

# Продвинутое использование git

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22 июня, 2024, Москва, Россия

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# Цели и задачи работы

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## Цель лабораторной работы

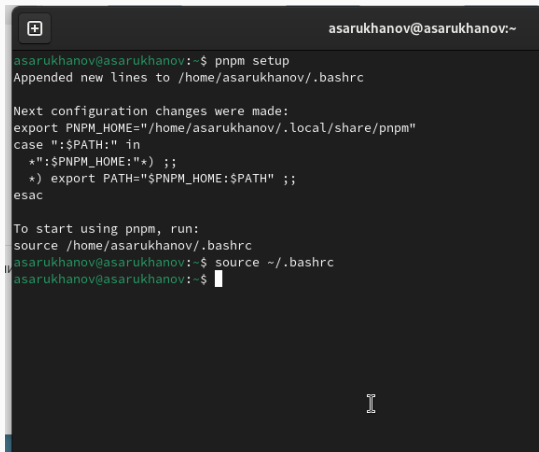
Получение навыков правильной работы с репозиториями git.

# Задачи лабораторной работы

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

# **Процесс выполнения лабораторной работы**

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A terminal window with a dark background. The title bar shows a window icon and the text 'asarukhanov@asarukhanov:~'. The terminal content shows the execution of 'pnpm setup', which appends configuration to the .bashrc file. It then displays the configuration changes: setting Pnpm home and updating the PATH. Finally, it instructs to source the .bashrc file, which is done in the next line.

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

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

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

Рис. 1: Node.js

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

Update available! 8.12.0 → 9.4.0.  
Changelog: <https://github.com/pnpm/pnpm/releases/tag/v9.4.0>  
Run "pnpm add -g pnpm" to update.  
  
Follow @pnpmjs for updates: <https://twitter.com/pnpmjs>

```
WARN 2 deprecated subdependencies found: glob@7.2.3, inflight@1.0.6  
Packages: +153  
+-----+  
Progress: resolved 153, reused 0, downloaded 153, added 153, done  
  
/home/asarukhanov/.local/share/pnpm/global/5:  
+ commitizen 4.3.0  
  
Done in 5.7s  
asarukhanov@asarukhanov:~$
```

Рис. 2: установка commitizen

# standard-changelog

```
Done in 3.7s
asarukhanov@asarukhanov:~$ pnpm add -g standard-changelog
WARN 2 deprecated subdependencies found: glob@7.2.3, inflight@1.0.6
Packages: +42
*****
Progress: resolved 195, reused 153, downloaded 42, added 42, done

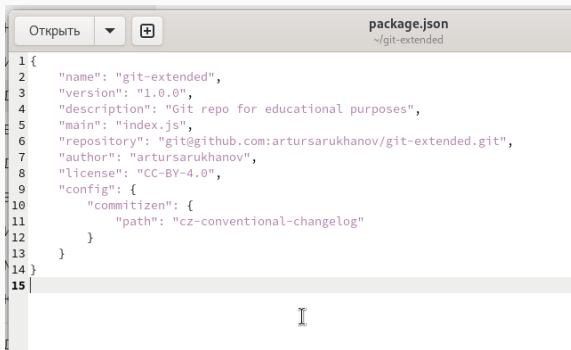
/home/asarukhanov/.local/share/pnpm/global/5:
+ standard-changelog 6.0.0

Done in 6.5s
asarukhanov@asarukhanov:~$
```

Рис. 3: установка standard-changelog



# package.json



The image shows a code editor window with a title bar that says "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:artursarukhanov/git-extended.git",  
7   "author": "artursarukhanov",  
8   "license": "CC-BY-4.0",  
9   "config": {  
10    "commitizen": {  
11      "path": "cz-conventional-changelog"  
12    }  
13  }  
14 }  
15
```

Рис. 4: package.json

# Использование commitizen

