

Git and GitHub

Version Control Systems and Teamwork



SoftUni Team

Technical Trainers



Software University

<https://softuni.bg>

1. Software Configuration Management and **Source Control Systems**
 - Vocabulary: **Clone** a Repo, **Commit** a Changeset, **Push** the Changes, **Pull** Changes, **Merge** Changes
2. Introduction to **Git**
 - Working with Git, Git Bash, and GitHub Desktop
3. Introduction to **GitHub**
 - Create a Repo, Clone, Commit, Push, Conflicts

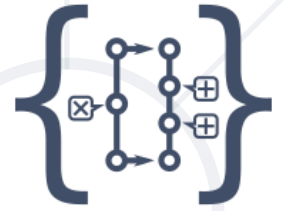


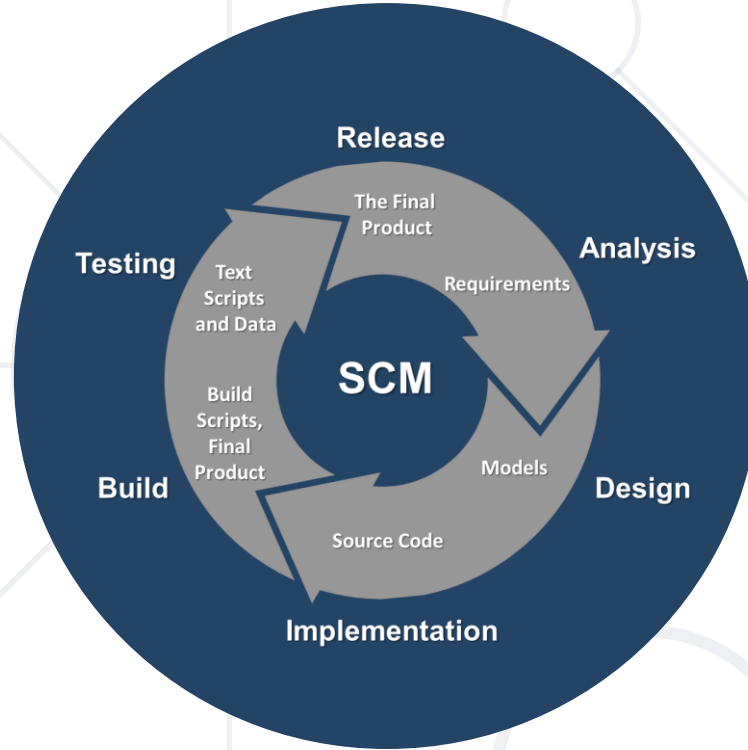
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#qa-fund

Source Control Systems: Lesson Summary

- **Source control systems** keep the source code (+ other project assets) in a shared **repository**
 - Developers can **clone** a repository, **pull** the latest version, **commit** & **push** local changes, view the change logs, etc.
- **Git** is the most popular source control system
 - Other version control systems: SVN, TFS, Perforce
- **GitHub** is the #1 site for Git project hosting
 - Git hosting + issue tracker + review system + project tracker + build system





Software Configuration Management

Working on Shared Code: Source Control Systems

Software Configuration Management

- **Version control** \approx Software Configuration Management (SCM) \approx **source control system**
- A software engineering discipline
- Consists of techniques, practices and tools for working on **shared source code** and files
- Mechanisms for **changes tracking** and **conflict resolution**
- Defines the process of **change management**
- Keeps track of **what is changing** in the project over time
- Solves **conflicts** in the changes



Change Log

- Version control systems keep their own **change log** (version history):
 - Who?
 - When?
 - Why?
 - What was changed?
- Old versions can be **reverted back**



C:\SoftUni\COURSES\QA-Profession - Log Messages - TortoiseSVN

Messages, Paths, Authors, Revisions, Bug-IDs, Date, From: 18-May-23 To: 13-Jun-23

Revision	Actions	Author	Date	Message
492		nakov	Monday, 5 June, 2023 13:04:30	work in progress: improving...
491		miroslava.dimitrova	Monday, 5 June, 2023 9:42:28	
490		miroslava.dimitrova	Monday, 5 June, 2023 9:22:21	
489		aleksandra.raykova	Thursday, 1 June, 2023 15:46:35	changed lecturer name
488		nakov	Wednesday, 31 May, 2023 17:37:45	Added UI prototypes
487		nakov	Wednesday, 31 May, 2023 0:23:42	Fixes and improvements
486		nakov	Tuesday, 30 May, 2023 18:28:57	fixes and improvements
485		krasimir.tsanev	Tuesday, 30 May, 2023 15:37:26	
484		krasimir.tsanev	Tuesday, 30 May, 2023 14:40:14	

Added UI prototypes

Path	Action	Copy from path	Revision
/resources/UI-prototypes	Added		
/resources/UI-prototypes/Ads-App-UI-Prototype.pdf	Added		
/resources/UI-prototypes/Poll-System-UI-Prototype.pptx	Added		

Showing 100 revision(s), from revision 444 to revision 543 - 1 revision(s) selected, showing 3 changed paths

☐ Show only affected paths ☐ Stop on copy/rename ☐ Include merged revisions

Show All Next 100 Refresh

Statistics Help OK

Change Log – Examples

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Show All Next 100 Refresh

Commits · twbs/bootstrap

github.com/twbs/bootstrap/commits/main?after=bb92ec707aa607fa4a43f4...

Commits

main

Commits on May 19, 2023

Add data attr selector for dark mode navbars (#38522) ... Verified a6dc107 <>

mdo committed last month ✓

Commits on May 17, 2023

Docs: new section to explain how to add a new color to the theme (#37737) ... Verified e87852f <>

julien-deramond and mdo committed last month ✓

Regenerate package-lock.json 50a8bb0 <>

XhmikosR committed last month ✓

Build(deps-dev): Bump stylelint from 15.6.1 to 15.6.2 (#38614) ... Verified e33298c <>

