

Git and GitHub

Version Control Systems



SoftUni Team
Technical Trainers



SoftUni



Software University

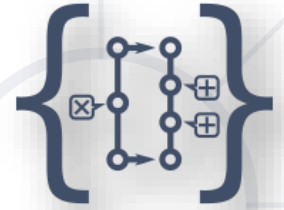
<https://softuni.bg>

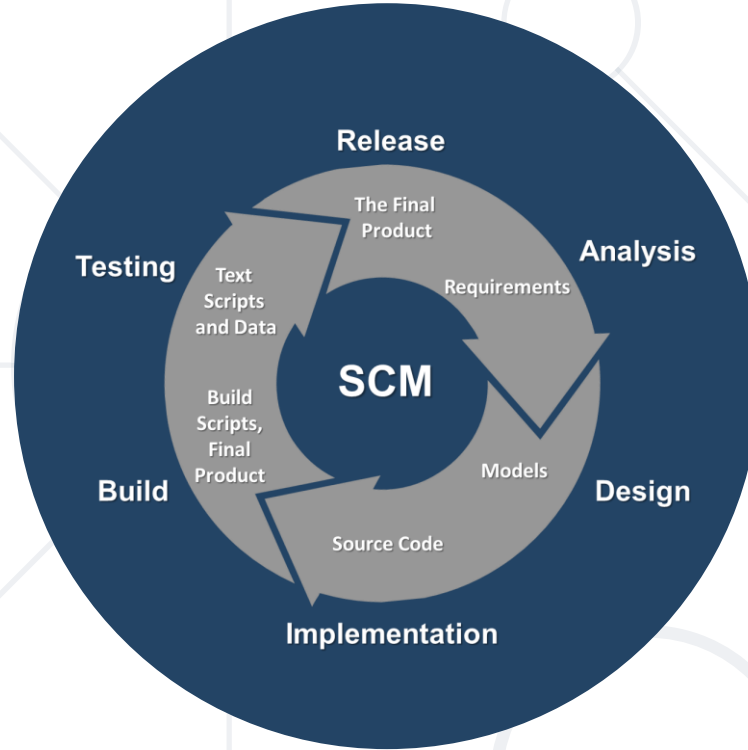
1. Software Configuration Management and Source Control Systems
 - Vocabulary: Clone a Repo, Commit a Changeset, Push the Changes, Pull Changes, Merge Changes
2. Introduction to Git
 - Working with git, Git Bash, and TortoiseGit
3. Introduction to GitHub
 - Create a Repo, Clone, Commit, Push, Conflicts



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 + 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 management, control and **tracking the changes**
 - Defines the process of **change management**
 - Keeps track of what is happening in the project over time
 - Solves **conflicts** in the changes



Change Log

- **Version control systems** keep their own **change log** (version history). It shows
 - Who?
 - When?
 - Why?
 - What had been changed?
- Old versions could be **restored**



C:\SoftUni\COURSES\School-Courses-Svetlina - Log Messages - TortoiseGit

main From: 29-Oct-20 To: 27-Nov-20 | Search: | Author Email

Graph	Actions	Message	Author	Date
		Update README.md	Svetlin Nakov	25-Nov-20 14:07:22
		Merge branch 'main' of https://github.com/SoftUni/...	dizheleva	25-Nov-20 12:58:40
		Changed file structure	evandonova	25-Nov-20 12:21:15
		Exam 12 added	dizheleva	25-Nov-20 12:57:58
		Solutions added	dizheleva	25-Nov-20 11:34:57
		Exercises added	dizheleva	25-Nov-20 11:33:03
		Update README.md	Svetlin Nakov	25-Nov-20 00:17:45
		Uploading presentations, labs and exercises.	Viktoriya Velikova	24-Nov-20 23:50:58
		Corrected file name	evandonova	24-Nov-20 19:12:24

SHA-1: 30484c729d39659d8e20afd8be7fa5d9134d6d69

* Exam 12 added

Path	Extension	Status	Lines added
Courses/Applied-Programmer/Visual-Programming/11.Animation/Animation-Exercises.docx	.docx	Modified	-
Courses/Applied-Programmer/Visual-Programming/12.Mini-Exam-Animation/Mini-Exam-Animatio...	.docx	Modified	-
Courses/Applied-Programmer/Visual-Programming/12.Mini-Exam-Animation/Solutions/Cars.js	.js	Added	50
Courses/Applied-Programmer/Visual-Programming/12.Mini-Exam-Animation/Solutions/FlowerGar...	.js	Added	24

