



Distance Learning System

Alati za kolaboraciju

Python and programming fundamentals

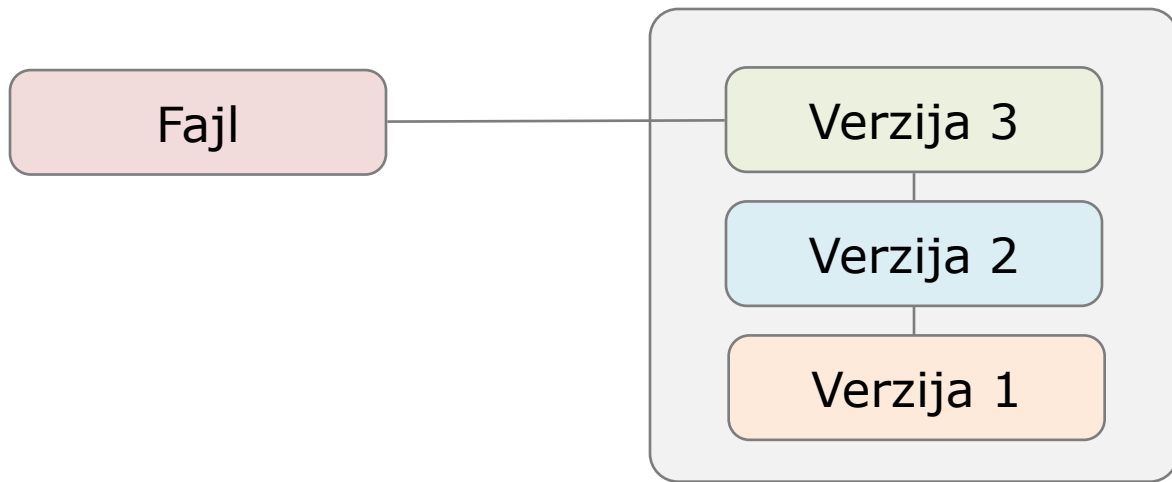
Verzioniranje (version control)

<https://git-scm.com/book/sr/v2>

- Verzioniranje omogućava čuvanje prethodnih verzija jednog ili grupe fajlova
- Verzioniranje obezbeđuje veću pouzdanost u radu jer je moguće lako povratiti prethodne verzije oštećenih ili obrisanih fajlova
- Verzioniranje se može obavljati **lokalno**, **centralizovano** ili **distribuirano**

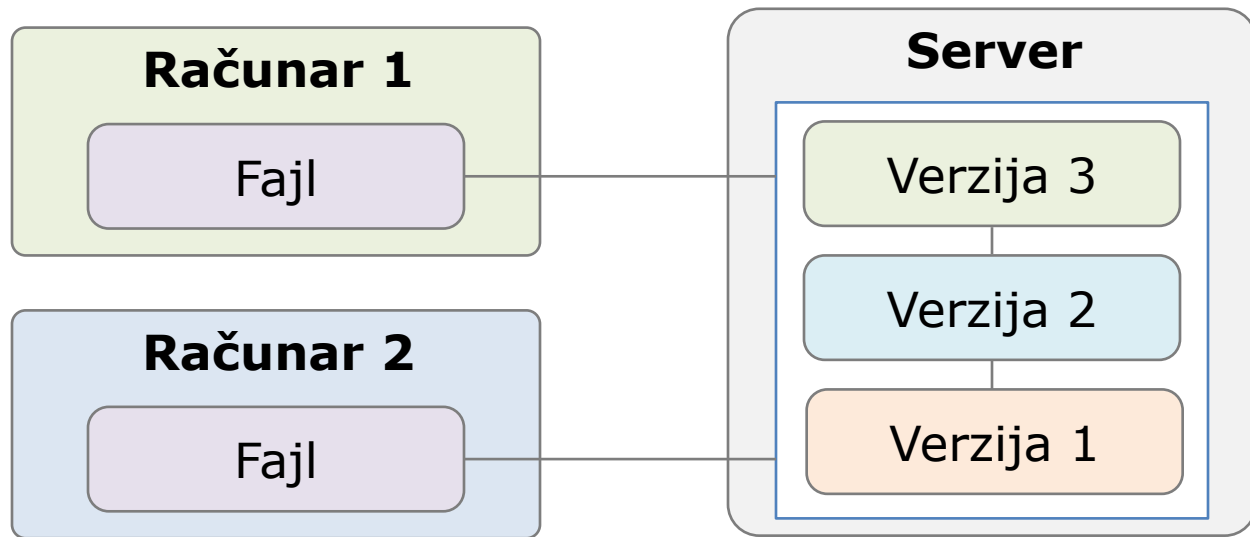
Lokalno verzioniranje

- Verzije fajlova se čuvaju lokalno
- Prilikom gubitka ili oštećenja fajla, prethodna verzija se preuzima iz lokalnog repozitorijuma



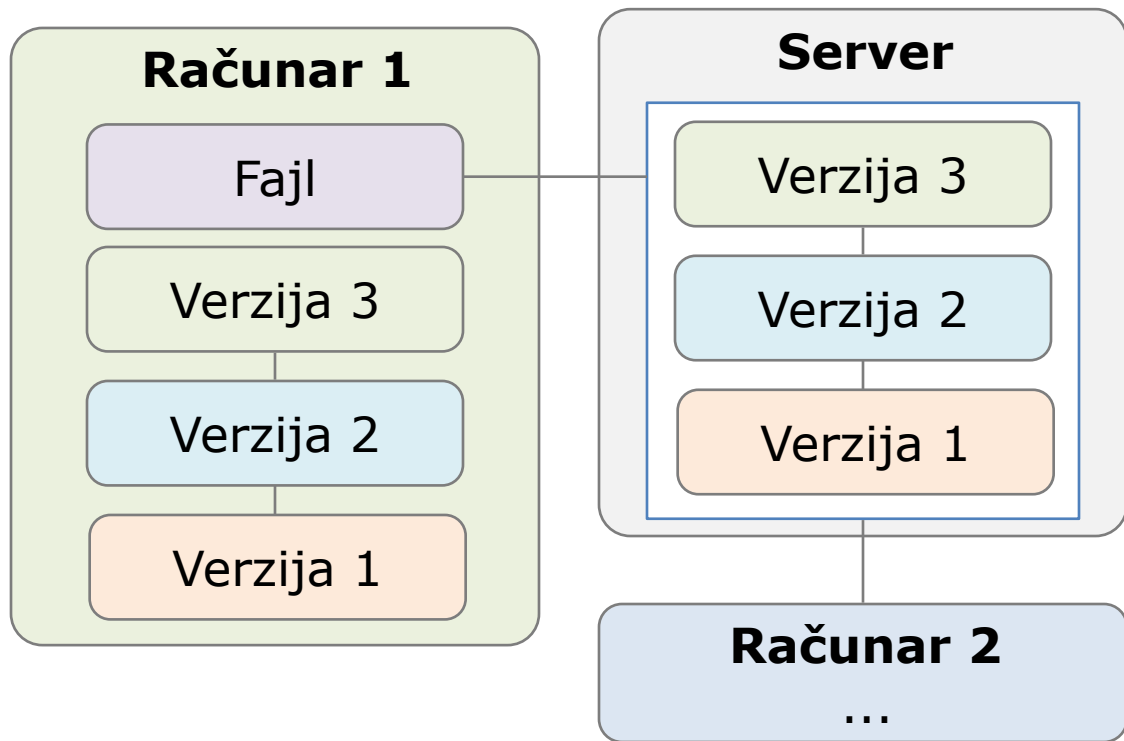
Centralizovano verzioniranje

- Verzije se čuvaju na udaljenom računaru
- Olakšava se kolaboracija
- Ne postoje lokalne verzije



Distribuirano verzioniranje

- Verzije se čuvaju na udaljenom računaru i na lokalnim računarima
- Olakšava se kolaboracija
- Postoje lokalne verzije



Alati za verzioniranje

- Da se ne bi radilo ručno, u svrhu verzioniranja se koriste različiti alati
- Među najpoznatijim alatima za verzioniranje su **git** i **svn**, iako postoje i mnogi drugi (cvs, mercurial, visual studio team services)