dependabot[bot] committed last month ✓

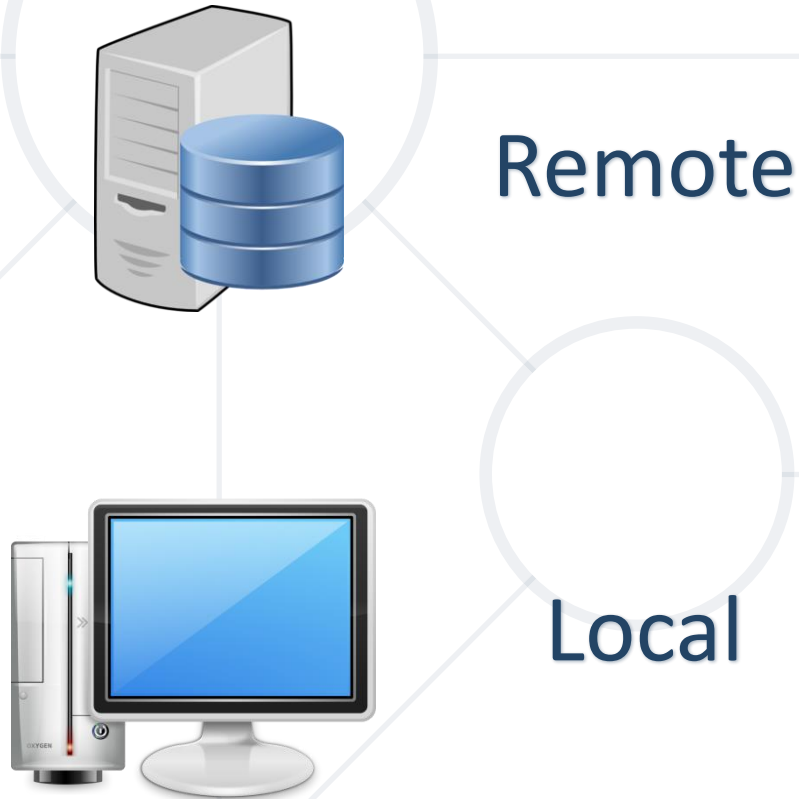
Rename config.yml to hugo.yml (#38582) ... Verified 07a08c2 <>

coliff committed last month ✓

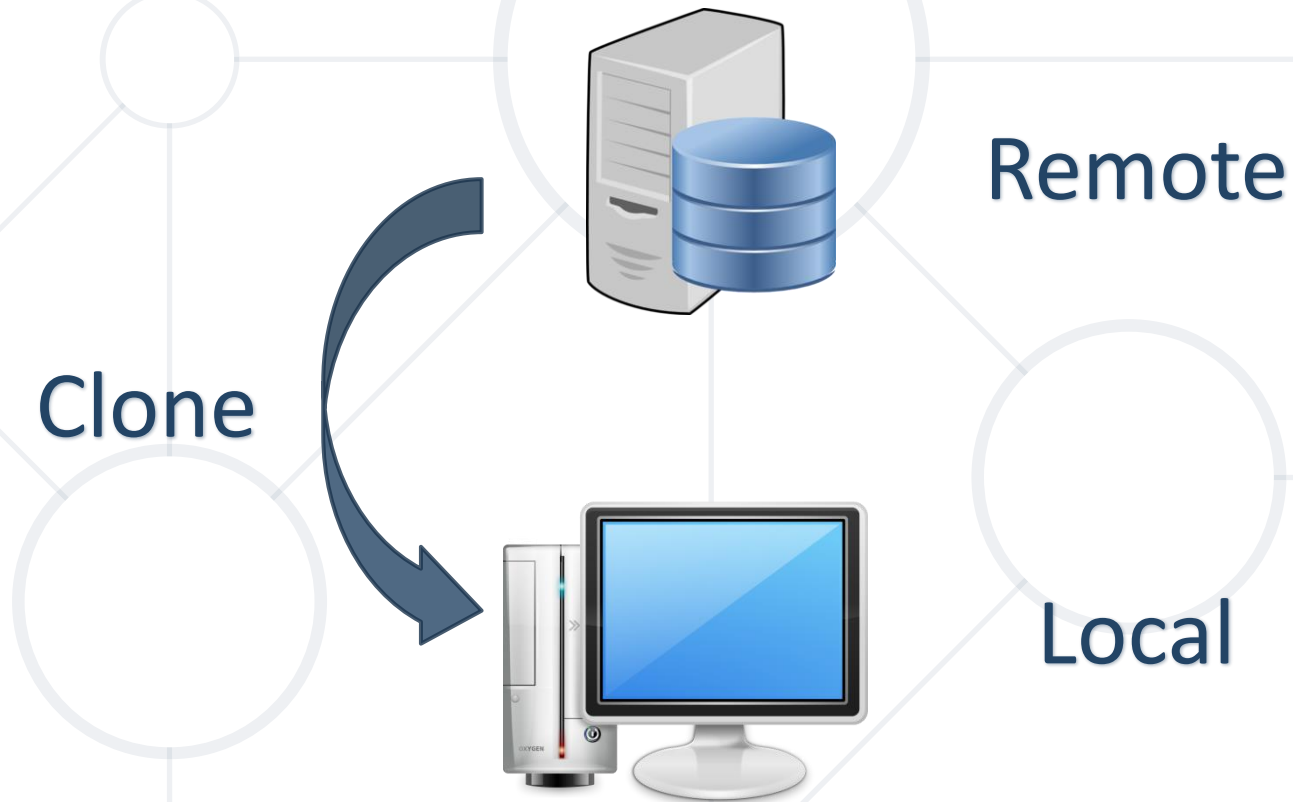
<https://github.com/twbs/bootstrap/commits>

Vocabulary: Repository (Repo)