Showing 158 revision(s), from revision b30dc6f to revision 84e760a - 1 revision(s) selected, 0 file(s) selected; line: 74(+) 0(-) files: modified = 2 added = 2 deleted = 0 renamed = 0

☐ Show Whole Project ☐ All Branches

Filter paths

Refresh Statistics Walk Behaviour View OK

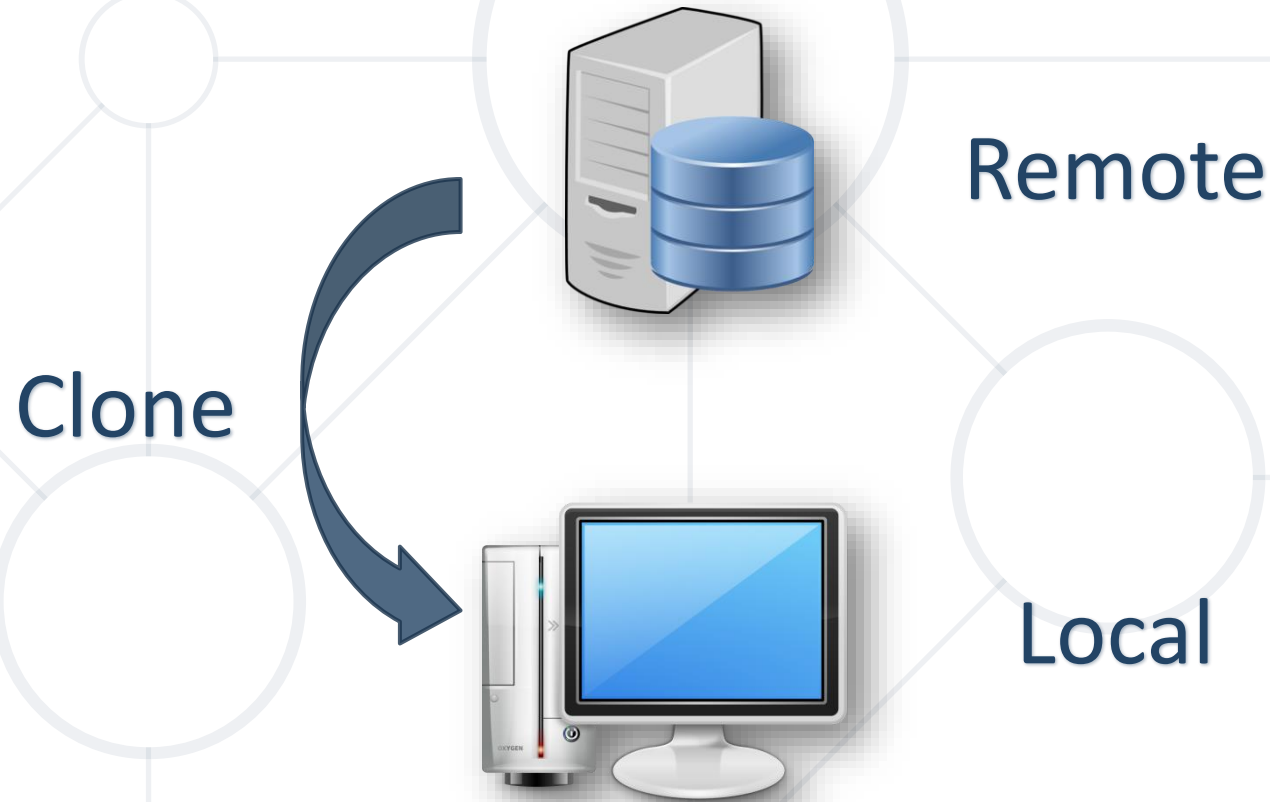
Vocabulary: Repository (Repo)