Git

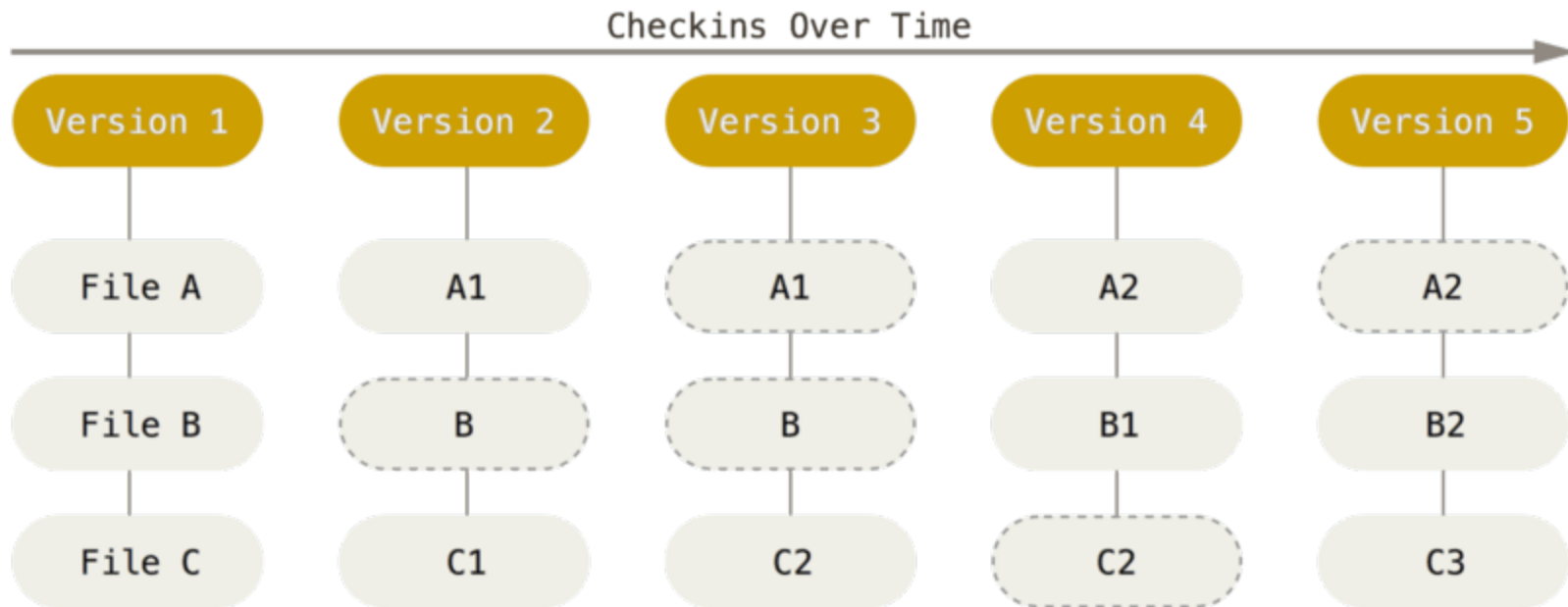


git

- Jedan od najpopularnijih alata za verzioniranje danas
- Inicijalno kreiran za Linux okruženje, ali se koristi i na Windows-u
- Brz
- Jednostavan za korišćenje
- Dobro dokumentovan

Čuvanje verzija

- U bazi se čuvaju snapshotovi projekta, pri čemu se nepromenjeni fajlovi referenciraju



Integritet podataka

- Za sve fajlove praćene git-om, kreira se **checksum**
- Na osnovu checksum-a prate se fajlovi kontrolisani git sistemom
- Za izračunavanje checksum-a, git koristi algoritam SHA-1
- Na primer, poruka: hello world , provučena kroz SHA-1 funkciju glasi uvek:
2aae6c35c94fcfb415dbe95f408b9ce91ee846ed

Instalacija git-a

<https://git-scm.com/book/en/v2/Getting-Started-Installing-Git>

- Git za windows je moguće preuzeti sa adrese **<https://git-scm.com>**



The screenshot shows the Git website homepage. At the top left is the Git logo and the tagline "--distributed-is-the-new-centralized". To the right is a search bar. The main content area describes Git as a "free and open source distributed version control system" and lists its features: "easy to learn", "tiny footprint with lightning fast performance", and features like "cheap local branching", "convenient staging areas", and "multiple workflows". To the right of the text is a diagram showing a branching model with stacks of code blocks connected by colored lines. Below the main text are four icons with corresponding links: "About" (gear icon), "Documentation" (book icon), "Downloads" (download arrow icon), and "Community" (speech bubble icon). On the right side, there is a monitor displaying the "Latest source Release 2.30.0" and a button labeled "Download 2.30.0 for Windows".

git --distributed-is-the-new-centralized

Search entire site...

Git is a **free and open source** distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Git is **easy to learn** and has a **tiny footprint with lightning fast performance**. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like **cheap local branching**, convenient staging areas, and multiple workflows.

About
The advantages of Git compared to other source control systems.

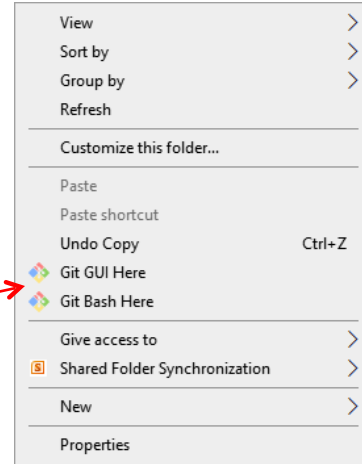
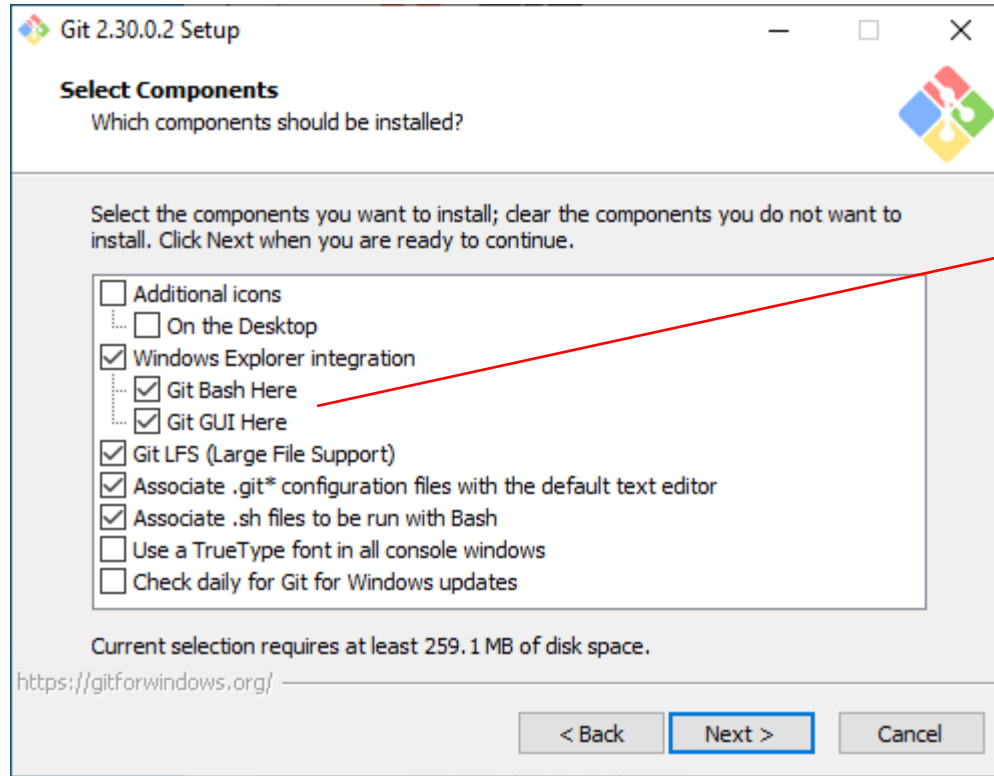
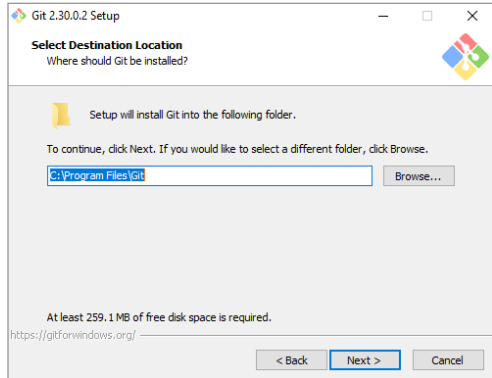
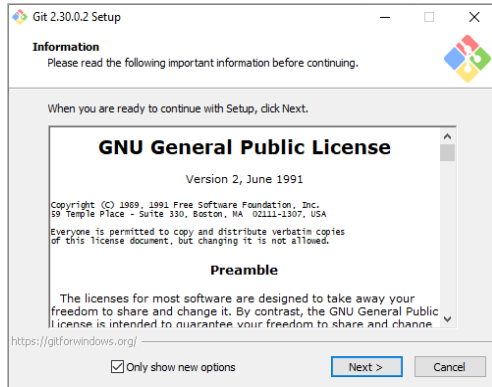
Documentation
Command reference pages, Pro Git book content, videos and other material.

