

VERZIONIRANJE IZVORNOG KODA

U slučaju požara



1. git commit



2. git push



3. napusti zgradu

In case of fire



1. git commit



2. git push



3. leave the building

Sustavi za verzioniranje koda

Definicije

Skup alata koji imaju sposobnost praćenja različitih verzija izvornog koda

Jon Loeliger, Matthew McCullough (2012)

Kategorija programskih alata koji pomažu razvojnim timovima praćenje promjena na kodu tijekom vremena

<https://www.atlassian.com/git/tutorials/what-is-version-control>

Varijacije na temu

VCS: Version Control System

SCM: Source Code Manager

RCS: Revision Control System

Kalkulator -> Digitron | Sustav za verzioniranje koda -> Git

Git is an Open Source project covered by the GNU General Public License version 2 (some parts of it are under different licenses, compatible with the GPLv2). It was originally written by Linus Torvalds with help of a group of hackers around the net.

<https://github.com/git/git>

Povijest

**M.J. Rochkind. “The Source Code Control System”
IEEE Transactions on Software Engineering 1(4) (1975): 364-370**



Marc J. Rochkind was born in Baltimore, Md., on June 12, 1948. He received the B.S.M.E. degree from the University of Maryland, College Park, and the M.S.M.E. degree from Rutgers University, New Brunswick, N.J., in 1970 and 1972, respectively.

Since 1970 he has been a member of the Technical Staff at Bell Laboratories, Murray Hill, N.J. He is currently engaged in the development of software systems for use by Bell Telephone companies.

Walter F. Tichy. “RCS: A System from Version Control” Software Practice and Experience 15(7) (1985): 637-654

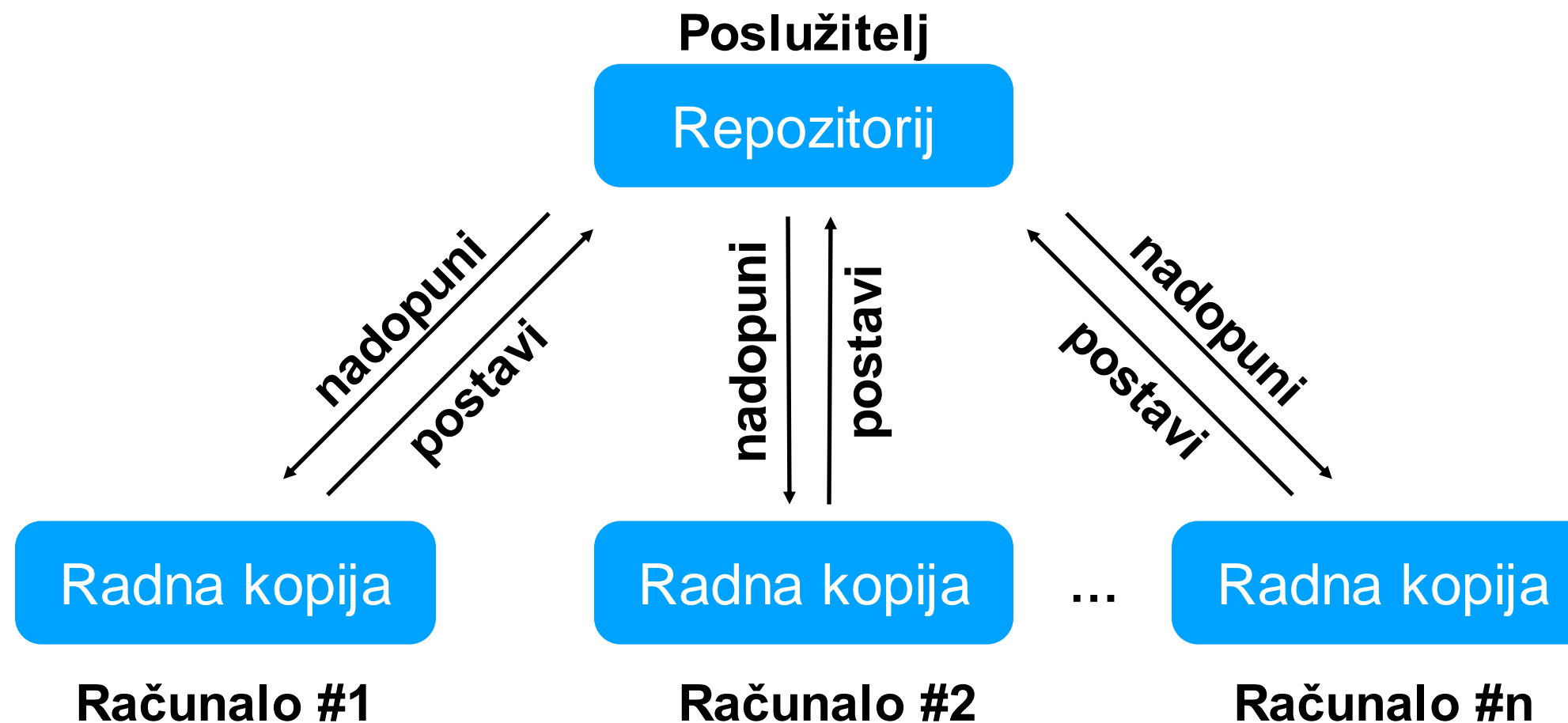
Walter F. Tichy

Department of Computer Sciences
Purdue University
West Lafayette, Indiana 47907

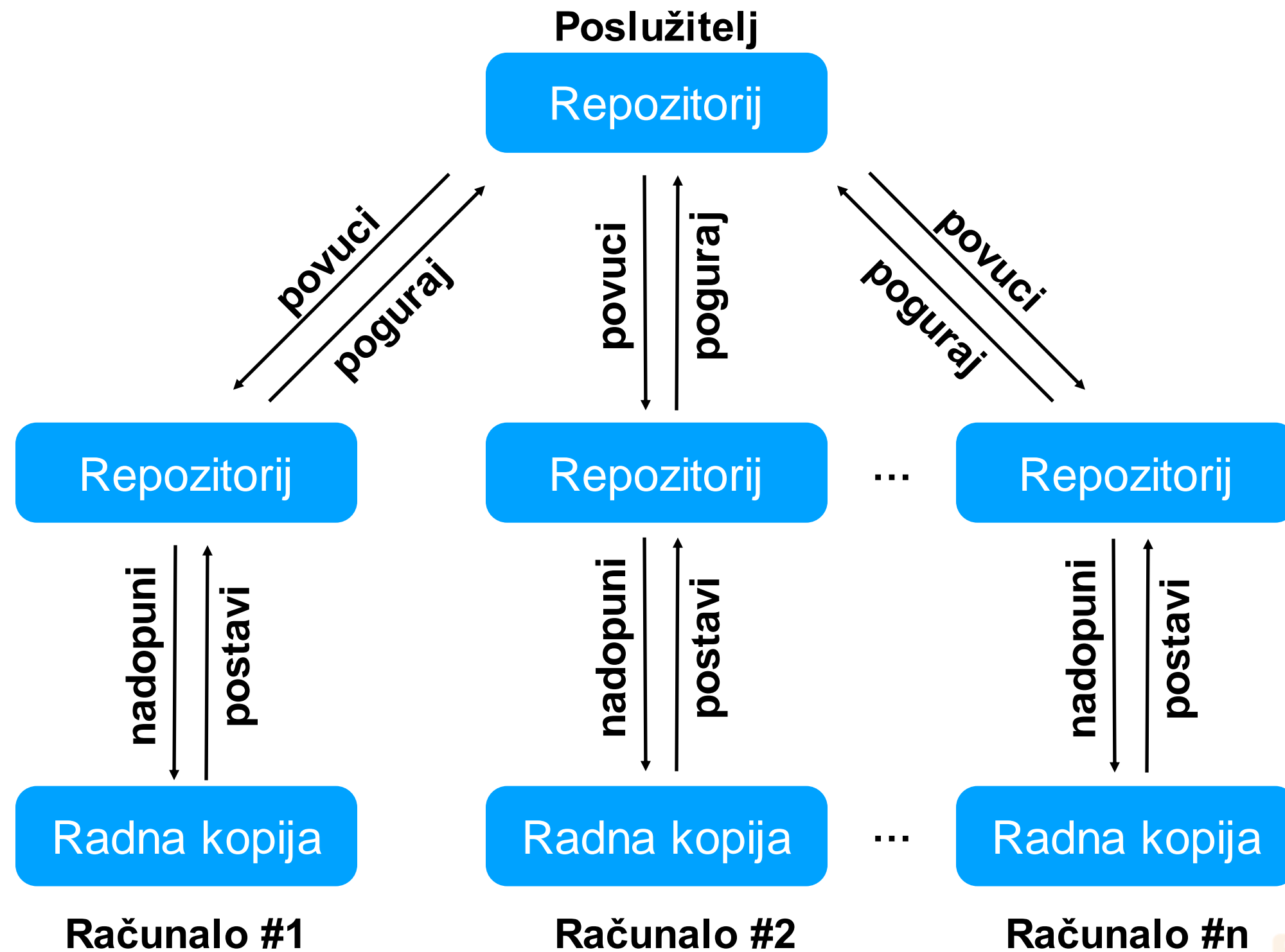
<http://www-public.imtbs-tsp.eu/~gibson/Teaching/Teaching-ReadingMaterial/Rochkind75.pdf>
<http://www.gnu.org/software/rcs/tichy-paper.pdf>