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



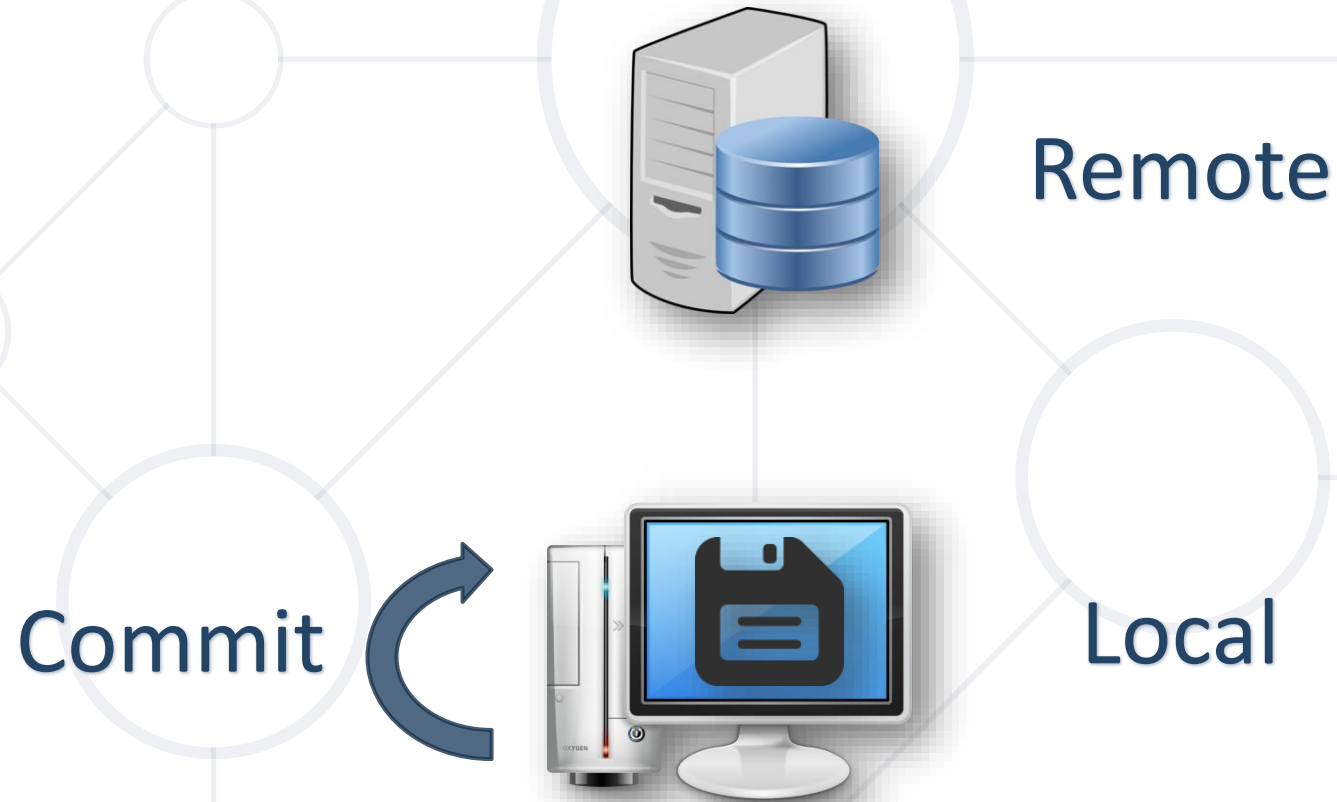
Vocabulary: Clone

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



