

RETRO RABBIT



Git 101

By Keagan Bester and Kyle Oosthuizen

OVERVIEW

What is Version control

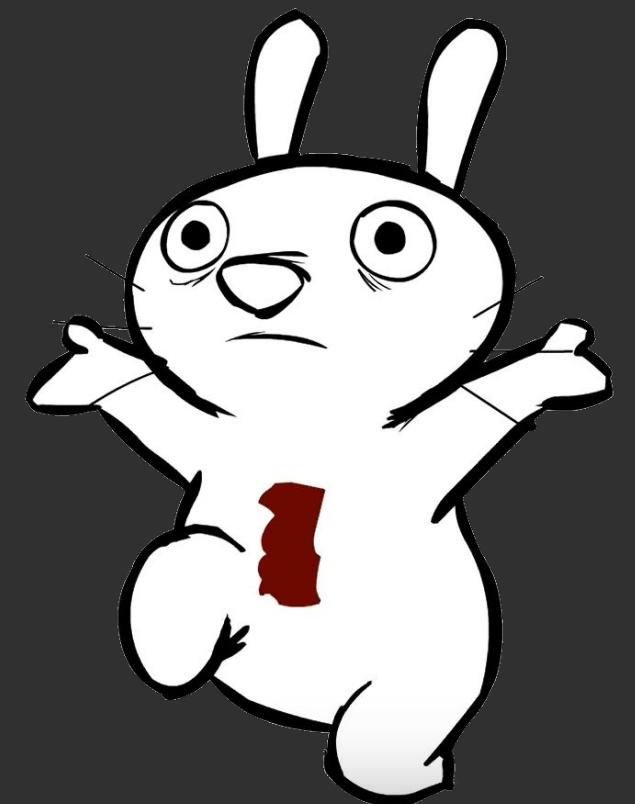
What is Git and Github

Git

- Basics of Git and its use
- Basic everyday commands
- Tools to use for Git

Github

- How to use Git with Github





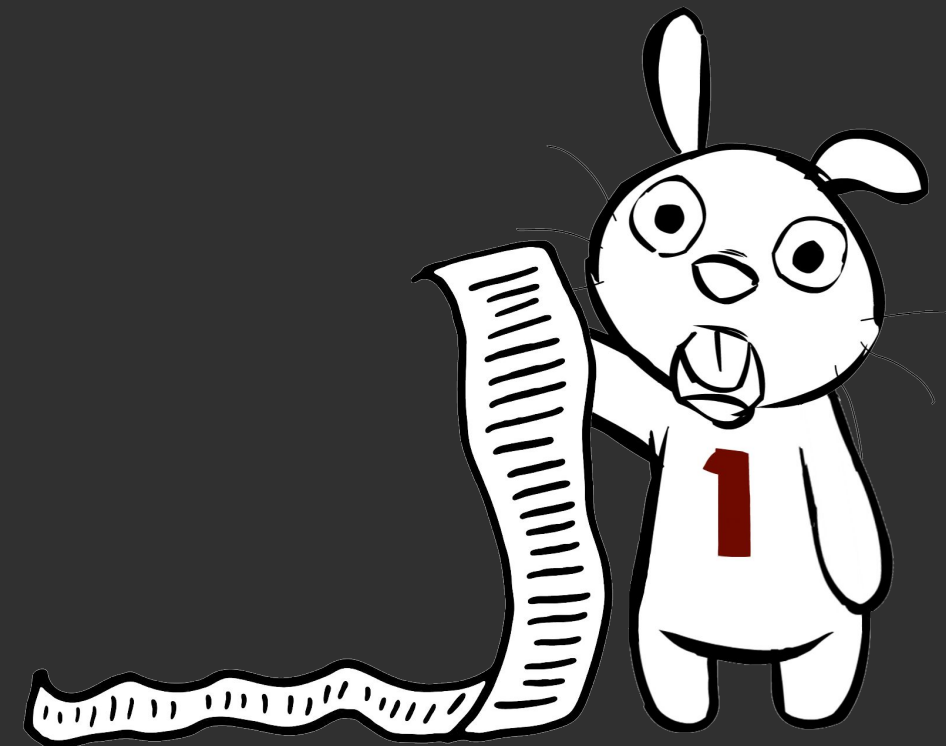
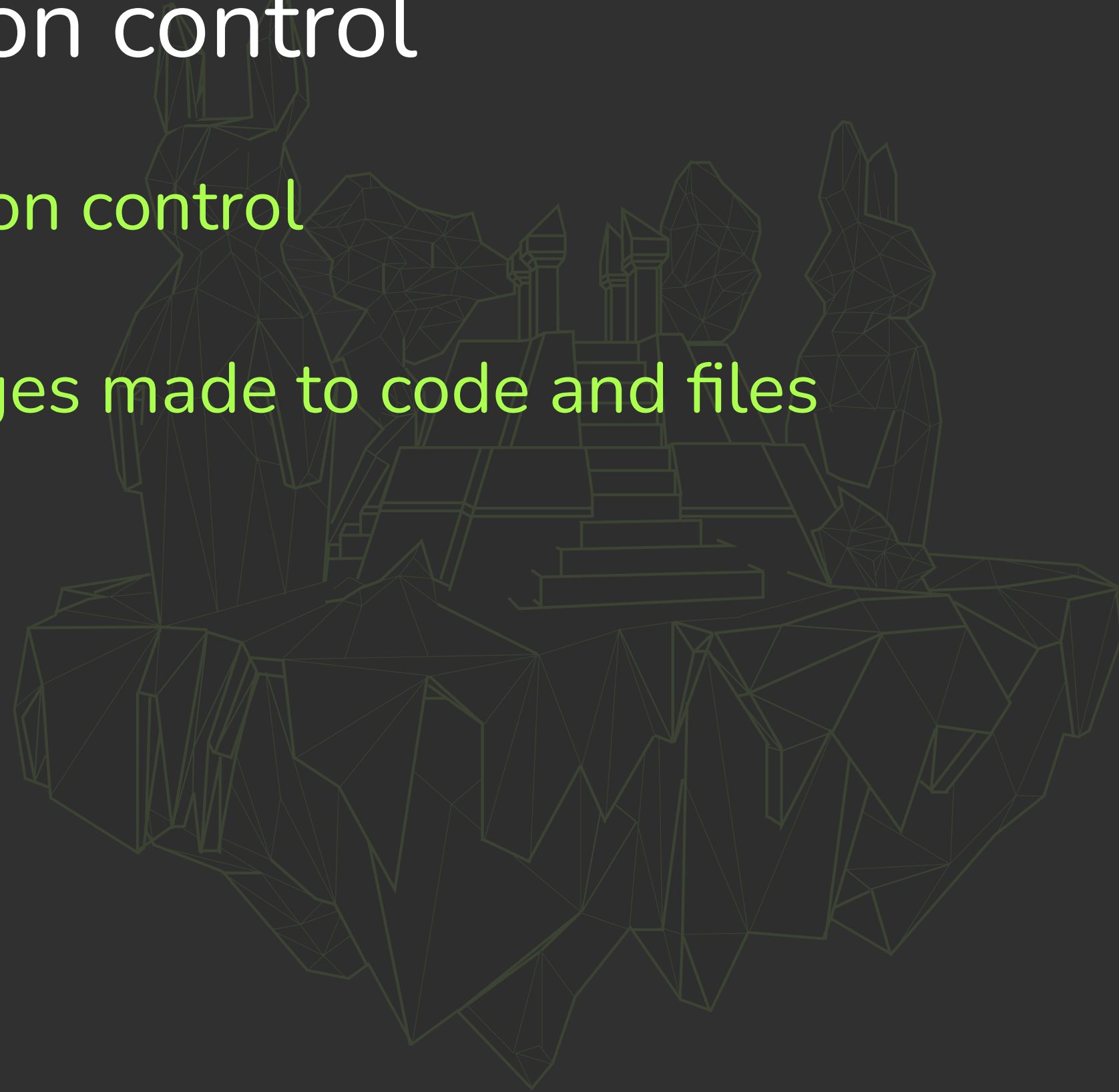
The basics