Vrste sustava za verzioniranje izvornog koda

Centralizirani sustav



Distribuirani sustav



Sustavi za verzioniranje koda

- PVCS Version Manager (1985)

- **CVS (1986)**

- IBM Relational ClearCase (1986)

- SourceSave (1991)

- CMVC (1994)

- Microsoft Delta (1994)

- Borland StarTeam (1995)

- Perforce (1995)

- Sun Workshop TeamWare (1996)

- BitKeeper (1998)

- CVSNT (1998)

- BitKeeper (2000)

- **Subversion (2000)**

- GNU Arch (2001)

- AcuRev (2002)

- Darcs (2002)

- DCVS (2002)

- Monotone (2003)

- SVK (2003)

- SourceGear Valt (2003)














- **mercurial (2005)**

- Microsoft TFVC (2005)

- **git (2005)**

- Fossil (2006)

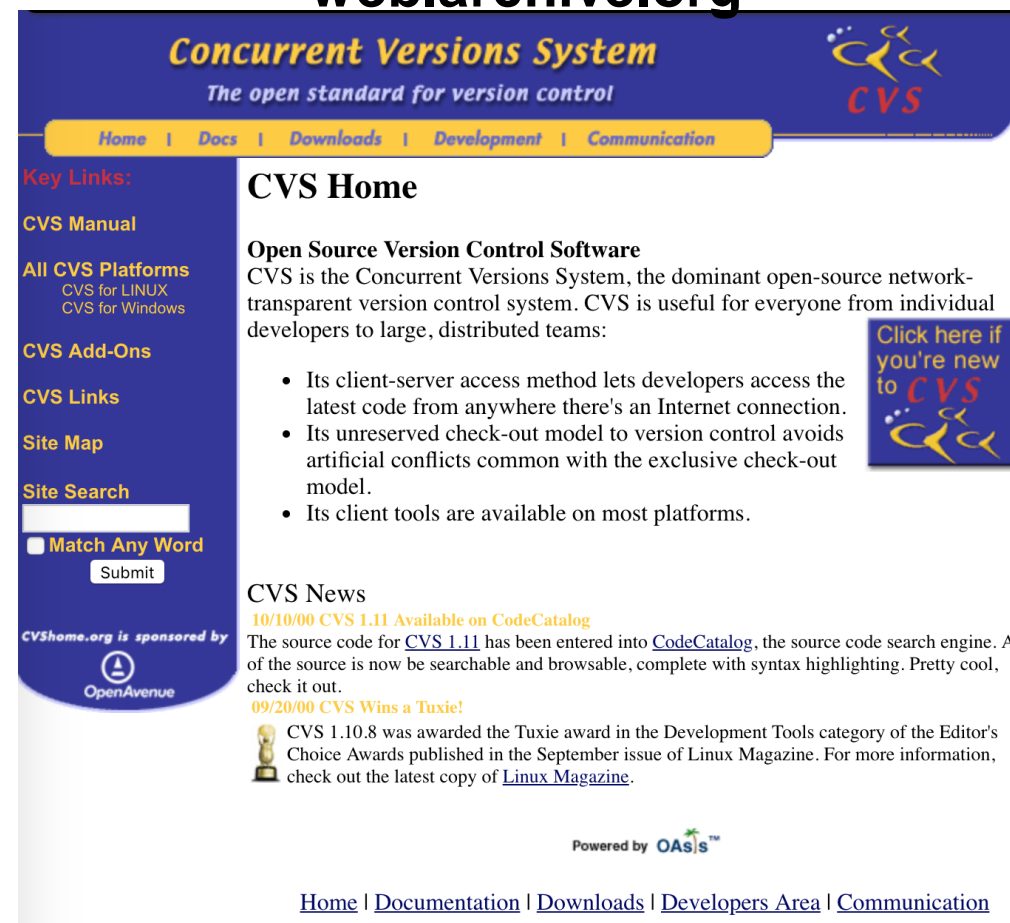
- Bazaar (2007)

	Git by Git ★★★★★ (36 reviews) Distributed source control system that helps software developers to track and manage multiple revisions of the same project. Learn more about Git	View Profile
Add to Compare		
	Team Foundation Server by Microsoft ★★★★☆ (26 reviews) Store and share code, capture and track work, and automate CI processes with these collaboration tools for software development teams. Learn more about Team Foundation Server	View Profile
Add to Compare		
	FundView Permits by Fund Accounting Solution Technologies ★★★★☆ (19 reviews) FundView Permits streamlines the permitting process with simplified tools. Learn more about FundView Permits	View Profile
Add to Compare		
	Apache Subversion by Apache Software Foundation ★★★★☆ (2 reviews) Open-source revision control system that provides interactive conflict resolution, merge tracking, file locking, and more. Learn more about Apache Subversion	View Profile
Add to Compare		
	IBM Rational ClearCase by IBM ★★★★☆ (2 reviews) Configuration management solution designed to track changes and control access to enterprise software assets. Learn more about IBM Rational ClearCase	View Profile
Add to Compare		
	CA Harvest SCM by CA Technologies ★★★★☆ (1 review) Software change management solution for development teams to simplify change merging and review, source code versioning, and more. Learn more about CA Harvest SCM	View Profile
Add to Compare		
	SourceAnywhere by Dynamsoft ★★★★☆ (1 review) This software allows multiple users to work on code from many operating systems. It is simple and secure. Learn more about SourceAnywhere	View Profile
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	SourceGear Vault by SourceGear ★★★★☆ (1 review) Bug tracking and source control software that automates code versioning, build management, work item tracking, and more. Learn more about SourceGear Vault	View Profile
Add to Compare		
	Mercurial by Mercurial ★★★★☆ (1 review) Distributed revision control tool with advanced committing, merging, and branching capabilities for software developers. Learn more about Mercurial	View Profile
Add to Compare		
	BitKeeper by BitKeeper ★★★★☆ (0 reviews) Distributed SCM system with simple-to-use command line interface and auto-merging capability for projects of any size. Learn more about BitKeeper	View Profile
Add to Compare		
	Kallithea by Kallithea ★★★★☆ (0 reviews) Source code management solution that includes web editor, code review, access management, and issue tracking capabilities. Learn more about Kallithea	View Profile
Add to Compare		
	Plastic SCM by Codice Software ★★★★☆ (0 reviews) Distributed version control solution that comes with GUI, built-in semantic diffs, branching and merging for big projects. Learn more about Plastic SCM	View Profile
Add to Compare		
	RhodeCode by RhodeCode ★★★★☆ (0 reviews) Distributed version control solution that comes with GUI, built-in semantic diffs, branching and merging for big projects. Learn more about RhodeCode	View Profile
Add to Compare		

CVS

“CVS started out as a bunch of shell scripts written by Dick Grune, posted to the newsgroup comp.sources.unix in the volume 6 release of July, 1986.”

