



**Knight Foundation
School of Computing
and Information Sciences**

CIS 4951 Capstone II - Fall 2025

Green Vault

Installation Guide

Members:

**Giorgio Abboud, B.S, Malik Dagher, B.S
Audrey Gamero, B.S, Daniella Lacotera, B.S
Rodrigo Munoz Salas, B.S**



CIS 4951 Capstone II

Giorgio Abboud

Malik Dagher

Audrey Gamero

Daniella Lacotera

Rodrigo Munoz Salas

December 1, 2025

The following document provides a step-by-step guide on how to set up and run Green-Vault locally in a machine. The primary deployment model uses Linux guidelines, including container bootstrapping, environment configuration, and service wiring, supported by screenshots to reduce environment drift during installation. Although this guide is centered on Linux systems, the system is cross-platform compatible and can run in any operating system that supports the Docker Engine. Alternative setup paths are also documented for:

- MacOS.
- Microsoft Windows.

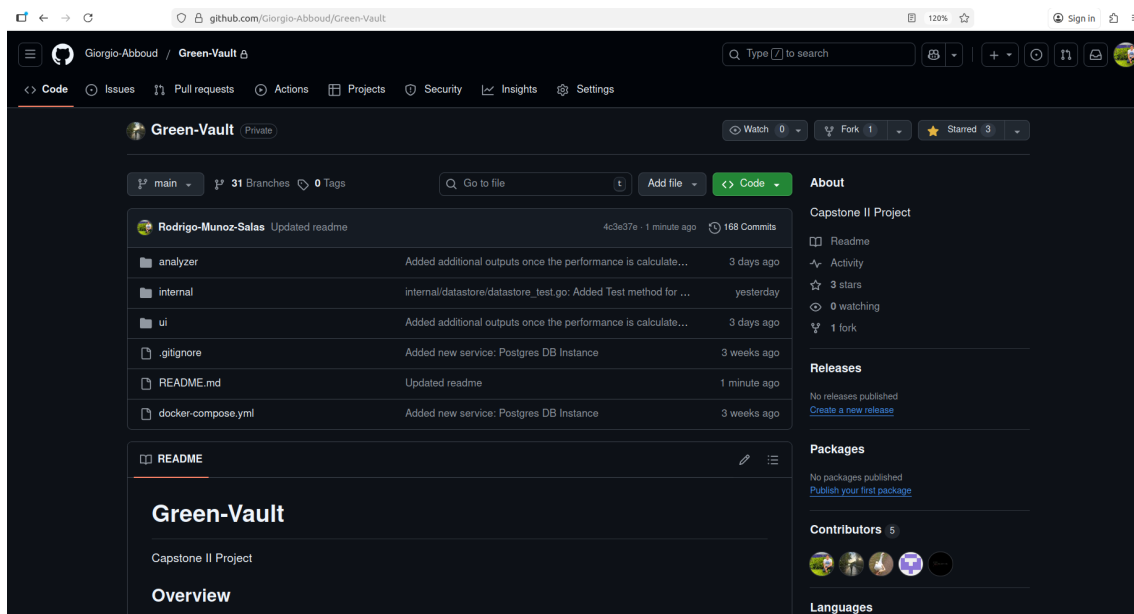
All application components (UI, Analyzer, and Internal API) are deployed as isolated containers managed by Docker Compose, while only the Go Internal API service owns and accesses the PostgreSQL database layer for persistence (which is also launched by Docker Compose).

