

Лабораторная работа №4

Продвинутое использование git

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Информация

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Вводная часть

- Важно знать принцип работы с git-flow, так как эта система применяется при разработке проектов в команде

- git-flow и conventional commits

- Цель: получение навыков правильной работы с репозиториями git
- Задачи:
 - Выполнить работу для тестового репозитория
 - Преобразовать рабочий репозиторий в репозиторий с git-flow и conventional commits

- git-flow
- Node.js
- GitHub

Выполнение лабораторной работы

Установка git-flow командами `dnf copr enable elegos/gitflow` и `dnf install gitflow` под суперпользователем.

```
[1/3] Verify package files      100% | 250.0 B/s | 1.0 B | 00m00s
[2/3] Prepare transaction      100% | 3.0 B/s | 1.0 B | 00m00s
[3/3] Installing gitflow-0:1.12.3-1.fc34.x8 100% | 506.6 KiB/s | 271.0 KiB | 00m01s
Complete!
root@yapolyakoval:~#
```

Рис. 1: Установка git-flow

Установка Node.js (dnf install nodejs) и pnpm.

```
[3/7] Installing nodejs-libs-1:22.14.0-2.fc41 100% | 85.2 MiB/s | 1
[4/7] Installing nodejs-1:22.14.0-2.fc41.x86_64 100% | 8.7 MiB/s | 1
[5/7] Installing nodejs-npm-1:10.9.2-1.22.1 100% | 5.9 MiB/s | 1
[6/7] Installing nodejs-full-i18n-1:22.14.0 100% | 88.8 MiB/s | 1
[7/7] Installing nodejs-docs-1:22.14.0-2.fc41 100% | 28.3 MiB/s | 1
Complete!
root@yapolyakova1:~# dnf install pnpm
Updating and loading repositories:
Repositories loaded.
Package Arch Version Repository
Installing:
pnpm noarch 9.13.0-1.fc41 update
Transaction Summary:
Installing: 1 package
```

Рис. 2: Установка Node.js

Настройка Node.js

Настройка Node.js. Для работы с Node.js добавим каталог с исполняемыми файлами, устанавливаемыми yarn, в переменную PATH.

```
yapolyakova1@yapolyakova1:~$ pnpm setup
Appended new lines to /home/yapolyakova1/.bashrc

Next configuration changes were made:
export PNPM_HOME="/home/yapolyakova1/.local/share/pnpm"
case ":$PATH:" in
  *:$PNPM_HOME:*) ;;
  *) export PATH="$PNPM_HOME:$PATH" ;;
esac

To start using pnpm, run:
source /home/yapolyakova1/.bashrc
yapolyakova1@yapolyakova1:~$ source ~/.bashrc
```

Рис. 3: Настройка Node.js

Устанавливаем программу для создания общепринятых коммитов.

```
yapolyakova1@yapolyakova1:~$ npm add -g commitizen

Update available! 9.13.0 -> 10.6.1.
Changelog: https://github.com/pnpm/pnpm/releases/tag/v10.6.1
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/yapolyakova1/.local/share/pnpm/global/5:
+ commitizen 4.3.1

Done in 4.9s
yapolyakova1@yapolyakova1:~$ npm 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/yapolyakova1/.local/share/pnpm/global/5:
+ standard-changelog 6.0.0

Done in 4.1s
yapolyakova1@yapolyakova1:~$
```

Рис. 4: Общепринятые коммиты

Создаем репозиторий с именем git-extended на GitHub, клонируем его в папку с таким же именем, переходим в эту папку.

```
yapolyakoval@yapolyakoval:~$ git clone --recursive git@github.com:JuliaMaffin123/git-extended.git git-extended
Cloning into 'git-extended'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
yapolyakoval@yapolyakoval:~$ cd git-extended
yapolyakoval@yapolyakoval:~/git-extended$
```

