@shahinduniamaliev:~/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)
? 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 c95c7df] chore: test
3 files changed, 88 insertions(+), 205 deletions(-)
create mode 100644 package.json
shahinduniamaliev@shahinduniamaliev:~/work/study/2024-2025/Операционные системы/os-intro$ git push
Перечисление объектов: 16, готово.
Подсчет объектов: 100% (16/16), готово.
При сжатии изменений используется до 4 потоков
Сжатие объектов: 100% (9/9), готово.
Запись объектов: 100% (9/9), 4.82 КиБ | 4.82 МБ/с, готово.
Total 9 (delta 4), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (4/4), completed with 4 local objects.
To github.com:shahinduniamaliev/os-intro.git
149a628..c95c7df master -> master
shahinduniamaliev@shahinduniamaliev:~/work/study/2024-2025/Операционные системы/os-intro$
```

Рис. 11: package.json и коммит


```
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'

shahinduniamaliev@shahinduniamaliev:~/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 4 потоков
Сжатие объектов: 100% (5/5), готово.
Запись объектов: 100% (5/5), 2.77 КиБ | 2.77 МиБ/с, готово.
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:shahinduniamaliev/os-intro.git
   c95c7df..9a8944c  develop -> develop
   c95c7df..090b3da  master -> master

shahinduniamaliev@shahinduniamaliev:~/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), 165 байтов | 165.00 КиБ/с, готово.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:shahinduniamaliev/os-intro.git
 * [new tag]           1.0.0 -> 1.0.0
shahinduniamaliev@shahinduniamaliev:~/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.