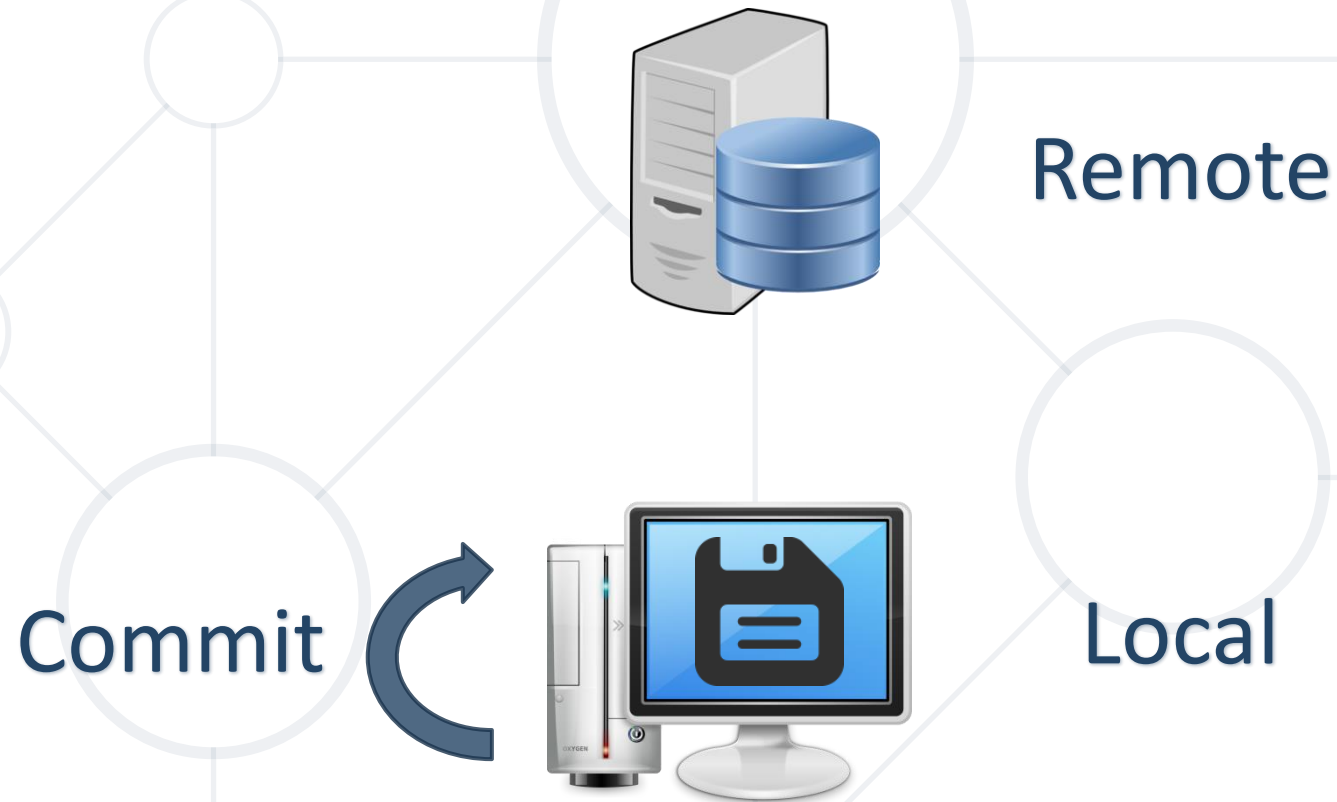
- **Repo** holds the project in a remote server



- **Clone** == download a **local copy** of the remote project

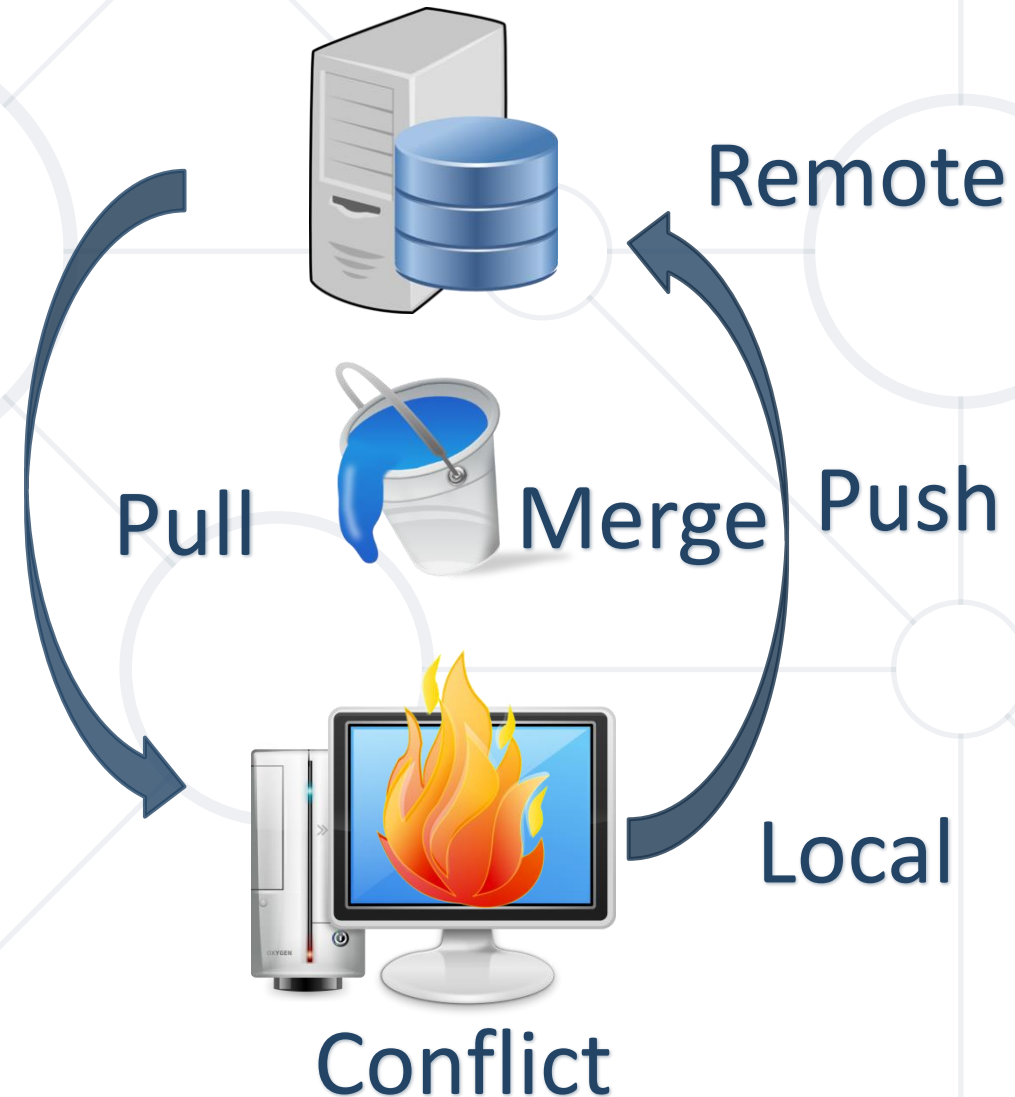


- **Commit** == saves a set of changes locally



Vocabulary: Sync (Pull / Push)

- **Pull** – take and merge the changes from the Remote
- **Push** – send local changes to the Remote