Рис. 5: Создание репозитория git

Первый коммит, загрузка файлов

Делаем первый коммит и выкладываем на github.

```
yapolyakoval@yapolyakoval:~/git-extended$ touch README.md
yapolyakoval@yapolyakoval:~/git-extended$ git add .
yapolyakoval@yapolyakoval:~/git-extended$ git commit -m "first commit"
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean
yapolyakoval@yapolyakoval:~/git-extended$ git remote add git@github.com:JuliaMaffin1
23/git-extended.git
usage: git remote add [<options>] <name> <url>

    -f, --[no-]fetch          fetch the remote branches
    --[no-]tags              import all tags and associated objects when fetching
                             or do not fetch any tag at all (--no-tags)
    -t, --[no-]track <branch>
                             branch(es) to track
    -m, --[no-]master <branch>
                             master branch
    --[no-]mirror[=(push|fetch)]
                             set up remote as a mirror to push to or fetch from

yapolyakoval@yapolyakoval:~/git-extended$ git push -u
branch 'main' set up to track 'origin/main'.
Everything up-to-date
yapolyakoval@yapolyakoval:~/git-extended$
```

Рис. 6: Первый коммит, загрузка файлов

Задаем конфигурацию

Задаем конфигурацию для пакетов Node.js

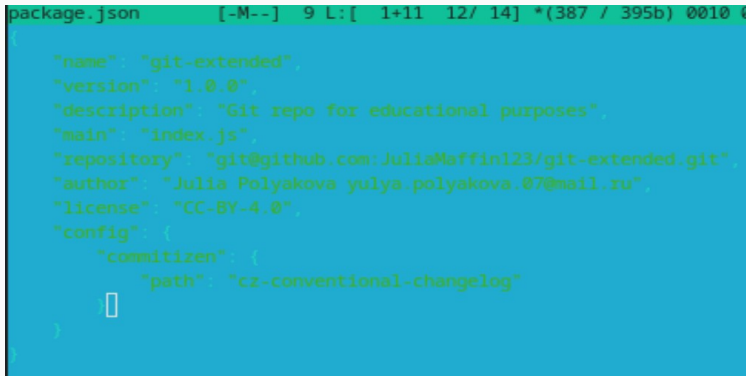
```
yapolyakova1@yapolyakova1:~/git-extended$ pnpm init
Wrote to /home/yapolyakova1/git-extended/package.json

{
  "name": "git-extended",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \\\"Error: no test specified\\\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}
yapolyakova1@yapolyakova1:~/git-extended$ mc
```

Рис. 7: Задаем конфигурацию

Меняем package.json

Добавим в файл package.json команду для формирования коммитов.



```
package.json  [-M--]  9 L: [ 1+11 12/ 14] *(387 / 395b) 0010 0
{
  "name": "git-extended",
  "version": "1.0.0",
  "description": "Git repo for educational purposes",
  "main": "index.js",
  "repository": "git@github.com:JuliaMaffin123/git-extended.git",
  "author": "Julia Polyakova yulya.polyakova.07@mail.ru",
  "license": "CC-BY-4.0",
  "config": {
    "commitizen": {
      "path": "cz-conventional-changelog"
    }
  }
}
```

Рис. 8: Меняем package.json

Отправление файлов на сервер

Добавим новые файлы на сервер.

```
yapolyakoval@yapolyakoval:~/git-extended$ git add .
yapolyakoval@yapolyakoval:~/git-extended$ git cz
cz-cl1@4.3.1, cz-conventional-changelog@3.3.0

? Select the type of change that you're committing: feat: A new feature
? 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 94 chars):
  (19) change package.json
? 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
[main 25bb30f] feat: change package.json
Committer: yapolyakoval <yapolyakoval@yapolyakoval.yapolyakoval.net>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly:

    git config --global user.name "Your Name"
    git config --global user.email you@example.com

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

1 file changed, 14 insertions(+)
create mode 100644 package.json
yapolyakoval@yapolyakoval:~/git-extended$ git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 521 bytes | 521.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:JuliaMaffin123/git-extended.git
 @2aa68e..25bb30f main -> main
yapolyakoval@yapolyakoval:~/git-extended$
```

Рис. 9: Отправление файлов на сервер

Конфигурация git-flow 1-ая ч.

