



FAIR Bioinfo 2024 - Strasbourg



Forges

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With some slides from the IFB/I2BC FAIR bioinfo team

BiGEst



INSTITUT FRANÇAIS DE BIOINFORMATIQUE



INRAE



Inserm



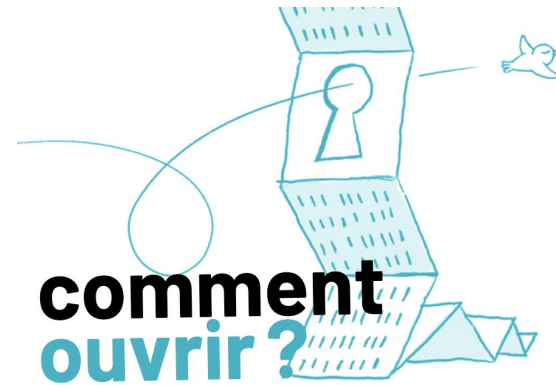


<https://www.ouvrirlascience.fr/science-ouverte-codes-et-logiciels/>

Le logiciel c'est quoi ?	4
Pourquoi ouvrir ?	6
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<https://www.ouvri.la.science.fr/science-ouverte-codes-et-logiciels/>





Version control



Collaboration



GitHub



GitLab





- Web platforms
- Aggregate communities
 - Bug report
 - Suggest new functionalities
 - Interactivity
- Offer many services
 - Manage contributors and rights
 - Documentation (wiki)
 - Continuous integration (automated testing/build)
 - Plan roadmap and releases
 - ...



- Powerful tools
- Unmissable in a developer's life, but not only





The screenshot shows the GitHub interface for the repository 'colomoto/colomoto-docker'. The file 'colomoto-docker/usecases/Usecase - Mutations enabling tumour invasion.ipynb' is open in a viewer. The notebook content includes a title, authors, and a list of affiliations.

Prediction of Mutations to Control Pathways Enabling Tumour Cell Invasion with the CoLoMoTo Interactive Notebook (Tutorial)

Authors: Nicolas Levy^{1,2}, Aurélien Naldi³, Céline Hernandez³, Gautier Stoll⁴⁻⁸, Denis Thieffry³, Andrei Zinovyev⁹⁻¹¹, Laurence Calzone⁹⁻¹¹, Loïc Paulevé^{1*}

¹ LRI UMR 8623, Université Paris-Sud, CNRS, Université Paris-Saclay, Orsay, France; ² École Normale Supérieure de Lyon, France; ³ Computational Systems Biology team, Institut de Biologie de l'École Normale Supérieure, CNRS UMR8197, INSERM U1024, École Normale Supérieure, PSL Université, Paris, France; ⁴ Université Paris Descartes/Paris V, Sorbonne Paris Cité, Paris, France; ⁵ Équipe 11 labellisée Ligue Nationale contre le Cancer, Centre de Recherche des Cordeliers, Paris, France; ⁶ Institut National de la Santé et de la Recherche Médicale, U1138; Paris, France; ⁷ Université Pierre et Marie Curie, Paris, France; ⁸ Metabolomics and Cell Biology Platforms, Gustave Roussy Cancer Campus; Villejuif, France; ⁹ Institut Curie, PSL Research University, Paris, France; ¹⁰ INSERM, U900, Paris, France; ¹¹ MINES ParisTech, PSL Research University, CBIO-Centre for Computational Biology, Paris, France

[PRE REVIEW]: FAIR_Bioinfo: a turnkey training course and protocol for reproducible computational biology #63

New issue

Closed whedon opened this issue on Jul 26, 2019 · 11 comments

The screenshot shows a GitHub issue page. The issue is titled "[PRE REVIEW]: FAIR_Bioinfo: a turnkey training course and protocol for reproducible computational biology #63" and is marked as "Closed". The issue was opened by whedon on Jul 26, 2019, with 11 comments.

whedon commented on Jul 26, 2019 · edited -

Submitting author: @thomasdenecker (Thomas DENECKER)
Repository: https://github.com/thomasdenecker/FAIR_Bioinfo
Version: v1.2.0
Editor: @labarba
Reviewers: @k8hertweck, @lexnederbragt

Author instructions

Thanks for submitting your paper to JOSE @thomasdenecker. The JOSE editor (shown at the top of this issue) will work with you on this issue to find a reviewer for your submission before creating the main review issue.

@thomasdenecker if you have any suggestions for potential reviewers then please mention them here in this thread. In addition, [this list of people](#) have already agreed to review for JOSE and may be suitable for this submission.

Editor instructions

The JOSE submission bot @whedon is here to help you find and assign reviewers and start the main review. To find out what @whedon can do for you type:

```
@whedon commands
```

Assignees

labarba

Labels

Jupyter Notebook pre-review R Shell

Projects

None yet

Milestone

No milestone

Development

No branches or pull requests

Notifications Customize

Unsubscribe

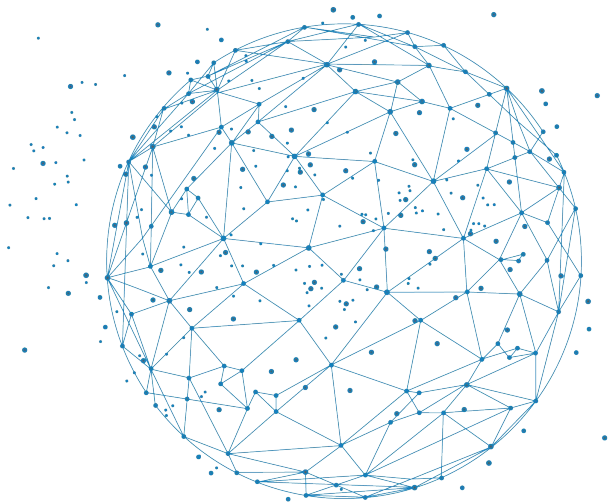
You're receiving notifications because you were mentioned.

2 participants

whedon added the pre-review label on Jul 26, 2019



- Powerful tools
- Unmissable in a developer's life, but not only
- Very often used without thinking
- Very often taken for granted
- Very often not really known



GitHub



slido



Who ?

① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.