Downloads
GUI clients and binary releases for all major platforms.

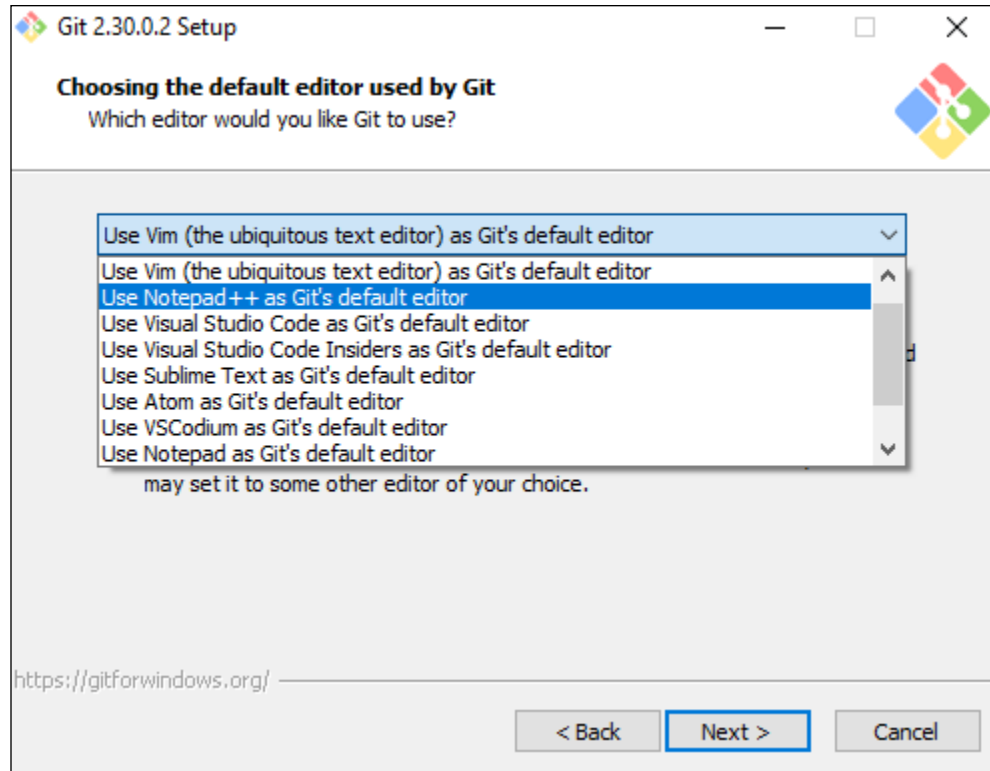
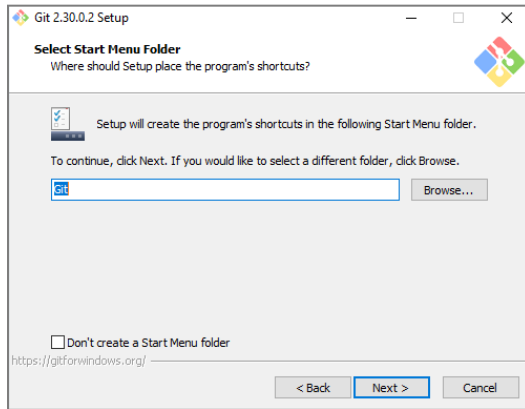
Community
Get involved! Bug reporting, mailing list, chat, development and more.

Latest source Release
2.30.0
Release Notes (2020-12-27)
Download 2.30.0 for Windows

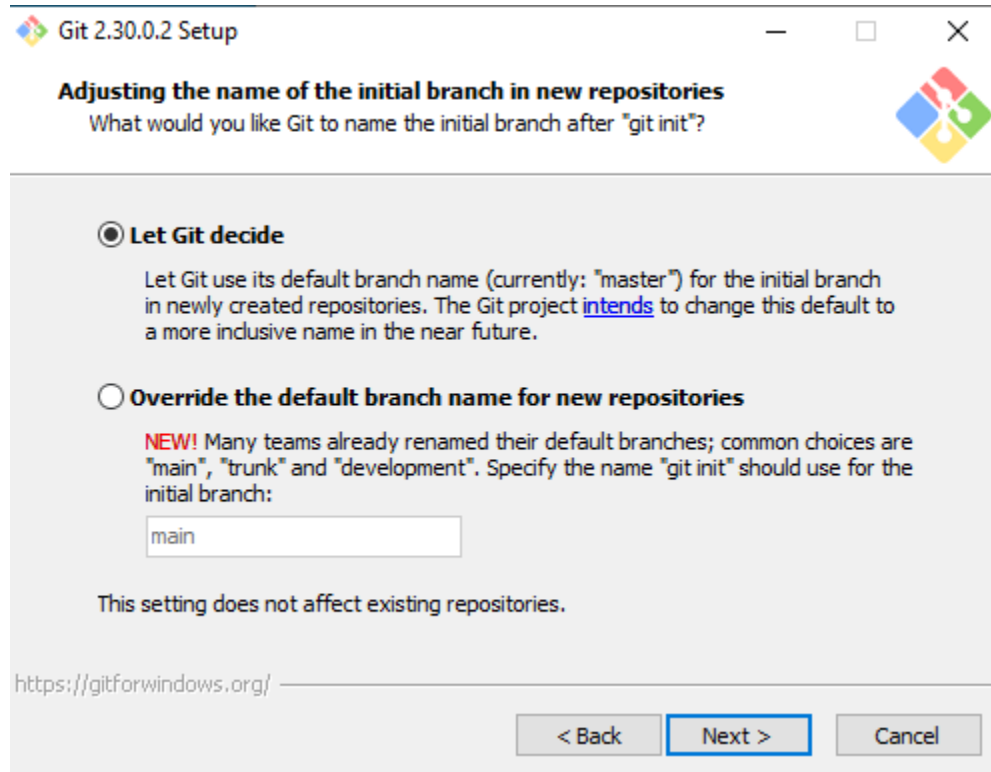
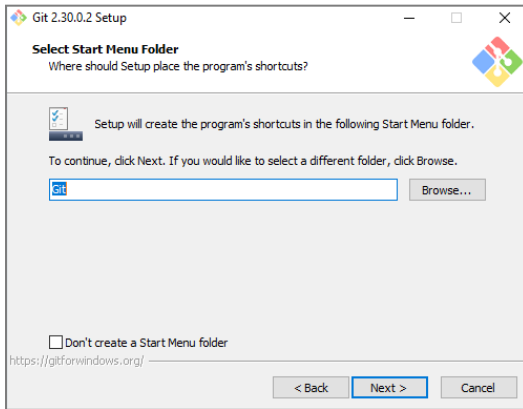
Instalacija git-a