Инициализируем git-flow, проверяем, что мы на ветке develop, загружаем весь репозиторий на git

```
Support branches? [support/]
Version tag prefix? [] v
Hooks and filters directory? [/home/yapolyakoval/git-extended/.git/hooks]
yapolyakoval@yapolyakoval:~/git-extended$ git branch
* develop
  main
yapolyakoval@yapolyakoval:~/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/JuliaMaffin123/git-extended/pull/new/develop
remote:
To github.com:JuliaMaffin123/git-extended.git
 * [new branch]      develop -> develop
yapolyakoval@yapolyakoval:~/git-extended$
```

Рис. 10: Конфигурация git-flow 1-ая ч.

Устанавливаем внешнюю ветку как вышестоящую, создаем релиз с версией 1.0.0

```
yapolyakoval@yapolyakoval:~/git-extended$ git branch --set-upstream-to=origin/develop develop
branch 'develop' set up to track 'origin/develop'.
yapolyakoval@yapolyakoval:~/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'
```

Рис. 11: Конфигурация git-flow 2-ая ч.

Создаем журнал изменений, добавим его в индекс.

```
yapolyakoval@yapolyakoval: ~/git-extended$ standard-changelog --first-release
✓ created CHANGELOG.md
✓ output changes to CHANGELOG.md
yapolyakoval@yapolyakoval:~/git-extended$ git add CHANGELOG.md
yapolyakoval@yapolyakoval:~/git-extended$ git commit -am 'chore(site): add changelog'

[release/1.0.0 5123f32] chore(site): add changelog
Committer: yapolyakoval <yapolyakoval@yapolyakoval.yapolyakoval.net>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly:

    git config --global user.name "Your Name"
    git config --global user.email you@example.com

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

1 file changed, 9 insertions(+)
create mode 100644 CHANGELOG.md
yapolyakoval@yapolyakoval:~/git-extended$
```

Рис. 12: Конфигурация git-flow 3-я ч.

Зальём релизную ветку в основую.

```
yapolyakova1@yapolyakova1:~/git-extended$ git flow release finish 1.0.0
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
Merge made by the 'ort' strategy.
  CHANGELOG.md | 9 ++++++++
  1 file changed, 9 insertions(+)
  create mode 100644 CHANGELOG.md
Already on 'main'
Your branch is ahead of 'origin/main' by 2 commits.
  (use "git push" to publish your local commits)
Switched to branch 'develop'
Your branch is up to date with 'origin/develop'.
Merge made by the 'ort' strategy.
  CHANGELOG.md | 9 ++++++++
  1 file changed, 9 insertions(+)
  create mode 100644 CHANGELOG.md
Deleted branch release/1.0.0 (was 5123f32).

Summary of actions:
- Release branch 'release/1.0.0' has been merged into 'main'
- 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'

yapolyakova1@yapolyakova1:~/git-extended$
```

Рис. 13: Конфигурация git-flow 4-ая ч.

Отправляем данные о репозитории и ярлыках на github. Создаем релиз с помощью gh

```
yapolyakoval@yapolyakoval:~/git-extended$ git push --all
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 4 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (5/5), 703 bytes | 703.00 KiB/s, done.
Total 5 (delta 2), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (2/2), done.
To github.com:JuliaMaffin123/git-extended.git
 25bb30f..a60c126 develop -> develop
 25bb30f..9081947 main -> main
yapolyakoval@yapolyakoval:~/git-extended$ git push --tags
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 173 bytes | 173.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:JuliaMaffin123/git-extended.git
 * [new tag]         v1.0.0 -> v1.0.0
yapolyakoval@yapolyakoval:~/git-extended$ gh release create v1.0.0 -F CHANGELOG.md
https://github.com/JuliaMaffin123/git-extended/releases/tag/v1.0.0
yapolyakoval@yapolyakoval:~/git-extended$
```

Рис. 14: Конфигурация git-flow 5-ая ч.