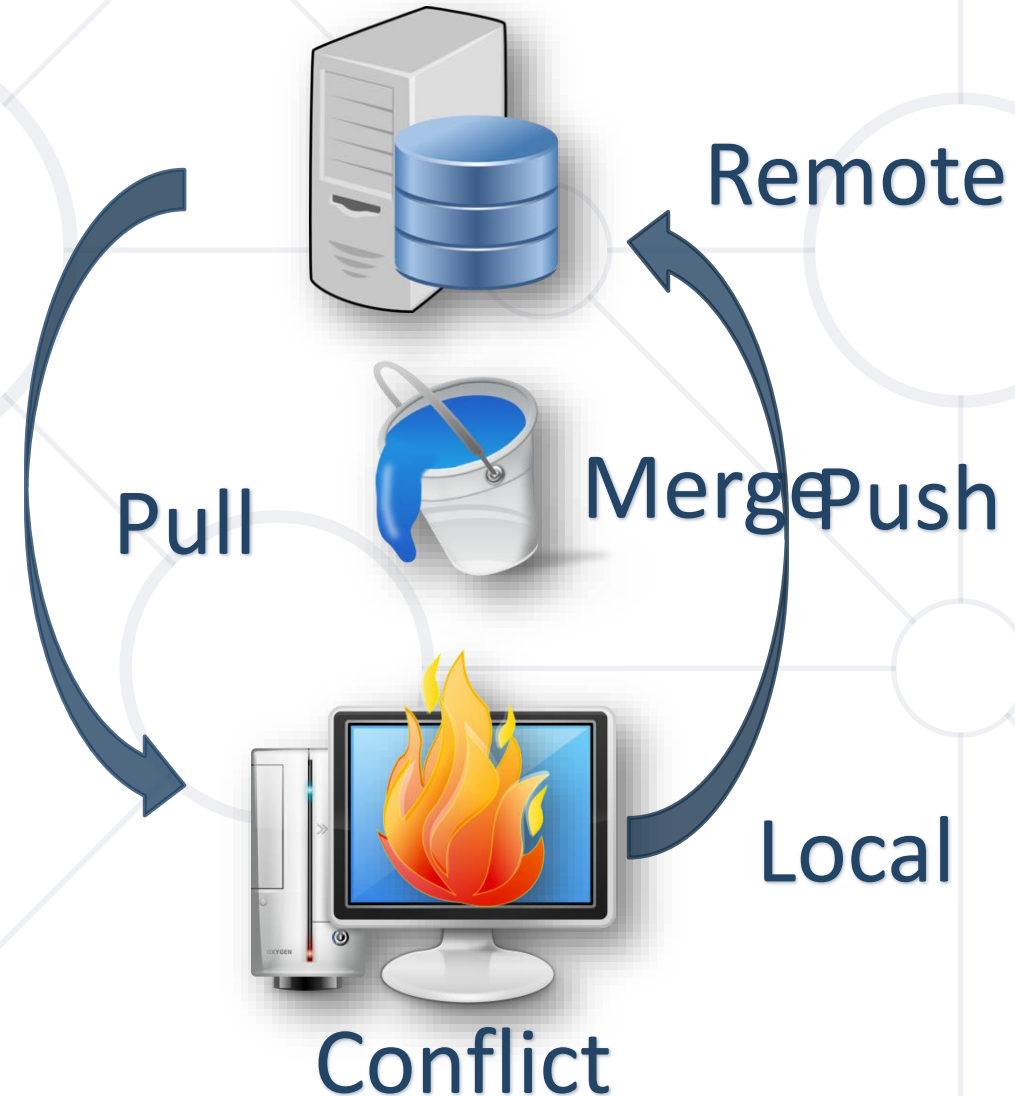
Vocabulary: Commit

- **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