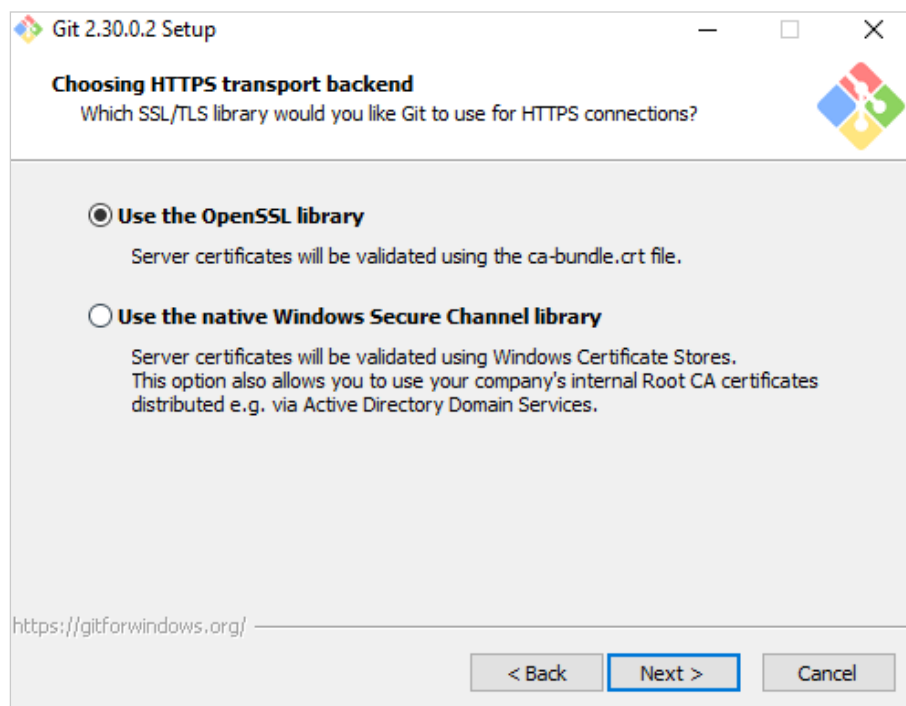
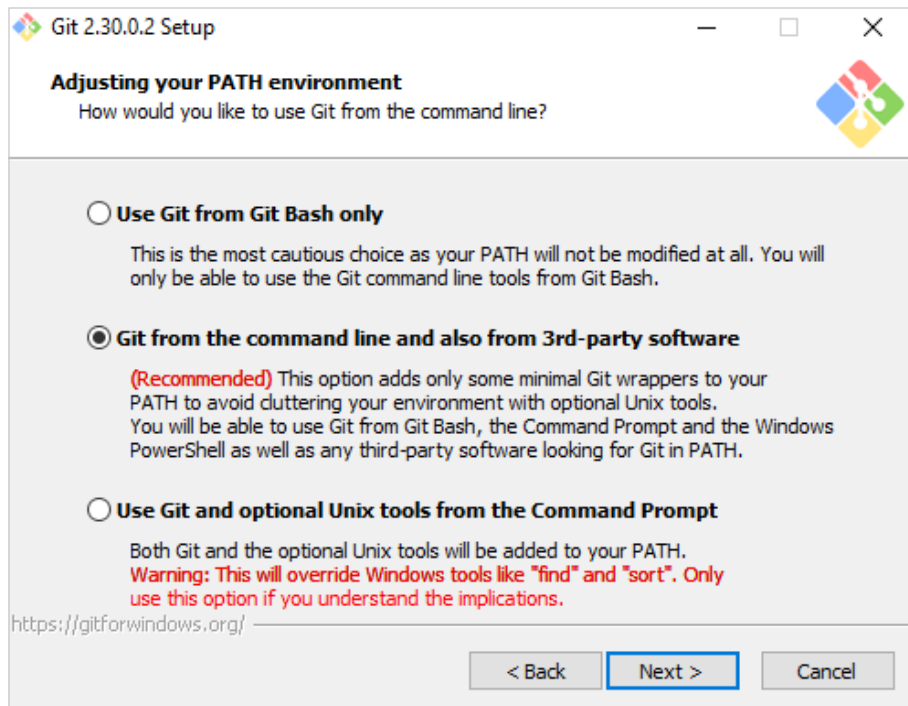
Instalacija git-a



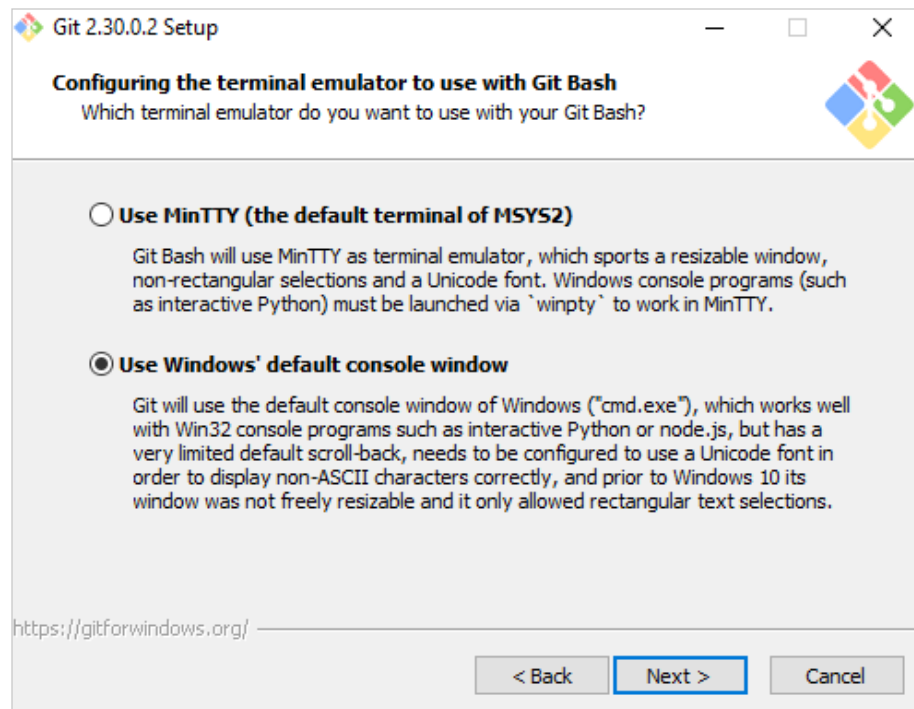
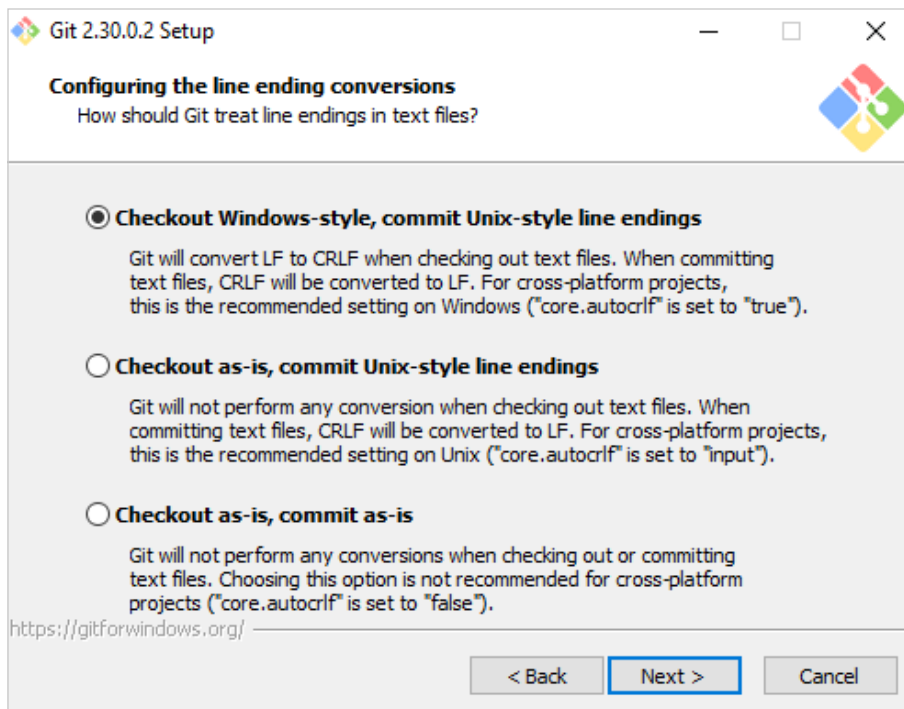
Instalacija git-a



Instalacija git-a



Instalacija git-a



Instalacija git-a

Git 2.30.0.2 Setup

Choose the default behavior of `git pull`
What should `git pull` do by default?

☒ **Default (fast-forward or merge)**
This is the standard behavior of `git pull`: fast-forward the current branch to the fetched branch when possible, otherwise create a merge commit.

☐ **Rebase**
Rebase the current branch onto the fetched branch. If there are no local commits to rebase, this is equivalent to a fast-forward.

☐ **Only ever fast-forward**
Fast-forward to the fetched branch. Fail if that is not possible.

<https://gitforwindows.org/>

< Back **Next >** Cancel

Git 2.30.0.2 Setup

Choose a credential helper
Which credential helper should be configured?

☒ **Git Credential Manager Core**
(NEW!) Use the new, [cross-platform version of the Git Credential Manager](#). See more information about the future of Git Credential Manager [here](#).

