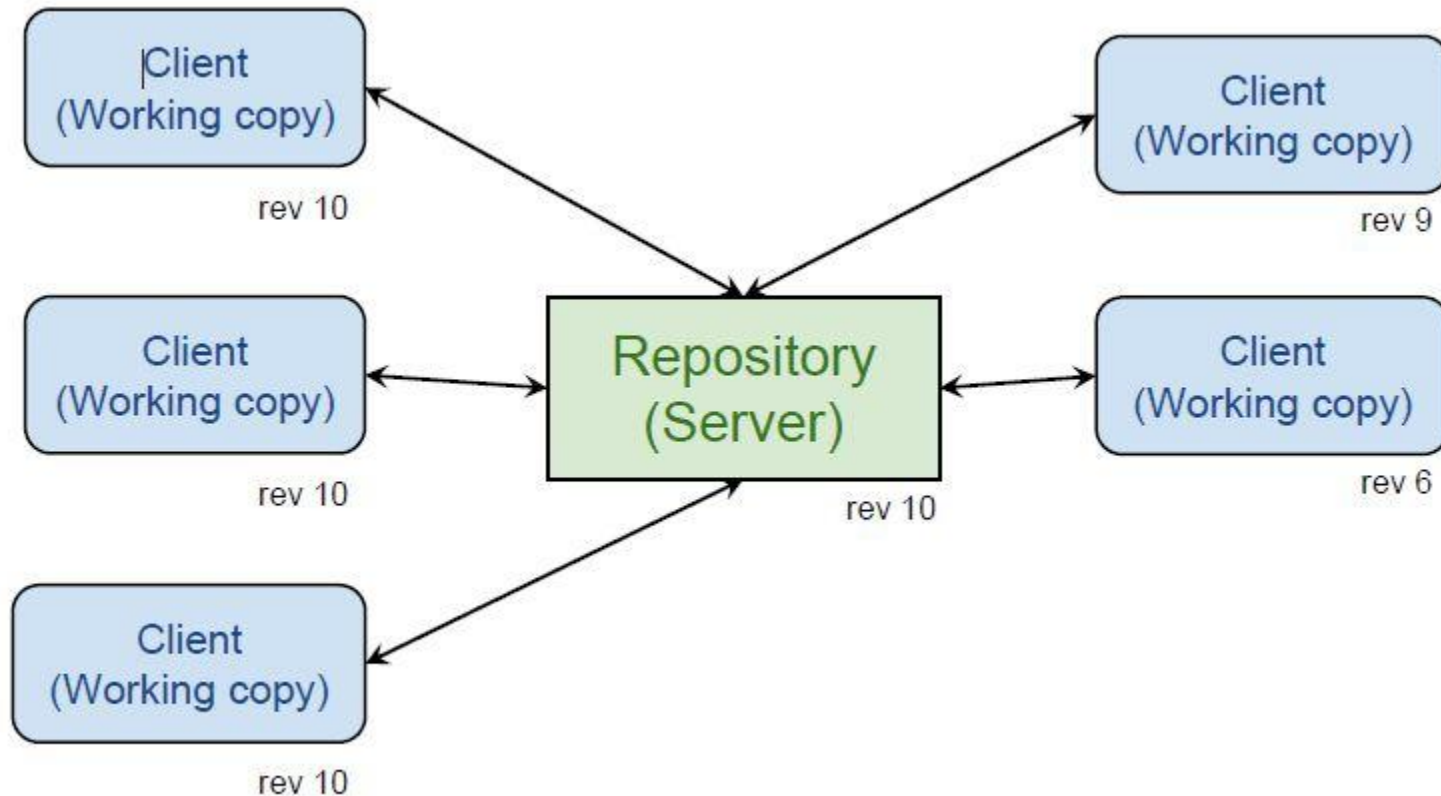


Система
КОНТРОЛЯ
версий
Git

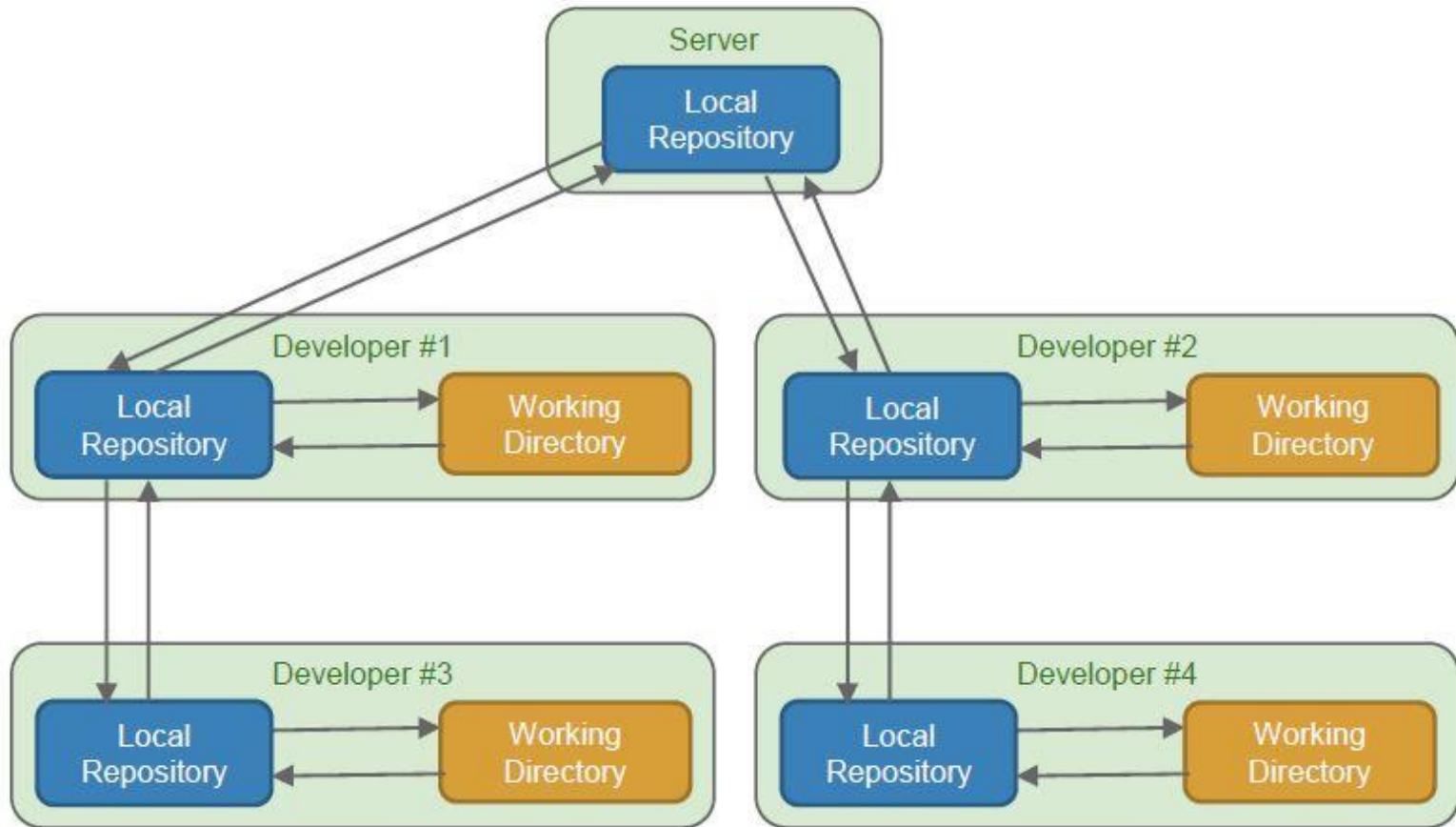
Централизованные VCS



Централизованные VCS

- Достоинства
 - Централизованное администрирование
 - Привычный workflow
 - Управление правами доступа
- Недостатки
 - Единая точка отказа – сервер
 - Любые изменения влияют на всех пользователей
 - Неудобная работа с ветками – легко создать, тяжело сдвинуть
 - Возможны блокировки - захват пессимистической блокировки одним пользователем