05. prosinca 2000 via web.archive.org

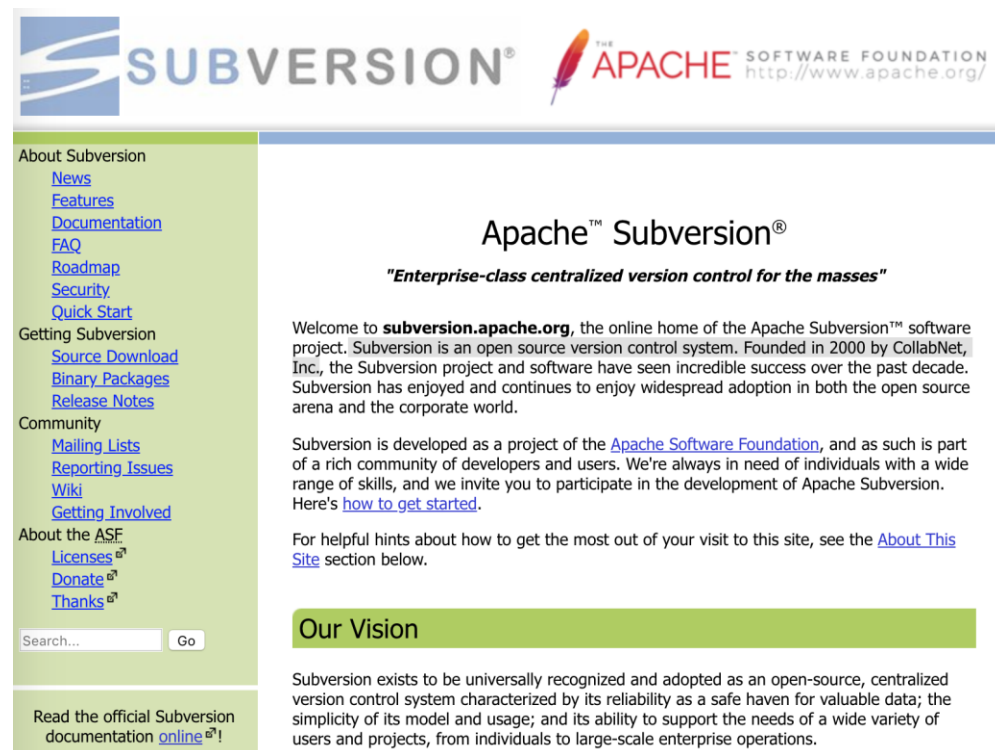


Centralizirani sustav

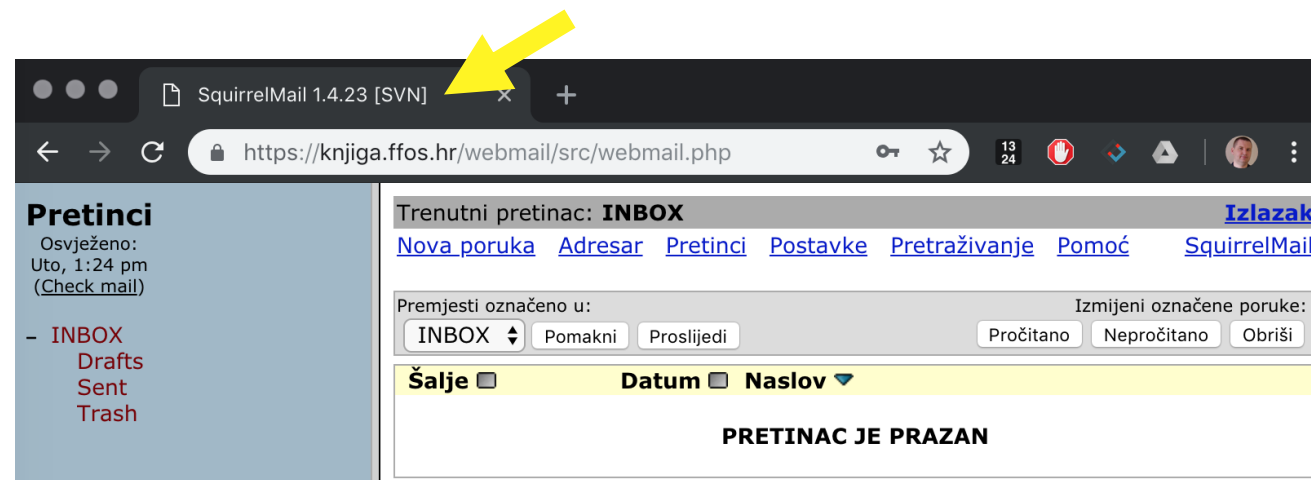
Apache™ Subversion®

“Subversion is an open source version control system. Founded in 2000 by CollabNet, Inc.”

<https://subversion.apache.org/>



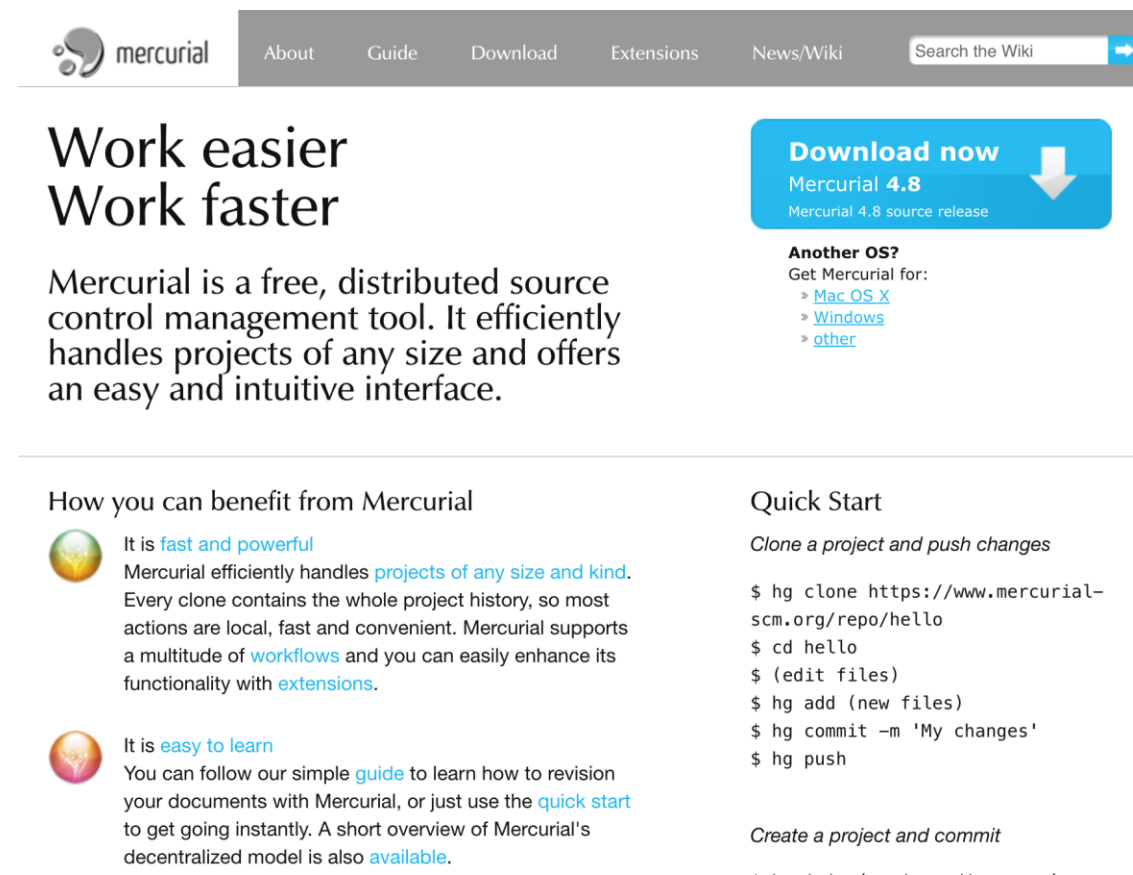
Centralizirani sustav



mercurial

“Mercurial is a free, distributed source control management tool.
It efficiently handles projects of any size and offers an easy and intuitive interface.”