Microsoft

Microsoft to acquire GitHub for \$7.5 billion

June 4, 2018 | Microsoft News Center



Acquisition will empower developers, accelerate GitHub's growth and advance Microsoft services with new audiences



lions3 > Patrick Lucas Austin

6/04/18 11:44am



14

So many issues with MS buying GitHub.

First, now you have one of the big software companies that SELLS software owning the site where all the open source companies store their free software. Plus how many of their competitors store code there too. Even if their intentions are good.. do you WANT the Googles, Apples, Microsofts of the world owning these servers?

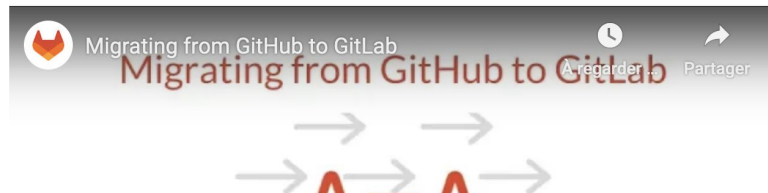
Anyone like what MS did to LinkedIn?

Microsoft has a history of ignoring software standards and just creating their own.

These guys created Sharepoint. Just saying.

I'm already seeing my developer friends moving their libraries off of GitHub. While others are trying to decide which other service to use. Such as BitBucket and GitLab.

HAHA.. look at this training video GitLab just posted.



<https://gizmodo.com/microsoft-buys-github-and-some-people-are-pissed-1826533362>



Microsoft to acquire GitHub for \$7.5 billion

June 4, 2018 | Microsoft News Center



Acquisition will empower developers, accelerate GitHub's growth and advance Microsoft services with new audiences



Enterprise

Four years after being acquired by Microsoft, GitHub keeps doing its thing

Frederic Lardinois @fredericl / 8:32 PM GMT+2 • October 26, 2022




Image Credits: GitHub

<https://techcrunch.com/2022/10/26/four-years-after-being-acquired-by-microsoft-github-keeps-doing-its-thing/>

Product ▾ Solutions ▾ Open Source ▾ Pricing

Search or jump to... Sign in Sign up

 **GitHub Universe: Dive in to AI, security, and DevEx**
Get your tickets now to join us on Nov. 8-9. >

Let's build from here

The AI-powered developer platform to build, scale, and deliver secure software



Company

About

Blog

Careers

Press

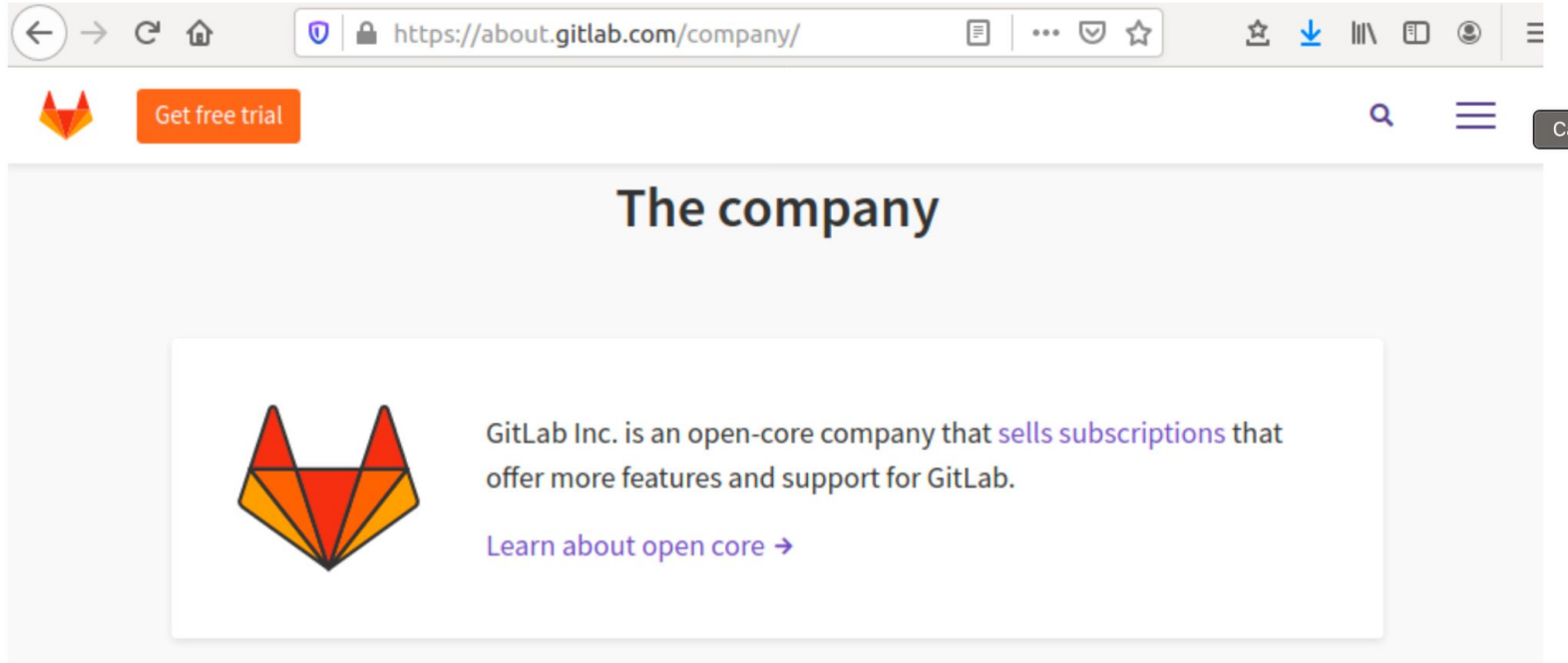
Inclusion

Social Impact

Shop



GitLab, a **GitHub** alternative?



The screenshot shows a web browser window with the URL `https://about.gitlab.com/company/`. The page features the GitLab logo (a stylized fox head) and a "Get free trial" button. The main heading is "The company". Below this, there is a section with the GitLab logo and the text: "GitLab Inc. is an open-core company that sells subscriptions that offer more features and support for GitLab." A link "Learn about open core →" is also present.