Распределенные VCS



Распределенные VCS

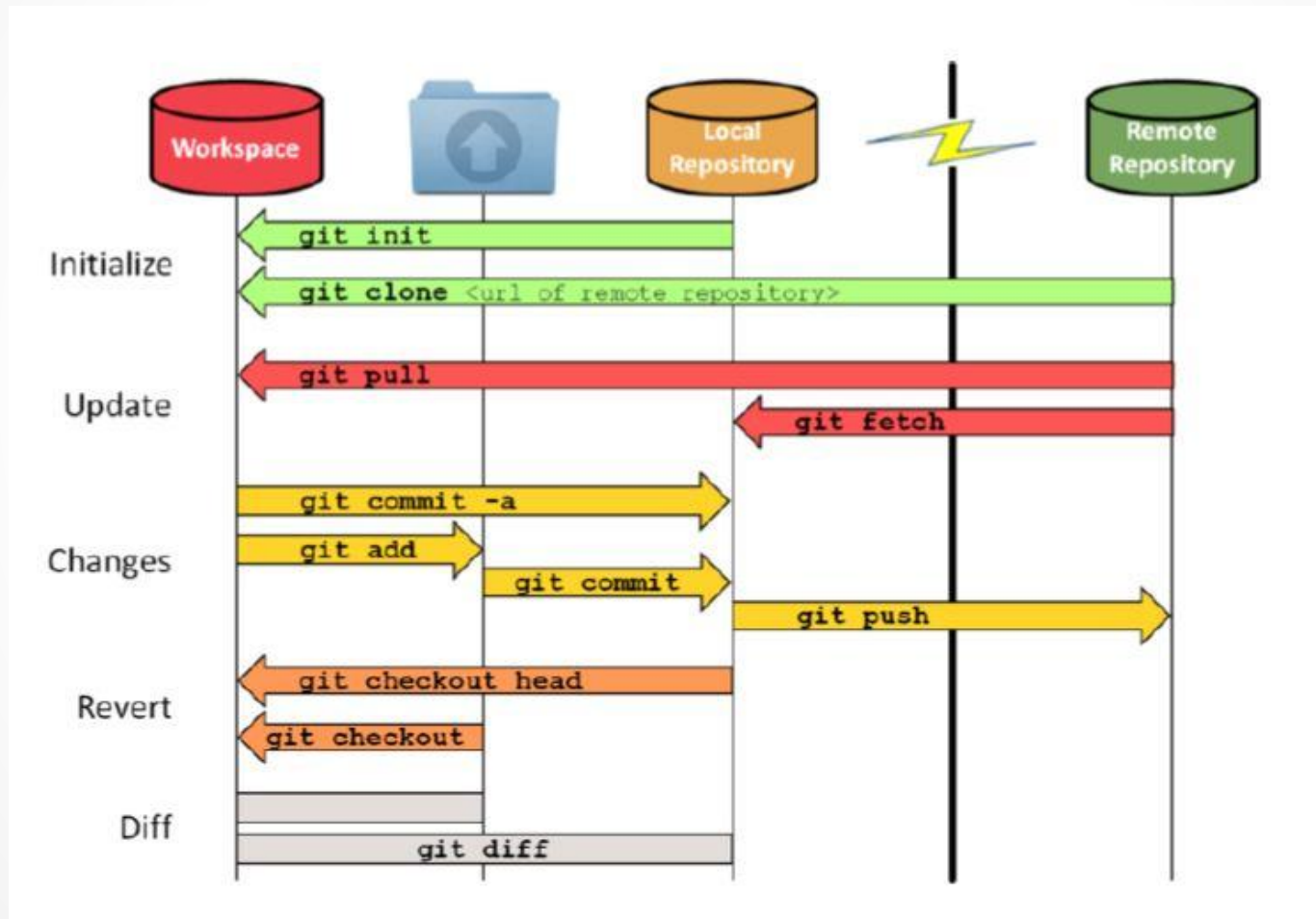
- Достоинства

- Гибкая работа с ветками
- Автономность (как каждого разработчика, так и от сервера вообще)
- Сборка артефактов отделена от разработки
- Локальные операции работают быстро
- Разделены операции фиксации изменений (commit) и публикации изменений(push)

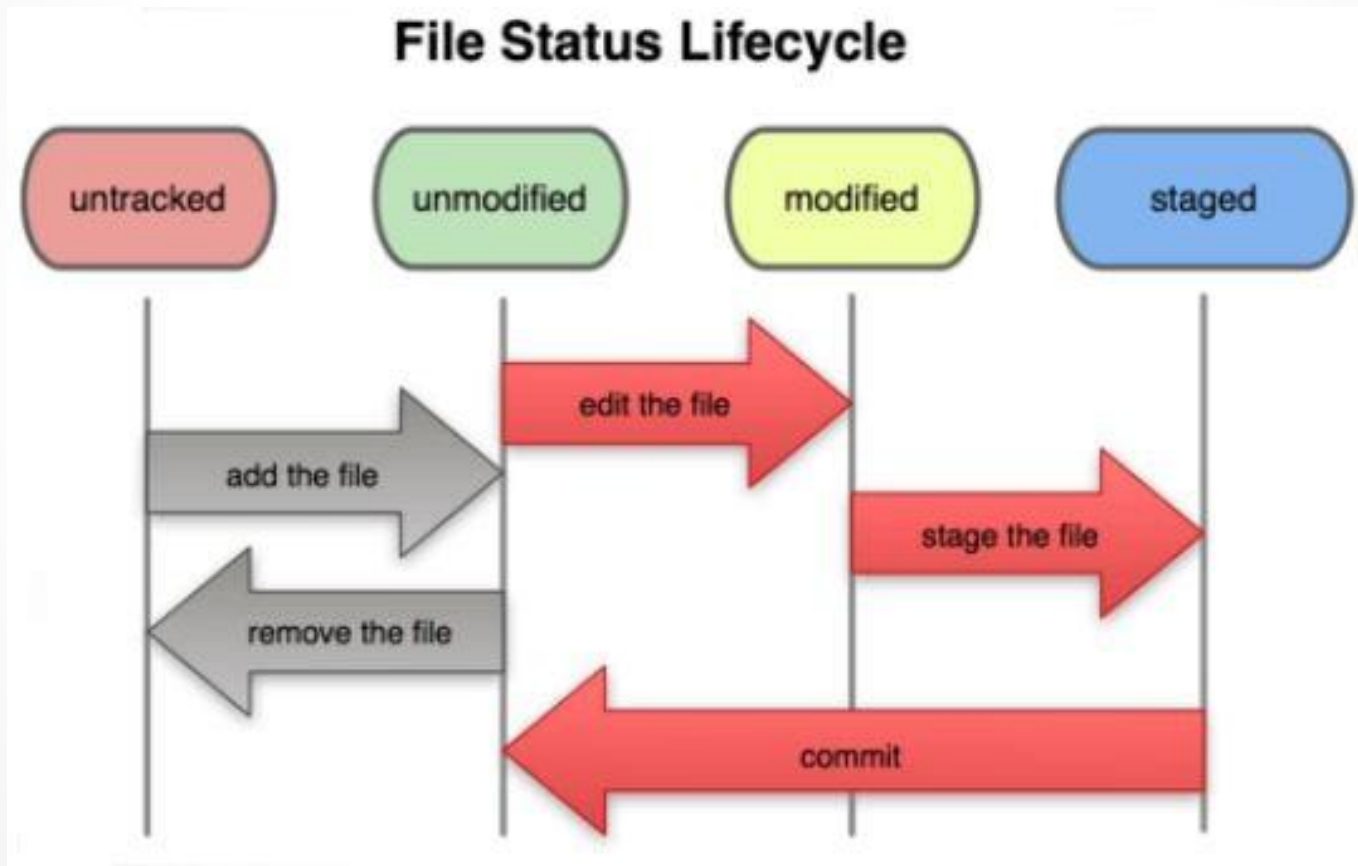
- Недостатки

- В каждой копии необходимо хранить всю историю изменений (иногда считается плюсом)
- Требуется более тщательное управление доступом (иногда считается плюсом)
- Сложны в использовании