<https://www.mercurial-scm.org/>



The screenshot shows the Mercurial website homepage. At the top is a navigation bar with links: About, Guide, Download, Extensions, News/Wiki, and a search box labeled 'Search the Wiki'. Below the navigation bar, the main content area is divided into two columns. The left column features the text 'Work easier Work faster' followed by a paragraph: 'Mercurial is a free, distributed source control management tool. It efficiently handles projects of any size and offers an easy and intuitive interface.' The right column has a blue 'Download now' button with a downward arrow, labeled 'Mercurial 4.8' and 'Mercurial 4.8 source release'. Below this button, it says 'Another OS?' and 'Get Mercurial for:' followed by links for 'Mac OS X', 'Windows', and 'other'. Below the main content area, there are two sections: 'How you can benefit from Mercurial' and 'Quick Start'. The 'How you can benefit from Mercurial' section has two items: 'It is fast and powerful' (with a globe icon) and 'It is easy to learn' (with a lightbulb icon). The 'Quick Start' section has two sub-sections: 'Clone a project and push changes' and 'Create a project and commit', each followed by a list of terminal commands.


Work easier
Work faster


Mercurial is a free, distributed source control management tool. It efficiently handles projects of any size and offers an easy and intuitive interface.

Download now
Mercurial 4.8
Mercurial 4.8 source release

Another OS?
Get Mercurial for:
» [Mac OS X](#)
» [Windows](#)
» [other](#)

How you can benefit from Mercurial

 It is [fast and powerful](#)
Mercurial efficiently handles [projects of any size and kind](#). Every clone contains the whole project history, so most actions are local, fast and convenient. Mercurial supports a multitude of [workflows](#) and you can easily enhance its functionality with [extensions](#).

 It is [easy to learn](#)
You can follow our simple [guide](#) to learn how to revision your documents with Mercurial, or just use the [quick start](#) to get going instantly. A short overview of Mercurial's decentralized model is also [available](#).

Quick Start

Clone a project and push changes

```
$ hg clone https://www.mercurial-scm.org/repo/hello
$ cd hello
$ (edit files)
$ hg add (new files)
$ hg commit -m 'My changes'
$ hg push
```

Create a project and commit

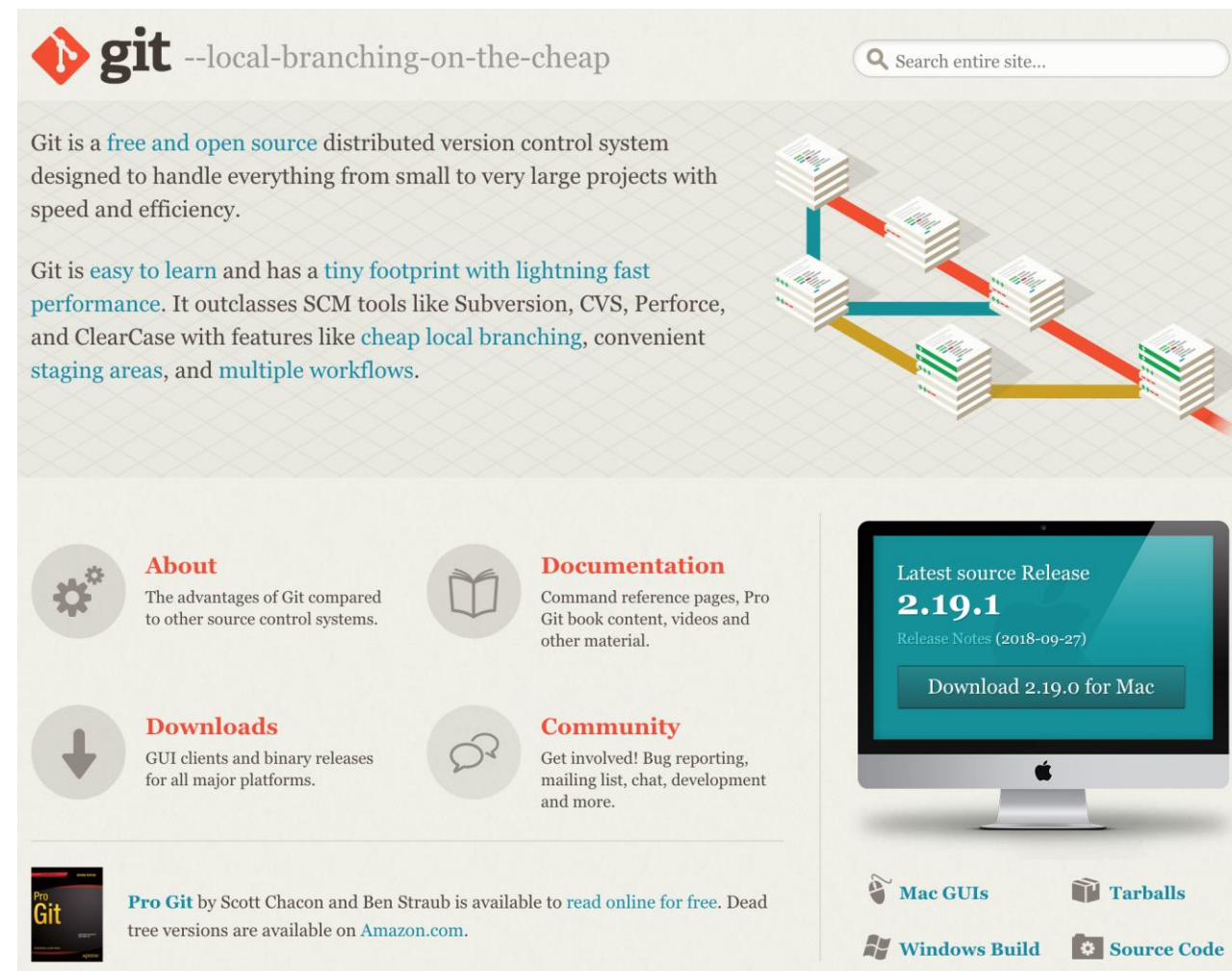
```
$ hg init
$ hg add
$ hg commit -m 'My changes'
$ hg push
```

Distribuirani sustav

git

“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.”

<https://git-scm.com/>



The screenshot shows the Git website homepage. At the top, the Git logo is followed by the tagline "--local-branching-on-the-cheap". A search bar is located in the top right corner. The main content area features a description of Git as a "free and open source" distributed version control system, followed by a diagram illustrating branching and merging. Below this, there are four sections: "About", "Documentation", "Downloads", and "Community", each with a brief description and an icon. On the right side, there is a section for the "Latest source Release" (2.19.1) with a "Download 2.19.0 for Mac" button. At the bottom, there is a section for "Pro Git" by Scott Chacon and Ben Straub, and a footer with links for "Mac GUIs", "Tarballs", "Windows Build", and "Source Code".

git --local-branching-on-the-cheap

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
2.19.1
Release Notes (2018-09-27)
Download 2.19.0 for Mac

Pro Git by Scott Chacon and Ben Straub is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#).

Mac GUIs **Tarballs**
Windows Build **Source Code**

Distribuirani sustav

git

Timeline

With the stage set, a bit of external impetus, and a dire VCS crisis imminent, **Git** sprang to life in April 2005.

Git became self-hosted on April 7 with this commit:

```
commit e83c5163316f89bfbde7d9ab23ca2e25604af29
Author: Linus Torvalds <torvalds@ppc970.osdl.org>
Date:   Thu Apr 7 15:13:13 2005 -0700
```

```
Initial revision of "git", the information manager from hell
```

Shortly thereafter, the first Linux commit was made:

```
commit 1da177e4c3f41524e886b7f1b8a0c1fc7321cac2
Author: Linus Torvalds <torvalds@ppc970.osdl.org>
Date:   Sat Apr 16 15:20:36 2005 -0700
```

```
Linux-2.6.12-rc2
```

```
Initial git repository build. I'm not bothering with the full history,
even though we have it. We can create a separate "historical" git
archive of that later if we want to, and in the meantime it's about
3.2GB when imported into git - space that would just make the early
git days unnecessarily complicated, when we don't have a lot of good
infrastructure for it.
```

```
Let it rip!
```

That one commit introduced the bulk of the entire Linux Kernel into a **Git** repository.⁴ It consisted of

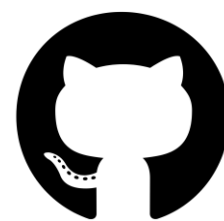
```
17291 files changed, 6718755 insertions(+), 0 deletions(-)
```

What's in a Name?