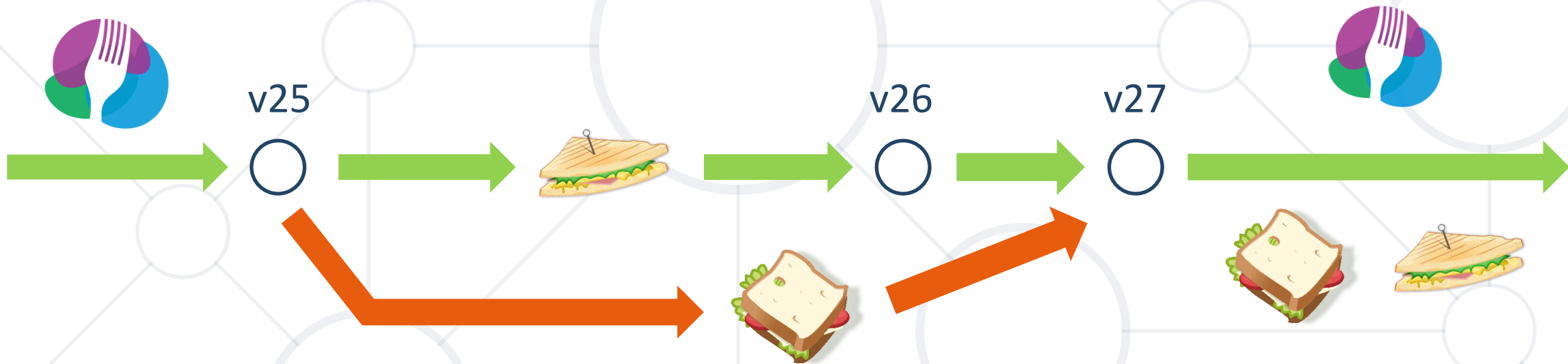
Vocabulary: Branch



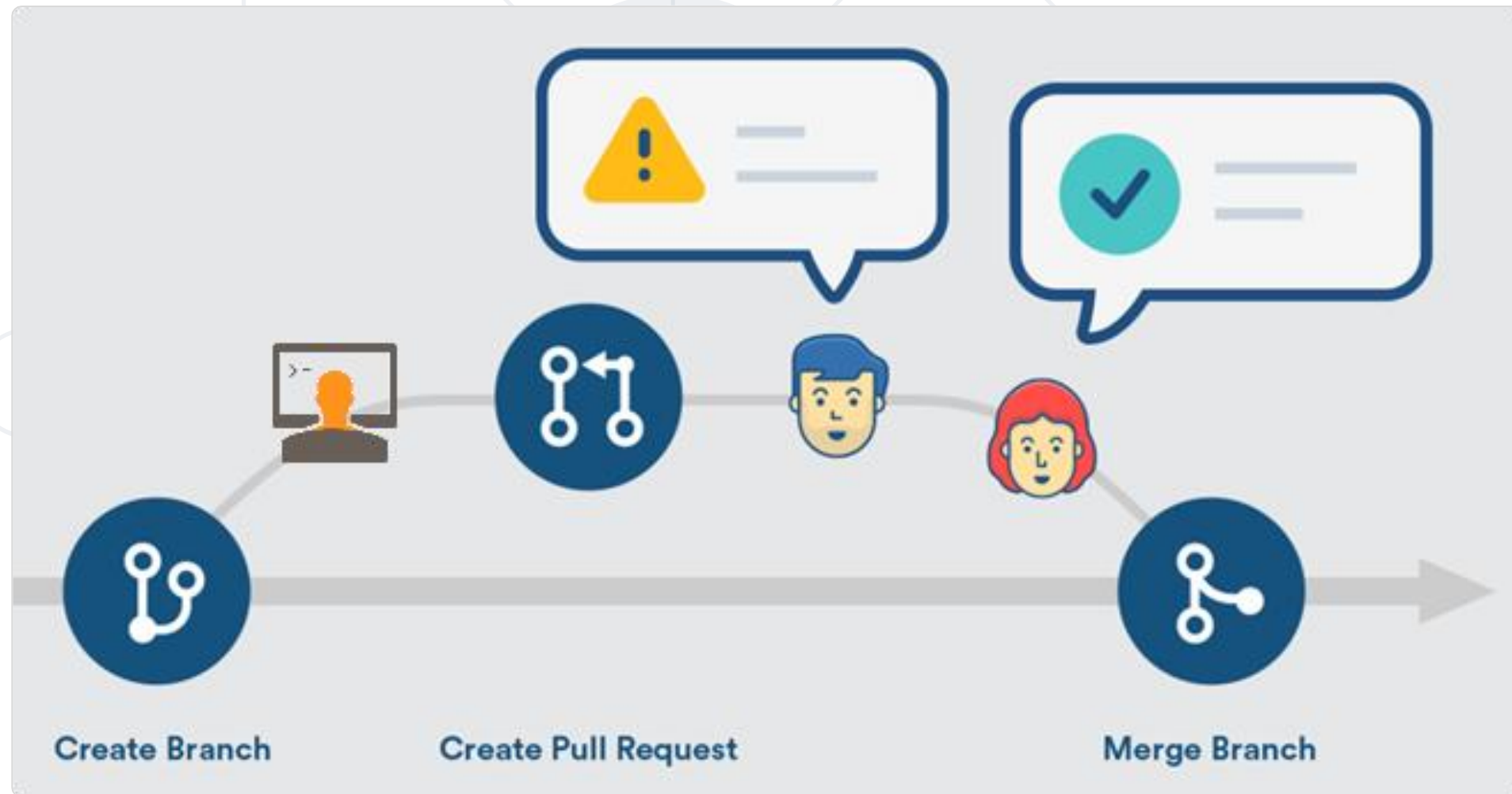
Vocabulary: Merge Branches



Example: Branches



Pull Requests: The Code Review Process





Git

World's #1 Source Control System

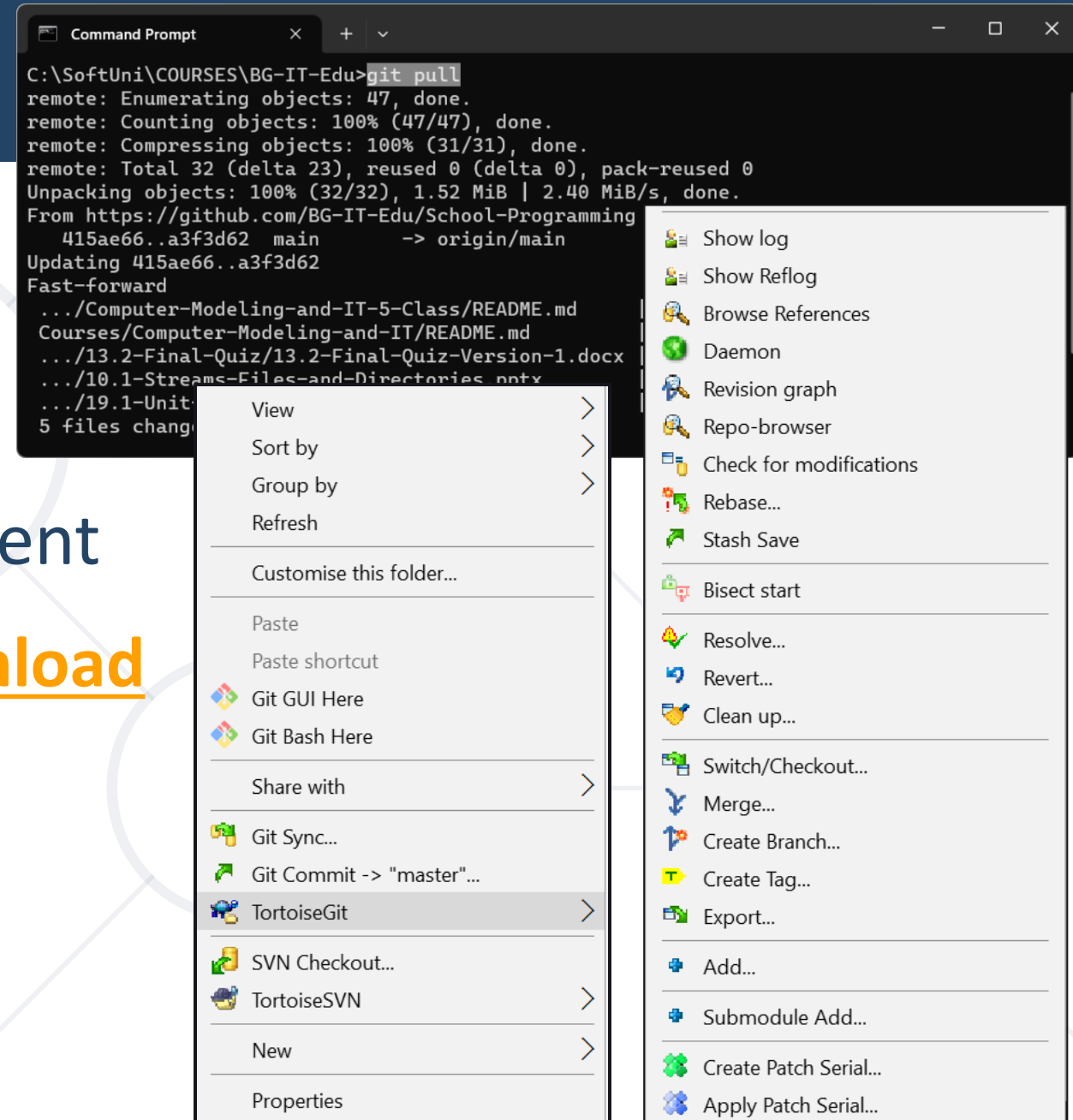
What is Git?

- **Git** == distributed **source-control system**
 - The most popular in the world
 - Free, open-source software
- Works with **local** and **remote** repositories
- **Git bash** – command line interface for Git
- Runs on Linux, macOS and Windows (**msysGit**)
- <https://git-scm.com>



Using Git

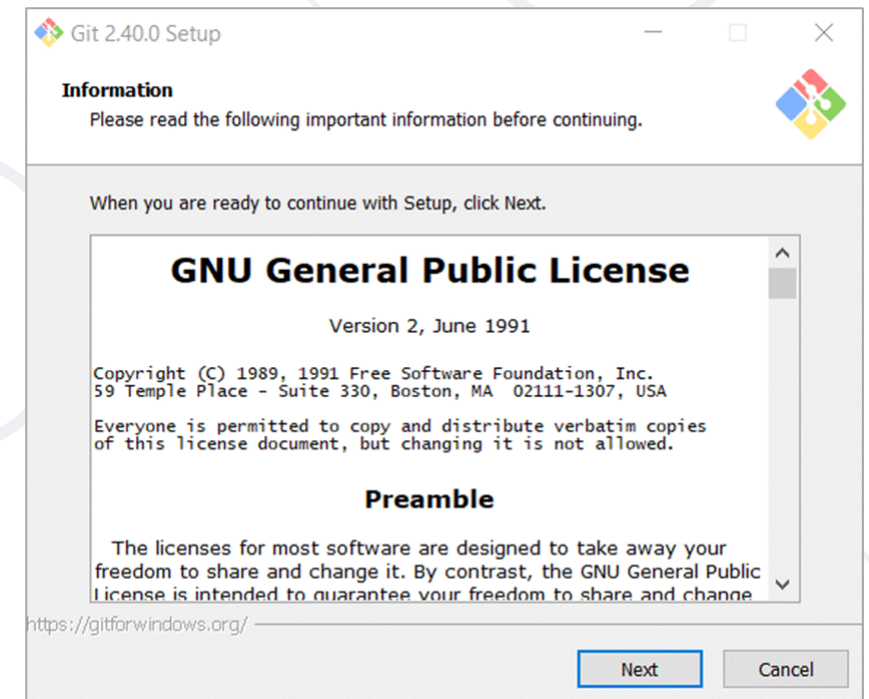
- Console-based Git client
 - **git, Git Bash**
- **TortoiseGit** – Windows GUI client
 - <https://tortoisegit.org/download>
- **GitHub Desktop** client
 - <https://desktop.github.com>



Installing Git

- Git installation on Windows: **Git for Windows** (msysGit)
 - <https://git-scm.com/downloads>
 - Options to select (selected by default)
 - "Use Git Bash Only"
 - "Checkout Windows-style, Commit Unix-style Endings"
- Git installation on **Linux**:

```
sudo apt-get install git
```



Basic Git Commands (1)

- **Cloning** an existing Git repository

```
git clone [remote url]
```

- **Fetch** and **merge** the latest changes from the remote repository

```
git pull
```

- Preparing (**adding** / selecting) files for a commit

```
git add [filename] ("git add ." adds everything)
```

- **Committing** to the local repository

```
git commit -m "[your message here]"
```

Basic Git Commands (2)

- Check the **status** of your local repository (see the local changes)

```
git status
```

- Creating a **new** local repository (in the current directory)

```
git init
```

- Creating a **remote** (assign a short name for remote Git URL)

```
git remote add [remote name] [remote url]
```

- **Pushing** to a remote (send changes to the remote repository)

```
git push [remote name] [local name]
```

- **Clone** a repository from GitHub

```
git clone https://github.com/SoftUni/playground
```