1 Prerequisites

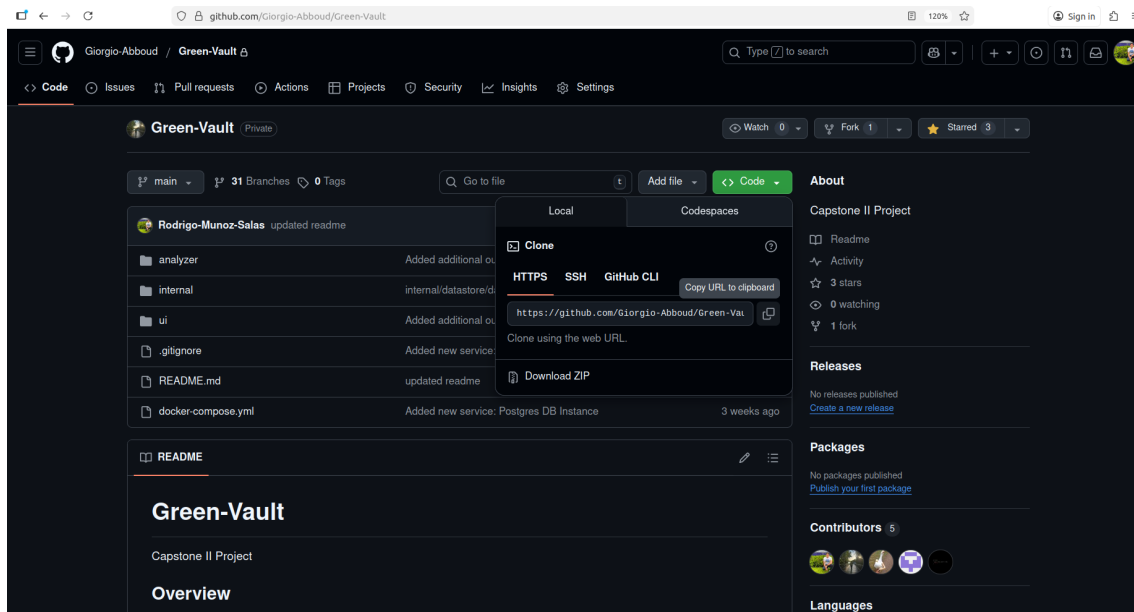
1. Install Git: <https://git-scm.com/install/>
2. Install Docker: <https://docs.docker.com/engine/install/>
3. Install Docker Compose: <https://docs.docker.com/compose/install/linux/>

2 Cloning Green Vault

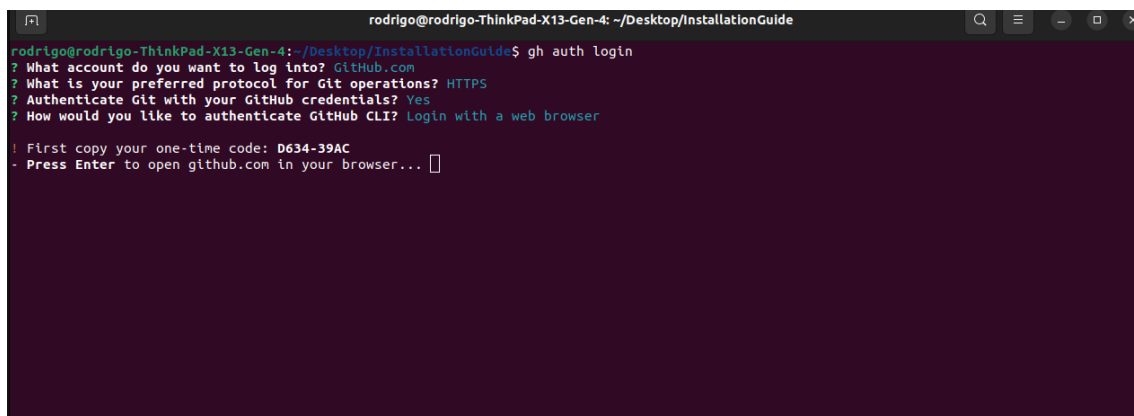
1. Access Green Vault: <https://github.com/Giorgio-Abboud/Green-Vault>



2. Click on 'Code' button and copy the URL



3. Install gh cli and log in to your GitHub account (skip if already installed)





Device Activation



Signed in as
Rodrigo-Munoz-Salas

Continue

Use a different account



© 2025 GitHub, Inc. [Terms](#) [Privacy](#) [Security](#) [Status](#) [Community](#) [Docs](#) [Contact](#) [Manage cookies](#) [Do not share my personal information](#)



Authorize your device



Signed in as **Rodrigo-Munoz-Salas**

Enter the code displayed in the app or on the device you're signing in to.
Never use a code sent by someone else.