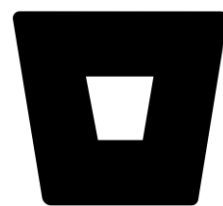
Linus himself rationalizes the name “**Git**” by claiming “I’m an egotistical bastard, and I name all my projects after myself. First Linux, now **git**.”⁵ Granted, the name “Linux” for the kernel was sort of a hybrid of Linus and Minix. The irony of using a British term for a silly or worthless person was not missed, either.

Since then, others had suggested some alternative and perhaps more palatable interpretations: the Global Information Tracker seems to be the most popular.

git repozitoriji i klijenti



github

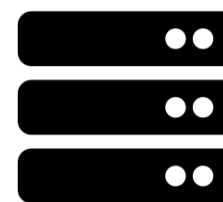


Bitbucket

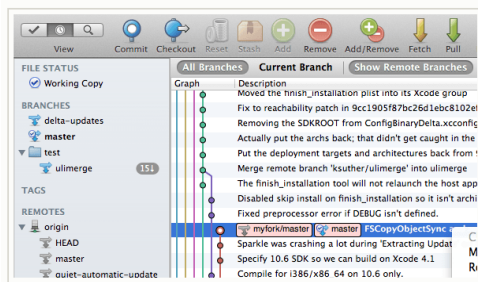
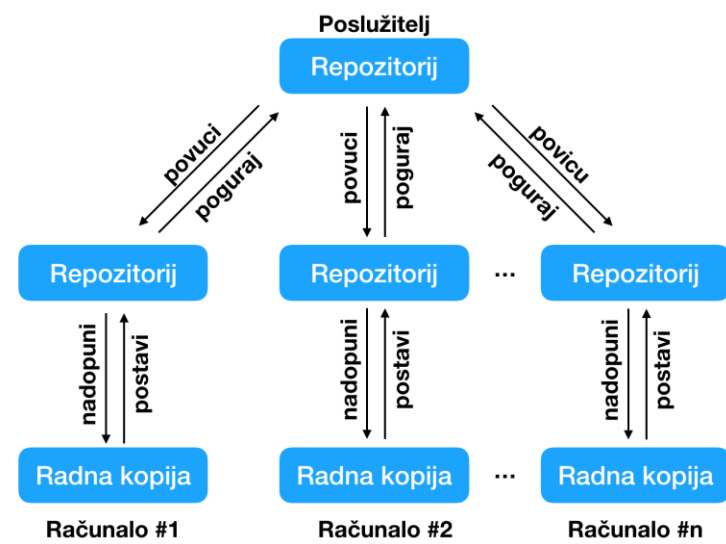


gitlab

...



vlastiti repozitorij

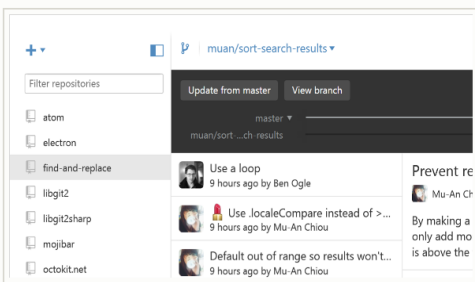


SourceTree

Platforms: Mac, Windows

Price: Free

License: Proprietary

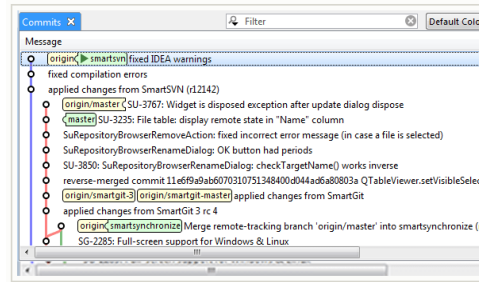


GitHub Desktop

Platforms: Mac, Windows

Price: Free

License: MIT

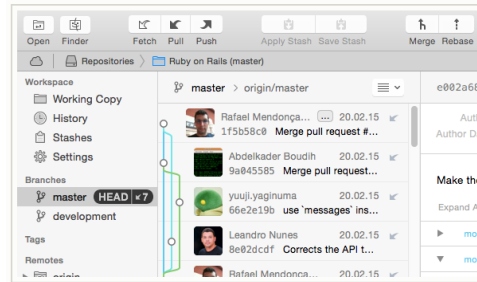


SmartGit

Platforms: Linux, Mac, Windows

Price: \$79/user / Free for non-commercial use

License: Proprietary



Tower

Platforms: Mac, Windows

Price: \$79/user (Free 30 day trial)

License: Proprietary

<https://git-scm.com/downloads/guis>

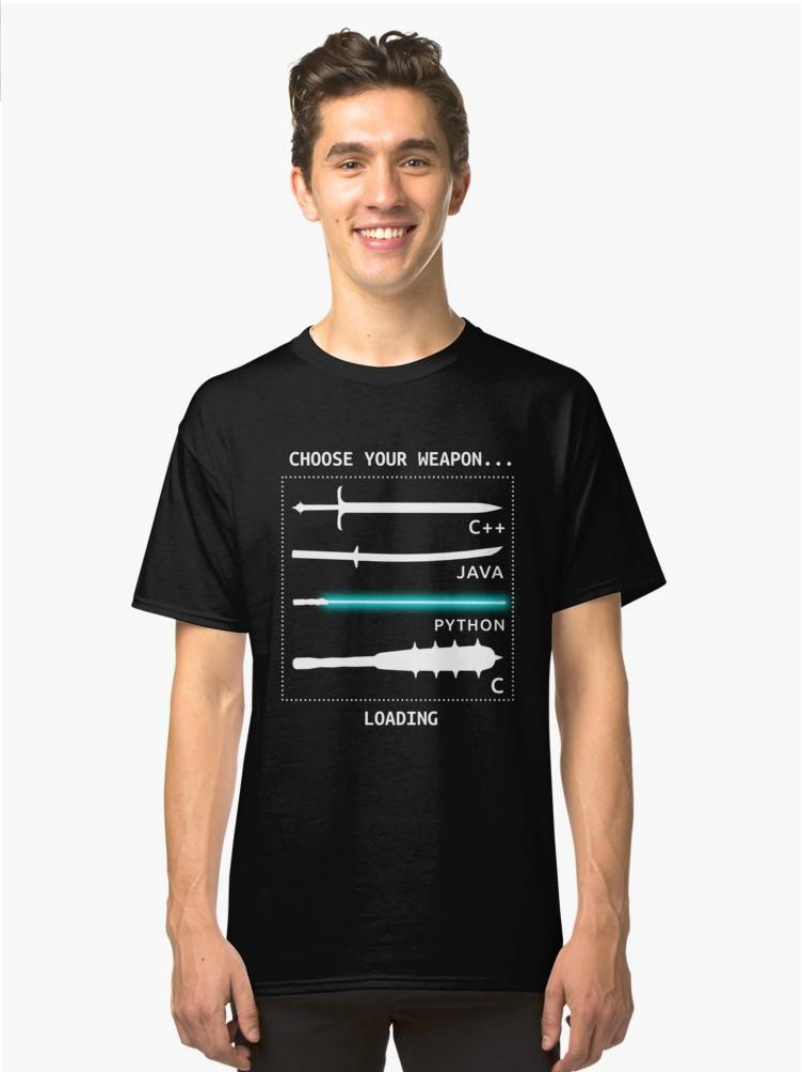
Scenarij



Marija



Ana



Zvonko



```
package ffos;
```

```
/**
 * <h1>Ljubavni kalkulator</h1>
 * Program relevantnim kalkulacijama
 * pronalazi najbolju osobu za tebe
 * @author Marija Zimska
 * @version 1.0
 * @since 2018-11-21
 */
public class Ljubav {

    private static final String KALKULIRAM = "Kalkuliram ljubav (tražim osobu)";
    private static final String REZULTAT = "Pronašao 1 rezultat: Marija Zimska <mzimska@ffos.hr>";
    private static final char TRAZENJE = '.';
    private static final int BROJ_PONAVLJANJA = 7;

    /**
     * Ovo je metoda koju poziva operativni sustav
     * @param args ne koristim.
     * @return tipa void pa ne vraća vrijednost.
     */
    public static void main(String[] args) {
        System.out.println(KALKULIRAM);
        for (int i = 0; i < BROJ_PONAVLJANJA; i++) {
            System.out.print(TRAZENJE + " ");
            try {
                Thread.sleep(1000);
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
        System.out.println("\n" + REZULTAT);
    }
}
```