- **Modify** local files

```
notepad README.md
```

- **Commit** changes (local)

```
git add . & git commit -m "Added something"
```

- **Push** the changes to GitHub

```
git push
```



Git: Live Demo

Checkout → Modify → Commit → Push

GitHub – Teamwork Example

■ Alice (terminal)

```
git clone https://github.com/SoftUni/playground
```

```
notepad README.md
```

```
git add . & git commit -m "Added something"
```

```
git push
```

■ Bob (TortoiseSVN)

```
git clone https://...
```

```
notepad README.md
```

```
git add & git commit
```

```
git push → conflict
```

```
git pull → merge
```

```
git push → success
```





Git: Live Demo

Teamwork and Resolve a Conflict

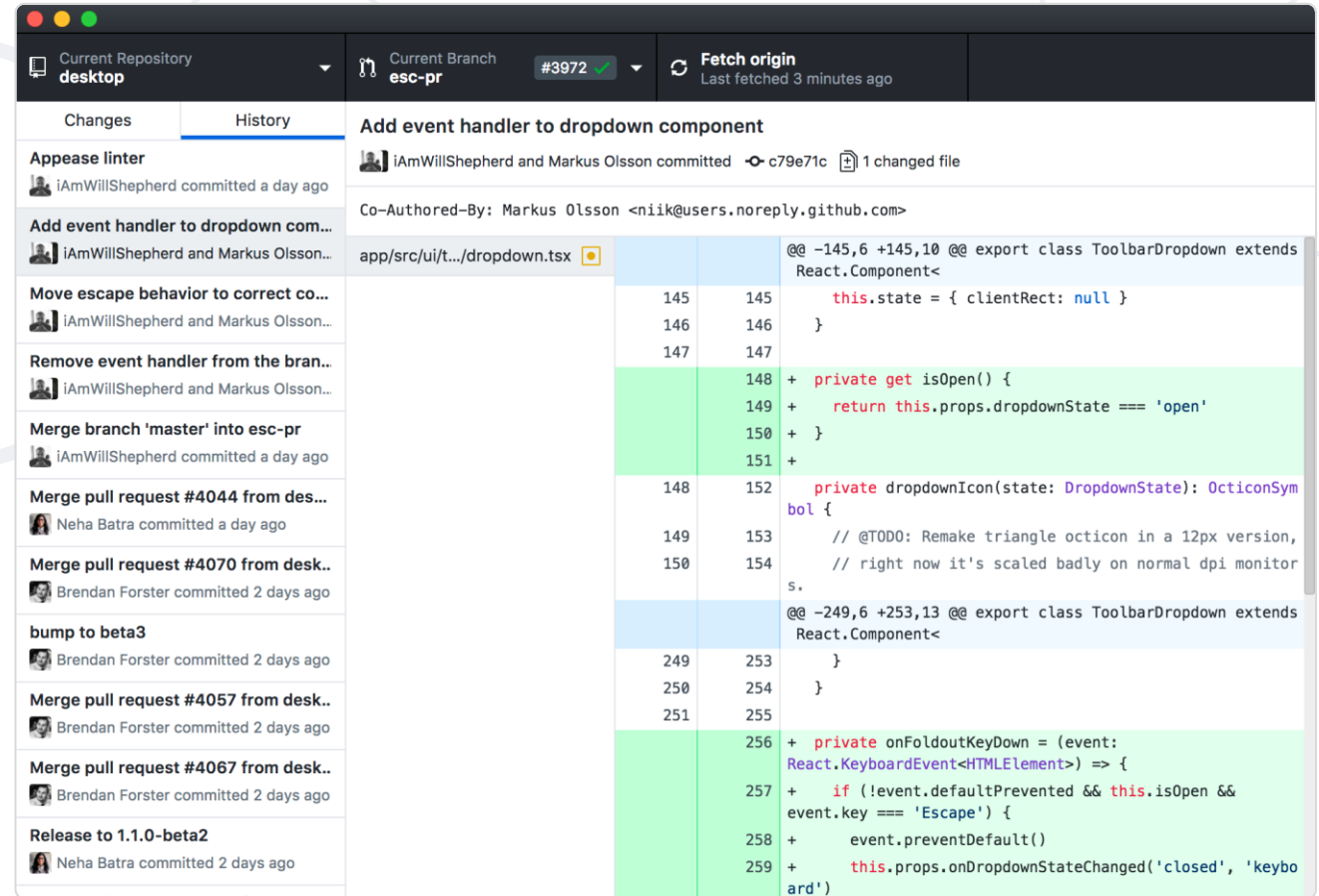


GitHub Desktop

Development Workflow Simplified

What is GitHub Desktop?

- Simple **Desktop GUI client** app by GitHub
- Translates Git operations from command-line into a **user-friendly UI**
- Functions: **manage repositories, branches, commits, and pull requests** without opening a terminal



GitHub Desktop's Key Features

- **Repository** management
 - Create, clone, pull
- **Change** management
 - Add, commit, push
 - Conflict resolution
- **Branch** management
 - Create, switch, merge
 - Pull requests and merging



