

Шаблон отчёта по лабораторной работе №4

Продвинутое использование git

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1 Цель работы

- Получение навыков правильной работы с репозиториями git.

2 Задание

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

3 Выполнение лабораторной работы

3.1 Установка программного обеспечения

3.1.1 Установка git-flow

- Linux
- fedora
- Установка из коллекции репозитория Copr (<https://copr.fedorainfracloud.org/coprs/elegos/>)
- Enable the copr repository
- Install gitflow

```
[sabdullakhi@sabdullakhi ~]$ sudo dnf copr enable elegos/gitflow
[sudo] password for sabdullakhi:
Enabling a Copr repository. Please note that this repository is not part
of the main distribution, and quality may vary.

The Fedora Project does not exercise any power over the contents of
this repository beyond the rules outlined in the Copr FAQ at
<https://docs.pagure.org/copr.copr/user_documentation.html#what-i-can-bu
ild-in-copr>,
and packages are not held to any quality or security level.

Please do not file bug reports about these packages in Fedora
Bugzilla. In case of problems, contact the owner of this repository.

Do you really want to enable copr.fedorainfracloud.org/elegos/gitflow? [
y/N]: y
Repository successfully enabled.
[sabdullakhi@sabdullakhi ~]$ sudo dnf install gitflow
Copr repo for gitflow owned by elegos 2.6 kB/s | 1.5 kB 00:00
Fedora 39 - x86_ [=== ] --- B/s | 0 B --- ETA
```

Рис. 3.1: Enable the copr repository

3.1.1.1 Установка Node.js

```
[sabdullakhi@sabdullakhi ~]$ sudo dnf install nodejs
Last metadata expiration check: 0:01:31 ago on Tue 05 Mar 2024 10:23:32 AM MSK.
Dependencies resolved.
=====
Package           Arch    Version                               Repo      Size
=====
Installing:
nodejs             x86_64  1:20.10.0-3.fc39                     updates   48 k
Installing dependencies:
nodejs-libs        x86_64  1:20.10.0-3.fc39                     updates   15 M
Installing weak dependencies:
nodejs-docs        noarch  1:20.10.0-3.fc39                     updates   8.1 M
nodejs-full-118n   x86_64  1:20.10.0-3.fc39                     updates   8.5 M
nodejs-npm         x86_64  1:10.2.3-1.20.10.0.3.fc39           updates   2.2 M
Transaction Summary
=====
```

Рис. 3.2: install node.js

- Чтобы install apt-get install npm, надо установим **apt** с помощью этого ка-монда : `dnf install apt`

```
[sabdullakhi@sabdullakhi ~]$ sudo dnf install apt
Fedora 39 - x86_64 - Updates 17 kB/s | 18 kB 00:01
Dependencies resolved.
=====
Package           Architecture Version                               Repository  Size
=====
Installing:
apt               x86_64      2.7.11-1.fc39                       updates     1.3 M
Installing dependencies:
apt-libs          x86_64      2.7.11-1.fc39                       updates     1.1 M
dpkg              x86_64      1.21.21-2.fc39                      fedora      1.6 M
libmd              x86_64      1.1.0-2.fc39                        fedora      47 k
Transaction Summary
=====
Install 4 Packages
```

Рис. 3.3: install apt

```
[sabdullakhi@sabdullakhi ~]$ sudo apt-get install npm
Reading package lists... Done
Building dependency tree... Done
E: Unable to locate package npm
[sabdullakhi@sabdullakhi ~]$
```

Рис. 3.4: install npm

3.1.2 Настройка Node.js

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

```
[sabdullakhi@sabdullakhi ~]$ sudo wget -qO- https://get.pnpm.io/install.sh | sh -
==> Downloading pnpm binaries 8.15.4
WARN using --force I sure hope you know what you are doing
Copying pnpm CLI from /tmp/tmp.W04QUdcopc/pnpm to /home/sabdullakhi/.local/share/pnpm/pnpm
Appended new lines to /home/sabdullakhi/.bashrc

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

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

Рис. 3.5: install gitflow

- Запустите:
- Перелогиньтесь, или выполним:

```
[sabdullakhi@sabdullakhi ~]$ pnpm setup
No changes to the environment were made. Everything is already up to date.
[sabdullakhi@sabdullakhi ~]$ source ~/.bashrc
[sabdullakhi@sabdullakhi ~]$
```

Рис. 3.6: pnpm setup , Настройка pnpm binaries 8.15.4

3.1.3 Общепринятые коммиты

1. commitizen

- Данная программа используется для помощи в форматировании коммитов.