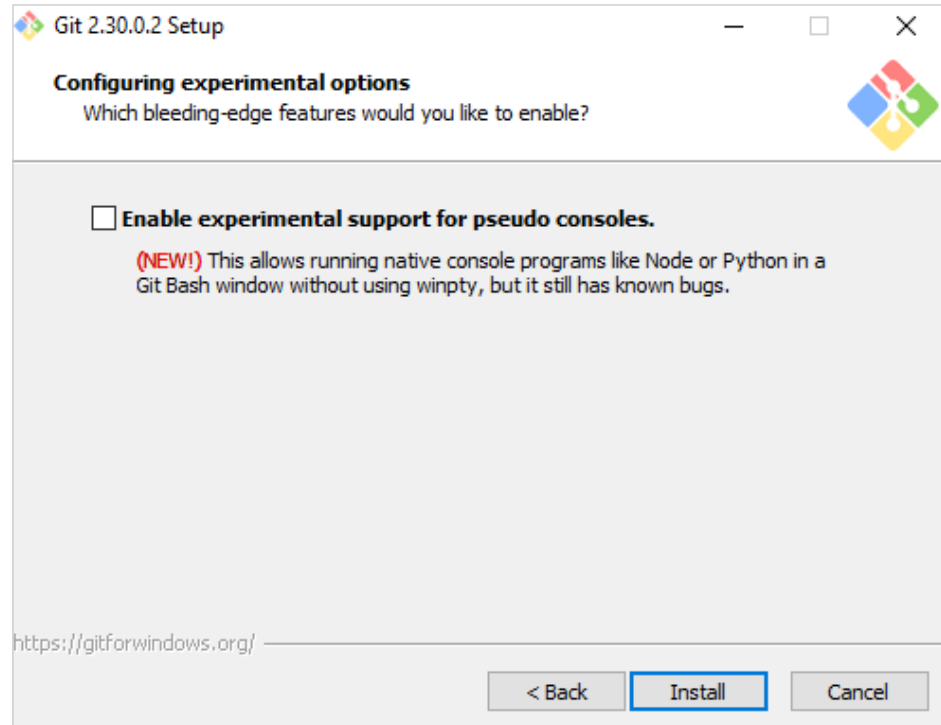
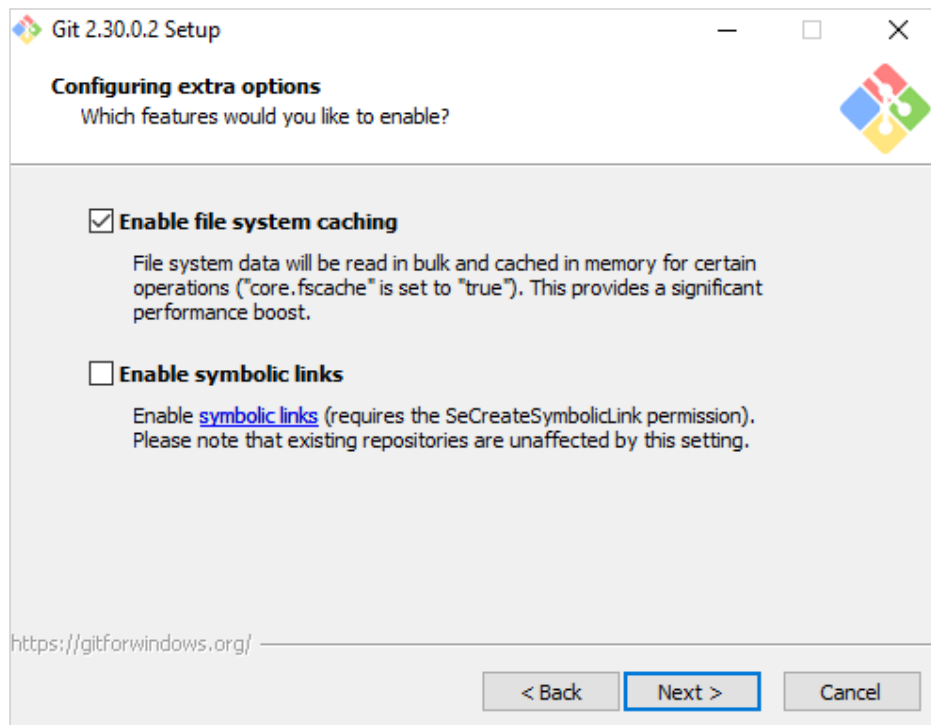
☐ **Git Credential Manager**
(DEPRECATED) The [Git Credential Manager for Windows](#) handles credentials e.g. for Azure DevOps and GitHub (requires .NET framework v4.5.1 or later).

☐ **None**
Do not use a credential helper.

<https://gitforwindows.org/>

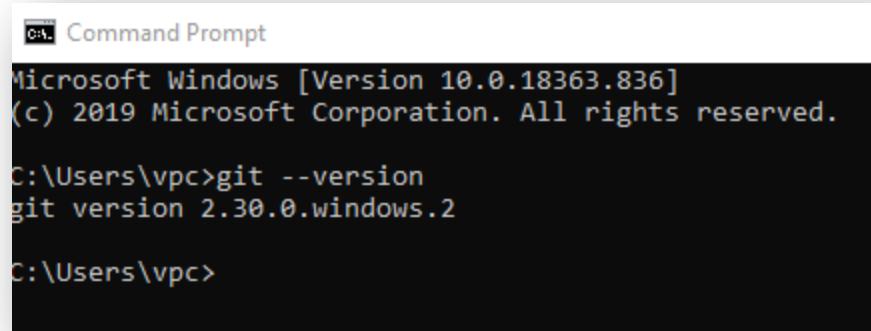
< Back **Next >** Cancel

Instalacija git-a



Instalacija git-a

- Za proveru verzije alata git kuca se komanda: `git --version`



```
Command Prompt
Microsoft Windows [Version 10.0.18363.836]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\vpc>git --version
git version 2.30.0.windows.2

C:\Users\vpc>
```

- Komandni prompt treba otvoriti tek nakon kompletirane instalacije

Git upotreba

- Program git sadrži mnoštvo dodatnih alata ali je njegova osnovna komanda: **git**
- Komande se koriste u kombinaciji sa komandom git:
- Primer:

git help git

git help tutorial

git add .

git mergetool

Git postavke

- Git je potrebno podesiti kako bi ispravno funkcionisao
- Većina postavki obavlja se komandom **git config**
- Konfiguracija se postavlja globalno i lokalno, pri čemu svako lokalno podešavanje prepisuje istoimeno globalno podešavanje
- Podešavanja se nalaze u fajlu **.gitconfig** u okviru korisničkog direktorijuma ili u fajlu **config**, lokalnog direktorijuma **.git**
- Prikaz podešavanja vrši se komandom:

git config --list

```
C:\Users\vpc\myproject>git config --list
diff.astextplain.textconv=astextplain
filter.lfs.clean=git-lfs clean -- %f
filter.lfs.smudge=git-lfs smudge -- %f
filter.lfs.process=git-lfs filter-process
filter.lfs.required=true
http.sslbackend=openssl
http.sslcainfo=C:/Program Files/Git/mingw64/ssl/certs/ca-bundle.crt
core.autocrlf=true
core.fscache=true
core.symlinks=false
core.editor="C:\\Program Files\\Notepad++\\notepad++.exe" -multiInst -notabbar -nosession -noPlugin
pull.rebase=false
credential.helper=manager-core
credential.https://dev.azure.com.usehttppath=true
init.defaultbranch=master
user.email=vladimir.maric@link.co.rs
```

Git postavke

- Da bi git ispravno funkcionisao, neophodno je takođe postaviti email i korisničko ime korisnika

```
[user]
  name = Dvla
  email = vladimir.maric@link.co.rs
```

Globalno

```
git config --global user.email "vladimir.maric@link.co.rs"
```

Lokalno

```
git config user.email "vladimir.maric@link.co.rs"
```

Inicijalizacija projekta

- Da bi neki projekat (direktorijum) bio praćen od strane git-a, potrebno je da bude inicijalizovan
- Inicijalizacija podrazumeva kreiranje poddirektorijuma **.git** u okviru direktorijuma projekta
- Inicijalizovani git projekat, naziva se **repozitorijum**
- Inicijalizacija se vrši na jedan od dva načina:

Kreiranjem repozitorijuma u okviru radnog direktorijuma

```
C:\Users\vpc\myproject>git init  
Initialized empty Git repository in C:/Users/vpc/myproject/.git/
```

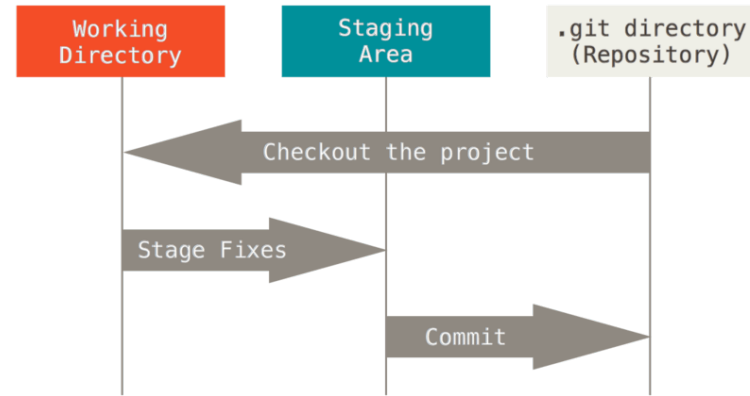
Kloniranjem postojećeg repozitorijuma (naredba git clone)

```
C:\Users\vpc>git clone https://vmaric@bitbucket.org/vmaric/qa_test_repo.git  
Cloning into 'qa_test_repo'...  
remote: Counting objects: 3, done.  
remote: Compressing objects: 100% (2/2), done.  
remote: Total 3 (delta 0), reused 0 (delta 0)  
Unpacking objects: 100% (3/3), 580 bytes | 96.00 KiB/s, done.
```

```
C:\Users\vpc>
```