<https://desktop.github.com>



GitHub

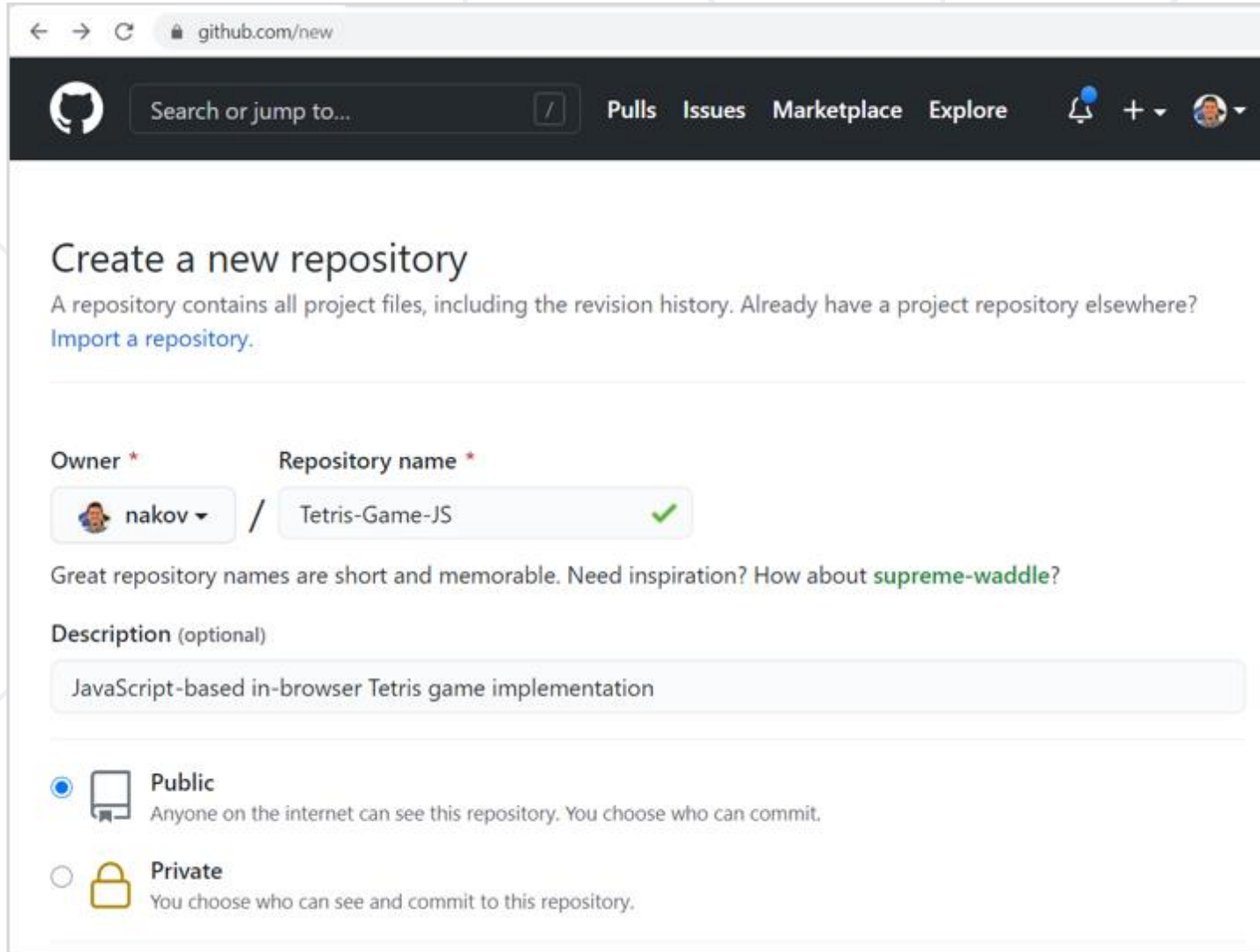
The World's #1 Developer Collaboration Cloud

What is GitHub?

- **GitHub** is the world's #1 source code hosting site
 - **Free** for open-source projects
 - **Paid plans** for private repositories
- GitHub provides:
 - **Git source code** repository
 - **Issue tracker** (bug tracker)
 - **Project board** (Kanban style)
 - **Wiki pages** (documentation)
 - **Code reviews** (pull requests)
 - **Build system** (actions)
 - **Site hosting** (pages)
 - **Online IDE** (spaces)



Creating a GitHub Repository




github.com/new

Search or jump to... Pulls Issues Marketplace Explore

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)


Owner * Repository name *


 nakov / Tetris-Game-JS ✓

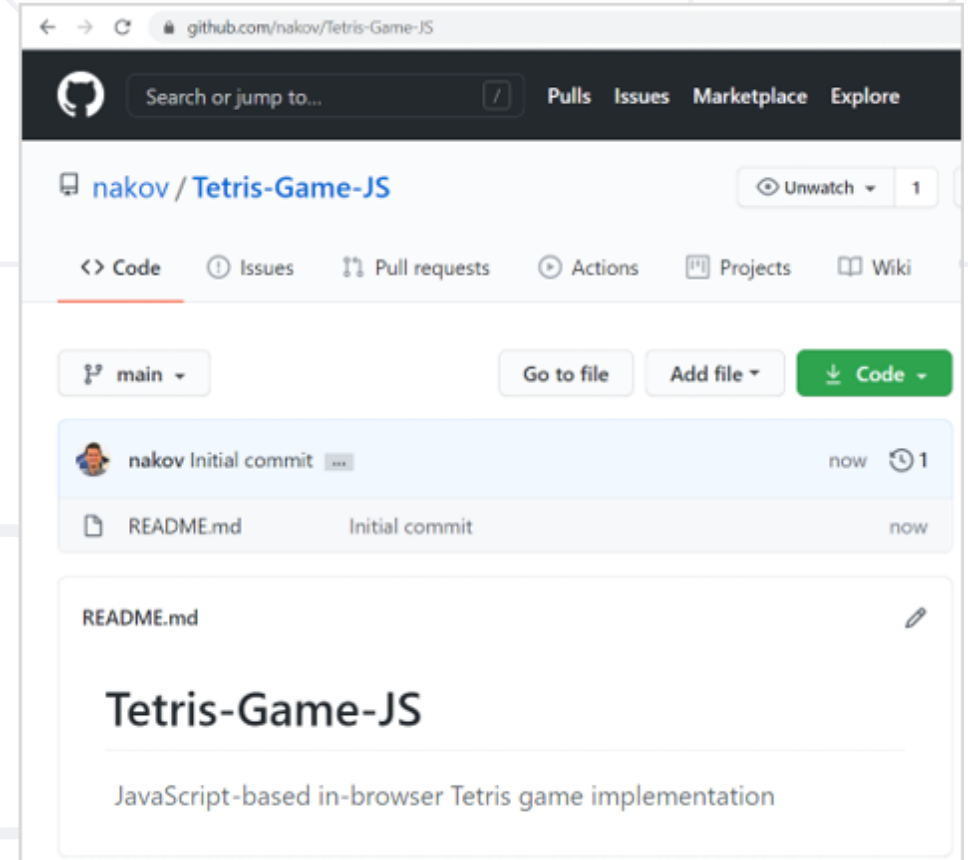
Great repository names are short and memorable. Need inspiration? How about [supreme-waddle?](#)

Description (optional)

JavaScript-based in-browser Tetris game implementation


☒  **Public**
Anyone on the internet can see this repository. You choose who can commit.