What is version control

aka source/revision control

tracking of changes made to code and files

multiple people



Why is it useful

Roll back changes if issues are identified

Multiple users can collaborate on one codebase

Resolve code conflicts and keep correct solutions

Bonus: Eliminate USB transfers and frequent Drive uploads

What is Git

Open-source distributed VCS

One of the most common VCS used today for any project size

Command-line and graphical user interfaces

Branching & Merging: Test features in isolation and then integrate safely



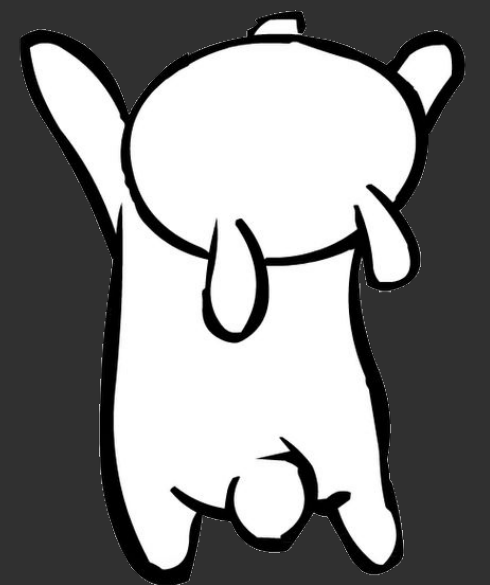
What is GitHub

A for-profit platform using Git for free public code versioning

Provides paid version control for private code

Streamlines native Git actions for efficiency

Example: Users can 'Fork' to clone, modify, and propose changes back





Fundamental Git terminology

Terminology often used in Git

Repository (Repo): The code base being worked on and distributed

Branch: A version of the being worked on containing changes that will be merged into the main code base (pointer to a commit)

Commit: A single point in the Git history of the project, represents the version of the project that existed at the time of pushing the changes to a branch





Having fun with Git CLI

Basic Git commands

git init	Initializes a new Git repo and starts tracking an existing directory	New Repo, you create the repo link
Git clone <URL>	Clones a repo from an existing URL down to Local	New or New-to-you Repo, you don't create the repo link
git add <filename> git add .	Adds a file to the staging area in preparation for a commit	Loading changes into a stage
Git commit -m "<message>"	Save changes to the local repository with a descriptive message.	Saving changes in a stage to your Local
Git status	Check the status of changes in the project. It shows which changes are staged, unstaged, and untracked.	Summary tool. "You are here"
Git push	Push committed changes to a remote repository.	Updating your code on the Origin with your Local
Git pull	Update your local repository with changes from the remote.	Updating your Local code with the Origin Code

Basic Git commands

Git fetch	Fetch new branches and commits from the remote repository without application.	Fetching the Origin Code without updating your current branch
Git branch	List branches in your repository. Branches are essentially pointers to different versions of your project.	Creating code pointers separate to the /main to avoid issues
Git checkout <branch-name>	Switch to a different branch.	Swapping between pointers
Git merge <branch name>	Merge changes from one branch into another.	Pull new changes into your branch
Git revert <commit hash>	Creates an “undo” commit that removes a specific commit	Undo but more like $X + Y = Z$; $Z - Y = X$ therefore Y is gone
Git reset —<mode>	Moves the current branch pointer to the specific commit. It can be used in three main modes	While (issue) { Ctrl-Z }

Working with Git on your PC

Windows:

- <https://git-scm.com/download/>
- `choco install git.install`

Linux:

- `sudo apt-get update - > sudo apt-get install git`

Apple:

- Step 1
- Repeat Windows or Linux



Git GUI

Source Tree

Git Fork

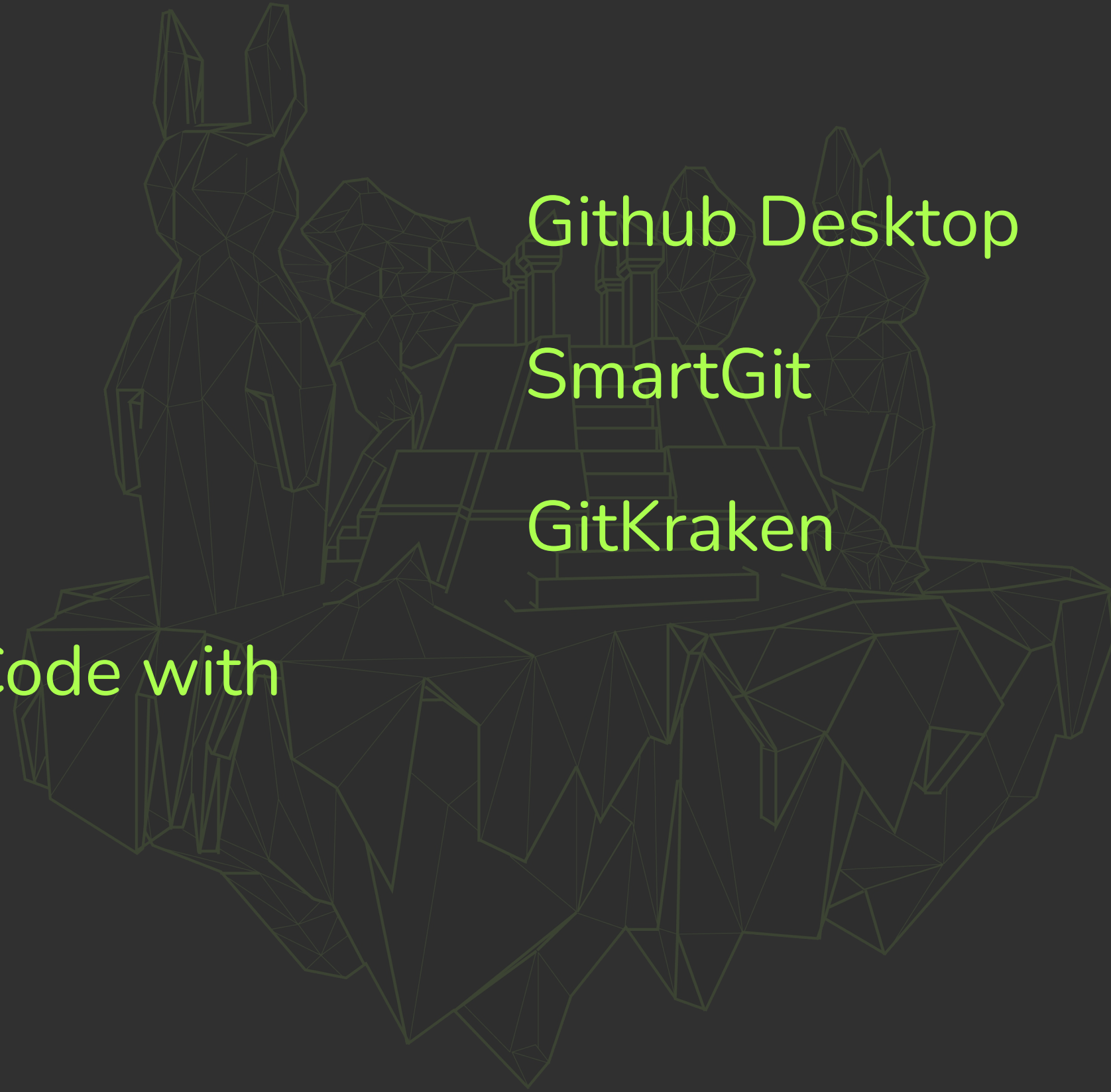
Git extensions

Visual Studio Code with
extensions

Github Desktop

SmartGit

GitKraken



Sources to read up on

Gitlab explains version control ->

<https://about.gitlab.com/topics/version-control/>

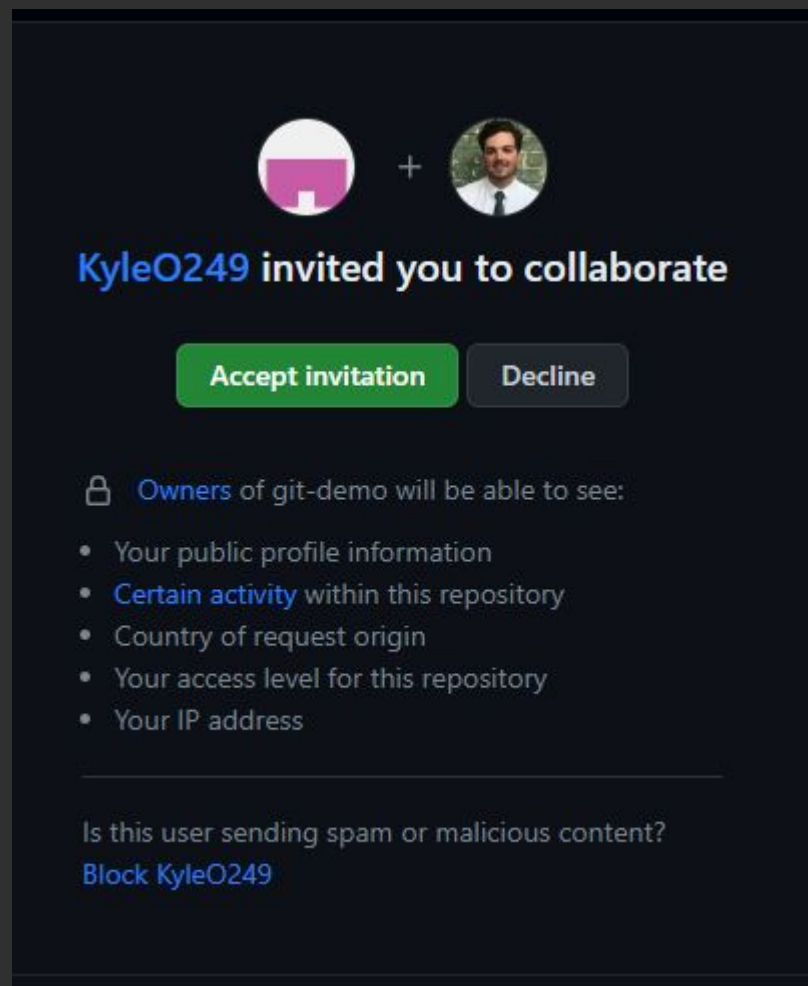
Git explained -> <https://git-scm.com/about>

Visual demonstration of Git -> <https://learngitbranching.js.org/>

A wireframe scene rendered in a low-poly style. It features a large rabbit on the left, a central castle with a staircase, and another rabbit on the right. The entire scene is composed of visible geometric lines and triangles, giving it a skeletal appearance. The word "Demo" is centered over the castle.

Demo

Joining a Github Repo



You now have push access to the KyleO249/git-demo repository.

git-demo Public

main

2 branches

0 tags

Go to file

Add file

<> Code

KyleO249 Merge pull request #1 from KyleO249/feature/init-project

e2e

src

.editorconfig

.gitignore

LICENSE

README.md

angular.json

package-lock.json

package.json

tsconfig.0.json

tsconfig.app.json

tsconfig.json

tsconfig.spec.json

Local Codespaces

Clone

HTTPS SSH GitHub CLI

You don't have any public SSH keys in your GitHub account. You can add a new public key, or try cloning this repository via HTTPS.

git@github.com:KyleO249/git-demo.git

Use a password-protected SSH key.

Open with GitHub Desktop

Open with Visual Studio

Download ZIP

Joining a Github Repo

Add new SSH Key

Title

HP-Victus

Key type

Authentication Key

Key

AAAAB3NzaC1yc2EAAAADAQABAAQCAQC3IS4ET1LH1BaorFhThYKM40spREJKghBq+R6EhCyGFHP4/HL/Kxq/vsqFZ0yteA+nCja4IKJq63UxghopdlGJcxT1FUFYGYwHddcEkHDCuZovplrhRFVusKefPdLNd89vG44aEE0qNEEuKUG/eZUYi8woCwBV+SdbqsKZAyh8ZTTcfVmlngy5zb11YJgvTMQPhXnFb6YZkPISimSrL2OPodqTLZhjElmJ41PdZNrVdwByqxWbgQQN+HVJ3xbwsSz9zgyFaEqDJGe9rLye3S2/5sMKEfjIB+zFKXgecmNK3OZtdGgWJLCqHXU4CTwJmYj8xHFfuDH6UyCq5kKNYk1LUzrcEOCXepXVPxUqLcnUP+o8ASslbm41gGPbFe1AZ5Cv9KEPekMoMKnPmZ5ur5YItL5Y5/sbKwY2+VGoEV6N01hGy418X+nVqMBF7cjSTO+2THTYx1r0uhsG1sN/T4XDc5NTxz1yvvOEZrogfeRJMx7skuTrID3NAq346S46x+JxFKHEdXN+LJKgv0bSln4VoCb7+ZbGQPwjff6MV9Sxw1iJcJo1B5HBkRU2mBdTDN1DyAcxLeGm9j96WD/oXNsLeqT+r5p7BZlxUrOHnYvoFpJW1F7b0Wn0XnmRr163PLAoiCKOb5L2Yc3cLZvRyAUNNVKSxrKCkePHArG1/Q== keaganbester@gmail.com