```
asarukhanov@asarukhanov:~/git-extended$
asarukhanov@asarukhanov:~/git-extended$ git add .
asarukhanov@asarukhanov:~/git-extended$ git cz
cz-cli@4.3.0, 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 9cfb2e9] chore: test
1 file changed, 15 insertions(+)
create mode 100644 package.json
asarukhanov@asarukhanov:~/git-extended$ git push
Перечисление объектов: 4, готово.
Подсчет объектов: 100% (4/4), готово.
При сжатии изменений используется до 6 потоков
Сжатие объектов: 100% (3/3), готово.
Запись объектов: 100% (3/3), 1.12 КиБ | 1.12 МБ/с, готово.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:artursarukhanov/git-extended.git
   ccc96f3..9cfb2e9  master -> master
asarukhanov@asarukhanov:~/git-extended$
```

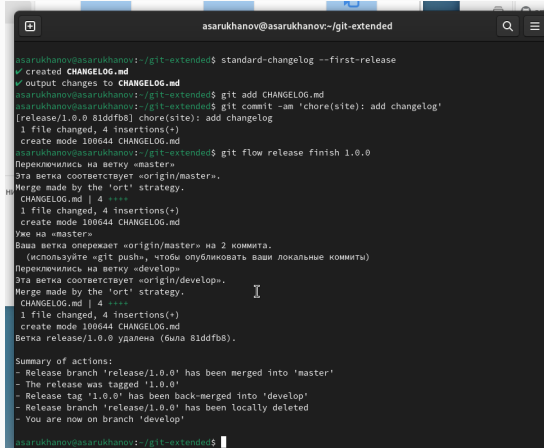
Рис. 5: Отправка

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

Рис. 6: Инициализация и загрузка изменений

A terminal window titled 'asarukhanov@asarukhanov:~/git-extended' showing the execution of 'git flow release finish 1.0.0'. The terminal output includes: creating CHANGELOG.md, committing it, switching to master, merging the release branch, tagging 1.0.0, switching back to develop, merging develop, and deleting the release branch. A summary of actions is provided at the end.

```
asarukhanov@asarukhanov:~/git-extended$ standard-changelog --first-release
✓ created CHANGELOG.md
✓ output changes to CHANGELOG.md
asarukhanov@asarukhanov:~/git-extended$ git add CHANGELOG.md
asarukhanov@asarukhanov:~/git-extended$ git commit -am 'chore(site): add changelog'
[release/1.0.0 81ddfb8] chore(site): add changelog
1 file changed, 4 insertions(+)
 create mode 100644 CHANGELOG.md
asarukhanov@asarukhanov:~/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)
Переключились на ветку «develop»
Эта ветка соответствует «origin/develop».
Merge made by the 'ort' strategy.
CHANGELOG.md | 4 ++++
1 file changed, 4 insertions(+)
 create mode 100644 CHANGELOG.md
Ветка release/1.0.0 удалена (была 81ddfb8).

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'

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

Рис. 7: Завершение релиза

# Отправим данные на github

```
asarukhanov@asarukhanov: ~/git-extended$  
asarukhanov@asarukhanov:~/git-extended$ git push --all  
Перечисление объектов: 6, готово.  
Подсчет объектов: 100% (6/6), готово.  
При сжатии изменений используется до 6 потоков  
Сжатие объектов: 100% (4/4), готово.  
Запись объектов: 100% (5/5), 2.68 КиБ | 914.00 КиБ/с, готово.  
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)  
To github.com:artursarukhanov/git-extended.git  
  9cfb2e9..cf10a91  develop -> develop  
  9cfb2e9..9e0fdad  master -> master  
asarukhanov@asarukhanov:~/git-extended$ git push --tags  
Перечисление объектов: 1, готово.  
Подсчет объектов: 100% (1/1), готово.  
Запись объектов: 100% (1/1), 157 байтов | 157.00 КиБ/с, готово.  
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)  
To github.com:artursarukhanov/git-extended.git  
  * [new tag]          1.0.0 -> 1.0.0  
asarukhanov@asarukhanov:~/git-extended$ gh release create v1.0.0 -F CHANGELOG.md  
https://github.com/artursarukhanov/git-extended/releases/tag/v1.0.0  
asarukhanov@asarukhanov:~/git-extended$
```

Рис. 8: Отправка

# Объединение веток

```
* [new tag] 1.0.0 -> 1.0.0
asarukhanov@asarukhanov:~/git-extended$ gh release create v1.0.0 -F CHANGELOG.md
https://github.com/artursarukhanov/git-extended/releases/tag/v1.0.0
asarukhanov@asarukhanov:~/git-extended$
asarukhanov@asarukhanov:~/git-extended$
asarukhanov@asarukhanov:~/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

asarukhanov@asarukhanov:~/git-extended$ touch test2
asarukhanov@asarukhanov:~/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 cf10a91).

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'

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

Рис. 9: Объединение веток

```
asarukhanov@asarukhanov:~/git-extended
Эта ветка соответствует «origin/develop».
Merge made by the 'ort' strategy.
 CHANGELOG.md | 4 ++++
 package.json | 2 +-
 2 files changed, 5 insertions(+), 1 deletion(-)
Ветка release/1.2.3 удалена (была edd09bc).