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




github.com/nakov/Tetris-Game-JS

Search or jump to... Pulls Issues Marketplace Explore

 **nakov** / **Tetris-Game-JS** Unwatch 1

<> Code ⓘ Issues 🔗 Pull requests ▶ Actions 📁 Projects 📖 Wiki

main Go to file Add file Code

 nakov Initial commit now 1

README.md Initial commit now

README.md

Tetris-Game-JS

JavaScript-based in-browser Tetris game implementation

- **Clone** a repository from GitHub

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```
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- **Commit** changes (local)

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git add . & git commit -m "Added something"
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- **Push** the changes to GitHub

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git push
```



GitHub: Live Demo

Create Repo → Edit Files → Checkout → Push



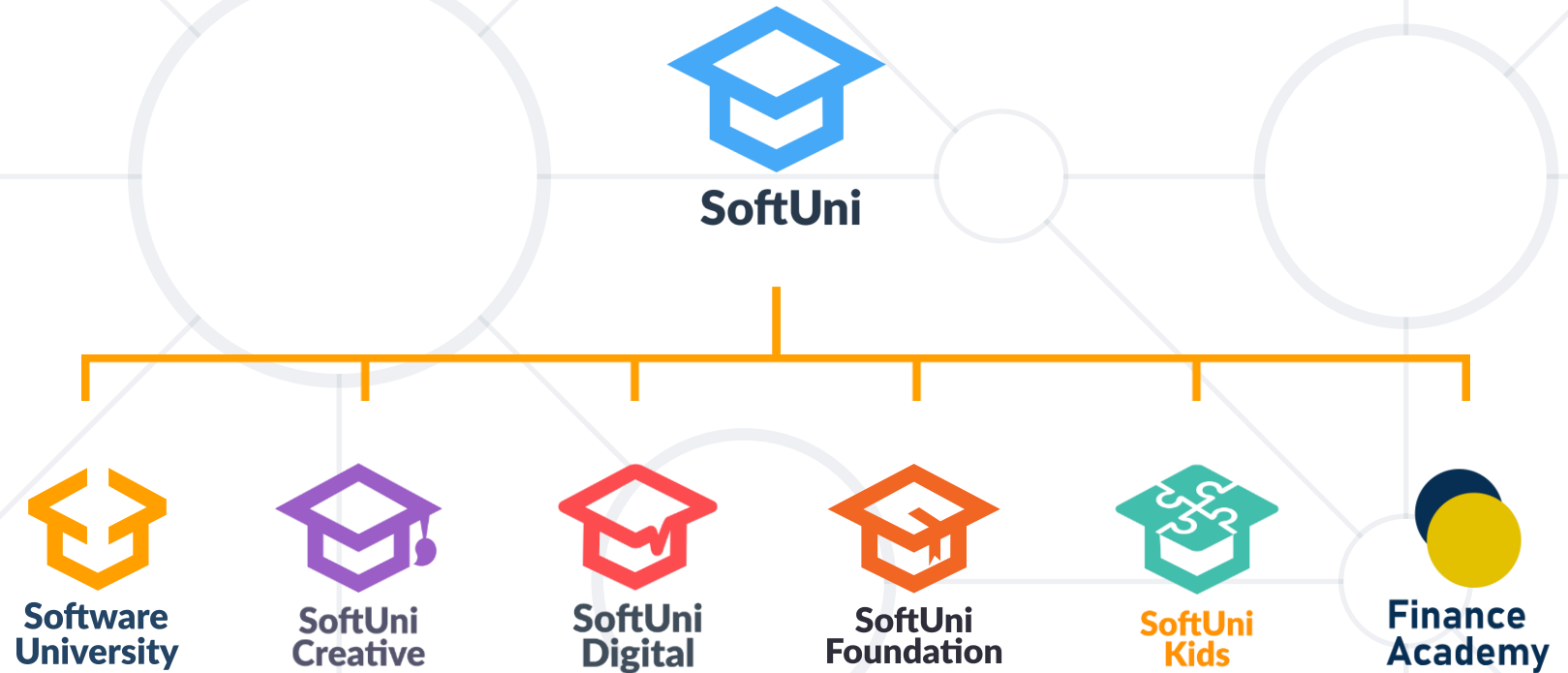
Live Exercises

Creating a Repo, Cloning a Repo, Commit and Push
Changes, Resolve Conflicts, Team Interactions

- Use **version control systems** to work in a team
 - Keep the **shared code** in a central repository
 - Handle merge **conflicts** with ease
- Important **Git** commands:
 - **clone, pull, add, commit, push**
- **Git** clients: **TortoiseGit, GitHub Desktop**
- **GitHub** == the world's most used software project hosting platform
 - Git repository, issue tracker, Kanban board, Wiki



Questions?



SoftUni Diamond Partners

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HOSTING
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**Coca-Cola HBC
Bulgaria**



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POKER | CASINO | SPORTS
a Flutter International brand

INDEAVR
Serving the high achievers



AMBITIONED

 **DRAFT
KINGS**



**SOFTWARE
GROUP**

createX



Postbank
Решения за твоето утре

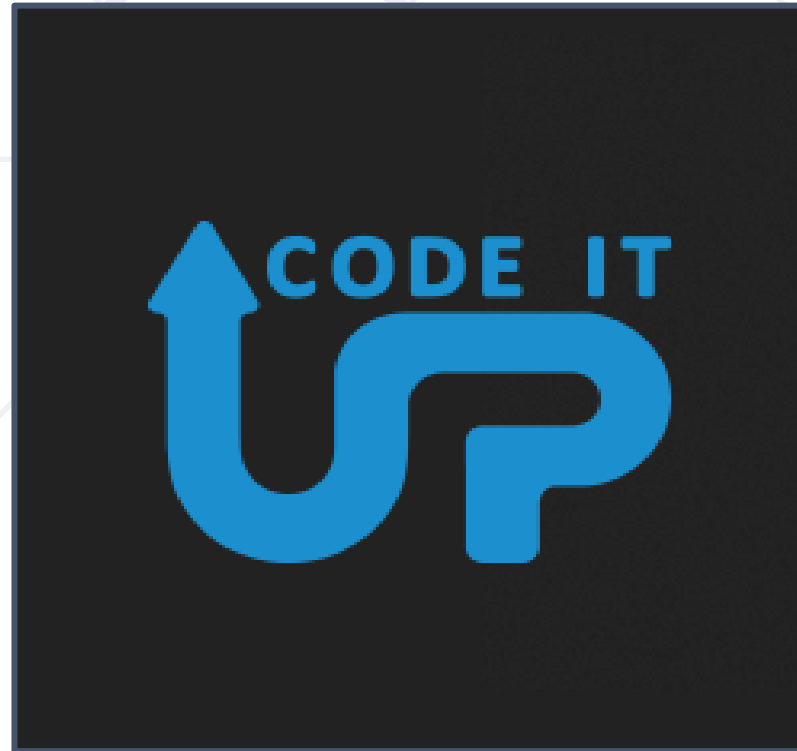


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