D

6

3

4

-

3

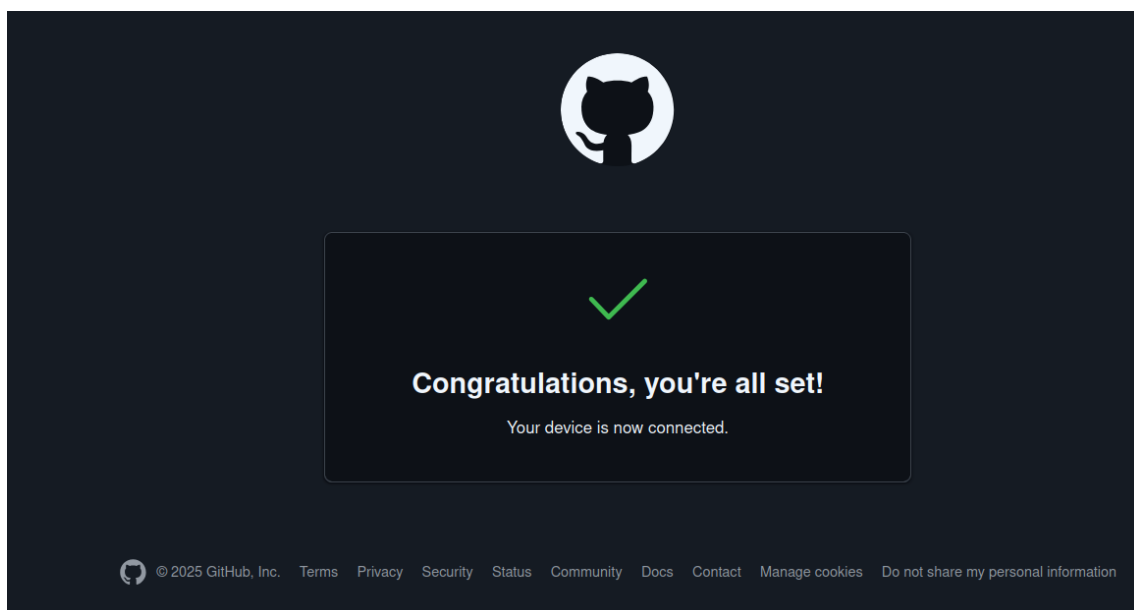
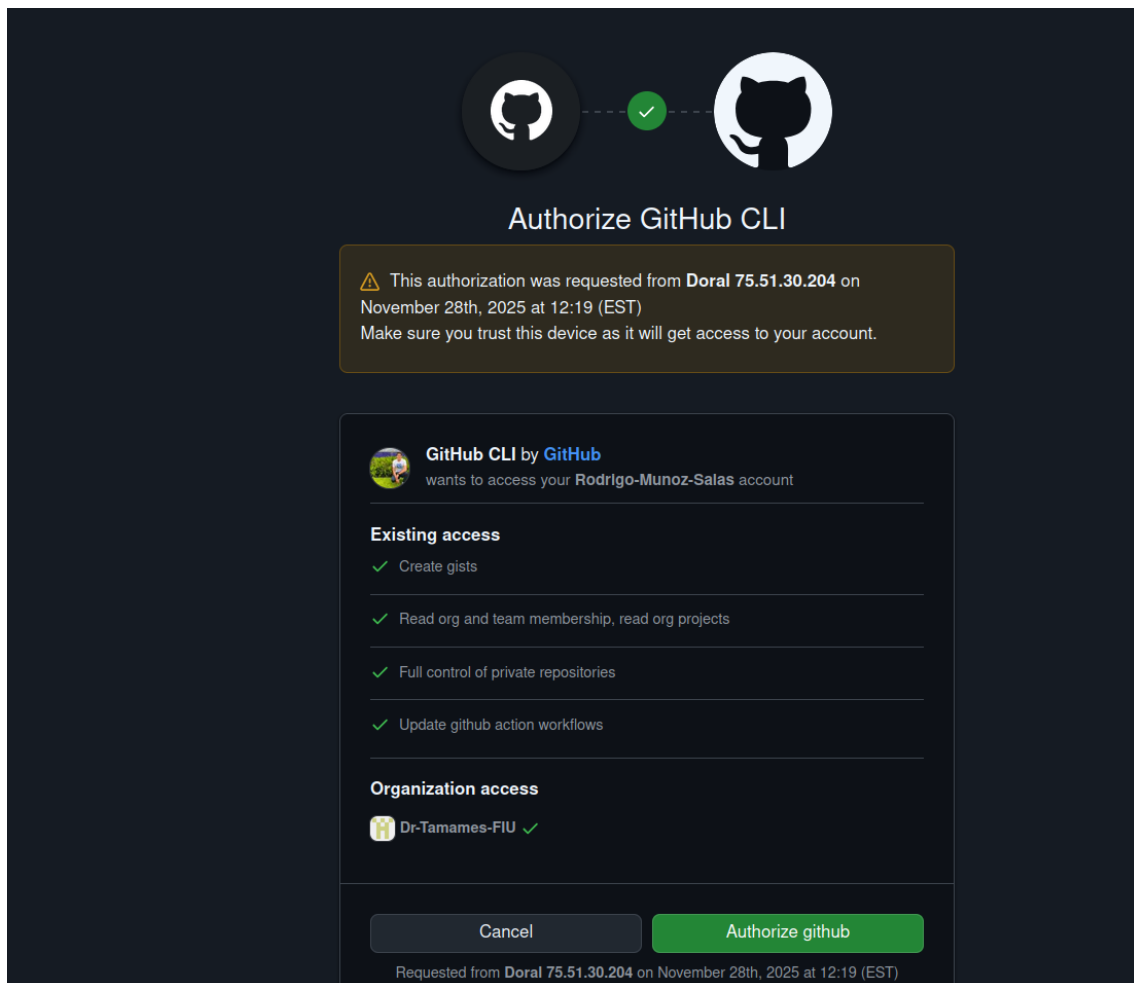
9