Жизненный цикл Git



Состояния файлов



Работа с удаленным репозиторием

- Команда **clone** клонирует репозиторий и создаёт рабочую копию
- Команда **push** отправляет изменения в удаленный репозиторий
- Команда **pull** забирает изменения указанной ветки из удаленного репозитория и сливает их в текущую ветку
- Команда **fetch** забирает все изменения из удаленного репозитория

Работа с локальным репозиторием

- Команда **add** добавляет измененные файлы в stage
- Команда **rm** помечает файл в stage как удаленный
- Команда **reset** сбрасывает изменения в текущем stage
- Команда **commit** сохраняет текущий stage в локальный репозиторий

Работа с ветками

- Команда **branch** создаёт ветку
- Команда **checkout** переключает рабочую копию на другую ветку
- Команда **merge** сливает изменения веток
- Команда **stash** помещает изменения из stage во временное хранилище и сбрасывает рабочую копию

Полезные ссылки

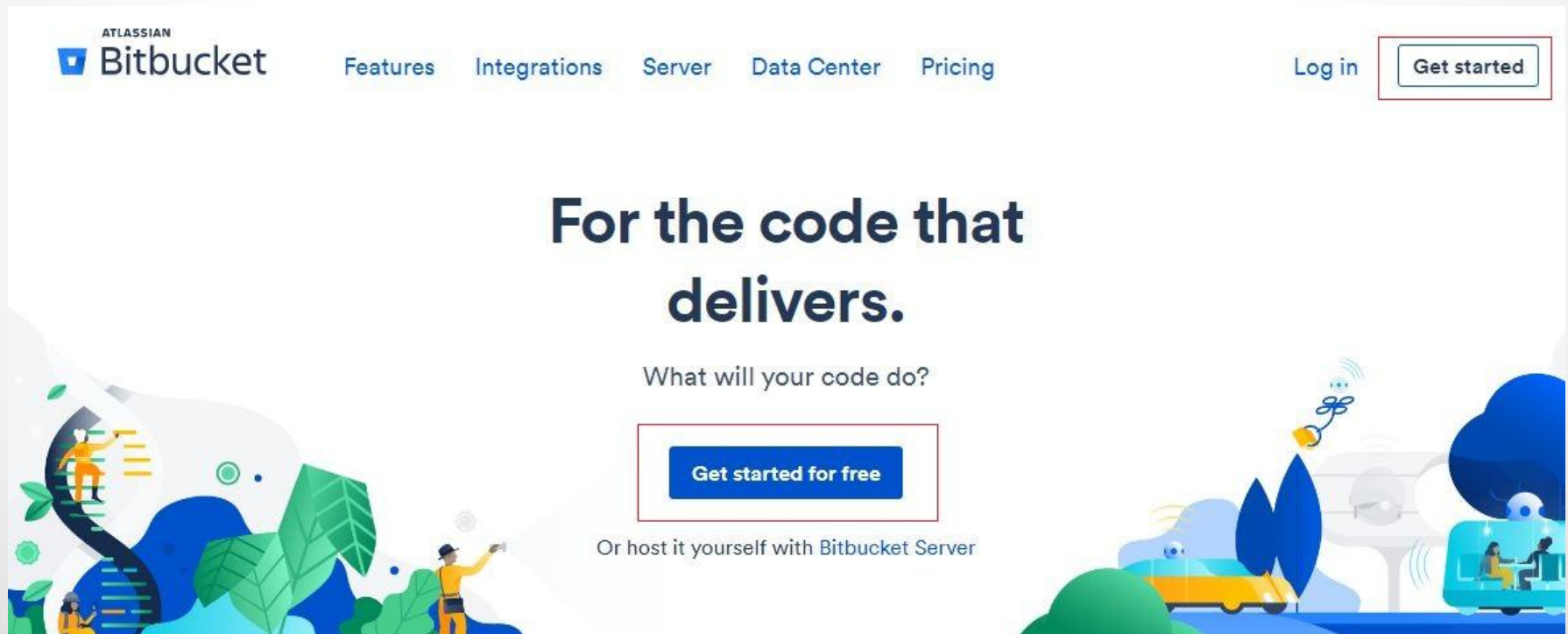
- <http://proselyte.net/tutorials/git/introduction/> - русскоязычная документация, начальные шаги
- <https://git-scm.com/book/en/v2> - основательная документация, почти на все случаи жизни

Bitbucket

- <https://bitbucket.org/>
- веб-сервис для хостинга проектов и их совместной разработки, основанный на системе контроля версий Mercurial и Git.

Регистрация

Заходим на <https://bitbucket.org/>



The image shows the Bitbucket website homepage. At the top left is the Atlassian Bitbucket logo. To its right are navigation links: Features, Integrations, Server, Data Center, and Pricing. On the top right, there is a 'Log in' link and a 'Get started' button. The main content area features the headline 'For the code that delivers.' followed by the question 'What will your code do?'. Below this is a blue 'Get started for free' button, which is highlighted with a red border. Underneath the button is the text 'Or host it yourself with Bitbucket Server'. The background of the page is decorated with colorful illustrations of people working, trees, and a car.

ATLASSIAN
Bitbucket

Features Integrations Server Data Center Pricing

Log in **Get started**

For the code that delivers.

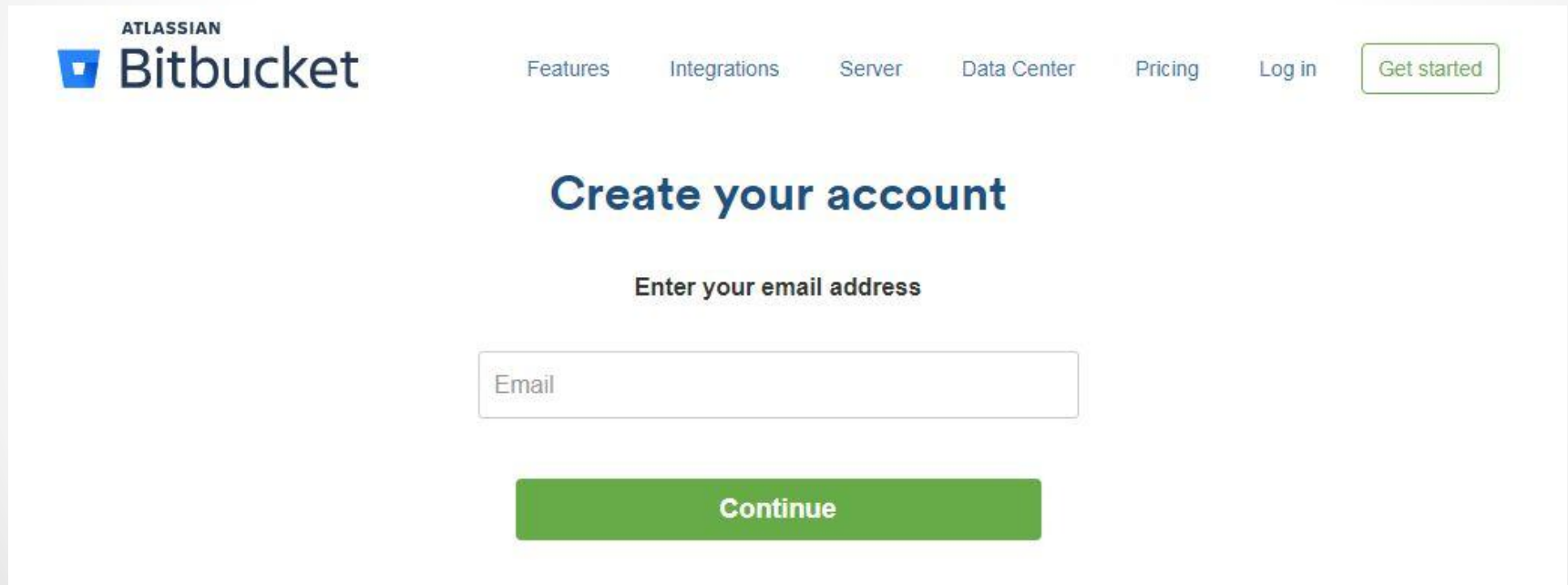
What will your code do?