Statusi fajlova

- Fajlovi u okviru repozitorijuma mogu biti u jednom od tri statusa:
- Izmenjeni (**modified**)
Fajl je dodat ili izmenjen ali još uvek nije potvrđen
- Postavljeni na scenu (**staged**)
Fajl je registrovan za praćenje
- Potvrđeni (**committed**)
Izmene izvršene nad fajlom su sačuvane u repozitorijumu
- Status fajlova u repozitorijumu moguće je videti komandom:
git status



```
C:\Users\vpc\myproject>git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    myfirstfile.txt

nothing added to commit but untracked files present (use "git add" to track)
```

Dodavanje fajlova

- Da bi fajlovi u inicijalizovanom direktorijumu bili praćeni, moraju biti dodati
- Dodavanje fajlova se vrši komandom **git add**

```
C:\Users\vpc\myproject>git add myfirstfile.txt

C:\Users\vpc\myproject>git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   myfirstfile.txt
```

- Prestanak praćenja fajlova vrši se komandom **git rm**

```
C:\Users\vpc\myproject>git rm --cached myfirstfile.txt
rm 'myfirstfile.txt'
```


Pregled izmena u fajlovima

- Komanda **git diff** prikazuje izmene po fajlovima
- Prikazuju se izmene u fajlovima koji nisu dodati u praćenje

```
C:\Users\vpc\myproject>git diff
diff --git a/newfile.txt b/newfile.txt
index 3b18e51..68ee958 100644
--- a/newfile.txt
+++ b/newfile.txt
@@ -1,1 @@
-hello world
+hello world 123
```

komad (chunk) →

meta podaci

markeri

komad zaglavlje

- Za izmene nad fajlovima koji su dodati u praćenje komanda se koristi sa zastavicom **staged**

```
C:\Users\vpc\myproject>git diff --staged
diff --git a/newfile.txt b/newfile.txt
new file mode 100644
index 0000000..3b18e51
--- /dev/null
+++ b/newfile.txt
@@ -0,0 +1 @@
+hello world
```

Potvrđivanje izmena fajlova

- Izmene napravljene nad fajlovima koje dodamo u praćenje, potvrđujemo naredbom: **git commit**
- Potvrđivanje mora biti praćeno porukom koja obično sadrži kratak opis potvrđenih izmena

```
C:\Users\vpc\myproject>git commit -m "first commit"
[master (root-commit) cc7b8be] first commit
1 file changed, 1 insertion(+)
create mode 100644 myfirstfile.txt
```

- Ukoliko se komanda startuje bez zastavice **m**, otvara se podrazumevani tekst editor u koji unosimo poruku:

```
My first commit
# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
#
# On branch master
# Changes to be committed:
#   modified:   newfile.txt
#
```

Preskakanje staging faze

- Moguće je automatsko priključivanje fajlova praćenju i potvrđivanje, pomoću zastavice -a nad komandom git commit

```
C:\Users\vpc\myproject>git commit -a -m "commit with stage"  
[master da2dbae] commit with stage  
1 file changed, 1 insertion(+), 1 deletion(-)
```

Pregled istorije potvrđivanja

- Komanda **git log** prikazuje istoriju svih dosadašnjih potvrđivanja
- Od vrha na dole listaju se najnovija potvrđivanja

```
C:\Users\vpc\myproject>git log
commit 92d66f965233d636d8385b61ff52b9c72d99eb6a (HEAD -> master)
Author: unknown <vladimir.maric@link.co.rs>
Date: Tue Feb 9 04:40:44 2021 -0800

...

commit 3fd261a7840f2bb39333e50321002dfb1719c5e7
Author: unknown <vladimir.maric@link.co.rs>
Date: Tue Feb 9 04:18:52 2021 -0800

    rm

commit da2dbaecfb65dd0b59bc9785ef60cf35ea8d56db
Author: unknown <vladimir.maric@link.co.rs>
Date: Tue Feb 9 04:15:12 2021 -0800

    commit with stage

commit db24b7a47b0928c8a9a874fe80606592c088e946
Author: unknown <vladimir.maric@link.co.rs>
Date: Tue Feb 9 04:10:25 2021 -0800

    My first commit

commit 38e26d71f46562e3175efcfaf488378216abd6a3
Author: unknown <vladimir.maric@link.co.rs>
Date: Tue Feb 9 04:08:07 2021 -0800

    My first commit
```

Izmena postojećeg commit-a

- Dodavanje izmena u postojeći commit

```
C:\Users\vpc\myproject>git commit -m "some commit"
[master bf7cadd] some commit
1 file changed, 2 insertions(+), 1 deletion(-)

C:\Users\vpc\myproject>git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        mf1.txt

nothing added to commit but untracked files present (use "git add" to track)

C:\Users\vpc\myproject>git add .

C:\Users\vpc\myproject>git commit --amend
[master 9547625] some commit
Date: Wed Feb 10 03:37:17 2021 -0800
2 files changed, 3 insertions(+), 1 deletion(-)
create mode 100644 mf1.txt
```

Izmena postojećeg commit-a

- Uklanjanje fajla sa stage-a

```
C:\Users\vpc\myproject>git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
       modified:   mf1.txt
       modified:   myfile.txt

C:\Users\vpc\myproject>git restore --staged myfile.txt

C:\Users\vpc\myproject>git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
       modified:   mf1.txt

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
       modified:   myfile.txt
```

Vreaćanje fajla u inicijalni status

```
C:\Users\vpc\myproject>echo Hello > myfile.txt  
C:\Users\vpc\myproject>git add .  
C:\Users\vpc\myproject>echo World >> myfile.txt  
C:\Users\vpc\myproject>git checkout -- myfile.txt  
C:\Users\vpc\myproject>type myfile.txt  
Hello  
C:\Users\vpc\myproject>_
```

Vraćanje na prethodni commit

- Komanda **git reset** omogućava kretanje kroz commit-ove
- Koristi se u kombinaciji sa putanjom ili hash-om commit-a
- Koristi se u jednoj od tri varijante:
-

git reset --soft

Stanje se postavlja na fazu posle stage-a a pre commit-a

git reset --mixed

Stanje se setuje na fazu pre stage-a

git reset --hard

Stanje se setuje na fazu nakon prethodnog commit-a

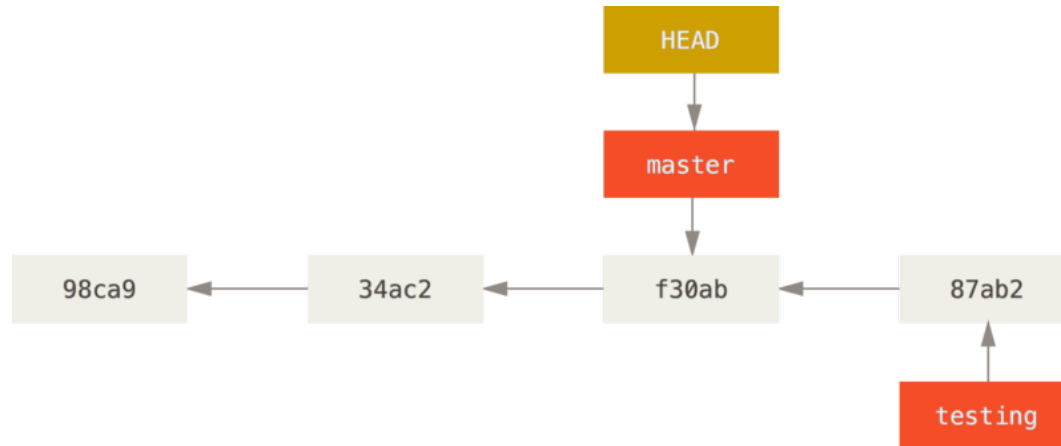
Vraćanje na prethodni commit

```
C:\Users\vpc\myproject>echo First Line > myfile.txt
C:\Users\vpc\myproject>git add myfile.txt
C:\Users\vpc\myproject>git commit -m "First Commit"
[master (root-commit) 5fe1274] First Commit
 1 file changed, 1 insertion(+)
 create mode 100644 myfile.txt
C:\Users\vpc\myproject>echo Second Line >> myfile.txt
C:\Users\vpc\myproject>git commit -a -m "Second Commit"
[master 21cd26b] Second Commit
 1 file changed, 1 insertion(+)
```

```
C:\Users\vpc\myproject>git commit -a -m "Third Commit"
[master 9cb55e8] Third Commit
 1 file changed, 1 insertion(+)
C:\Users\vpc\myproject>git reset --hard HEAD~
HEAD is now at 21cd26b Second Commit
C:\Users\vpc\myproject>type myfile.txt
First Line
Second Line
C:\Users\vpc\myproject>_
```