Koda

GitLab instance



https://src.koda.cnrs.fr

Rechercher

Mail CNRS Gmail Partage Zoom CNRS Site I2BC - PFNGS JupyterLab (auto-W) Intranet CNRS Etherpad EtamineMISSIONS Notilus InOne

Autres marque-pages

cnrs

Your work > Projects

Search or go to...

Your work

- Projects
- Groups
- Issues
- Merge requests
- To-Do List
- Milestones
- Snippets
- Activity

Help

Welcome to GitLab

Faster releases. Better code. Less pain.

Create a project

Projects are where you store your code, access issues, wiki and other features of GitLab.

Create a group

Groups are the best way to manage projects and members.

Explore public projects

Public projects are an easy way to allow everyone to have read-only access.

Learn more about GitLab

Take a look at the documentation to discover all of GitLab's capabilities.

slido



What ?

① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.



✓ A social network

Hadley Wickham
hadley · he/him

Follow

Chief Scientist at @posit-pbc

25.2k followers · 0 following

Followed by cherman

@posit-pbc
Houston, TX
11:32 - 7h behind
hadley@posit.co
http://hadley.nz
@hadleywickham@fosstodon.org

Sponsoring

Achievements

Send feedback

Organizations

Block or Report

Pinned

- tidyverse/ggplot2** (Public)
An implementation of the Grammar of Graphics in R
R · 6.2k stars · 2k forks
- tidyverse/dplyr** (Public)
dplyr: A grammar of data manipulation
R · 4.6k stars · 2.1k forks
- tidyverse/tidyverse** (Public)
Easily install and load packages from the tidyverse
R · 1.6k stars · 280 forks
- r4ds** (Public)
R for data science: a book
R · 4.3k stars · 4.1k forks
- r-lib/devtools** (Public)
Tools to make an R developer's life easier
R · 2.3k stars · 758 forks
- adv-r** (Public)
Advanced R: a book
TeX · 2.3k stars · 1.7k forks

4,087 contributions in the last year

2024

Learn how we count contributions

Less More

Activity overview

- Contributed to `rstudio/renv`, `rstudio/connect`, `r-lib/htr2` and 171 other repositories

57% Commits
14% Code review
10% Issues
19% Pull requests

Contribution activity

February 2024

- Created 61 commits in 11 repositories
- Created 1 repository
hadley/workshops
- Created a pull request in `rstudio/chromote` that received 5 comments

<https://github.com/hadley>



✓ A tool to create website

GitHub Pages

Websites for you and your projects.

Hosted directly from your GitHub repository. Just edit, push, and your changes are live.

Design Resources

A collection of free resources made by designers at Facebook.

iOS 9 GUI (iPhone)

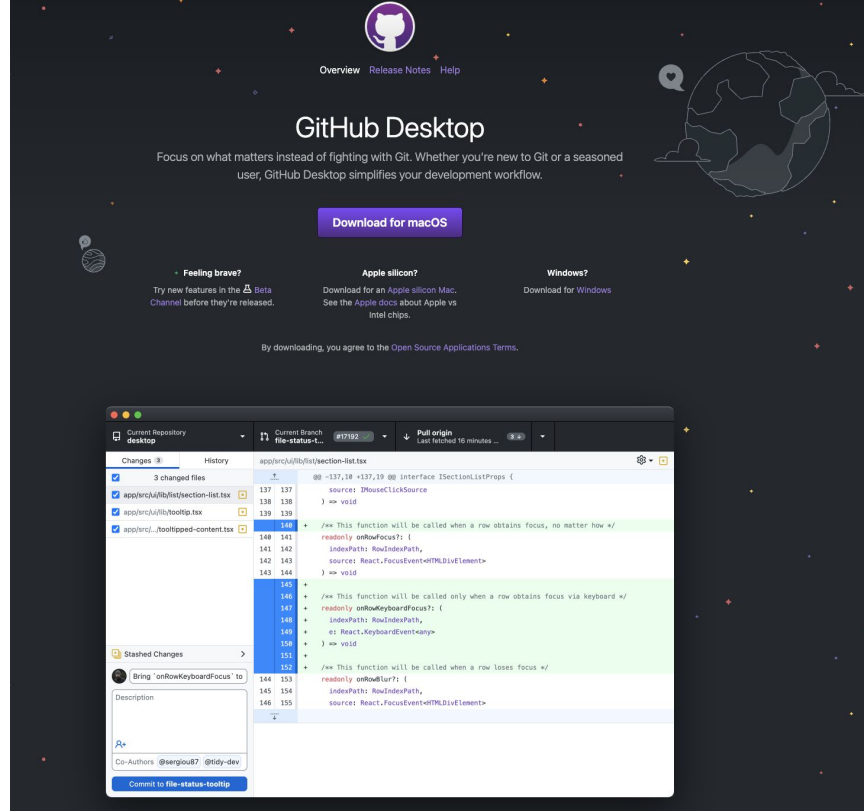
Diverse Devices

Ready to get started? Build your own site from scratch or generate one for your project.

You get one site per GitHub account and organization, and unlimited project sites. Let's get started.

User or organization site Project site

✓ Desktop application





✓ a stable repository

Name	Users	Projects
Assembla	Unknown	526,581+ ^[48]
Bitbucket	5,000,000 ^[49]	Unknown
Buddy	Unknown	Unknown
CloudForge	Unknown	Unknown
Gitea	Unknown	Unknown
GitHub	94,000,000 ^[50]	330,000,000 ^[50]
GitLab	31,190,000 ^[51]	546,000 ^[52] ^[1]
GNU Savannah	93,346 ^[53]	3,848 ^[53]
Launchpad	3,965,288 ^[54]	40,881 ^[55]
OSDN	54,826 ^[56]	6,294 ^[56]
Ourproject.org	6,353 ^[57]	1,846 ^[57]
OW2	Unknown	Unknown
SEUL	Unknown	Unknown
SourceForge	3,700,000 ^[58]	500,000 ^[58]
Name	Users	Projects

https://en.wikipedia.org/wiki/Comparison_of_source-code-hosting_facilities



✓ / ✗ to publish any file ?