Get started for free

Or host it yourself with Bitbucket Server

Регистрация

Вводим email, подтверждаем его



The image shows a screenshot of the Bitbucket registration page. At the top left is the Atlassian Bitbucket logo. To the right of the logo are navigation links: Features, Integrations, Server, Data Center, Pricing, and Log in. A 'Get started' button is located in the top right corner. The main heading is 'Create your account'. Below it is the instruction 'Enter your email address'. There is a text input field with the placeholder text 'Email'. Below the input field is a green 'Continue' button.

ATLASSIAN
Bitbucket

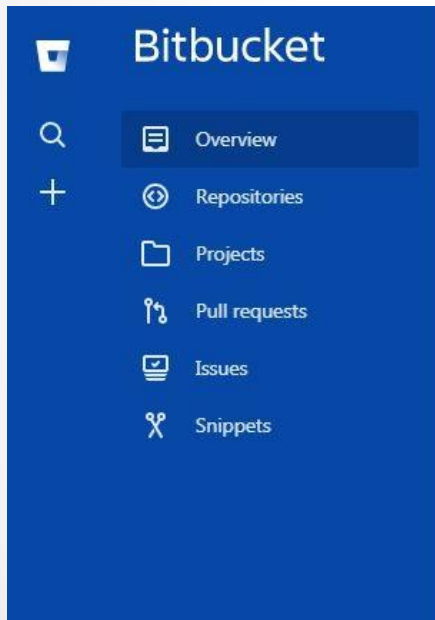
Features Integrations Server Data Center Pricing Log in [Get started](#)

Create your account

Enter your email address

[Continue](#)

Создание репозитория



Dashboard



Everything's awesome!

All your pull requests and reviews are done and dusted.

[View all pull requests](#)



Your repository list is empty

Repositories that you own or watch will show up here.

[Create a repository](#)

Создание репозитория

Create a new repository [Import repository](#)