При разработке новой функциональности мы создаем ветку, работаем с git, а затем объединяем ветку feature_branch с develop

```
yapolyakoval@yapolyakoval:~/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

yapolyakoval@yapolyakoval:~/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 a60c126).

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'

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

Рис. 15: Разработка новой функциональности

Создание релиза git-flow 1-ая ч.

Создаем релиз с версией 1.2.3, обновляем номер версии в файле package.json, создаем журнал изменений.

```
yapolyakova1@yapolyakova1:~/git-extended$ git flow release start 1.2.3
Switched to a new branch 'release/1.2.3'

Summary of actions:
- A new branch 'release/1.2.3' was created, based on 'develop'
- You are now on branch 'release/1.2.3'

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

    git flow release finish '1.2.3'

yapolyakova1@yapolyakova1:~/git-extended$ mc

yapolyakova1@yapolyakova1:~/git-extended$ standard-changelog
✓ output changes to CHANGELOG.md
yapolyakova1@yapolyakova1:~/git-extended$
```

Рис. 16: Создание релиза git-flow 1-ая ч.

Создание релиза git-flow 2-ая ч.

Добавим журнал изменений в индекс.

```
yapolyakoval@yapolyakoval:~/git-extended$ git add CHANGELOG.md
yapolyakoval@yapolyakoval:~/git-extended$ git commit -am 'chore(site): update changelog'
[release/1.2.3 53a0b7e] chore(site): update changelog
Committer: yapolyakoval <yapolyakoval@yapolyakoval.yapolyakoval.net>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly:

    git config --global user.name "Your Name"
    git config --global user.email you@example.com

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

2 files changed, 5 insertions(+), 1 deletion(-)
yapolyakoval@yapolyakoval:~/git-extended$
```

Рис. 17: Создание релиза git-flow 2-ая ч.

Создание релиза git-flow 3-я ч.

Зальём релизную ветку в основную ветку.

```
yapolyakoval@yapolyakoval:~/git-extended$ git flow release finish 1.2.3
Switched to branch 'main'
Your branch is up to date with 'origin/main'.
Merge made by the 'ort' strategy.
  CHANGELOG.md | 4 ++++
  package.json | 2 +-
  2 files changed, 5 insertions(+), 1 deletion(-)
Already on 'main'
Your branch is ahead of 'origin/main' by 3 commits.
  (use "git push" to publish your local commits)
Switched to branch 'develop'
Your branch is up to date with 'origin/develop'.
Merge made by the 'ort' strategy.
  CHANGELOG.md | 4 ++++
  package.json | 2 +-
  2 files changed, 5 insertions(+), 1 deletion(-)
Deleted branch release/1.2.3 (was 53a0b7e).

Summary of actions:
- Release branch 'release/1.2.3' has been merged into 'main'
- 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'

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

Рис. 18: Создание релиза git-flow 3-я ч.

Создание релиза git-flow 4-ая ч.

Отправим данные на github и создадим релиз на github с комментарием из журнала изменений

```
yapolyakoval@yapolyakoval:~/git-extended$ git push --all
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 4 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 709 bytes | 709.00 KiB/s, done.
Total 6 (delta 4), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (4/4), completed with 2 local objects.
To github.com:JuliaMaffin123/git-extended.git
   a60c126..b658241  develop -> develop
   9081947..3b46569  main -> main
yapolyakoval@yapolyakoval:~/git-extended$ git push --tags
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 176 bytes | 176.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:JuliaMaffin123/git-extended.git
 * [new tag]           v1.2.3 -> v1.2.3
yapolyakoval@yapolyakoval:~/git-extended$ gh release create v1.2.3 -F CHANGELOG.md
https://github.com/JuliaMaffin123/git-extended/releases/tag/v1.2.3
yapolyakoval@yapolyakoval:~/git-extended$
```

Рис. 19: Создание релиза git-flow 4-ая ч.

Были получены навыки правильной работы с репозиториями git