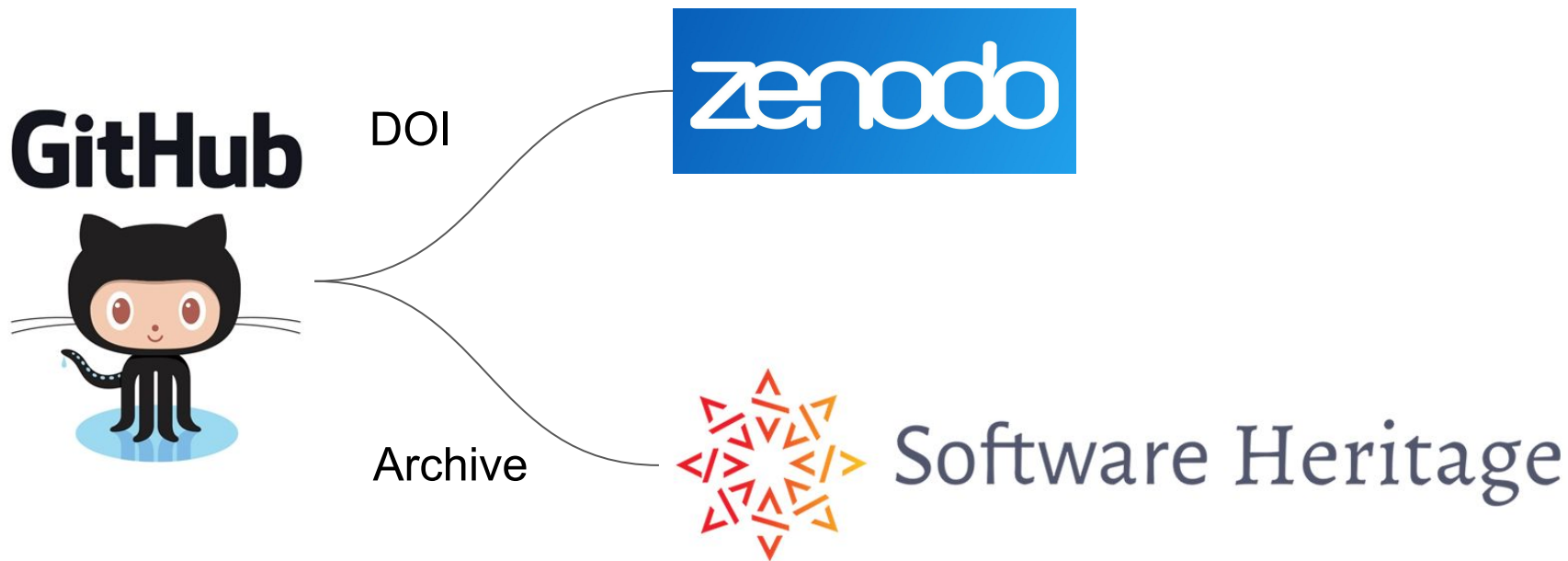


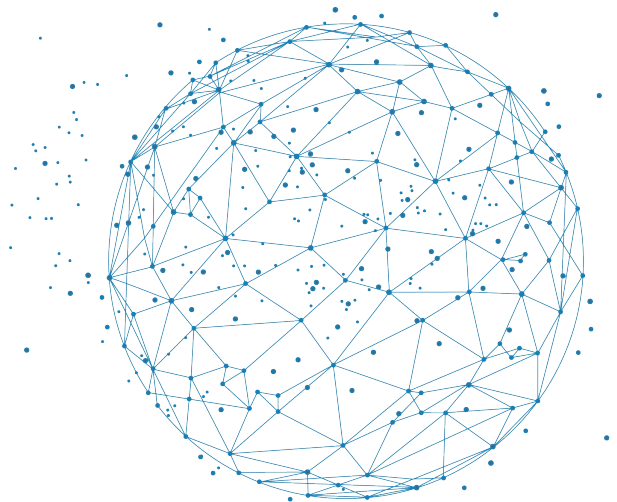
R script
Python script
Notebook Jupyter

...



PDF
fastq files





Archive



RIP Google code... (2006-2016)



Google Code Archive

Welcome! The Google Code Archive contains the data found on the Google Code Project Hosting Service, which was turned down in early 2016.

This archive contains over 1.4 million projects, 1.5 million downloads, and 12.6 million issues. You can learn more about the data served from Google Cloud Storage [here](#).

Google Code offered open-source project hosting on other domains besides just code.google.com, too. Explore the projects Google Code hosted below:

Google Code



EclipseLabs



Apache Extras



Sharing is not archiving



unesco
"Building peace in the minds of men and women"

IN BRIEF WHAT WE DO WHERE WE WORK PARTNERS JOIN US RESOURCES

Home > Software Heritage

Software Heritage



Software Heritage

"Part of our Heritage, Pillar of our Present, Enabler of our Future" Paris Call on Software Source Code as Heritage for Sustainable Development

In today's digital world, software is everywhere: it allows our phones and computers to run, it powers our industries, it represents the basis of scientific research, it interfaces citizens with their states and enables the access to public services, among many other applications. In one word, software shapes every aspect of our lives.

However, software is often disregarded, and its preservation is at stake. Until recently, software source code was not stored in a reliable archive, but was either offline and not available to the public or it was stored on working platforms which may one day disappear. The lack of recognition that

This common understanding and the resolve to protect software source code constitutes the essence of the collaboration between UNESCO and Inria, the French national research institute for the digital sciences. Inria first incubated the project **Software Heritage**, which safely collects, curates and archives software source code and is the first worldwide archive of software. UNESCO collaborates to the project through its programs on documentary heritage preservation and access, including the Memory of the World programme and the Free and Open Source Software programme.