Add SSH key

MINGW64:/c/Users/keaga

\$ ssh-keygen -t rsa -b 4096 -C "keaganbester@gmail.com"
Generating public/private rsa key pair.
Enter file in which to save the key (/c/Users/keaga/.ssh/id_rsa): kb_rsa
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in kb_rsa
Your public key has been saved in kb_rsa.pub
The key fingerprint is:
SHA256:MjMg9/8HbErCL1DVL0wYtRayi6Ta8VGr5qJIv0Y6YaY keaganbester@gmail.com
The key's randomart image is:
+----[RSA 4096]-----+
| .ooo
| .o+oo
| o +=+.
| o +o*..
|. o.o.B S.
|.+. oo* .
|=+. o.o .
|Eoo+. . . .
|o.o+. . .
+----[SHA256]-----+
keaga@LAPTOP-20T9J5K2 MINGW64 ~
\$

git-demo

Local Changes

All Commits

Filter

Branches

main

Remotes

origin

Tags

Stashes

Submodules

Merge pull request #1 from KyleO249/feature/init-project

origin/feature/init-project Added author meta tag

Added Angular 16 example project

Initial commit

Clone

Clone a remote repository into a local folder

Repository Url: git@github.com:KyleO249/git-demo.git SSH

Test Connection

Parent Folder: C:\Users\keaga\Documents\Repos

Name: git-demo

Clone Cancel

Commit

Changes

File Tree

AUTHOR

K KyleO249 59878048+KyleO249@users.noreply.github.com 21 Aug 2023 17:07:54 +02:00

REFS main origin/main

SHA 4e4025bb0033a4cd7c702d8842d6693dc53a9381

PARENTS 55ea542 1964f47

Merge pull request #1 from KyleO249/feature/init-project

Feature/init project

.editorconfig

Viewing file changes

The screenshot displays a Git commit view. At the top, a list of commits is shown with a vertical timeline on the left. The commits include:

- feature/sale-indicators**: Added HTML rendering for new o... (Koosthuizen, bfcca44, 22 Aug 2023 18:53)
- Added new onSale and originalPrice properties to product datatype (Koosthuizen, 06c203a, 22 Aug 2023 18:53)
- main**: Merge pull request #1 from KyleO249/feature/init-project (KyleO249, 4e4025b, 21 Aug 2023 17:07)
- stash@{1}**: On feature/init-project: Checkout autostash 2023/... (KyleO249, c620390, 21 Aug 2023 22:21)
- feature/init-project**: Added author meta tag (Koosthuizen, 1964f47, 21 Aug 2023 17:04)
- Added Angular 16 example project (Koosthuizen, 95f7207, 21 Aug 2023 17:01)
- stash@{0}**: On main: Pull autostash 2023/08/21 22:23:32 (KyleO249, 4e0e744, 21 Aug 2023 22:23)
- Initial commit (KyleO249, 55ea542, 21 Aug 2023 16:47)

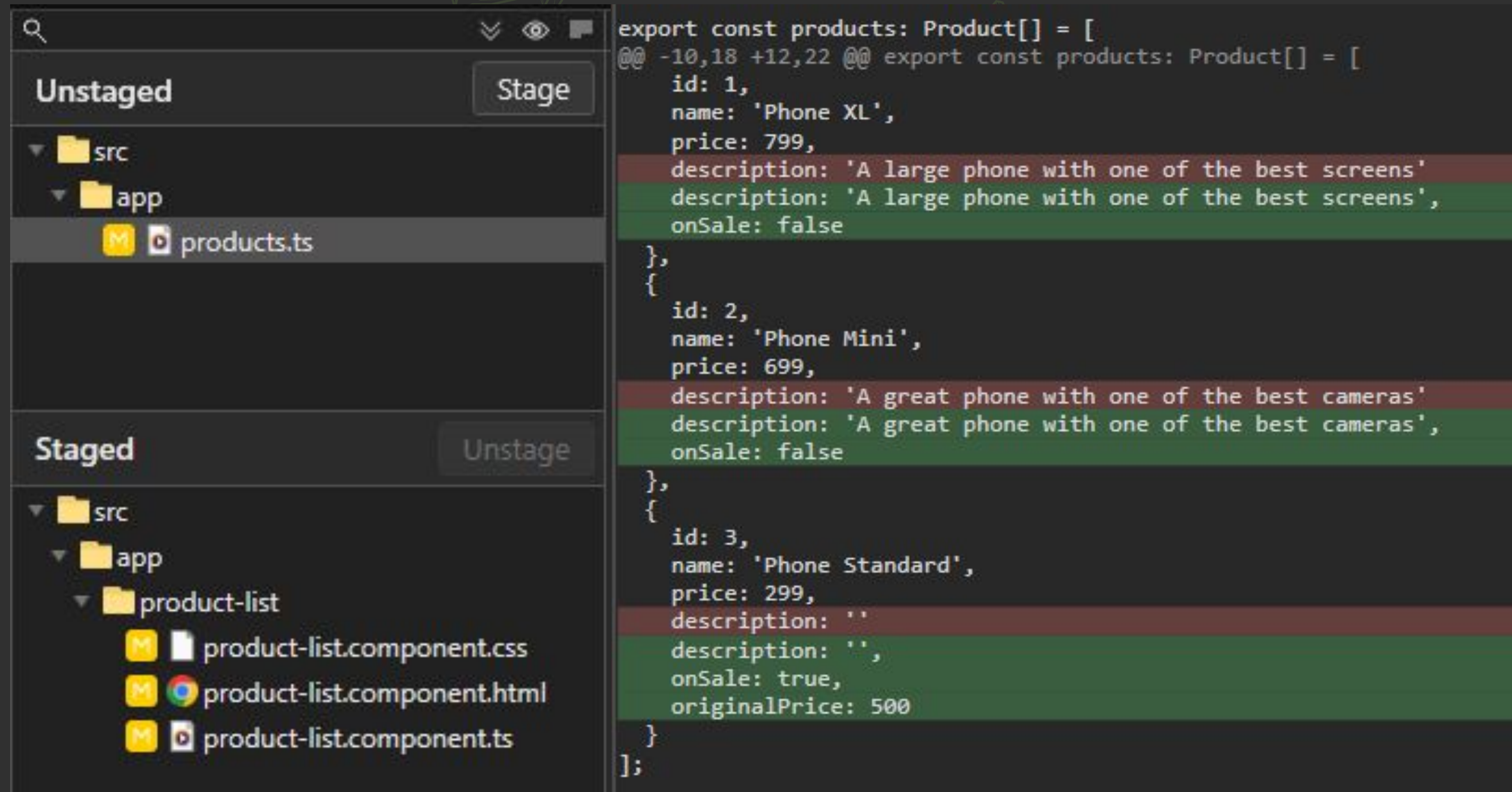
Below the commit list, there are tabs for **Commit**, **Changes**, and **File Tree**. The **Commit** tab is selected, showing details for the current commit:

- AUTHOR**: Koosthuizen (22 Aug 2023 18:53:51 +02:00)
- REFS**: feature/sale-indicators, origin/feature/sale-indicators
- SHA**: bfcca4420c2cd4734a3394adc866ce6b7665ae84
- PARENTS**: 06c203a

The commit message is **Added HTML rendering for new on sale indicators**.

At the bottom, there is a file tree view showing the file **src/app/product-list/product-list.component.css**. An **Expand All** button is located in the bottom right corner.

Viewing file changes



The screenshot displays a code editor interface with a file explorer on the left and a code editor on the right. The file explorer is divided into two sections: 'Unstaged' and 'Staged'.

Unstaged:

- src
 - app
 - products.ts

Staged:

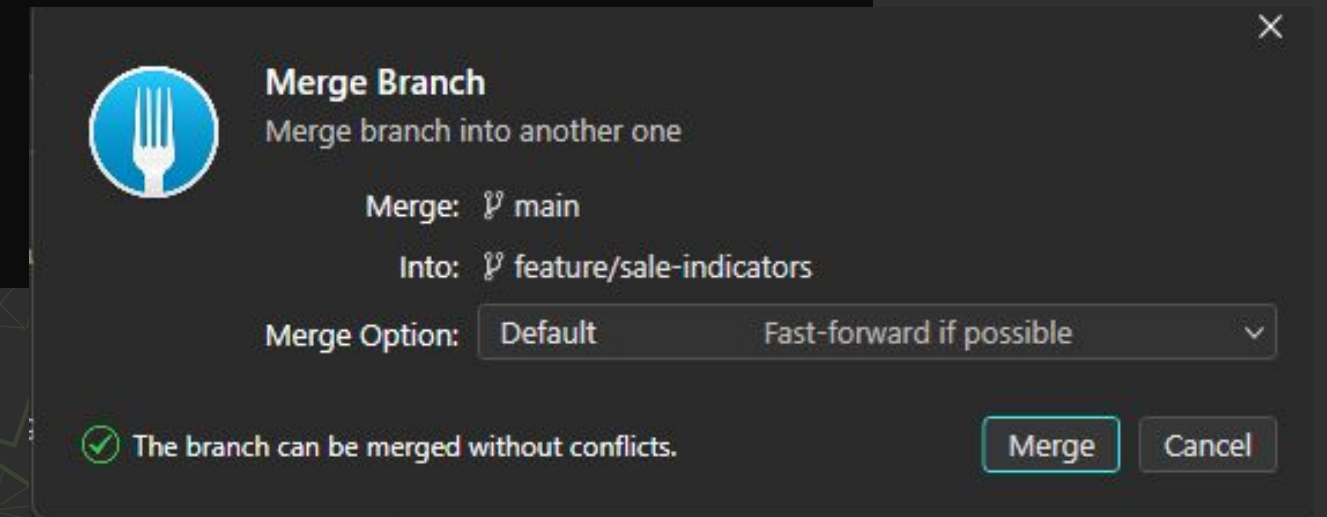
- src
 - app
 - product-list
 - product-list.component.css
 - product-list.component.html
 - product-list.component.ts

The code editor on the right shows the content of the selected file, `products.ts`. It displays a TypeScript array of product objects. The changes are highlighted with a green background for the new content and a red background for the removed content. The changes are as follows:

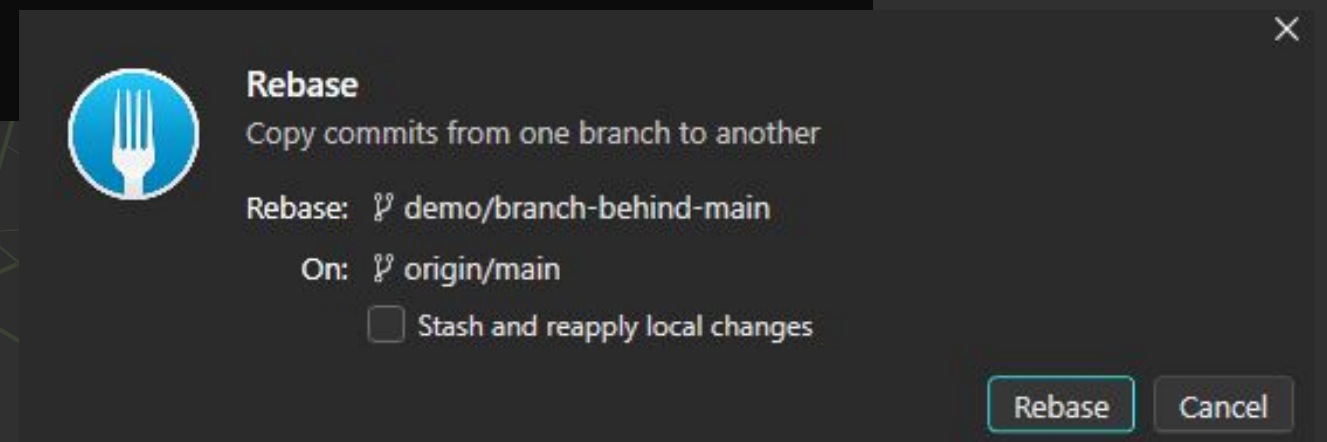
```
export const products: Product[] = [
@@ -10,18 +12,22 @@ export const products: Product[] = [
  id: 1,
  name: 'Phone XL',
  price: 799,
  description: 'A large phone with one of the best screens'
+ description: 'A large phone with one of the best screens',
  onSale: false
},
{
  id: 2,
  name: 'Phone Mini',
  price: 699,
  description: 'A great phone with one of the best cameras'
+ description: 'A great phone with one of the best cameras',
  onSale: false
},
{
  id: 3,
  name: 'Phone Standard',
  price: 299,
  description: ''
+ description: '',
  onSale: true,
  originalPrice: 500
}
];
```