Repository name ^{*}

Access level This is a private repository

Repository type Git Mercurial

▼ Advanced settings

Description

Forking ▼

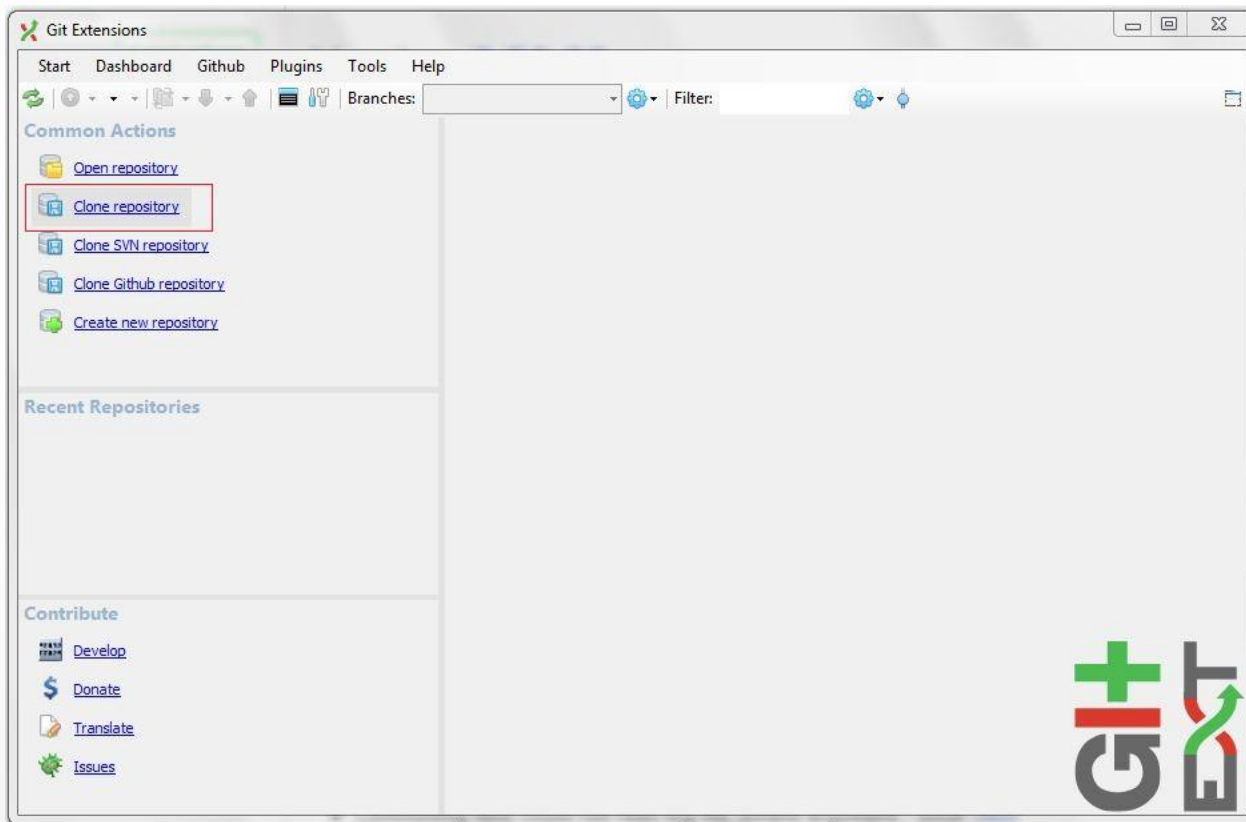
Project management Issue tracking Wiki

Language × ▼

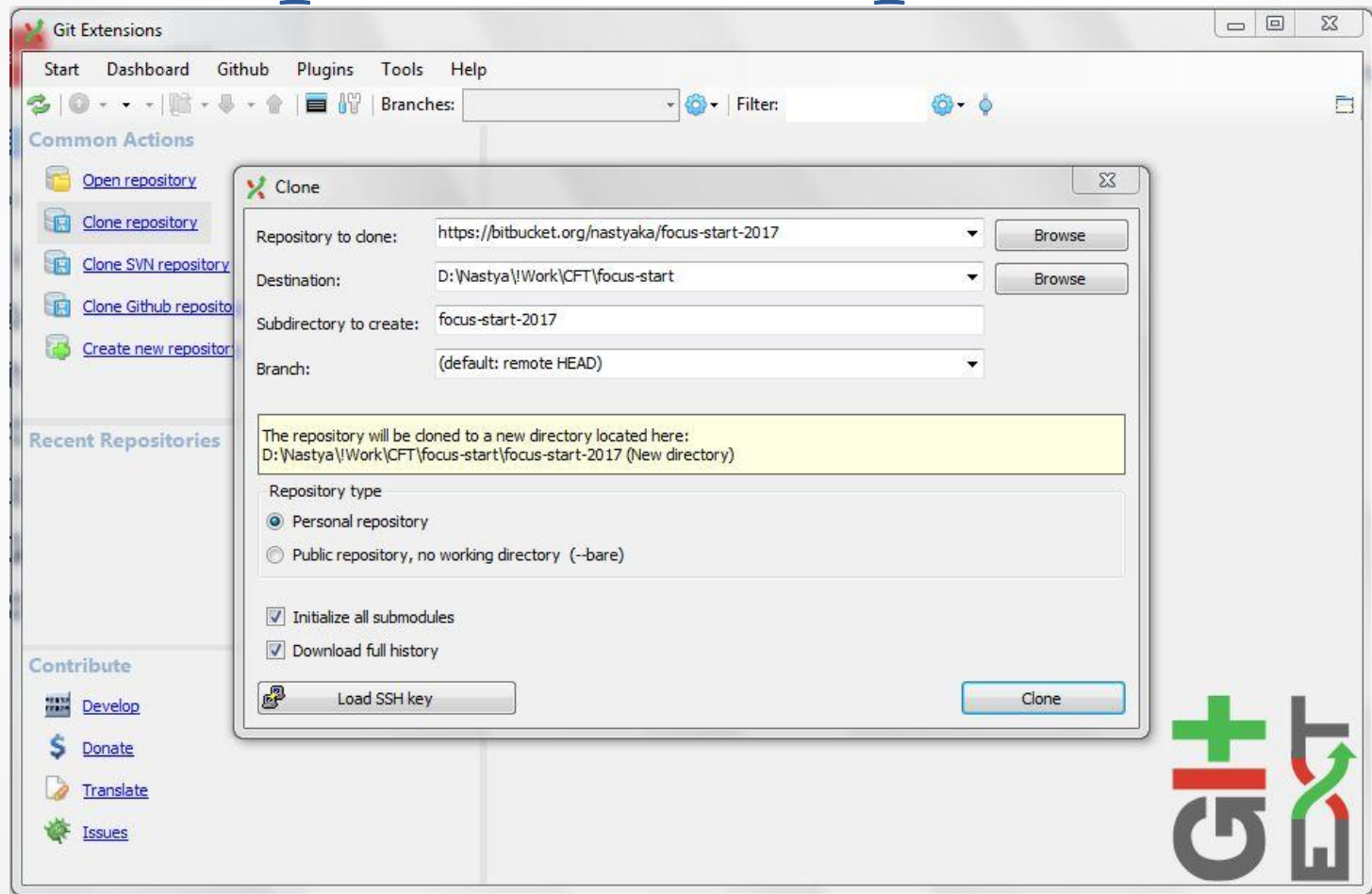
Integrations Enable Hipchat notifications