These were the key moments of the collaboration between Inria and UNESCO within the Software Heritage Project:

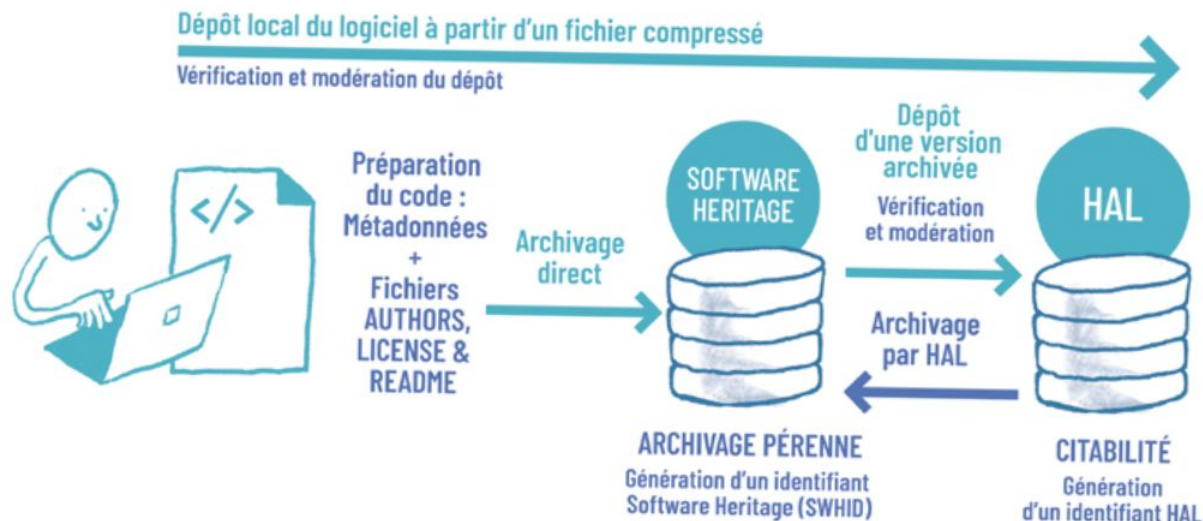
April, 2017: Agreement signed between UNESCO and Inria

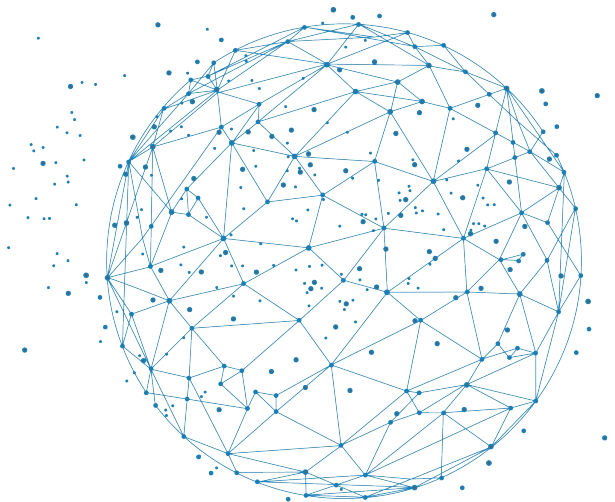
June, 2018: Software Heritage launch ceremony at UNESCO

November, 2018: The Paris Call. Software Source Code as Heritage for Sustainable Development

October, 2019: Software Heritage Acquisition Process

La plateforme Software Heritage permet de s'assurer très simplement de l'archivage et du référencement des logiciels disponibles publiquement et sans embargo. Le dépôt peut être fait aussi directement sur **HAL**. L'archive ouverte HAL permet, en collaboration avec **Software Heritage**, de gérer la description et la citation des logiciels de recherche .





Un peu d'IA ?





What is GitHub Copilot?

- An AI-powered code completion tool
- Developed by GitHub in collaboration with OpenAI
- Built on OpenAI's GPT (Generative Pre-trained Transformer) model
- Provides suggestions and completions for code as you type



GitHub
Copilot



Key Features

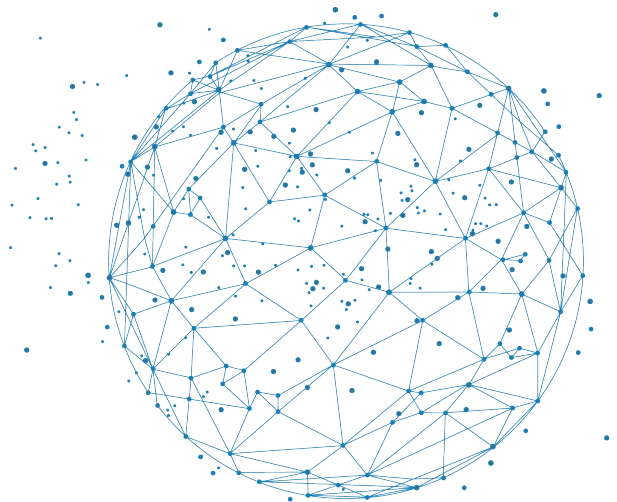
- Generates code suggestions for multiple programming languages
- Context-aware completions based on comments and existing code
- Support for common programming tasks, such as writing functions, loops, and conditionals
- Ability to generate entire functions or code blocks



GitHub
Copilot

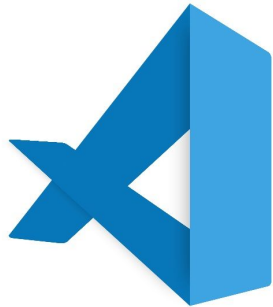


A screenshot of the GitHub Copilot interface. On the left, a chat window titled "GITHUB COPILOT: CHAT" shows a conversation with "GitHub Copilot". The chat text reads: "Hi @monalisa, how can I help you?" followed by "I'm powered by AI, so surprises and mistakes are possible. Make sure to verify any generated code or suggestions, and share feedback so that we can learn and improve." At the bottom of the chat is a text input field with the placeholder "Ask a question or type '/' for commands" and a send button. On the right, a code editor shows three tabs: "parse_expenses.py", "addresses.rb", and "sentiments.ts". The "parse_expenses.py" tab is active, displaying a code snippet: "1 import datetime", "2", "3 |", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20", "21", "22", "23", "24", "25", "26", "27", "28", "29", "30", "31", "32", "33", "34". A mouse cursor is visible over the code.