Merging branches

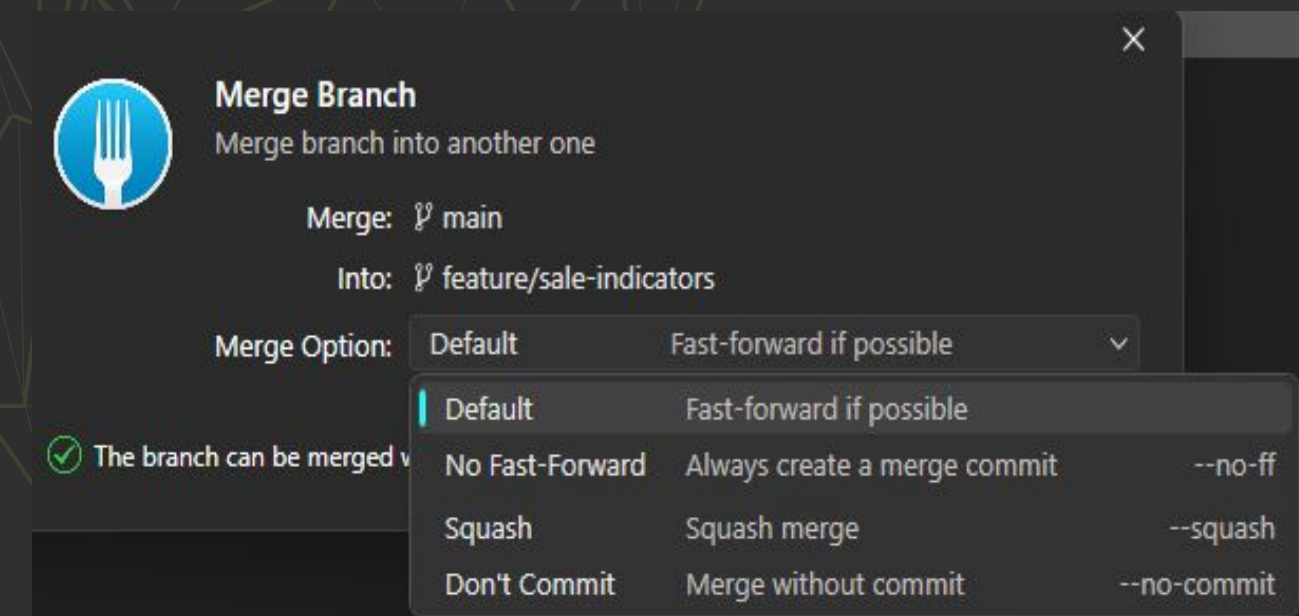
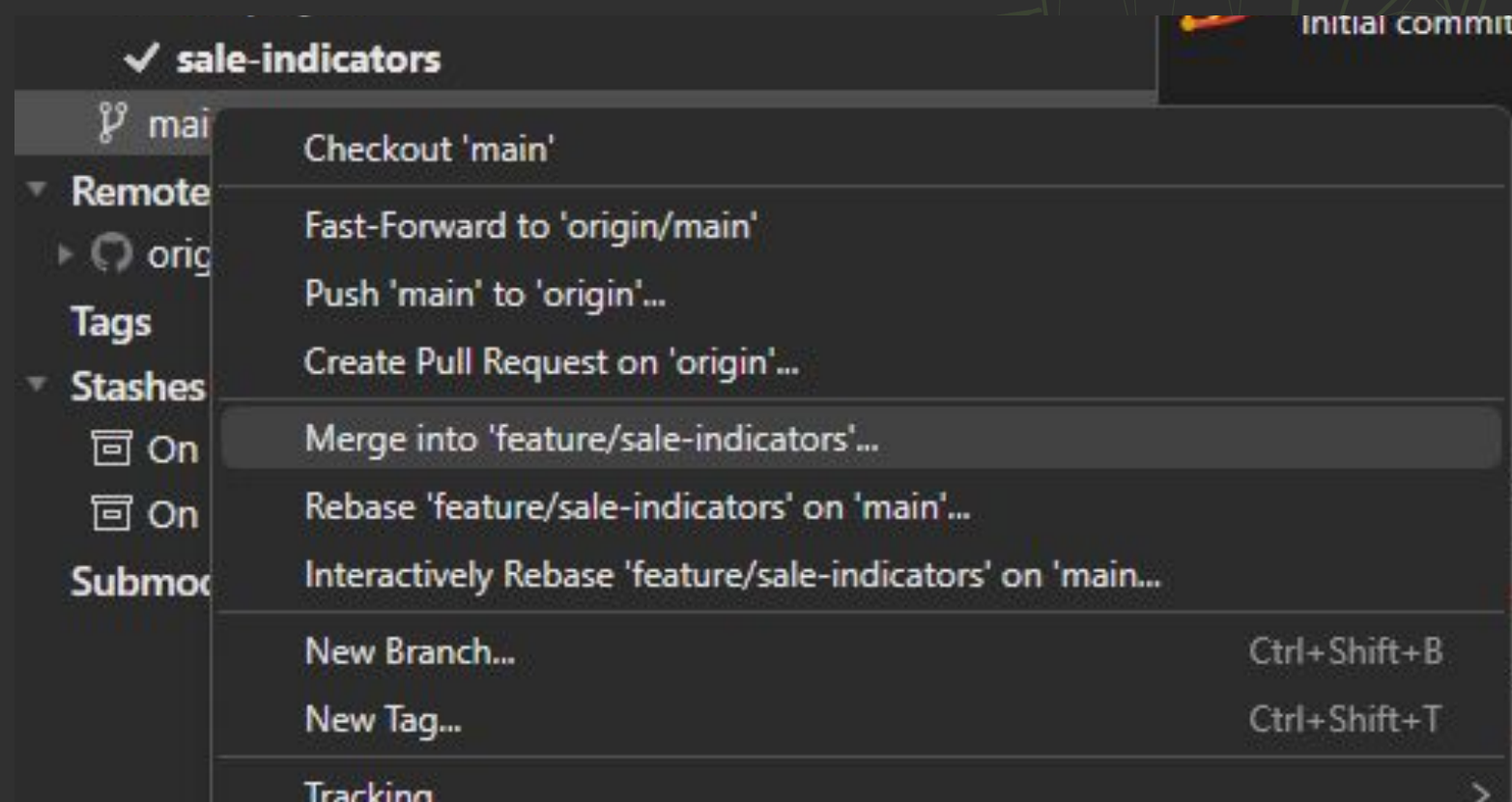
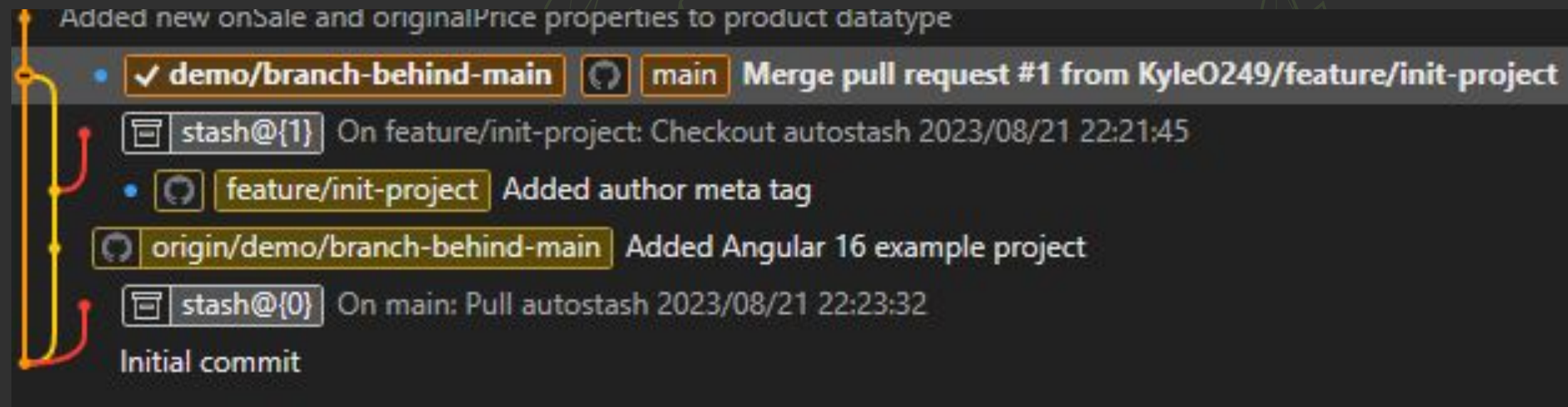
```
AzureAD+Koosthuizen@Kyle-Oosthuizen MINGW64 ~/Documents/Demos/git-demo (demo/branch-behind-main)
$ git merge origin/main
Updating 95f7207..4e4025b
Fast-forward
 src/index.html | 1 +
 1 file changed, 1 insertion(+)
```



```
AzureAD+Koosthuizen@Kyle-Oosthuizen MINGW64 ~/Documents/Demos/git-demo (demo/branch-behind-main)
$ git rebase origin/main
Successfully rebased and updated refs/heads/demo/branch-behind-main.
```