Клонирование репозитория

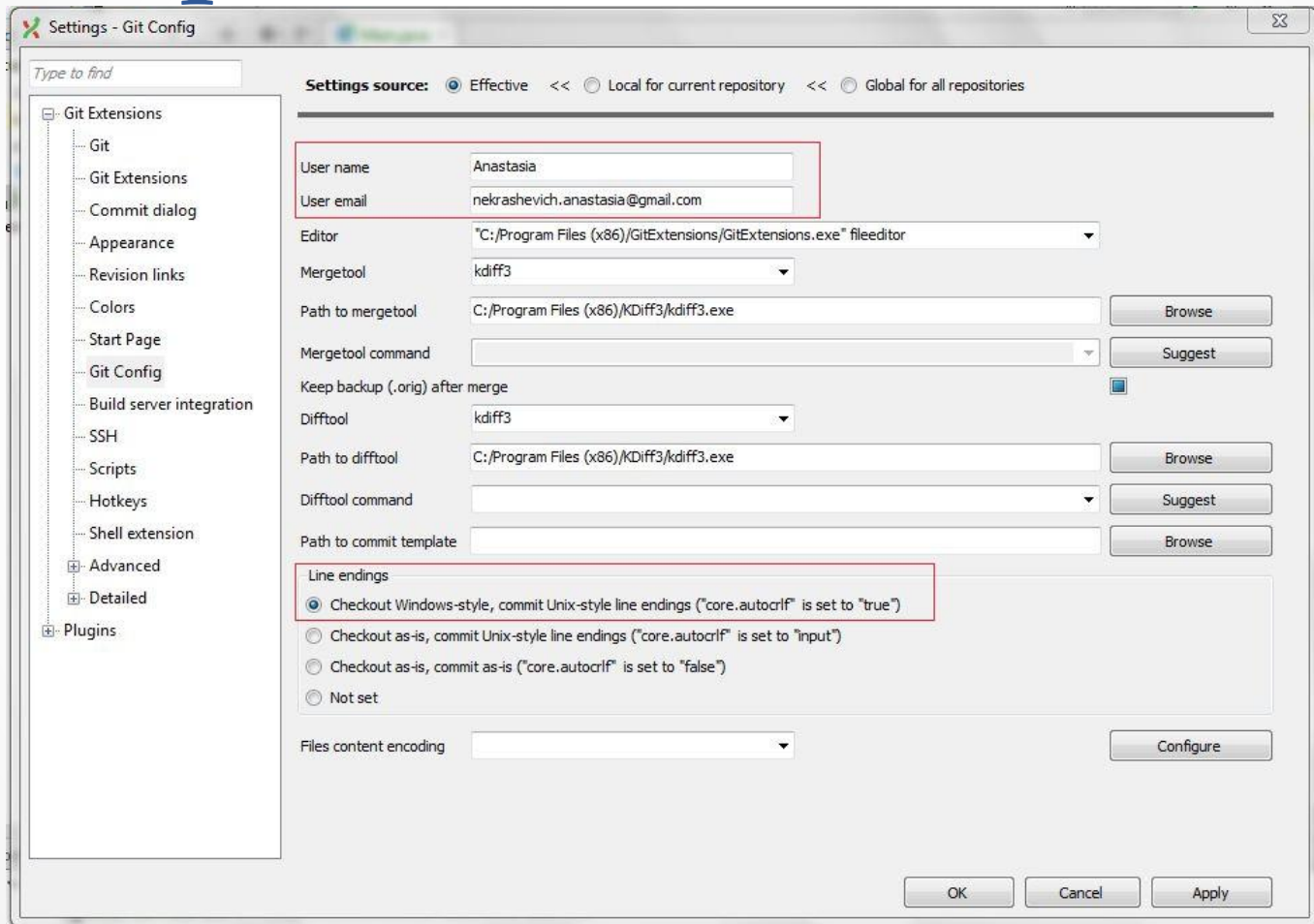
Открываем Git Extensions



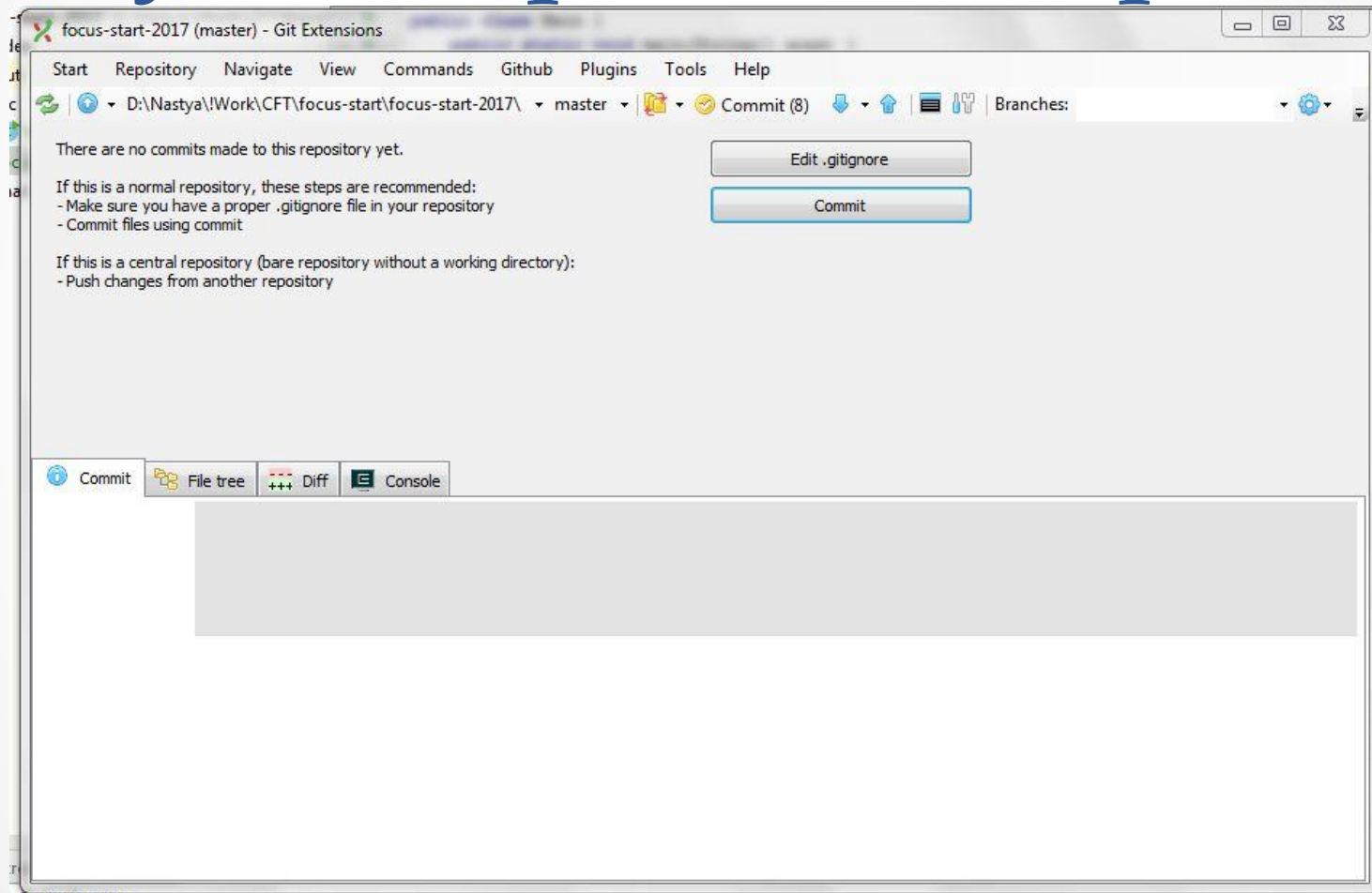
Клонирование репозитория



Настройки GitExtensions



Пустой репозиторий



Создаём Hello world
проект в Idea

...