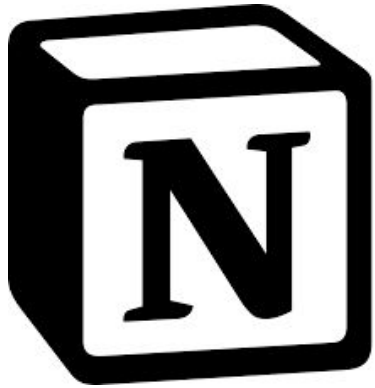
Github integration

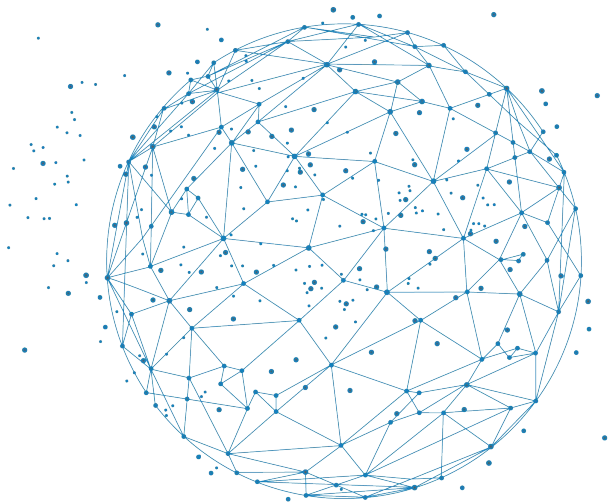




Visual Studio

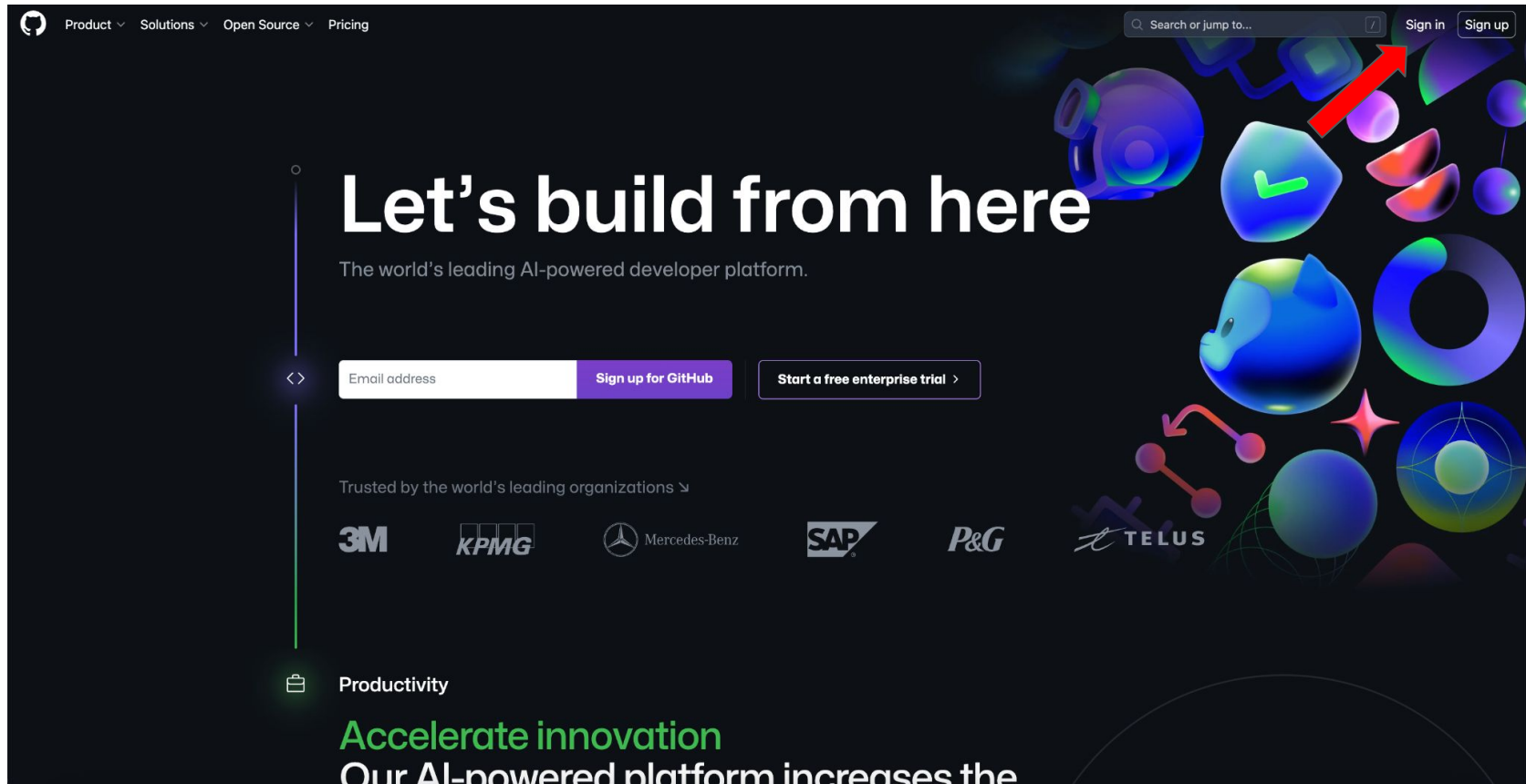
...





Here we go !





The screenshot shows the GitHub homepage with a dark background and colorful abstract graphics. At the top left, there is a navigation menu with 'Product', 'Solutions', 'Open Source', and 'Pricing'. At the top right, there is a search bar with the text 'Search or jump to...' and two buttons: 'Sign in' and 'Sign up'. A red arrow points from the search bar area towards the 'Sign in' button. The main heading is 'Let's build from here' in large white text, followed by the subtitle 'The world's leading AI-powered developer platform.' Below this, there is a form with an 'Email address' input field, a purple 'Sign up for GitHub' button, and a 'Start a free enterprise trial' button. Underneath the form, it says 'Trusted by the world's leading organizations' followed by logos for 3M, KPMG, Mercedes-Benz, SAP, P&G, and TELUS. At the bottom left, there is a 'Productivity' section with a briefcase icon and the text 'Accelerate innovation' and 'Our AI-powered platform increases the'.



Sign in to GitHub

Username or email address

Password

[Forgot password?](#)

Sign in

[Sign in with a passkey](#)

New to GitHub? [Create an account](#)

[Terms](#) [Privacy](#) [Docs](#) [Contact GitHub Support](#) [Manage cookies](#) [Do not share my personal information](#)



thomasdenecker ▾

Top Repositories

New

Find a repository...