Merging branches



Resolving merge conflicts

```
AzureAD+Koosthuizen@Kyle-Oosthuizen MINGW64 ~/Documents/Demos/git-demo (demo/branch-behind-main)
$ git merge origin/feature/sale-indicators
Auto-merging src/app/product-list/product-list.component.css
CONFLICT (content): Merge conflict in src/app/product-list/product-list.component.css
Auto-merging src/app/product-list/product-list.component.html
Auto-merging src/app/products.ts
CONFLICT (content): Merge conflict in src/app/products.ts
Automatic merge failed; fix conflicts and then commit the result.
```

Example of a merge conflict #3

 Open KyleO249 wants to merge 3 commits into `feature/sale-indicators` from `demo/branch-behind-main` 

 Conversation 0  Commits 3  Checks 0  Files changed 3







KyleO249 commented now

Owner ...

This branch has a conflict with the target branch



 Koosthuizen added 3 commits 4 minutes ago

-  Added image as new property for product 5ab6852
-  Used new image property to render images of products d2f93be
-  Added coming soon description d9fd8cf

Add more commits by pushing to the `demo/branch-behind-main` branch on **KyleO249/git-demo**.



This branch has conflicts that must be resolved

Resolve conflicts

Use the [web editor](#) or the [command line](#) to resolve conflicts.

Conflicting files

`src/app/product-list/product-list.component.css`

`src/app/products.ts`

Merge pull request



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

Resolving merge conflicts

```
src/app/product-list/product-list.component.css 1 conflict Prev ^ Next v

1 <<<<<< demo/branch-behind-main
2 .flex {
3     display: flex;
4 }
5
6 .center {
7     align-items: center;
8 }
9
10 .image {
11     padding-left: 12px;
12     width: 30px;
13 }
14
15 .strike-through {
16     text-decoration: line-through;
17 }
18
19 .my-7 {
20     margin-top: 14px;
21     margin-bottom: 14px;
22 }
23 >>>>>> feature/sale-indicators
24 }
```

```
You, 8 seconds ago | 2 authors (Koosthuizen and others) | Accept Current Change | Accept Incoming Change | Accept Both Changes | Compare Changes
<<<<<< HEAD (Current Change)
.flex {
    display: flex;
}

.center {
    align-items: center;
}

.image {
    padding-left: 12px;
    width: 30px;
}

.strike-through {
    text-decoration: line-through;
}

.my-7 {
    margin-top: 14px;
    margin-bottom: 14px;
}

>>>>>> feature/sale-indicators (Incoming Change)
Koosthuizen, 6 minutes ago • Used new image property to render images of produ...

Resolve in Merge Editor
```


GitHub Pull requests

Feature/sale indicator on Products #2

Open

KyleO249 wants to merge 3 commits into `main` from `feature/sale-indicators`

Conversation 0

Commits 3

Checks 0

Files changed 6

KyleO249 commented 8 minutes ago • edited

Owner

...

Added the ability to indicate when a product is on sale:

My Store

Checkout

Products

Phone XL

Description: A large phone with one of the best screens

Price: \$799.00

Share

Notify Me

Phone Mini

Description: A great phone with one of the best cameras

Price: \$699.00

Share

Phone Standard

Was: \$600.00

Now: \$299.00

Share

Koosthuizen added 2 commits 22 minutes ago

Added new `onSale` and `originalPrice` properties to product datatype

06c203a

Added HTML rendering for new on sale indicators

bfcca44

KyleO249 requested a review from keaganbester 19 minutes ago

KyleO249 self-assigned this 19 minutes ago

Added launch files to run project in visual studio code

0f127c1

KyleO249 closed this 4 minutes ago

KyleO249 reopened this now

Add more commits by pushing to the `feature/sale-indicators` branch on `KyleO249/git-demo`.

Review required

Show all reviews

At least 1 approving review is required by reviewers with write access. [Learn more.](#)

1 pending reviewer

No unresolved conversations

View

There aren't yet any conversations on this pull request.