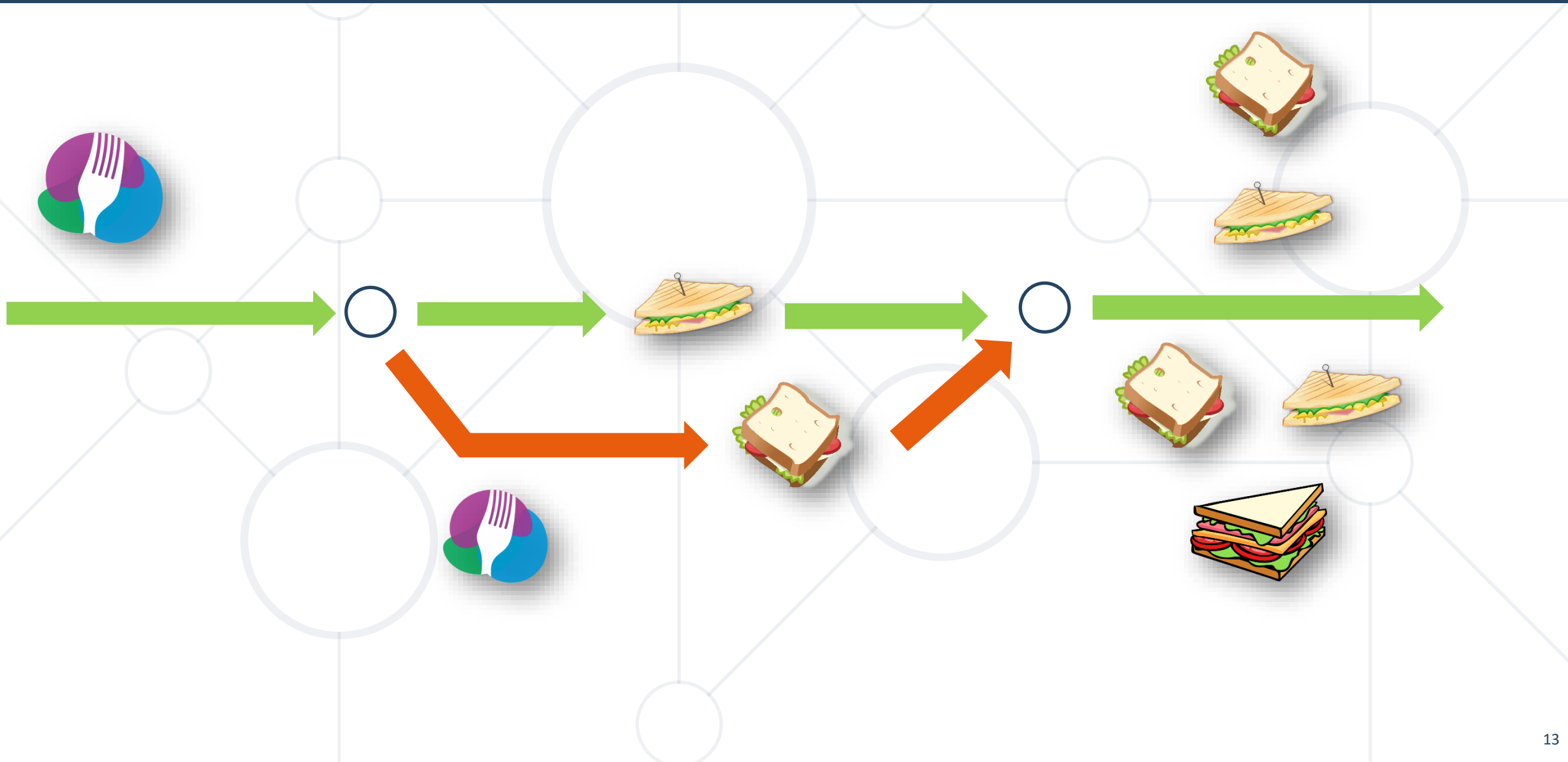
Vocabulary: Branch



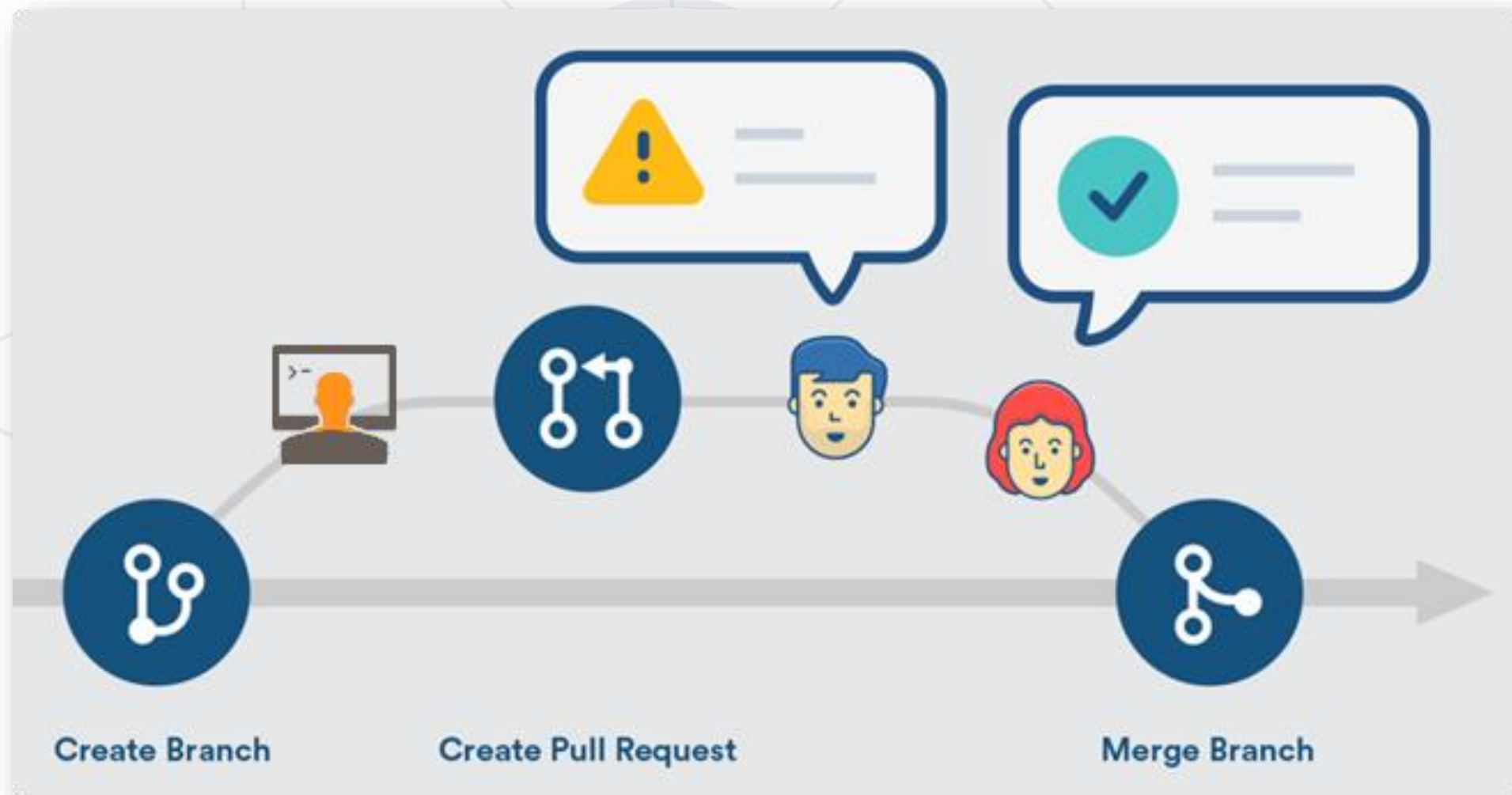
Vocabulary: Merge Branches



Example: Branches