- IFB-ElixirFr/Wasm4Learn
- SouthGreenPlatform/training_reproducible_research
- elixir-europe/pdp-maturity-model
- IFB-ElixirFr/Wasm4Learn-content
- IFB-ElixirFr/Wasm4Learn-doc
- IFB-ElixirFr/sandboxbioscenarios
- IFB-ElixirFr/sandboxbio-IFB-docs

Show more

Recent activity

When you take actions across GitHub, we'll provide links to that activity here.

Your teams

Find a team...

You've been added to the DU-Bii organization.

View organization

×

Home

Send feedback

Filter 8

Updates to your homepage feed

We've combined the power of the Following feed with the For you feed so there's one place to discover content on GitHub. There's improved filtering so you can customize your feed exactly how you like it, and a shiny new visual design. ✨

Learn more

r-wasm/webr released
2 weeks ago

webR 0.3.1

Hotfix release to manage incompatible WebAssembly binary R packages due to ABI changes in Emscripten.



r-wasm/webr released

The state of the Octoverse 2023

What does it mean for a technology to go mainstream? Discover how AI is changing the developer experience.

Learn more

Latest changes

- 14 hours ago
Secret scanning now detects secrets in GitHub wikis
- 2 days ago
GitHub Actions: Hardware accelerated Android virtualization now available
- 2 days ago
What's new for GitHub Actions hosted runners
- 2 days ago
Code security configurations let organizations easily roll out GitHub security...
View changelog →

Explore repositories



In a terminal in Jupyter

```
$ ls -al ~/.ssh  
  
# Only if no available SSH keys  
  
$ ssh-keygen -t ed25519 -C "your_email@example.com"  
$ Generating public/private ALGORITHM key pair.  
$ Enter a file in which to save the key  
(/home/YOU/.ssh/id_ALGORITHM):[Press enter]  
$ Enter passphrase (empty for no passphrase): [Type a passphrase]  
$ Enter same passphrase again: [Type passphrase again]
```



<https://docs.github.com/fr/authentication/connecting-to-github-with-ssh/generating-a-new-ssh-key-and-adding-it-to-the-ssh-agent>



In a terminal in Jupyter

```
$ ls -al ~/.ssh
total 28
drwx-----  2 tdenecker tdenecker  4096 Apr  4 10:40 .
drwx----- 30 tdenecker tdenecker 12288 Apr  4 10:37 ..
-rw-----  1 tdenecker tdenecker   419 Apr  4 10:40 id_ed25519
-rw-r--r--  1 tdenecker tdenecker   106 Apr  4 10:40 id_ed25519.pub
-rw-r--r--  1 tdenecker tdenecker  1063 Jul 13  2023 known_hosts

$ cat ~/.ssh/id_ed25519.pub
```



Copy the output



 **thomasdenecker**
Thomas Denecker



🕒 Set status

👤 Your profile

👤+ Add account

📁 Your repositories

📁 Your projects

👤 Your Copilot

📁 Your organizations

🌐 Your enterprises

★ Your stars

♥ Your sponsors

📄 Your gists

📈 Upgrade

🌐 Try Enterprise

Free

👤 Feature preview

⚙️ Settings

👤 GitHub Support

👤 GitHub Community

Sign out



Thomas Denecker (thomasdenecker)

Your personal account [Switch settings context](#)

[Go to your personal profile](#)

👤 Public profile

⚙️ Account

✍️ Appearance

♿️ Accessibility

🔔 Notifications

Access

📄 Billing and plans

📧 Emails

🔑 Password and authentication

🗂️ Sessions

🔑 **SSH and GPG keys**

📁 Organizations

🌐 Enterprises

📄 Moderation

SSH keys



New SSH key

This is a list of SSH keys associated with your account. Remove any keys that you do not recognize.

Authentication keys

Check out our guide to [connecting to GitHub using SSH keys](#) or troubleshoot [common SSH problems](#).

GPG keys

New GPG key



Thomas Denecker (thomasdenecker)

Your personal account [↔](#) [Switch settings context](#) ▾

[Go to your personal profile](#)

[Public profile](#)

[Account](#)

[Appearance](#)

[Accessibility](#)

[Notifications](#)

Access

[Billing and plans](#) ▾

[Emails](#)

[Password and authentication](#)

[Sessions](#)

[SSH and GPG keys](#)

[Organizations](#)

[Enterprises](#)

[Moderation](#) ▾

Code, planning, and automation

[Repositories](#)

Add new SSH Key

Title

Key type

Authentication Key ▾

Key

Begins with 'ssh-rsa', 'ecdsa-sha2-nistp256', 'ecdsa-sha2-nistp384', 'ecdsa-sha2-nistp521', 'ssh-ed25519', 'sk-ecdsa-sha2-nistp256@openssh.com', or 'sk-ssh-ed25519@openssh.com'

[Add SSH key](#)



 **thomasdenecker**
Thomas Denecker



☺ Set status

👤 Your profile

👤+ Add account

📁 Your repositories

📁 Your projects

👤 Your Copilot

📁 Your organizations

🌐 Your enterprises

☆ Your stars

❤️ Your sponsors

📄 Your gists

📈 Upgrade

🌐 Try Enterprise

Free

👤 Feature preview

⚙️ Settings

👤 GitHub Support

👤 GitHub Community

Sign out



Thomas Denecker

thomasdenecker · he/him

Research engineer - Open Science

Edit profile

👤 16 followers · 2 following

📁 @IFB-ElixirFr

📄 thomas.denecker.free.fr

🌐 <https://orcid.org/0000-0003-1421-7641>

🐦 @DeneckerThomas

📁 in/thomas-denecker

Achievements



Find a repository...