▴ LJUBAVNIKALKULATOR

▸ bin

▴ src

▴ ffos

☕ Ljubav.java

Kalkuliram ljubav (tražim osobu)

-



Terminal / Command Prompt

```
cd $HOME_LJUBAVNI_KALKULATOR
git init
git add src/*
git commit -m "Inicijalni program"
```

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner

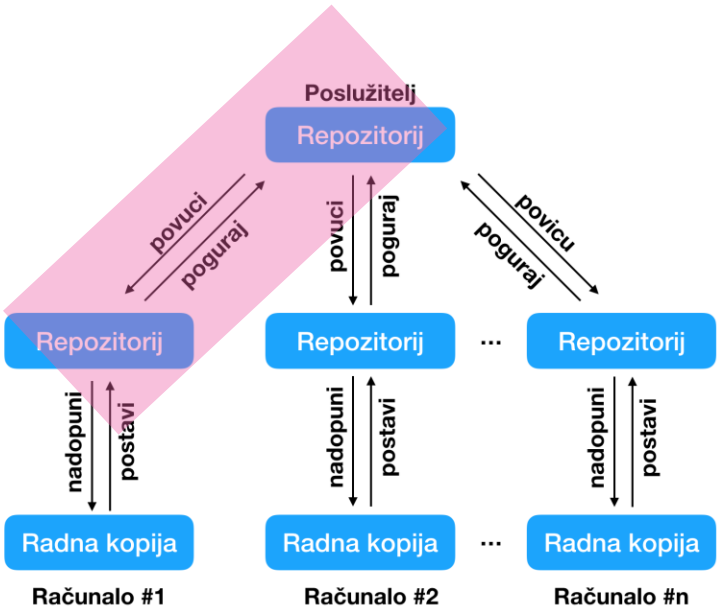
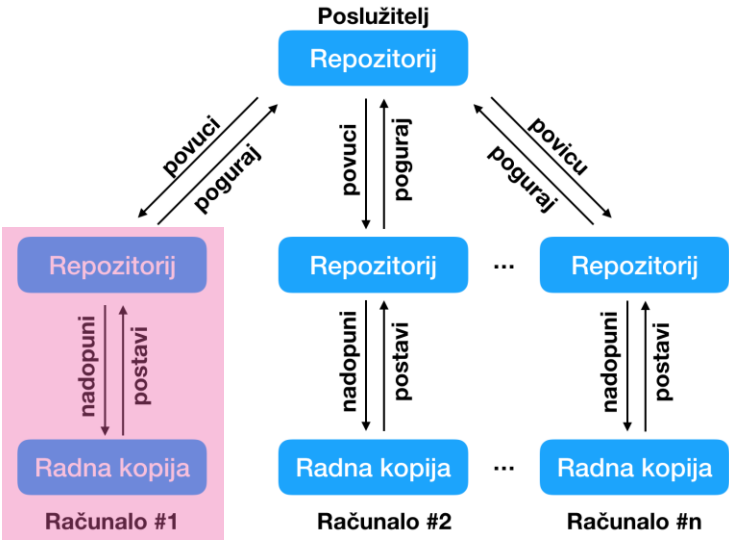
mzimska

Repository name

LjubavniKalkulator

Great repository names are short and memorable. Need inspiration? How about friendly-spoon.

```
git remote add origin https://github.com/mzimska/LjubavniKalkulator.git
git push -u origin master
```



mzimska / LjubavniKalkulator

Unwatch 1 Star 0 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

Branch: master LjubavniKalkulator / src / ffos / Ljubav.java Find file Copy path

mzimska Inicijalni program 8d28353 17 minutes ago

1 contributor

39 lines (32 sloc) 929 Bytes Raw Blame History


1 package ffos;
2
3 /**
4 * <h1>Ljubavni kalkulator</h1>



 **mzimska / LjubavniKalkulator**

 Unwatch ▾ 1

★ Star 0

 Fork 0

 Code

 Issues 0

 Pull requests 0

 Projects 0

 Wiki

 Insights

 Settings

Options

Collaborators

Branches

Webhooks

Integrations & services

Deploy keys

Collaborators

Push access to the repository



Ana Gal
agal



Search by username, full name or email address

You'll only be able to find a GitHub user by their email address if they've chosen to list it publicly. Otherwise, use their username instead.

Add collaborator



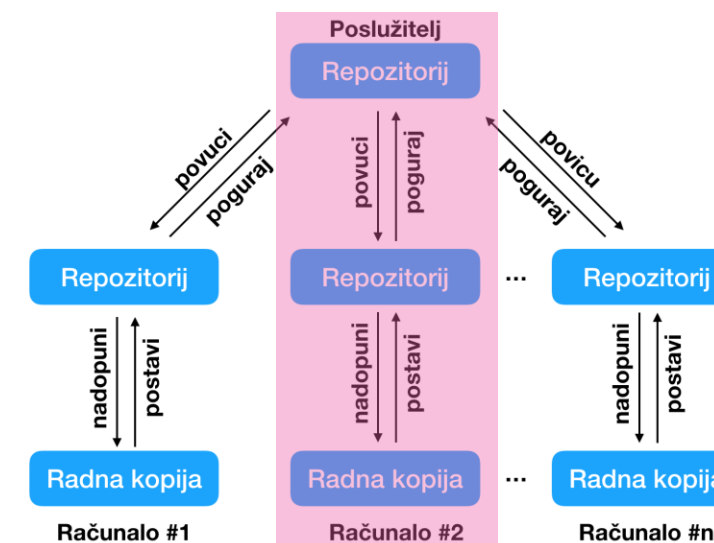
Terminal / Command Prompt

```
cd $WORKSPACE
```

```
git clone https://github.com/mzimska/LjubavniKalkulator.git
```

```
cd LjubavniKalkulator
```

```
git branch LjubavNaKvadrat  
git checkout LjubavNaKvadrat
```



https://cdn-images-1.medium.com/max/1600/1*iHPPa72N1sBI_JSDEGxEA.png

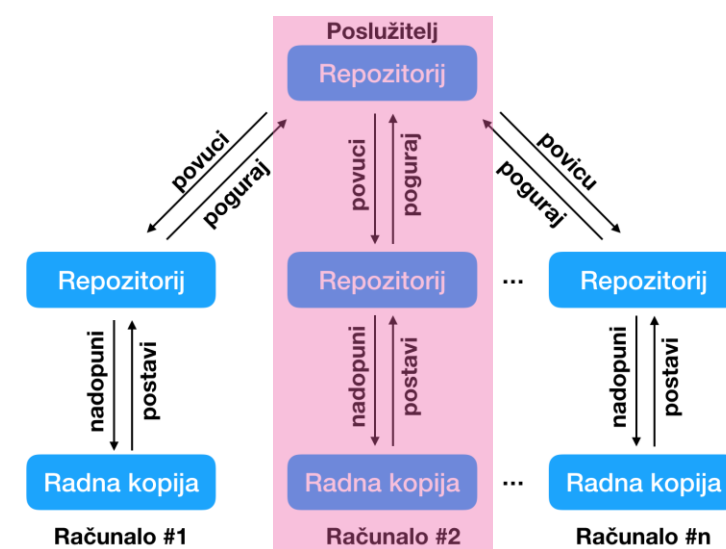


```
package ffos;

/**
 * <h1>Ljubavni kalkulator</h1>
 * Program relevantnim kalkulacijama
 * pronalazi najbolju osobu za tebe
 * @author Marija Zimska
 * @version 1.0
 * @since 2018-11-21
 */
public class Ljubav {

    /**
     * Ovo je metoda koju poziva operativni sustav
     * @param args ne koristim.
     * @return tipa void pa ne vraća vrijednost.
     */
    public static void main(String[] args) {
        if (args[0].equals("Marija") && args[1].equals("Zvonko")) {
            System.out.println("Volite se 98 %");
        } else {
            System.out.println("Volite se " + Math.random() + " %");
        }
    }
}
```

```
git add src/*
commit -m "Ovako je puno bolje"
git push origin LjubavNaKvadrat
```



LjubavNaKvadrat (1 minute ago)

Compare & pull request



mzimska / LjubavniKalkulator

Watch 1 Star 0 Fork 0

Code Issues 0 Pull requests 1 Projects 0 Wiki Insights

Marija, molim te provjeri #1

Edit

Open agal wants to merge 1 commit into master from LjubavNaKvadrat

Conversation 0 Commits 1 Checks 0 Files changed 1 +6 -13



agal commented a minute ago

Collaborator + 😊 ...