A

C

Continue

GitHub staff will never give you a code to enter on this page.



```
ask: https://github.com/rodrigo-munoz-salas/rodrigo-munoz-salas.git
✓ Authentication complete. Press Enter to continue...
- gh config set -h github.com git_protocol https
✓ Configured git protocol
✓ Logged in as Rodrigo-Munoz-Salas
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide$
```

4. Clone the repository

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide$ git clone https://github.com/Giorgio-Abboud/Green-Vault.git
Cloning into 'Green-Vault'...
remote: Enumerating objects: 1213, done.
remote: Counting objects: 100% (297/297), done.
remote: Compressing objects: 100% (201/201), done.
remote: Total 1213 (delta 155), reused 164 (delta 89), pack-reused 916 (from 1)
Receiving objects: 100% (1213/1213), 371.53 KiB | 2.32 MiB/s, done.
Resolving deltas: 100% (696/696), done.
```

3 Setup Environment Files

1. Go to **Green-Vault/** and create a file named **.env.db**

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ ls
analyzer  docker-compose.yml  internal  README.md  ut
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ touch .env.db
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ la
analyzer  docker-compose.yml  .env.db  .git  .gitignore  internal  README.md  ut
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$
```

2. Inside the file, set up the **POSTGRES_USER**, **POSTGRES_PASSWORD**, and **POSTGRES_DB**.
Note: Here you are setting up your DB account, which will be created at startup, so you can choose your **POSTGRES_PASSWORD** and **POSTGRES_DB** or just use this:

- **POSTGRES_USER**=postgres
- **POSTGRES_PASSWORD**=InstallationGuideGreenVault25!
- **POSTGRES_DB**=greenvaultdb

If you have previously used the **postgres** image from **Chainguard** to create an account, use those credentials for this setup

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ ls
analyzer  docker-compose.yml  internal  README.md  ut
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ touch .env.db
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ la
analyzer  docker-compose.yml  .env.db  .git  .gitignore  internal  README.md  ut
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ nano .env.db
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ cat .env.db
POSTGRES_USER=postgres
POSTGRES_PASSWORD=InstallationGuideGreenVault25!
POSTGRES_DB=greenvaultdb
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$
```

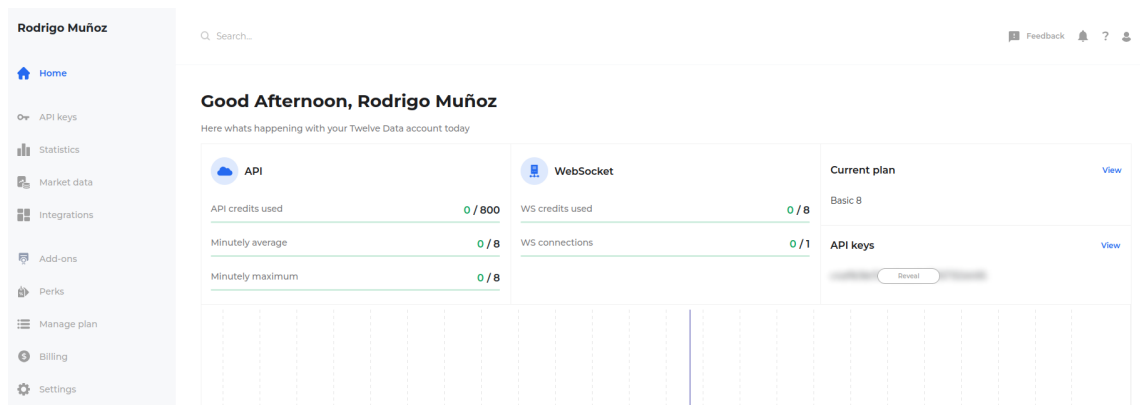
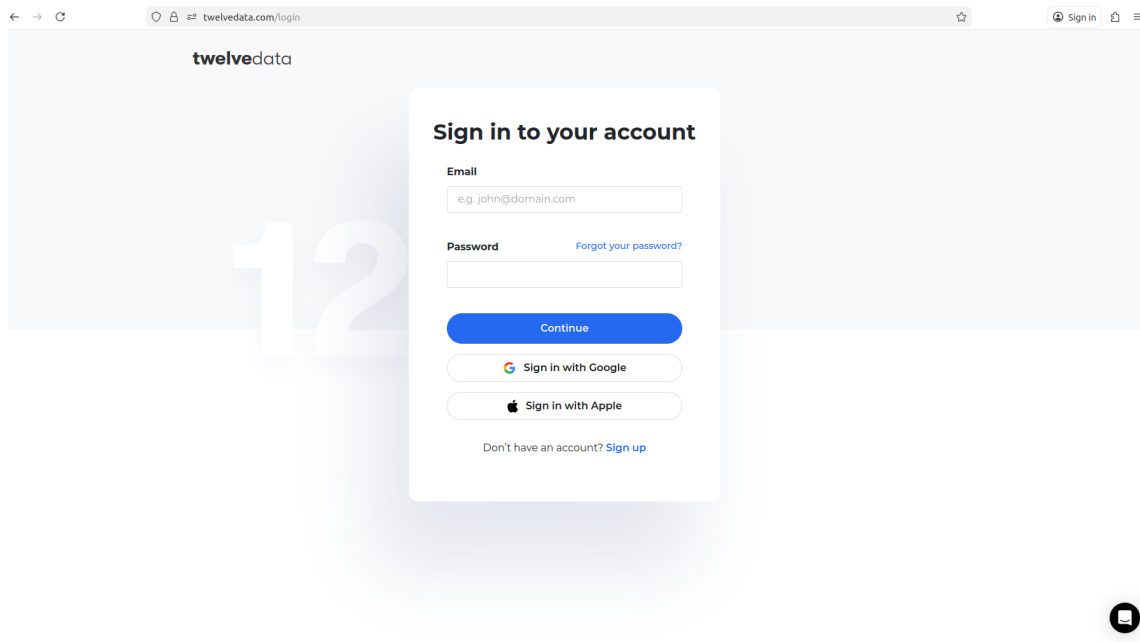
3. Go to **Green-Vault/analyzer** and create a file named **.env**

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault/analyzer
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ cd analyzer/
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ la
cmd  Dockerfile  .dockerignore  __init__.py  requirements.txt  reviewer  src  tests
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ touch .env
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ la
cmd  Dockerfile  .dockerignore  .env  __init__.py  requirements.txt  reviewer  src  tests
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$
```