Type ▾

Language ▾

Sort ▾

 New

☆ Star ▾

FAIR_Bioinfo Public

Démonstration d'outils de bioinfo dans le cadre d'un projet

🔴 HTML ☆ 10 🗨️ 4 📄 Other Updated on Jul 15, 2021

IronYeasts Public

IronYeasts is a tool suite dedicated to the analysis of iron in pathogenic yeasts 🧬 🍷

🔵 R ☆ 3 📄 BSD 3-Clause "New" or "Revised" License Updated on Dec 8, 2022

START-R Public

Simple Tool for Analysis of Replication Timing with R

🔵 R ☆ 2 🗨️ 2 📄 BSD 3-Clause "New" or "Revised" License Updated on Oct 17, 2023

START-R-OLD Private

☆ 1 Updated on Feb 5, 2018

Club-Bioinfo Public

Communications lors du Club Bioinformatique de l'I2BC

☆ 1 Updated on Nov 26, 2018



New repository

Q Type [] to search

+ -

🔄

📧


👤


Create a new repository

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

Required fields are marked with an asterisk ().*


Owner * **Repository name ***


 thomasdenecker ▾ / burgers

 burgers is available.

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

Description (optional)

 **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.

Initialize this repository with:


Add a README file
This is where you can write a long description for your project. [Learn more about READMEs.](#)

Add .gitignore

Choose which files not to track from a list of templates. [Learn more about ignoring files.](#)

Choose a license

A license tells others what they can and can't do with your code. [Learn more about licenses.](#)

 You are creating a public repository in your personal account.

[Create repository](#)

git remote

Push an existing repository from the command line

```
git remote add origin git@github.com:<repository_URL>/burgers.git
git branch -M main
git push -u origin main
```

The screenshot shows the GitHub interface for a public repository named 'burgers'. At the top, there are navigation icons for Pin, Unwatch (1), Fork (0), and Star (0). Below the repository name, there are two main sections: 'Set up GitHub Copilot' and 'Add collaborators to this repository'. The 'Set up GitHub Copilot' section includes a button 'Get started with GitHub Copilot'. The 'Add collaborators to this repository' section includes a button 'Invite collaborators'. Below these is a 'Quick setup' section with a dropdown menu showing 'Set up in Desktop' or 'HTTPS' or 'SSH' and a text input field containing 'git@github.com:thomasdenecker/burgers.git'. Below the dropdown, there is a note: 'Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [gitignore](#).' There are three main sections of instructions: 1. '...or create a new repository on the command line' with a code block:

```
echo "# burgers" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin git@github.com:thomasdenecker/burgers.git
git push -u origin main
```

 2. '...or push an existing repository from the command line' with a code block:

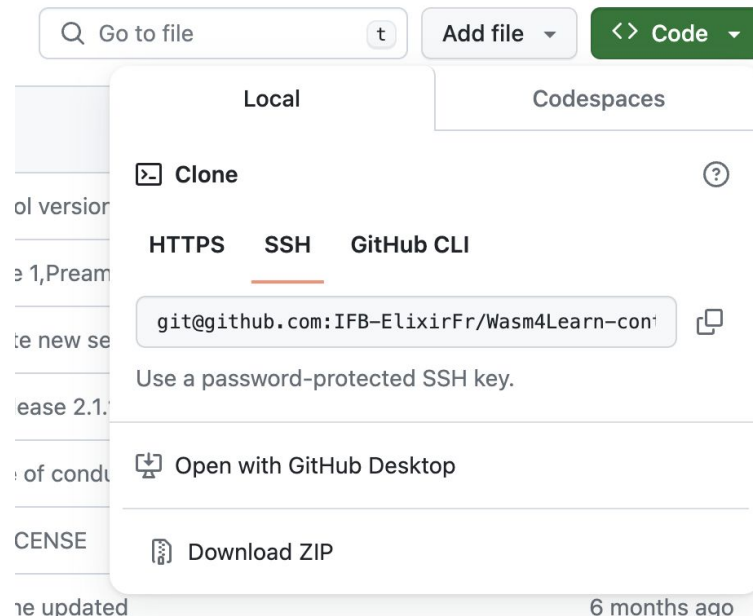
```
git remote add origin git@github.com:thomasdenecker/burgers.git
git branch -M main
git push -u origin main
```

 3. '...or import code from another repository' with a note: 'You can initialize this repository with code from a Subversion, Mercurial, or TFS project.' and a button 'Import code'. At the bottom, there is a note: 'ProTip! Use the URL for this page when adding GitHub as a remote.'

git clone

Clone a remote repository to your local machine.

```
git clone <repository_URL>
```

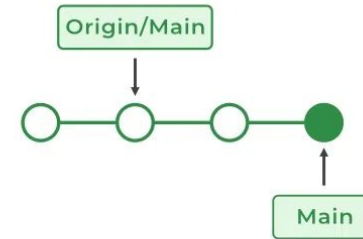


git push

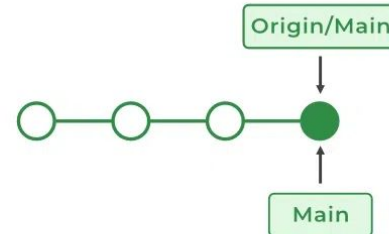
Send local commits to the remote repository.

```
git push <remote_name> <branch_name>
```

Before Pushing



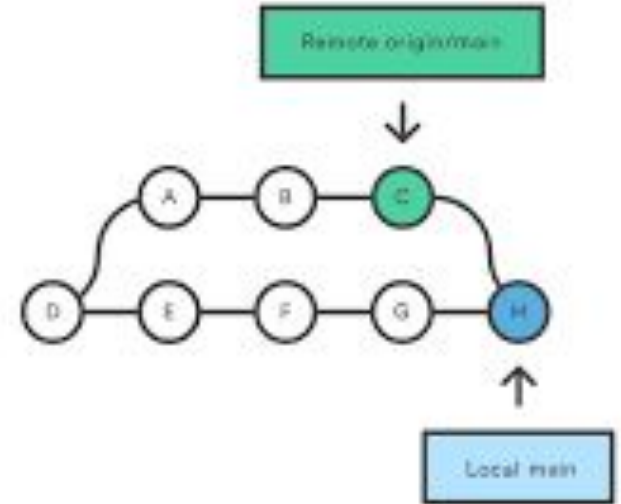
After Pushing



git push

Fetch the latest changes from the remote repository and merge them into your local branch.

```
git pull <remote_name> <branch_name>
```





git remote

Show or add remote repositories.

```
git remote -v  
git remote add <remote_name> <remote_URL>
```

git fetch

Fetch branches and commits from the remote repository, but do not merge the changes into your local branch.

```
git fetch <remote_name>
```