Pull Requests: The Code Review Process





Git

World's #1 Source Control System

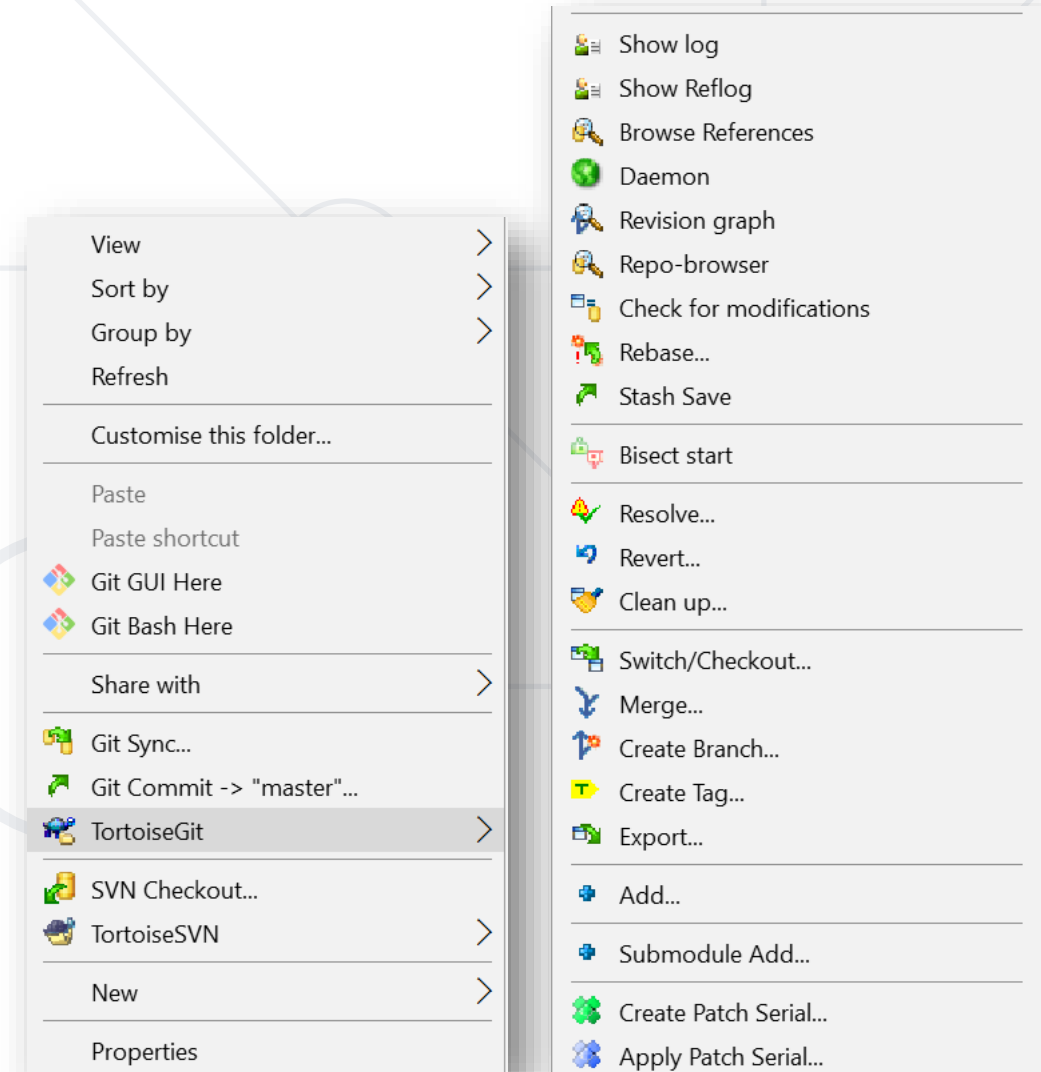
What is Git?