Merging is blocked

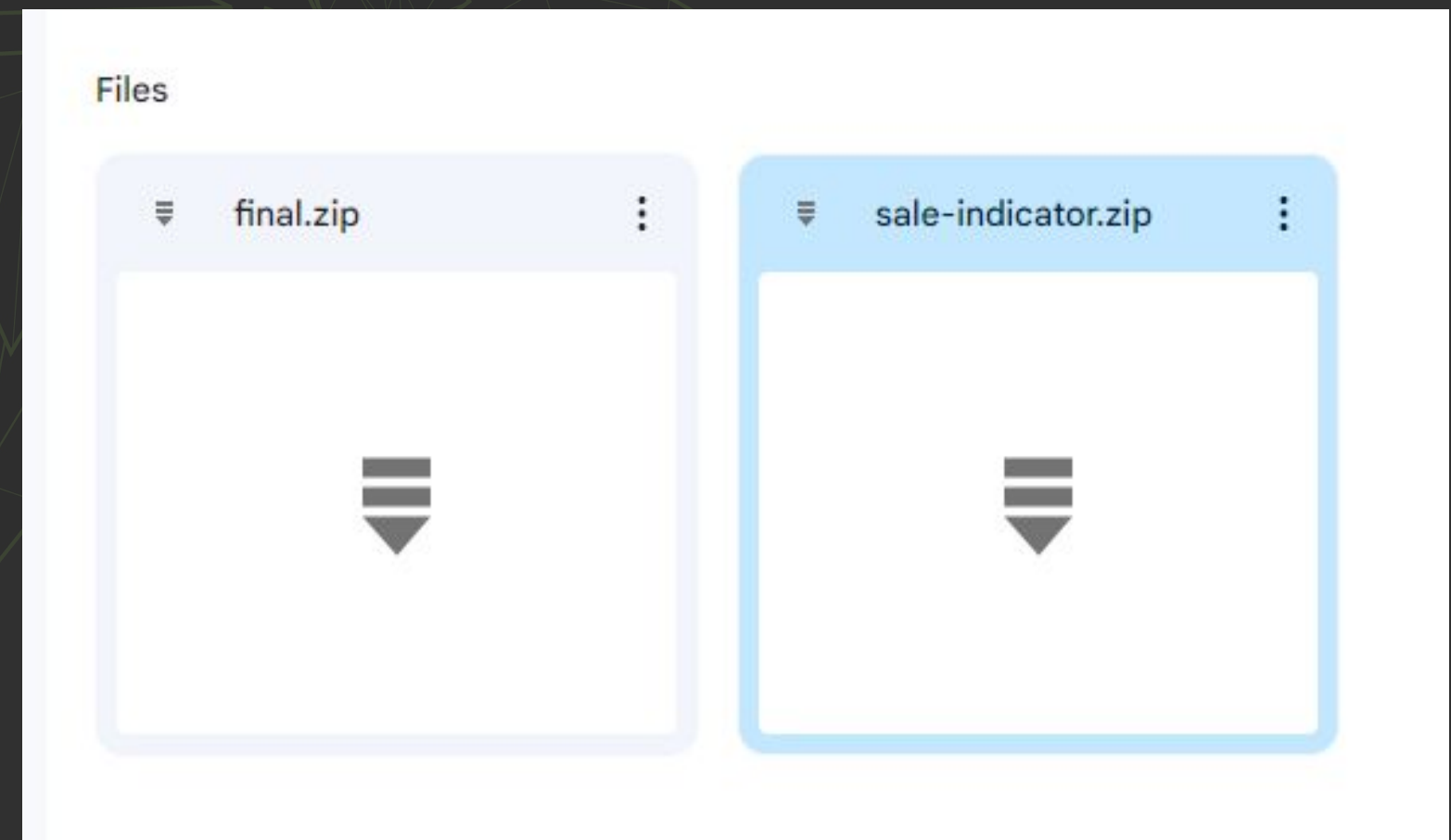
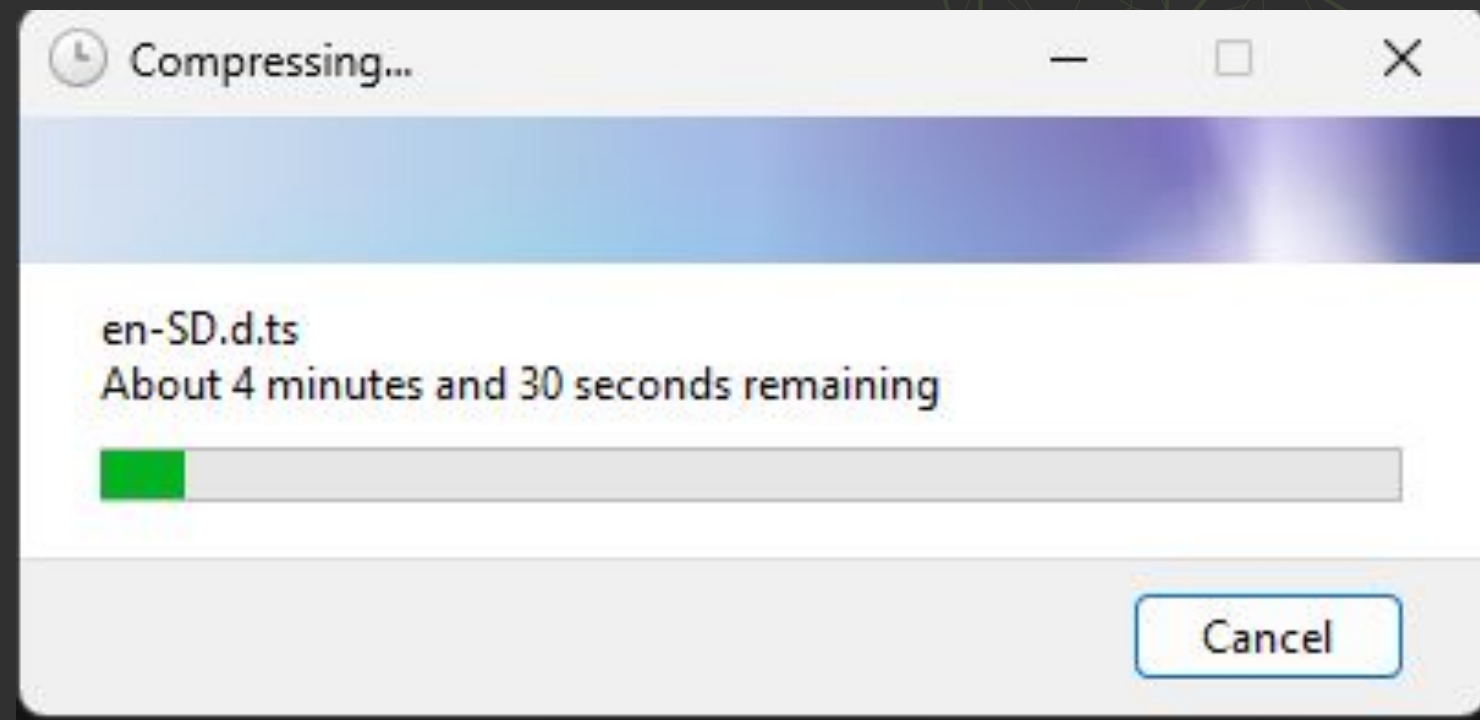
Merging can be performed automatically with 1 approving review.

☐ Merge without waiting for requirements to be met (bypass branch protections)

Merge pull request

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

Old Google Drive file sharing



RETRO RABBIT

THANK YOU



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