Mislim da je ovako puno bolje, na taj način će za sve druge kombinacije osim Marija i Zvonko izbaciti neki slučajni broj dok će za Vas dvoje dati 98% što je super, 100 % bi se vidjelo da je namješteno :)



Ovako je puno bolje

6ef1c4d



agal requested a review from mzimska one minute ago

Reviewers



mzimska



Assignees



No one—assign yourself

Labels



None yet

Projects



None yet

Milestone



No milestone

Notifications

Unsubscribe

You're receiving notifications because you authored the thread.

1 participant



Write

Preview

AA B i “ < > 🔗 ⋮ ⋮ ⋮ @ 📌 ↩

Leave a comment



[Code](#) [Issues 0](#) [Pull requests 1](#) [Projects 0](#) [Wiki](#) [Insights](#) [Settings](#)

Label issues and pull requests for new contributors

Now, GitHub will help potential first-time contributors discover issues labeled with **help wanted** or **good first issue**

[Dismiss](#)

Filters

Labels Milestones

New pull request

☐ 1 Open ☒ 0 Closed

Author Labels Projects Milestones Reviews Assignee Sort

☐ Marija, molim te provjeri

#1 opened 3 days ago by tjakopecffos

```
cd $HOME_LJUBAVNI_KALKULATOR
git pull
```

...

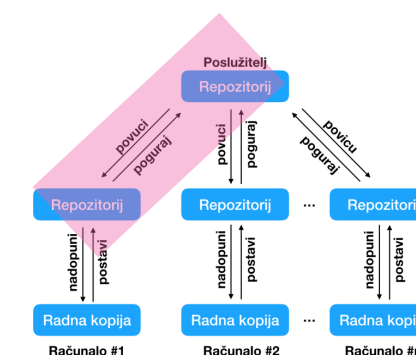
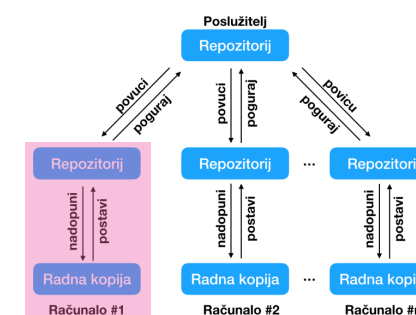
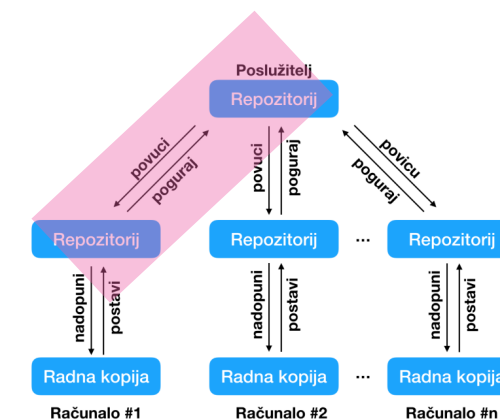
```
* [new branch]          LjubavNaKvadrat -> origin/LjubavNaKvadrat
```

```
git checkout LjubavNaKvadrat
```

```
... izmjene na kodu ...
```

```
git commit -m "Dorada mala/velika slova"
```

```
git push origin LjubavNaKvadrat
```





Continuous integration has not been set up

[Several apps are available](#) to automatically catch bugs and enforce style.



This branch has no conflicts with the base branch

Merging can be performed automatically.