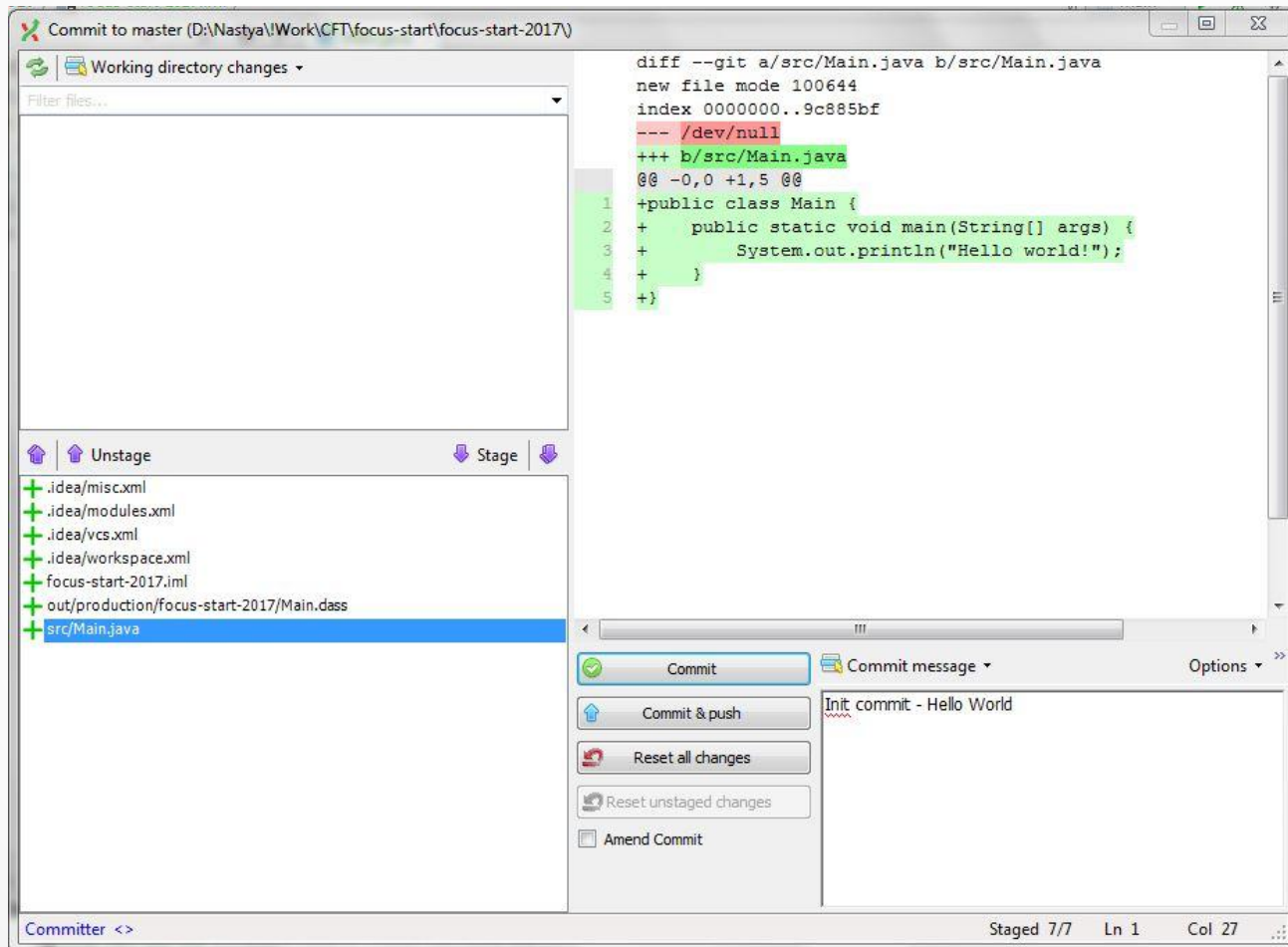
Stage изменений

The screenshot shows the 'Commit to master' dialog in IntelliJ IDEA. The window title is 'Commit to master (D:\Nastya\Work\CFT\focus-start\focus-start-2017)'. The 'Working directory changes' section on the left lists files to be committed: `.idea/workspace.xml`, `out/production/focus-start-2017/Main.dass`, and `src/Main.java`. Below this, the 'Unstage' section lists files that are not staged: `.idea/misc.xml`, `.idea/modules.xml`, `.idea/vcs.xml`, `focus-start-2017.iml`, and `src/Main.java`. A 'Stage' button is highlighted with a red box. The main area displays an XML diff for `src/Main.java`, showing changes to the `ChangeListenerManager` component. The diff includes a list of new changes and options like `EXCLUDED_CONVERTED_TO_IGNORED`, `TRACKING_ENABLED`, `SHOW_DIALOG`, `HIGHLIGHT_CONFLICTS`, `HIGHLIGHT_NON_ACTIVE_CHANGE_LIST`, and `LAST_RESOLUTION`. The `FileEditorManager` component is also shown with a new entry for `Main.java`. At the bottom, there are buttons for 'Commit', 'Commit & push', 'Reset all changes', 'Reset unstaged changes', and 'Amend Commit'. A 'Commit message' field is present with the placeholder text 'Enter commit message'. The status bar at the bottom indicates 'Committer <>' and 'Staged 5/8 Ln 0 Col 0'.

```
<?xml version="1.0" encoding="UTF-8"?>
<project version="4">
  <component name="ChangeListenerManager">
    <list default="true" id="a463172a-3943-4eca-94e9-f99d:
      <change type="NEW" beforePath="" afterPath="$PROJEC:
      <change type="NEW" beforePath="" afterPath="$PROJEC:
      <change type="NEW" beforePath="" afterPath="$PROJEC:
      <change type="NEW" beforePath="" afterPath="$PROJEC:
    </list>
    <ignored path="$PROJECT_DIR$/out/" />
    <option name="EXCLUDED_CONVERTED_TO_IGNORED" value="t:
    <option name="TRACKING_ENABLED" value="true" />
    <option name="SHOW_DIALOG" value="false" />
    <option name="HIGHLIGHT_CONFLICTS" value="true" />
    <option name="HIGHLIGHT_NON_ACTIVE_CHANGE_LIST" value="
    <option name="LAST_RESOLUTION" value="IGNORE" />
  </component>
  <component name="FileEditorManager">
    <leaf>
      <file leaf-file-name="Main.java" pinned="false" cur:
        <entry file="file://$PROJECT_DIR$/src/Main.java">
          <provider selected="true" editor-type-id="text-
          <state relative-caret-position="34">
```

Commit & Push

ИЗМЕНЕНИЙ



История изменений

The screenshot displays the Git GUI interface for a repository named 'focus-start-2017 (master)'. The main window shows a commit history with one entry: 'Init commit - Hello World' by Anastasia, committed 1 minute ago. The commit message is visible in the commit details pane at the bottom. The interface includes a menu bar (Start, Repository, Navigate, View, Commands, Github, Plugins, Tools, Help), a toolbar with icons for refresh, repository path, branch selection, commit, and other actions, and a bottom pane with tabs for Commit, File tree, Diff, and Console.

focus-start-2017 (master) - Git Extensions

Start Repository Navigate View Commands Github Plugins Tools Help

D:\Nastya\!Work\CFT\focus-start\focus-start-2017\ master Commit

Branches:

master origin/master Init commit - Hello World Anastasia 1 minute ago

Commit File tree Diff Console

Author: [Anastasia <nekrashevich.anastasia@gmail.com>](mailto:nekrashevich.anastasia@gmail.com)
Date: 1 minute ago (28.09.2017 22:55:37)
Commit hash: f9510d121613a0c92128539b52c5c6ebc1b8a13b

Init commit - Hello World

Contained in branches: [master](#)
Contained in no tag

Создание ветки

The screenshot shows the GitHub interface for the repository 'focus-start-2017'. The left sidebar contains navigation links: Overview, Source, Commits, Branches (highlighted with a red box), Pull requests, and Pipelines. The main content area is titled 'Nekrashevich Anastasia / focus-start-2017' and 'Branches'. It features a 'Create branch' button (highlighted with a red box), a search bar 'Find branches', and filter buttons for 'Active' and 'Merged'. A table lists the 'master' branch as the 'MAIN BRANCH', updated '4 days ago'. Below the table, it states 'No matching branches'.

java focus-start-2017

Overview

Source

Commits

Branches

Pull requests

Pipelines

Nekrashevich Anastasia / focus-start-2017

Branches

FILTERS: Active Merged

Find branches

Branch	Behind	Ahead	Updated	Pull request	Builds
master			4 days ago		

No matching branches


Create branch

Создание ветки

Create branch

Branch from

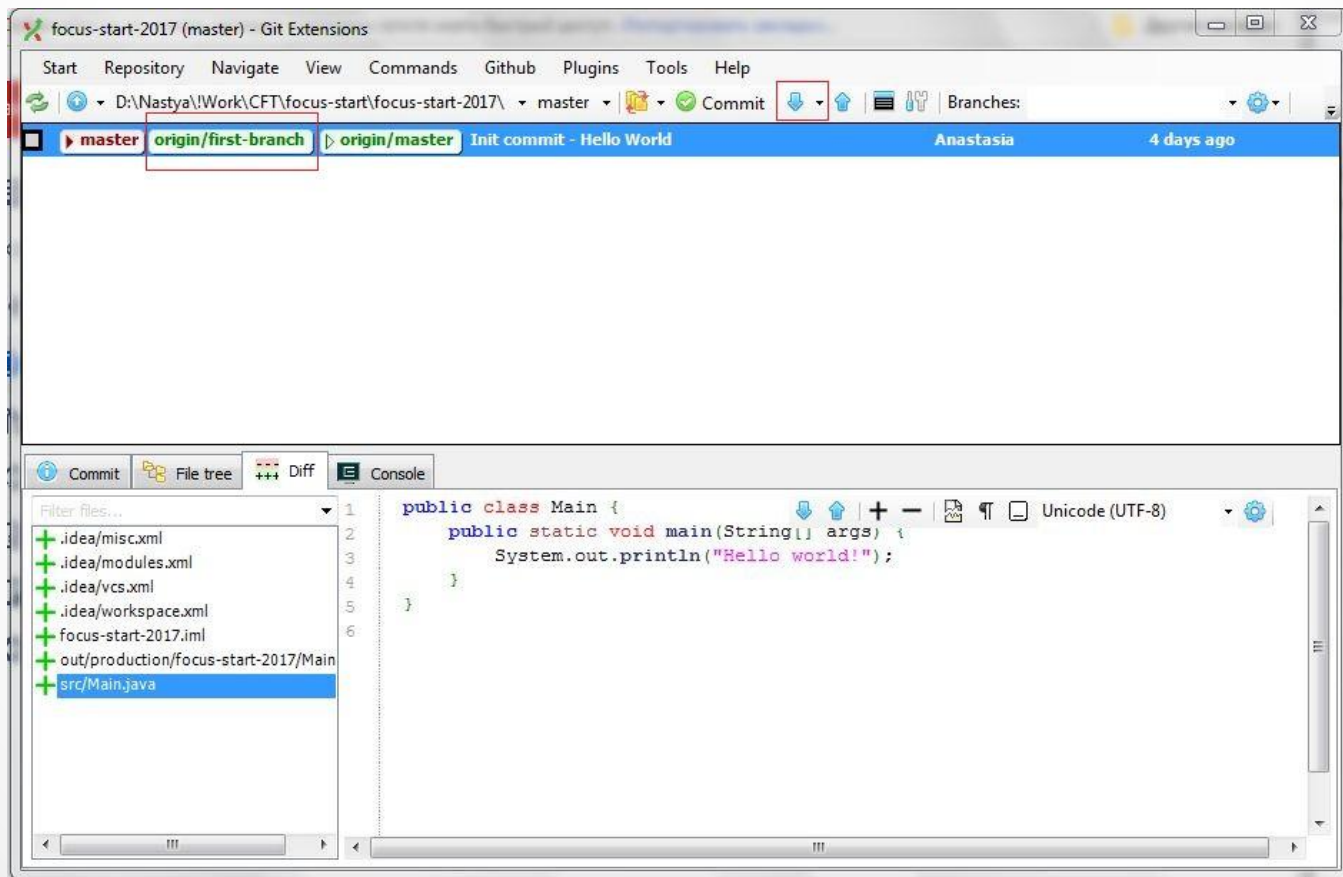
Branch name*



The diagram illustrates the branch structure. It shows a horizontal line representing the 'master' branch, with a grey dot at the start and a grey dot at the end. A blue curved line branches off from the end of the 'master' branch, ending in a blue circle, representing the 'first-branch' branch. To the right of the diagram are two buttons: 'v master' and 'v first-branch', each with a small 'v' icon.