- **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**
- Windows GUI client – **TortoiseGit**
 - <https://tortoisegit.org/download>
- Visual Studio / Eclipse plug-ins
- **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 (they should be selected by default)
 - "Use Git Bash Only"
 - "Checkout Windows-style, Commit Unix-style Endings"
- Git installation on Linux:

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



- 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]"
```

- 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]
```



GitHub

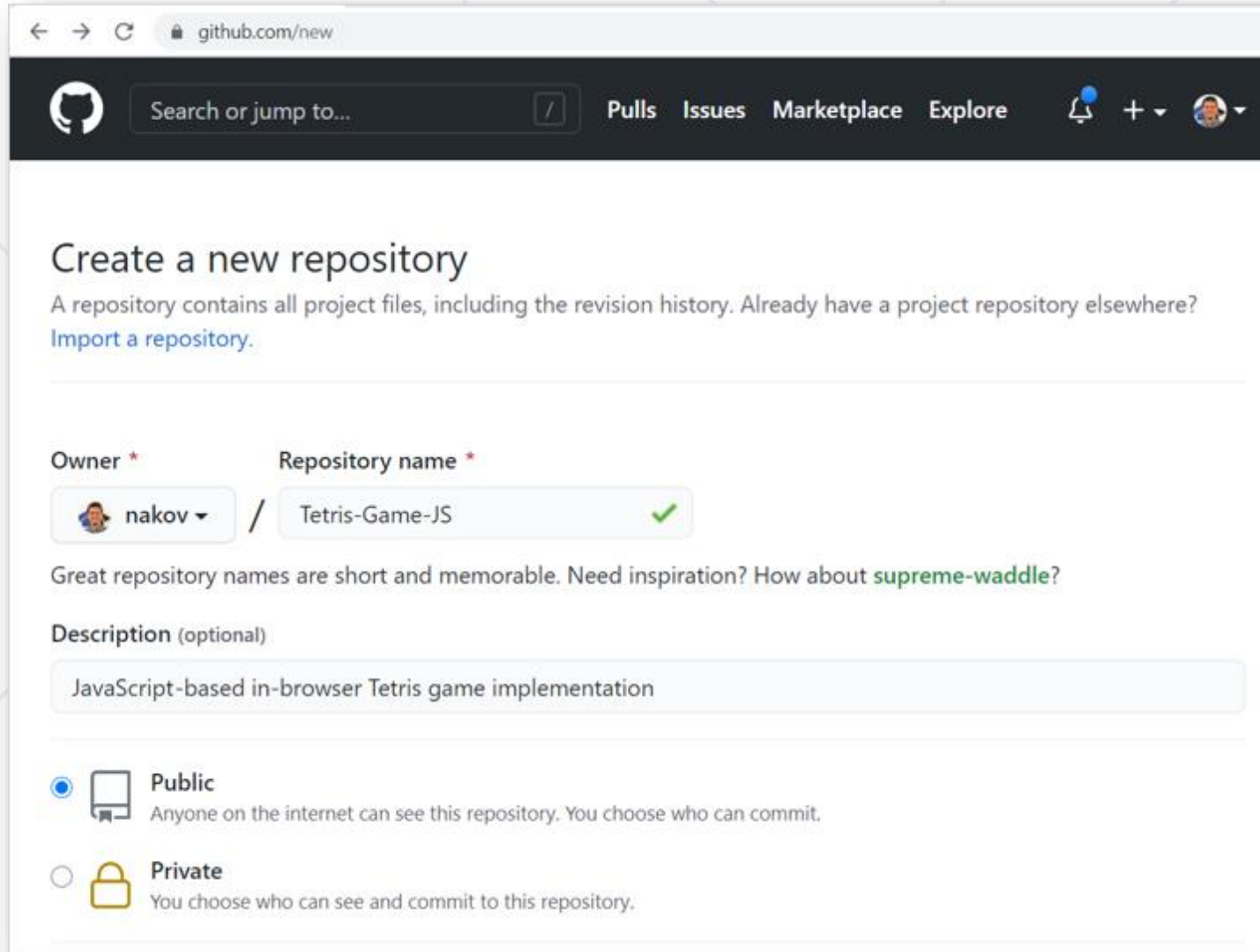
The World's #1 Developer Collaboration Cloud