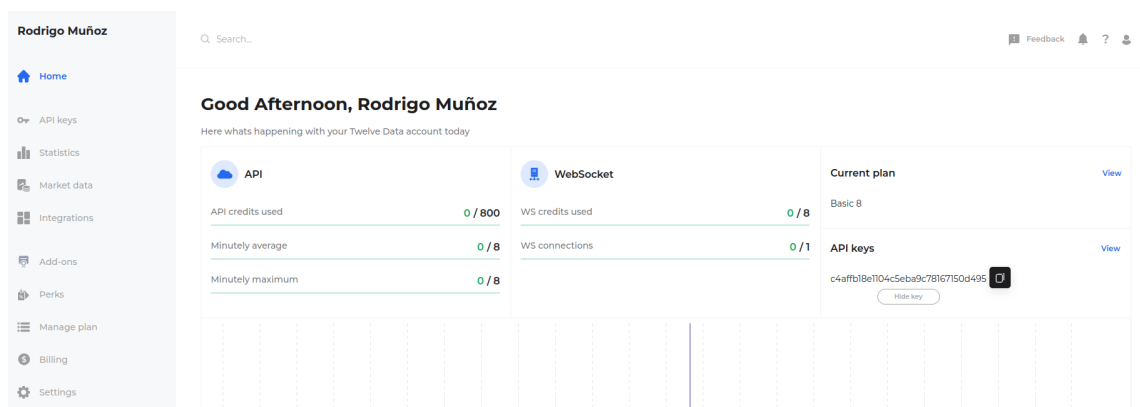
4. Inside the file, set up **TWELVE_DATA_API_KEY**

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault/analyzer
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ cd analyzer/
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ la
cmd  Dockerfile  .dockerignore  __init__.py  requirements.txt  reviewer  src  tests
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ touch .env
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ la
cmd  Dockerfile  .dockerignore  .env  __init__.py  requirements.txt  reviewer  src  tests
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ nano .env
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ cat .env
TWELVE_DATA_API_KEY={API_KEY}
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$
```

5. To get **{API_KEY}**, go to <https://twelvedata.com/login> and create and account/log in



6. Click on 'Reveal' in API Keys and copy it. Note: Do not share your api key with anyone.



7. Copy and paste YOUR API Key in the .env file

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault/analyzer
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ cd analyzer/
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ la
cmd Dockerfile .dockerignore __init__.py requirements.txt reviewer src tests
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ touch .env
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ la
cmd Dockerfile .dockerignore .env __init__.py requirements.txt reviewer src tests
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ nano .env
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ cat .env
TWELVE_DATA_API_KEY={API_KEY}
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ nano .env
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$ cat .env
TWELVE_DATA_API_KEY=c4affb18e1104c5eba9c78167150d495
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/analyzer$
```