```
[sabdullakhi@sabdullakhi ~]$ pnpm add -g standard-changelog
Packages: +56
+++++
Progress: resolved 208, reused 152, downloaded 56, added 56, done

/home/sabdullakhi/.local/share/pnpm/global/5:
+ standard-changelog 5.0.0

Done in 10s
[sabdullakhi@sabdullakhi ~]$
```

Рис. 3.7: Программа для форматирования коммитов

- При этом устанавливается скрипт git-cz, который мы и будем использовать для КОММИТОВ.

2. standard-changelog

- Данная программа используется для помощи в создании логов.

```
[sabdullakhi@sabdullakhi ~]$ pnpm add -g commitizen
Packages: +152
+++++
Downloading registry.npmjs.org/typescript/5.3.3: 5.76 MB/5.76 MB, done
Progress: resolved 152, reused 0, downloaded 152, added 152, done

/home/sabdullakhi/.local/share/pnpm/global/5:
+ commitizen 4.3.0

Done in 31.5s
[sabdullakhi@sabdullakhi ~]$
```

Рис. 3.8: Программа, помогающая создавать отчеты

3. Практический сценарий использования git

1. Подключение репозитория к github

- Создайте репозиторий на GitHub. Для примера назовём его git-extended.

Start a new repository for Shogofa21

A repository contains all of your project's files, revision history, and collaborator discussion.

Repository name *

git-extended

✓ git-extended is available.

☐ **Public**
Anyone on the internet can see this repository

☒ **Private**
You choose who can see and commit to this repository

Create a new repository

Рис. 3.9: создала репозиторий на github

Quick setup — if you've done this kind of thing before

HTTPS SSH git@github.com:Shogofa21/git-exte

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

...or create a new repository on the command line

```
echo "# git-extended" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin git@github.com:Shogofa21/git-exte
git push -u origin main
```

Рис. 3.10: создала репозиторий на github

- Делаем первый коммит и выкладываем на github:

1. сначала мы входим в файл git-extended, потом создадим файл README.md, открываем README.md с помощью nano и напишем там README.md, после этого начинаем коммит на github

```
[sabdullakhi@sabdullakhi ~]$ cd git-extended/
[sabdullakhi@sabdullakhi git-extended]$ touch README.md
[sabdullakhi@sabdullakhi git-extended]$ nano README.md
[sabdullakhi@sabdullakhi git-extended]$ git add .
[sabdullakhi@sabdullakhi git-extended]$ git commit -m "first commit"
[main (root-commit) 2d94266] first commit
1 file changed, 1 insertion(+)
create mode 100644 README.md
[sabdullakhi@sabdullakhi git-extended]$ git remote add origin git@github.com:Shogofa21/git-extended.git
error: remote origin already exists.
[sabdullakhi@sabdullakhi git-extended]$ git push -u origin master
error: src refspec master does not match any
error: failed to push some refs to 'github.com:Shogofa21/git-extended.git'
[sabdullakhi@sabdullakhi git-extended]$ git push -u origin main
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 875 bytes | 875.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:Shogofa21/git-extended.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
[sabdullakhi@sabdullakhi git-extended]$
```

Рис. 3.11: Делаем первый коммит и выкладываем на github:

2. Конфигурация общепринятых коммитов

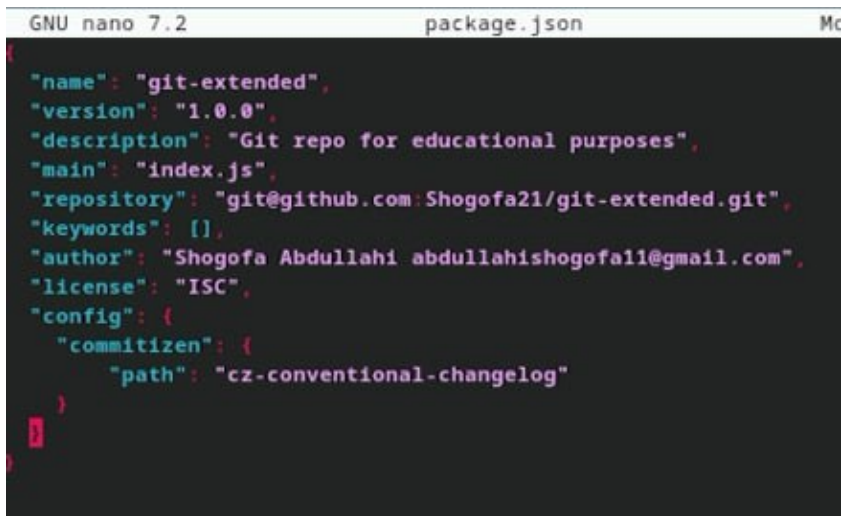
- Конфигурация для пакетов Node.js