Merge pull request



You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

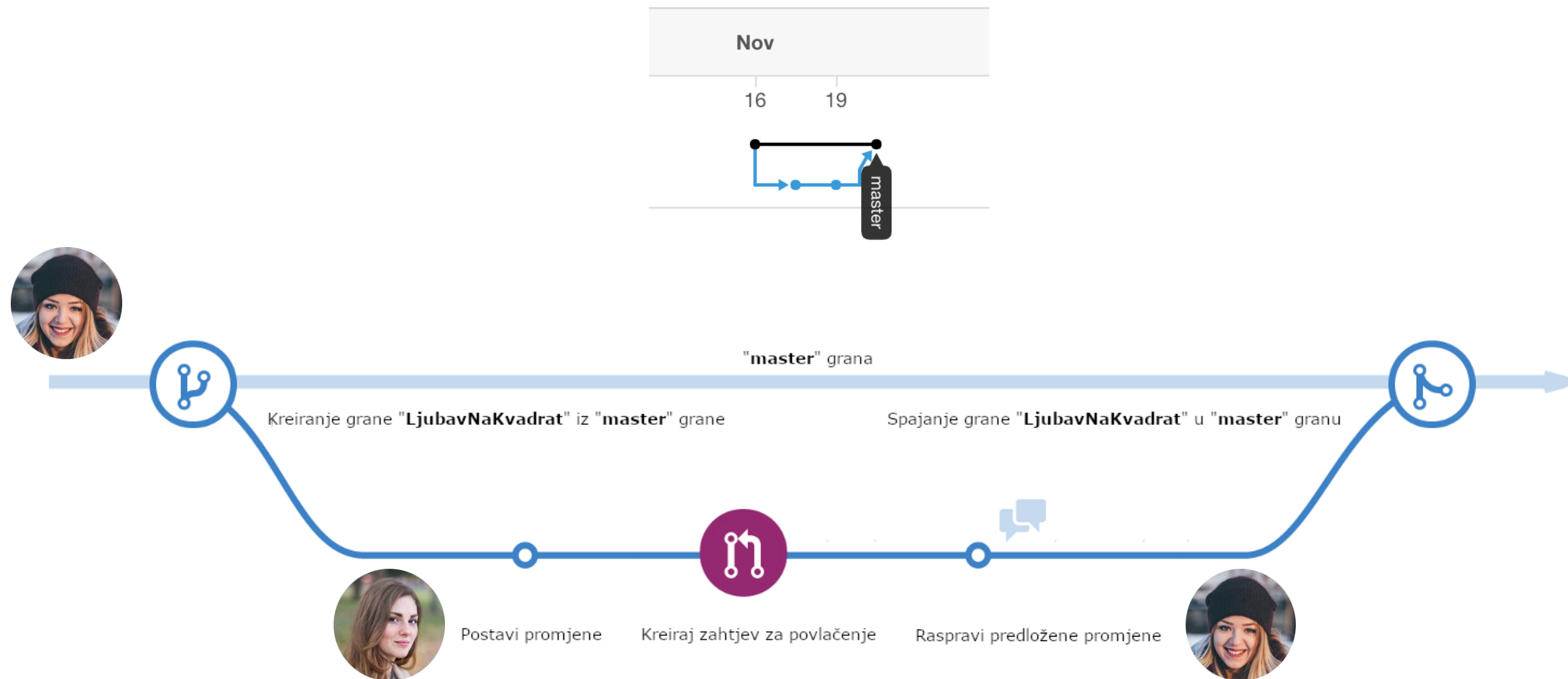


Pull request successfully merged and closed

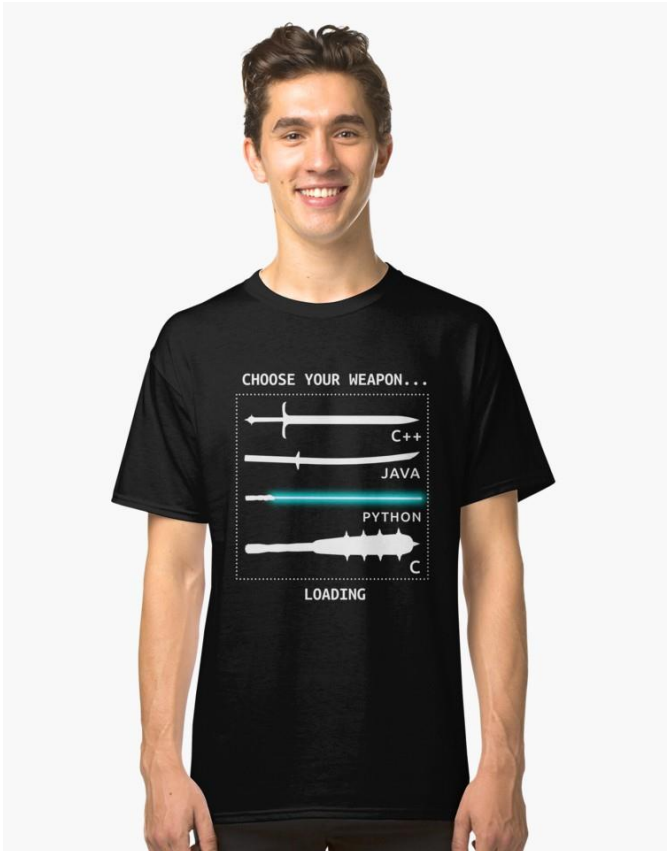
You're all set—the `LjubavNaKvadrat` branch can be safely deleted.

Delete branch

github -> Insights -> Network



7. predavanje




History for [LjubavniKalkulator](#) / [src](#) / [ffos](#) / [Ljubav.java](#)


```
...  ...  @@ -0,0 +1,38 @@
1  + package ffos;
2  +
3  + /**
4  +  * <h1>Ljubavni kalkulator</h1>
5  +  * Program relevantnim kalkulacijama
6  +  * pronalazi najbolju osobu za tebe
7  +  * @author Marija Zimska
8  +  * @version 1.0
9  +  * @since 2018-11-21
10 + */
11 + public class Ljubav {
12 +
13 +     private static final String KALKULIRAM = "Kalkuliram ljubav (tražim osobu)";
14 +     private static final String REZULTAT = "Pronašao 1 rezultat: Marija Zimska <mzimska@ffos.hr>";
15 +     private static final char TRAZENJE = '.';
16 +     private static final int BROJ_PONAVLJANJA = 7;
17 +
18 +     /**
19 +      * Ovo je metoda koju poziva operativni sustav
20 +      * @param args ne koristim.
21 +      * @return tipa void pa ne vraća vrijednost.
22 +      */
23 +     public static void main(String[] args) {
24 +         System.out.println(KALKULIRAM);
25 +         for (int i = 0; i < BROJ_PONAVLJANJA; i++) {
26 +             System.out.print(TRAZENJE + " ");
27 +             try {
28 +                 Thread.sleep(1000);
29 +             } catch (InterruptedException e) {
30 +                 e.printStackTrace();
31 +             }
32 +         }
33 +         System.out.println("\n" + REZULTAT);
34 +     }
35 +
36 + }
37 +
38 +
```



Commits on Nov 19, 2018

Dorada mala/velika slova

mzimska committed 2 days ago


3eb35a7


<>



Commits on Nov 16, 2018


Ovako je puno bolje


agal committed 5 days ago

6ef1c4d

<>

Inicijalni program

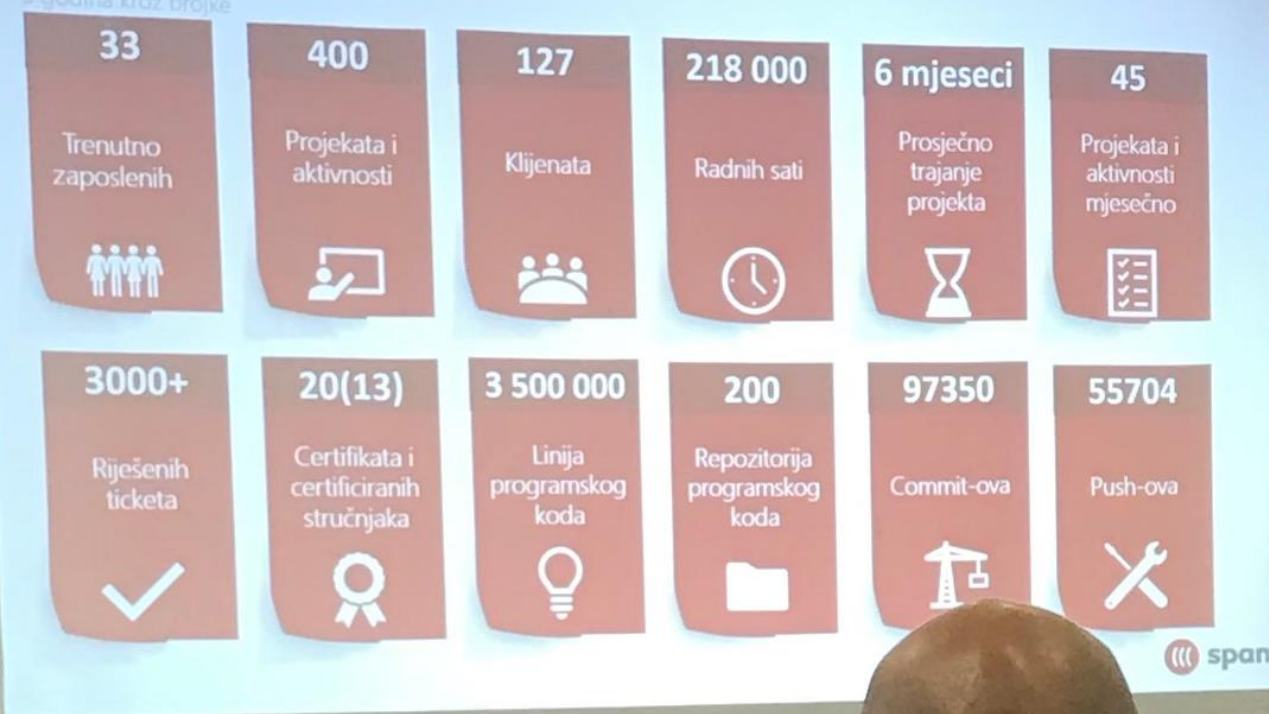
mzimska committed 5 days ago

8d28353


<>

Što smo od tada napravili?

5 godina kroz brojke



github -> dev CV



Fabien Potencier
fabpot


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Pinned

 [symfony/symfony](#)

Public

The Symfony PHP framework


PHP 26k 8.4k

 [twigphp/Twig](#)

Public

Twig, the flexible, fast, and secure template language for PHP

PHP 7.3k 1.1k

 [splitsh/lite](#)

Public


Split a repository to read-only standalone repositories

Go 1.4k 61

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January 2018

2017

Created 2 commits in 1 repository



2016

Literatura

Jon Loeliger, Matthew McCullough. Version Control with Git: Powerful tools and techniques for collaborative software development. "O'Reilly Media, Inc.", 2012

https://web.archive.org/web/20120415051926/http://ximbiot.com/cvs/manual/cvs-1.12.12/cvs_1.html

<https://subversion.apache.org/>

<http://bazaar.canonical.com/en/>

<https://www.mercurial-scm.org/>

<https://www.atlassian.com/git/tutorials/what-is-version-control>

<https://www.monotone.ca/>

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

<https://docs.microsoft.com/en-us/azure/devops/learn/git/what-is-git>

<https://insights.stackoverflow.com/survey/2015#tech-sourcecontrol>

<http://www-public.imtbs-tsp.eu/~gibson/Teaching/Teaching-ReadingMaterial/Rochkind75.pdf>

<http://www.gnu.org/software/rcs/tichy-paper.pdf>

<https://www.capterra.com/source-code-management-software/>

<https://www.edureka.co/blog/what-is-git/>

<https://www.youtube.com/watch?v=cQKo62CvO9w>

<https://financesonline.com/version-control-systems/>

<https://git-scm.com/>

<http://devhumor.com/content/uploads/images/January2018/hire-me.png>