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'

asarukhanov@asarukhanov:~/git-extended$ git push --all
Перечисление объектов: 9, готово.
Подсчет объектов: 100% (9/9), готово.
При сжатии изменений используется до 6 потоков.
Сжатие объектов: 100% (6/6), готово.
Запись объектов: 100% (6/6), 2.70 Киб | 715.00 Киб/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:artursarukhanov/git-extended.git
 cf10a91..9abcf73 develop -> develop
 9e0fdad..003fa6d master -> master
asarukhanov@asarukhanov:~/git-extended$ git push --tags
Перечисление объектов: 1, готово.
Подсчет объектов: 100% (1/1), готово.
Запись объектов: 100% (1/1), 157 байтов | 157.00 Киб/с, готово.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:artursarukhanov/git-extended.git
 * [new tag]      1.2.3 -> 1.2.3
asarukhanov@asarukhanov:~/git-extended$ gh release create v1.2.3 -F CHANGELOG.md
https://github.com/artursarukhanov/git-extended/releases/tag/v1.2.3
asarukhanov@asarukhanov:~/git-extended$
```

Рис. 10: Завершение релиза

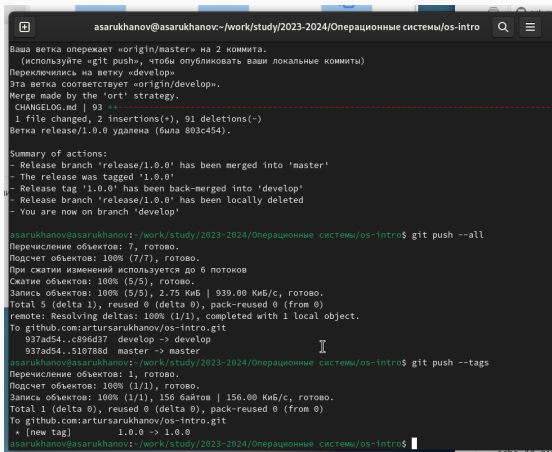
# Подготовка рабочего репозитория

```
asarukhanov@asarukhanov:~/work/study/2023-2024/Операционные системы/os-intro$  
asarukhanov@asarukhanov:~/work/study/2023-2024/Операционные системы/os-intro$ git add .  
asarukhanov@asarukhanov:~/work/study/2023-2024/Операционные системы/os-intro$ git cz  
cz-cli@4.3.0, 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 937ad54] chore: test  
  1 file changed, 14 insertions(+)  
  create mode 100644 package.json  
asarukhanov@asarukhanov:~/work/study/2023-2024/Операционные системы/os-intro$ git push  
Перечисление объектов: 4, готово.  
Подсчет объектов: 100% (4/4), готово.  
При сжатии изменений используется до 6 потоков  
Сканирование объектов: 100% (3/3), готово.  
Запись объектов: 100% (3/3), 1.12 КиБ | 1.12 МБ/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:artursarukhanov/os-intro.git  
   e64b976..937ad54  master -> master  
asarukhanov@asarukhanov:~/work/study/2023-2024/Операционные системы/os-intro$
```

Рис. 11: package.json и коммит



# Подготовка рабочего репозитория



```
asarukhanov@asarukhanov:~/work/study/2023-2024/Операционные системы/os-intro$
Ваша ветка опережает «origin/master» на 2 коммита.
(используйте «git push», чтобы опубликовать ваши локальные коммиты)
Переключились на ветку «develop»
Эта ветка соответствует «origin/develop».
Merge made by the 'ort' strategy.
CHANGELOG.md | 93 ++-----
1 file changed, 2 insertions(+), 91 deletions(-)
Ветка release/1.0.0 удалена (была 803c454).

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'

asarukhanov@asarukhanov:~/work/study/2023-2024/Операционные системы/os-intro$ git push --all
Перечисление объектов: 7, готово.
Подсчет объектов: 100% (7/7), готово.
При сжатии изменений используется до 6 потоков
Сжатие объектов: 100% (5/5), готово.
Запись объектов: 100% (5/5), 2.75 КиБ | 939.00 КиБ/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:artursarukhanov/os-intro.git
  937ad54..c896d37 develop -> develop
  937ad54..510788d master -> master

asarukhanov@asarukhanov:~/work/study/2023-2024/Операционные системы/os-intro$ git push --tags
Перечисление объектов: 1, готово.
Подсчет объектов: 100% (1/1), готово.
Запись объектов: 100% (1/1), 156 байтов | 156.00 КиБ/с, готово.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:artursarukhanov/os-intro.git
 * [new tag]          1.0.0 -> 1.0.0
asarukhanov@asarukhanov:~/work/study/2023-2024/Операционные системы/os-intro$
```

Рис. 12: Завершение релиза

## **Выводы по проделанной работе**

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Мы приобрели практические навыки взаимодействия с дополнительными функциями гитхаб.