```
[sabdullakhi@sabdullakhi git-extended]$ npm init
Wrote to /home/sabdullakhi/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"
}
```

Рис. 3.12: Конфигурация для пакетов Node.js

- Сконфигурируем формат коммитов. Для этого добавим в файл package.json команду для формирования коммитов:



```
GNU nano 7.2 package.json Me
{
  "name": "git-extended",
  "version": "1.0.0",
  "description": "Git repo for educational purposes",
  "main": "index.js",
  "repository": "git@github.com:Shogofa21/git-extended.git",
  "keywords": [],
  "author": "Shogofa Abdullahi abdullahishogofa11@gmail.com",
  "license": "ISC",
  "config": {
    "commitizen": {
      "path": "cz-conventional-changelog"
    }
  }
}
```

- Добавим новые файлы и Выполним коммит и Отправим на github:

```

foot
[sabdullakhi@sabdullakhi git-extended]$ git add .
[sabdullakhi@sabdullakhi git-extended]$ git cz
cz-cli@4.3.0, 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) readme.md
? Write a short, imperative tense description of the change (max 83
chars):
(12) step up file
? 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 3808425] feat(readme.md): step up file
1 file changed, 15 insertions(+)
create mode 100644 package.json
[sabdullakhi@sabdullakhi 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), 1.16 KiB | 596.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:Shogofa21/git-extended.git
2d94266..3808425  main -> main
[sabdullakhi@sabdullakhi git-extended]$ git flow init

Which branch should be used for bringing forth production releases?
- main
Branch name for production releases: [main]
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/sabdullakhi/git-extended/.git/hooks]

[sabdullakhi@sabdullakhi git-extended]$ 

```

Рис. 3.13: добавим файл выполним коммит и отправим на github

3. Конфигурация git-flow

- Инициализируем git-flow и Префикс для ярлыков установим в v.


```
[sabdullakhi@sabdullakhi git-extended]$ git flow init
Already initialized for gitflow.
To force reinitialization, use: git flow init -f
[sabdullakhi@sabdullakhi git-extended]$ git flow init -f

Which branch should be used for bringing forth production releases?
  - develop
  - main
Branch name for production releases: [main]

Which branch should be used for integration of the "next release"?
  - develop
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/sabdullakhi/git-extended/.git/hooks]

[sabdullakhi@sabdullakhi git-extended]$
```

- Проверьте, что Вы на ветке develop:
- Загрузите весь репозиторий в хранилище:

```
[sabdullakhi@sabdullakhi git-extended]$ git branch
* develop
  main
[sabdullakhi@sabdullakhi 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/Shogofa21/git-extended/pull/new/develop
remote:
To github.com:Shogofa21/git-extended.git
 * [new branch]      develop -> develop
```

Рис. 3.14: проверим и загрузим репозиторий в хранилище

- Установите внешнюю ветку как вышестоящую для этой ветки

```
[sabdullakhi@sabdullakhi git-extended]$ git branch --set-upstream-to=ori
gin/develop develop
branch 'develop' set up to track 'origin/develop'.
```

- Создадим релиз с версией 1.0.0

```
[sabdullakhi@sabdullakhi 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. 3.15: Создадим релиз с версией 1.0.0

- Создадим журнал изменений

```
[sabdullakhi@sabdullakhi git-extended]$ standard-changelog --first-release
✓ created CHANGELOG.md
✓ output changes to CHANGELOG.md
```

Рис. 3.16: Создадим журнал изменений

- Добавим журнал изменений в индекс

```
[sabdullakhi@sabdullakhi git-extended]$ git add CHANGELOG.md
[sabdullakhi@sabdullakhi git-extended]$ git commit -am 'chore(site): add changelog'
[release/1.0.0 364841c] chore(site): add changelog
1 file changed, 9 insertions(+)
create mode 100644 CHANGELOG.md
[sabdullakhi@sabdullakhi git-extended]$
```

Рис. 3.17: Добавим журнал в индекс

```
/home/sabdullakhi/git-extended/.git/TAG_EDITING
v1.0.0
#
# Write a message for tag:
#   v1.0.0
# Lines starting with '#' will be ignored.
```



```

Merge tag 'v1.0.0' into develop

v
# Please enter a commit message to explain why this merge is necessary,
# especially if it merges an updated upstream into a topic branch.
#
# Lines starting with '#' will be ignored, and an empty message aborts
# the commit.