Grananje

- Grananjem se omogućava kreiranje različitih razvojnih linija istog radnog direktorijuma
- Jedna grana je zapravo referenca na određeni commit
- Podrazumevana grana u Git-u je master
- Moguće je kreirati i neograničen broj dodatnih grana



Naredbe grananja

- Naredba **git branch** kreira novu granu u repozitorijumu (parametar komande je naziv nove grane)
- Kreiranje nove grane ne aktivira tu granu automatski
- Lista postojećih grana može se videti takođe pomoću komande **git branch** (bez parametara)
- Prebacivanje sa grane na granu, obavlja se komandom **git checkout**

```
C:\Users\vpc\myproject>git branch test_branch  
C:\Users\vpc\myproject>_
```

```
C:\Users\vpc\myproject>git status  
On branch master  
nothing to commit, working tree clean
```

```
C:\Users\vpc\myproject>git branch  
* master  
test_branch
```

```
C:\Users\vpc\myproject>git checkout test_branch  
Switched to branch 'test_branch'  
  
C:\Users\vpc\myproject>git status  
On branch test_branch  
nothing to commit, working tree clean  
  
C:\Users\vpc\myproject>_
```

Spajanje grana - merge

- Grane se u bilo kom trenutku mogu spojiti
- Za spajanje grana koriste se komande **git merge** i **git rebase**

```
C:\Users\vpc\myproject>git init
Initialized empty Git repository in C:/Users/vpc/myproject/.git/

C:\Users\vpc\myproject>echo Hello > myfile.txt

C:\Users\vpc\myproject>git add .

C:\Users\vpc\myproject>git commit -m "first commit"
[master (root-commit) 078e9b5] first commit
1 file changed, 1 insertion(+)
create mode 100644 myfile.txt

C:\Users\vpc\myproject>echo World >> myfile.txt

C:\Users\vpc\myproject>git commit -a -m "Second commit"
[master c70c20e] Second commit
1 file changed, 1 insertion(+)

C:\Users\vpc\myproject>git checkout -b testing
Switched to a new branch 'testing'

C:\Users\vpc\myproject>echo Hello again > yourfile.txt

C:\Users\vpc\myproject>git add .

C:\Users\vpc\myproject>git commit -m "first commit on test branch"
[testing eef8a86] first commit on test branch
1 file changed, 1 insertion(+)
create mode 100644 yourfile.txt
```

```
C:\Users\vpc\myproject>git checkout master
Switched to branch 'master'

C:\Users\vpc\myproject>git merge testing
Updating c70c20e..eef8a86
Fast-forward
 yourfile.txt | 1 +
1 file changed, 1 insertion(+)
create mode 100644 yourfile.txt

C:\Users\vpc\myproject>dir
Volume in drive C has no label.
Volume Serial Number is 3EB1-9BB3

Directory of C:\Users\vpc\myproject

02/22/2021  10:55 PM    <DIR>          .
02/22/2021  10:55 PM    <DIR>          ..
02/22/2021  10:53 PM                16 myfile.txt
02/22/2021  10:55 PM                14 yourfile.txt
                                2 File(s)        30 bytes
                                2 Dir(s)  14,619,041,792 bytes free
```

Rukovanje udaljenim repozitorijumom

- Kada se koristi za kolaboraciju, git podrazumeva upotrebu udaljenog repozitorijuma
- Udaljeni repozitorijum se nalazi na udaljenom računaru
- Udaljeni repozitorijumi mogu biti **samo hostovani** ili se mogu koristiti **javni servisi**
- Poznatiji javni git servisi su:


Github

Bitbucket

SourceForge

AWS CodeCommit

Rukovanje Bitbucket platformom

 Bitbucket


Sign up for your account


Very strong


By signing up, I accept the Atlassian Cloud Terms of Service and acknowledge the Privacy Policy.

Sign up

OR


 Continue with Google

 Continue with Microsoft

 Continue with Apple

Already have an Atlassian account? [Log in](#)

Create a new repository [Import repository](#)

Workspace  vladimir

Project name*

Repository name*

Access level ☒ Private repository

Uncheck to make this repository public. Public repositories typically contain open-source code and can be viewed by anyone.

Include a README?

Default branch name

Include .gitignore?

[Advanced settings](#)

Create repository Cancel

Kreiranje bitbucket repozitorijuma

The image shows the Bitbucket web interface. On the left is a blue sidebar with navigation links: 'Your work', 'Repositories' (highlighted), 'Projects', 'Pull requests', and 'Snippets'. The main area is titled 'Repositories' and contains a search bar, filters for 'Workspace', 'Project', and 'Watching', and a table with columns 'Summary', 'Description', 'Updated', and 'Builds'. A message states: 'You don't have access to any recently updated repositories. [Create your own repository](#)'. A red box highlights the 'Create repository' button in the top right, with a red arrow pointing to a modal window titled 'Create a new repository'. The modal includes the following fields and options:

- Workspace:** A dropdown menu showing 'vladimir'.
- Project name:** A text input field containing 'qa_smer_2021'.
- Repository name:** A text input field containing 'qa_test_repo'.
- Access level:** A checkbox labeled 'Private repository' which is checked. Below it, text reads: 'Uncheck to make this repository public. Public repositories typically contain open-source code and can be viewed by anyone.'
- Include a README?:** A dropdown menu showing 'No'.
- Default branch name:** A text input field containing 'e.g., 'main''.
- Include .gitignore?:** A dropdown menu showing 'Yes (recommended)'.
- Advanced settings:** A link to expand more options.
- Buttons:** 'Create repository' (blue) and 'Cancel' (grey) at the bottom right.

Kreiranje bitbucket repozitorijuma

The screenshot displays the Bitbucket web interface for a newly created repository named 'qa_test_repo' under the user 'vladimir / qa_smer_2021'. The left sidebar contains navigation links: Source, Commits, Branches, Pull requests, Pipelines, Jira issues, Downloads, and Repository settings. The main content area shows the repository name, a 'Clone' button, and a description prompt. Below this is a dropdown for the 'master' branch and a search bar. A table lists the repository's files, showing a single file named '.gitignore' with a size of 624 B, committed 4 seconds ago with the message 'Initial commit'.

qa_test_repo

Source

Commits

Branches

Pull requests

Pipelines

Jira issues

Downloads

Repository settings

vladimir / qa_smer_2021

qa_test_repo

Clone

Here's where you'll find this repository's source files. To give your users an idea of what they'll find here, [add a description to your repository](#).