Переключение на ветку

Обновляем проект (pull или fetch)
Переключаемся на ветку - checkout



Делаем изменения в Hello world проекте в Idea

...

Commit изменений

The screenshot displays the IntelliJ IDEA interface with the Git Extensions plugin. The top toolbar shows the 'Commit' button, which is highlighted. Below the toolbar, the 'first-branch' window shows the commit history. The current commit is 'first-branch' by Anastasia, committed 4 seconds ago. The previous commit is 'master' by Anastasia, committed 4 days ago. The diff view shows the changes between the parent and the selection. The diff is for the file `src/Main.java` and shows a modification. The diff output is as follows:

```
diff --git a/.idea/workspace.xml b/.idea/workspace.xml
index b3003d7..d5cbb98 100644
--- a/.idea/workspace.xml
+++ b/.idea/workspace.xml
@@ -2,11 +2,7 @@
 <project version="4">
   <component name="ChangeListManager">
     <list default="true" id="a463172a-3943-4eca-94e9-f99d37b817f1" name="...
-    <change type="NEW" beforePath="" afterPath="$PROJECT_DIR$/.idea/mis
-    <change type="NEW" beforePath="" afterPath="$PROJECT_DIR$/.idea/mod
-    <change type="NEW" beforePath="" afterPath="$PROJECT_DIR$/.idea/vcs
-    <change type="NEW" beforePath="" afterPath="$PROJECT_DIR$/focus-sta
-    <change type="NEW" beforePath="" afterPath="$PROJECT_DIR$/src/Main.
+    <change type="MODIFICATION" beforePath="$PROJECT_DIR$/src/Main.java
```

Push изменений

The screenshot shows the IntelliJ IDEA Git Extensions interface. The top bar indicates the current repository is 'focus-start-2017 (first-branch)'. The main area displays a list of commits. The most recent commit is on the 'first-branch' (origin/first-branch), committed by Anastasia 1 minute ago. Below it is the 'master' branch (origin/master) with an initial commit 'Hello World' by Anastasia 4 days ago.

The bottom panel shows a diff view for 'src/Main.java'. The diff compares the parent commit (a/src/Main.java) with the current selection (b/src/Main.java). The changes are as follows:

```
diff --git a/src/Main.java b/src/Main.java
index 9c885bf..6cdd004 100644
--- a/src/Main.java
+++ b/src/Main.java
@@ -1,5 +1,6 @@
1 1 public class Main {
2 2     public static void main(String[] args) {
3 3         System.out.println("Hello world!");
4 4 +     System.out.println("Double Hello world!");
4 5     }
5 6 }
```

Ветки в Bitbucket

The screenshot shows the Bitbucket interface for a repository named 'focus-start-2017'. The left sidebar contains navigation links: Overview, Source, Commits, Branches (highlighted), Pull requests, Pipelines, and Downloads. The main content area shows the 'Branches' section for user 'Nekrashevich Anastasia'. It includes a 'Create branch' button, filter buttons for 'Active' and 'Merged', and a search box 'Find branches'. A table lists the branches:

Branch	Behind	Ahead	Updated	Pull request	Builds
master MAIN BRANCH			4 days ago		
first-branch		1	2 minutes ago		

The 'first-branch' row is highlighted with a red box around the 'Ahead' column value '1', indicating it is one commit ahead of the 'master' branch.

Pull request ветки

The screenshot shows the GitHub interface for a repository named 'focus-start-2017'. On the left is a sidebar with navigation links: Overview, Source, Commits, Branches, Pull requests (highlighted with a red box), and Pipelines. The main content area shows the repository name 'Nekrashevich Anastasia / focus-start-2017' and a 'Create pull request' button (also highlighted with a red box). Below this is the 'Pull requests' section with filter options: 'Open', 'Author', 'Target branch', and 'I'm reviewing'. A search icon is present to the right of the filters. The main message states 'No open pull requests' and includes a sub-message: 'When a branch is ready to review, create a pull request.'

java focus-start-2017

Overview

Source

Commits

Branches

Pull requests

Pipelines

Nekrashevich Anastasia / focus-start-2017

Create pull request

Pull requests

FILTER BY: Open Author Target branch I'm reviewing

No open pull requests

When a branch is ready to review, create a pull request.

Pull request ветки

Nekrashevich Anastasia / focus-start-2017

Pull requests

Create a pull request

Java nastyaka / focus-start-2017
Created 4 days ago, updated 2 minutes ago

first-branch

Java nastyaka/focus-start-2017

master

Title* commit into branch

Description

Start typing to search for a user

Close branch Close **first-branch** after the pull request is merged

Create pull request

Diff Commits

Author	Commit	Message	Date	Builds
Nekrashevich A...	3f4d842	commit into branch	4 minutes ago	

Настройка доступа

java focus-start-2017

Nekrashevich Anastasia / focus-start-2017

Settings

GENERAL

- Repository details
- User and group access**
- Access keys
- Username aliases

WORKFLOW

- Branch permissions
- Default reviewers
- Webhooks
- Links


FEATURES

- Git LFS
- Wiki
- Issue tracker

User and group access

Here's where you grant users and groups access to this repository. For a list of all users with access to any of your private repositories, see which users count towards your bill on the Users on plan page. [Learn more](#)

Users

Username or email address	Read		Add
 Nekrashevich Anastasia	owner		

Groups

Select a group	Read		Add
----------------	------	--	-----

Настройка доступа

Необходимо добавить права на чтение следующим пользователям:

- Sergey Krupin (cft_krupin)
- Kristina Kolesnikova (k_kolesnikova)
- Nekrashevich Anastasia (nekrashevich)



The screenshot shows a 'Users' management interface. At the top, there is a search bar labeled 'Username or email address'. To the right of the search bar, there is a 'Read' button, a dropdown arrow, and an 'Add' button. Below the search bar, there is a list of users with their names and roles. The first user is 'Nekrashevich Anastasia' with the role 'owner'. The second user is 'Kristina Kolesnikova' with roles 'READ', 'WRITE', and 'ADMIN'. The third user is 'Sergey Krupin' with roles 'READ', 'WRITE', and 'ADMIN'. Each user entry has a small 'x' icon to its right, indicating a delete or remove action.

Username or email address	Role	Actions
Nekrashevich Anastasia	owner	
Kristina Kolesnikova	READ, WRITE, ADMIN	×
Sergey Krupin	READ, WRITE, ADMIN	×

Договоренности по работе с ветками

- каждая задача делается в новой ветке,
- когда задача готова, создается пул-реквест в мастер
- после проверки, сдачи и апрува задачи ветка сливается в мастер
- каждая задача – отдельный модуль идеи