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)
 - Discussions (forum)

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 ✓

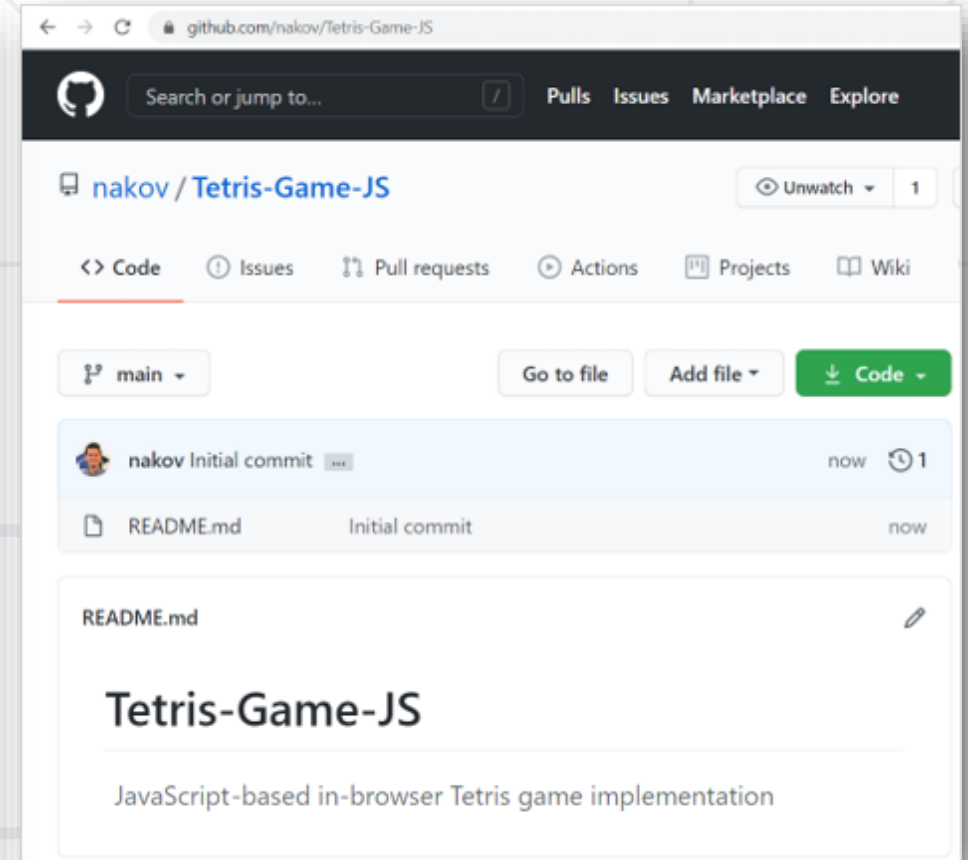
Great repository names are short and memorable. Need inspiration? How about [supreme-waddle?](#)

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

```
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
```


- 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, add, commit, pull, push**
- **GitHub** == the world's most used software project hosting platform
 - Git repository, issue tracker, Kanban board, Wiki