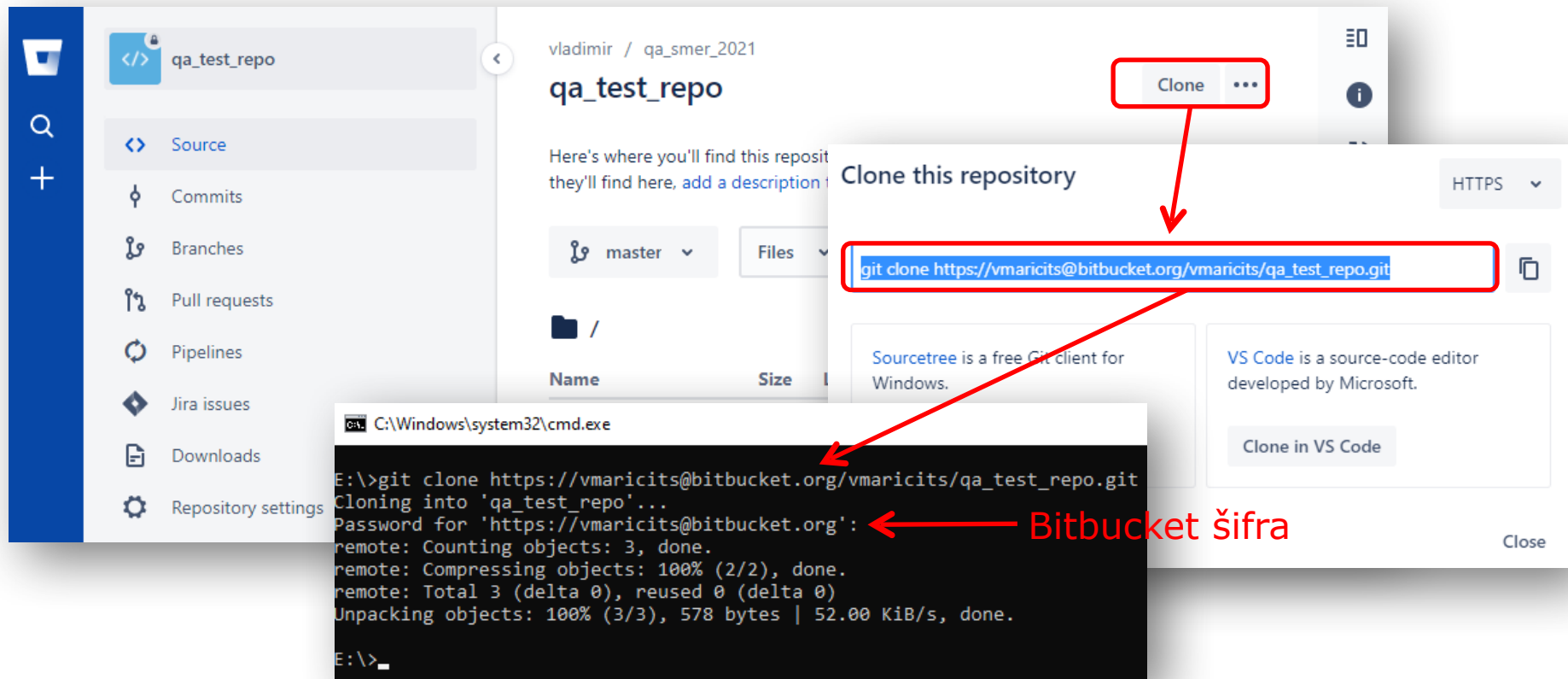
master

Files Filter files

/

Name	Size	Last commit	Message
.gitignore	624 B	4 seconds ago	Initial commit

Kloniranje repozitorijuma



The image shows a sequence of steps for cloning a repository. At the top, a Bitbucket repository page for 'qa_test_repo' is visible. A red box highlights the 'Clone' button. Below it, a 'Clone this repository' dialog box is shown, with a red box around the HTTPS clone URL: `git clone https://vmaricits@bitbucket.org/vmaricits/qa_test_repo.git`. A red arrow points from this URL to a Windows command prompt window. The command prompt shows the execution of the `git clone` command and the resulting output, including the password prompt and progress bars. A red arrow points from the text 'Bitbucket šifra' to the password prompt in the command prompt.

qa_test_repo

Source

Commits

Branches

Pull requests

Pipelines

Jira issues

Downloads

Repository settings

vladimir / qa_smer_2021

qa_test_repo

Here's where you'll find this repository. They'll find here, [add a description](#)

master

Files

Clone this repository

HTTPS

`git clone https://vmaricits@bitbucket.org/vmaricits/qa_test_repo.git`

Sourcetree is a free Git client for Windows.

VS Code is a source-code editor developed by Microsoft.

Clone in VS Code

Close

C:\Windows\system32\cmd.exe

```
E:\>git clone https://vmaricits@bitbucket.org/vmaricits/qa_test_repo.git
Cloning into 'qa_test_repo'...
Password for 'https://vmaricits@bitbucket.org':
remote: Counting objects: 3, done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0)
Unpacking objects: 100% (3/3), 578 bytes | 52.00 KiB/s, done.
E:\>
```

Bitbucket šifra

Rukovanje udaljenim repozitorijumom

- Ukoliko je repozitorijum preuzet pomoću komande `git clone`, udaljeni server je registrovan automatski, u suprotnom, udaljeni server se mora registrovati ručno komandom **git remote**

```
C:\Users\vpc\myproject>git remote add qa_test https://vmaric@bitbucket.org/vmaric/qa_test_repo.git  
  
C:\Users\vpc\myproject>git remote -v  
qa_test https://vmaric@bitbucket.org/vmaric/qa_test_repo.git (fetch)  
qa_test https://vmaric@bitbucket.org/vmaric/qa_test_repo.git (push)
```

Rukovanje udaljenim repozitorijumom

- Prikaz podataka o udaljenom repozitorijumu

```
C:\Users\vpc\myproject>git remote show qa_test
* remote qa_test
Fetch URL: https://vmaric@bitbucket.org/vmaric/qa_test_repo.git
Push URL: https://vmaric@bitbucket.org/vmaric/qa_test_repo.git
HEAD branch: master
Remote branch:
  master tracked
Local ref configured for 'git push':
  master pushes to master (local out of date)
```

- Preuzimanje podataka sa udaljenog repozitorijuma (git fetch)

Rukovanje udaljenim repozitorijumom

- Ukoliko udaljeni repozitorijum nije preuzet naredbom git clone mora se ručno sinhronizovati sa lokalnim repozitorijumom

```
C:\Users\vpc\myproject>git pull --set-upstream --allow-unrelated-histories qa_test master
From https://bitbucket.org/vmaric/qa_test_repo
* branch          master      -> FETCH_HEAD
Merge made by the 'recursive' strategy.
.gitignore | 50 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
1 file changed, 50 insertions(+)
create mode 100644 .gitignore
```

Rukovanje udaljenim repozitorijumom

- Komandama **push** i **pull** šaljemo izmene u lokalnom repozitorijumu na udaljeni i sa udaljenog na lokalni repozitorijum

```
C:\Users\vpc\myproject>git pull
Already up to date.

C:\Users\vpc\myproject>git push
Password for 'https://vmaric@bitbucket.org':
Enumerating objects: 12, done.
Counting objects: 100% (12/12), done.
Compressing objects: 100% (5/5), done.
Writing objects: 100% (11/11), 967 bytes | 193.00 KiB/s, done.
Total 11 (delta 0), reused 0 (delta 0), pack-reused 0
To https://bitbucket.org/vmaric/qa_test_repo.git
   c8ae288..fa1bb10  master -> master

C:\Users\vpc\myproject>_
```

Sakrivanje izmena

- Moguće je sakriti izmene kako bi se očistio status git-a, potvrđivanja
- Sakrivanje se obavlja komandom **git stash**

```
C:\Users\vpc\myproject>git status
On branch master
Your branch is ahead of 'qa_test/master' by 1 commit.
  (use "git push" to publish your local commits)

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   myfile.txt

no changes added to commit (use "git add" and/or "git commit -a")

C:\Users\vpc\myproject>git stash
Saved working directory and index state WIP on master: 1d09abd ...

C:\Users\vpc\myproject>git status
On branch master
Your branch is ahead of 'qa_test/master' by 1 commit.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean

C:\Users\vpc\myproject>git stash apply
On branch master
Your branch is ahead of 'qa_test/master' by 1 commit.
  (use "git push" to publish your local commits)

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   myfile.txt

no changes added to commit (use "git add" and/or "git commit -a")
```

Rukovanje konfliktima

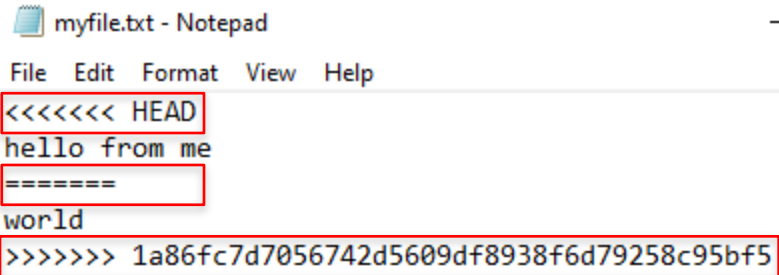
- Konflikti se obično dešavaju prilikom spajanja u kojima je na nekom fajlu rađena različita izmena od strane različitih korisnika
- Ukoliko git detektuje ovakav slučaj, odbija da kompletira spajanje pre nego što se konflikt reši

```
C:\Users\vpc\myproject>git pull
remote: Counting objects: 3, done.
remote: Total 3 (delta 0), reused 0 (delta 0)
Unpacking objects: 100% (3/3), 223 bytes | 11.00 KiB/s, done.
From https://bitbucket.org/vmaric/qa_test_repo
   5d6a3e2..1a86fc7  master      -> qa_test/master
Auto-merging myfile.txt
CONFLICT (content): Merge conflict in myfile.txt
Automatic merge failed; fix conflicts and then commit the result.

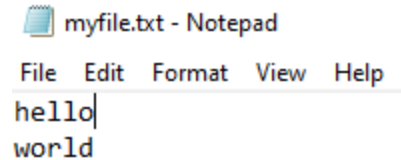
C:\Users\vpc\myproject>_
```

Rukovanje konfliktima

- Git označava problematične delove markerima
- Konflikt se rešava ručnim uklanjanjem markera i sređivanjem problematičnog fajla



```
myfile.txt - Notepad
File Edit Format View Help
<<<<<< HEAD
hello from me
=====
world
>>>>>> 1a86fc7d7056742d5609df8938f6d79258c95bf5
```



```
myfile.txt - Notepad
File Edit Format View Help
hello
world
```


Credits



<https://www.freepik.com/>