```

- Зальём релизную ветку в основную ветку

```

[sabdullakhi@sabdullakhi 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 364841c).

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'

[sabdullakhi@sabdullakhi git-extended]$

```

- Отправим данные на github

```

[sabdullakhi@sabdullakhi 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), 2.80 KiB | 957.00 KiB/s, done.
Total 5 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:Shogofa21/git-extended.git
 3808425..0655429 develop -> develop
 3808425..3ab8ab7 main -> main
[sabdullakhi@sabdullakhi git-extended]$ git push --tags
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 161 bytes | 161.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:Shogofa21/git-extended.git
 * [new tag]          v1.0.0 -> v1.0.0
[sabdullakhi@sabdullakhi git-extended]$

```

Рис. 3.18: отправим данные на github

- Создадим релиз на github. Для этого будем использовать утилиты работы с github:

```
[sabdullakhi@sabdullakhi git-extended]$ gh release create v1.0.0 -F CHANGELOG.md
https://github.com/Shogofa21/git-extended/releases/tag/v1.0.0
[sabdullakhi@sabdullakhi git-extended]$
```

Рис. 3.19: создадим релиз на github

2. Работа с репозиторием git

3. Разработка новой функциональности

- Создадим ветку для новой функциональности:

```
[sabdullakhi@sabdullakhi 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

[sabdullakhi@sabdullakhi git-extended]$
```

Рис. 3.20: Создадим ветку для новой функциональности

```
[sabdullakhi@sabdullakhi 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 0655429).

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'

[sabdullakhi@sabdullakhi git-extended]$
```

Рис. 3.21: ледует объединить ветку

2. Создание релиза git-flow

```
[sabdullakhi@sabdullakhi 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'

[sabdullakhi@sabdullakhi git-extended]$ nano package.js
```

Рис. 3.22: Создание рели с вирсей 1.2.3

```
{
  "name": "git-extended",
  "version": "1.2.3",
  "description": "Git repo for educational purposes",
  "main": "index.js",
  "repository": "git@github.com:Shogofa21/git-extended.git",
  "keywords": [],
  "author": "Shogofa Abdullahi abdullahishogofa11@gmail.com",
  "license": "ISC",
  "config": {
    "commitizen": {
      "path": "cz-conventional-changelog"
    }
  }
}
```

Рис. 3.23: Обновите номер версии в файле package.json.

- Создадим журнал изменений

```
[sabdullakhi@sabdullakhi git-extended]$ standard-changelog
✓ output changes to CHANGELOG.md
```

Рис. 3.24: создала журнал изменений

- Добавим журнал изменений в индекс
- Зальём релизную ветку в основную ветку

```
[sabdullakhi@sabdullakhi git-extended]$ git add CHANGELOG.md
[sabdullakhi@sabdullakhi git-extended]$ git commit -am 'chore(site): update changelog'
[release/1.2.3 92520c0] chore(site): update changelog
 2 files changed, 5 insertions(+), 1 deletion(-)
[sabdullakhi@sabdullakhi git-extended]$ ls
CHANGELOG.md package.json README.md
[sabdullakhi@sabdullakhi 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 92520c0).

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'
```

Рис. 3.25: добавила журнал в индекс

```
Merge tag 'v1.2.3' into develop

v
# Please enter a commit message to explain why this merge is necessary,
# especially if it merges an updated upstream into a topic branch.
#
# Lines starting with '#' will be ignored, and an empty message aborts
# the commit.
```

- Отправим данные на github
- Создадим релиз на github с комментарием из журнала изменений:

```

[sabdullakhi@sabdullakhi 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), 2.78 KiB | 2.78 MiB/s, done.
Total 6 (delta 2), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To github.com:Shogofa21/git-extended.git
   0655429..2ce2043  develop -> develop
   3ab8ab7..56d1421  main -> main
[sabdullakhi@sabdullakhi git-extended]$ git push --tags
Enumerating objects: 1, done.
Counting objects: 100% (1/1), done.
Writing objects: 100% (1/1), 161 bytes | 161.00 KiB/s, done.
Total 1 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To github.com:Shogofa21/git-extended.git
   * [new tag]         v1.2.3 -> v1.2.3
[sabdullakhi@sabdullakhi git-extended]$ gh release create v1.2.3 -F CHANGES.md
https://github.com/Shogofa21/git-extended/releases/tag/v1.2.3
[sabdullakhi@sabdullakhi git-extended]$

```

Рис. 3.26: Отправим Создадим релиз на github

4 Выводы

Получение навыков правильной работы с репозиториями git.