8. Go to **Green-Vault/internal** and create a file named **.env.docker**

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault/internal
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ cd internal/
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ la
cmd datastore Dockerfile .dockerignore go.mod go.sum package
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ touch .env.docker
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ la
cmd datastore Dockerfile .dockerignore .env.docker go.mod go.sum package
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$
```

9. Inside the file, set up **DB_URL**, **JWT_SECRET**, and **API_PORT**.

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault/internal
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ cd internal/
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ la
cmd datastore Dockerfile .dockerignore go.mod go.sum package
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ touch .env.docker
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ la
cmd datastore Dockerfile .dockerignore .env.docker go.mod go.sum package
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ nano .env.docker
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ nano .env.docker
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ cat .env.docker
DB_URL={DB_URL}

JWT_SECRET={JWT_SECRET}

API_PORT=8080
```

10. For **{DB_URL}** you will use **POSTGRES_USER**, **POSTGRES_PASSWORD**, and **POSTGRES_DB** that were previously set in this format:

postgres://{POSTGRES_USER}:{POSTGRES_PASSWORD}@db:5432/{POSTGRES_DB}?sslmode=disable

If you used the same credentials that were configured earlier, you can safely copy and paste this connection string directly:

postgres://postgres:InstallationGuideGreenVault25!@db:5432/greenvaultdb?sslmode=disable

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ nano .env.docker
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ cat .env.docker
DB_URL=postgres://postgres:InstallationGuideGreenVault25!@db:5432/greenvaultdb?sslmode=disable

JWT_SECRET={JWT_SECRET}

API_PORT=8080
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$
```

11. For **{JWT_SECRET}**, run **openssl rand -hex 32** in your terminal and copy the generated random value. Note: if you don't have openssl in your machine, you can just use the provided one:

bd9417b640ab3232c0e47acb9298922e9ee37c5c89b7b82d6bc5f1fc9374683b

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault/internal
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/internal$ openssl rand -hex 32
bd9417b640ab3232c0e47acb9298922e9ee37c5c89b7b82d6bc5f1fc9374683b
```

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault/INTERNAL
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/INTERNAL$ openssl rand -hex 32
bd9417b640ab3232c0e47acb9298922e9ee37c5c89b7b82d6bc5f1fc9374683b
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/INTERNAL$ nano .env.docker
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/INTERNAL$ cat .env.docker
DB_URL=postgres://postgres:InstallationGuideGreenVault251@db:5432/greenvaultdb?sslmode=disable

JWT_SECRET=bd9417b640ab3232c0e47acb9298922e9ee37c5c89b7b82d6bc5f1fc9374683b

API_PORT=8080
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/INTERNAL$
```

12. Go to **Green-Vault/ui** and create a file named **.env**

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault/ui
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ cd ui/
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/ui$ la
Dockerfile .dockerignore index.html package.json package-lock.json postcss.config.js src tailwind.config.js
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/ui$ touch .env
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/ui$ la
Dockerfile .dockerignore .env index.html package.json package-lock.json postcss.config.js src tailwind.config.js
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/ui$
```

13. Inside the file, set up **VITE_CALC_BASE_URL** and **VITE_API_BASE_URL** as:

- VITE_CALC_BASE_URL=http://localhost:8000
- VITE_API_BASE_URL=http://localhost:8080

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault/ui
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ cd ui/
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/ui$ la
Dockerfile .dockerignore index.html package.json package-lock.json postcss.config.js src tailwind.config.js
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/ui$ touch .env
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/ui$ la
Dockerfile .dockerignore .env index.html package.json package-lock.json postcss.config.js src tailwind.config.js
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/ui$ nano .env
VITE_CALC_BASE_URL=http://localhost:8000
VITE_API_BASE_URL=http://localhost:8080
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault/ui$
```

4 Run Green Vault!

1. Go to the top of the directory (**Green-Vault/**) where **docker-compose.yml** is located

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ ls
analyzer docker-compose.yml internal README.md ui
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$
```

2. Run **docker compose build ui analyzer internal**, you will get a successful message at the end.

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ docker compose build ui analyzer internal
```

```
[+] Building 3/3
✔ green-vault-ui Built 0.0s
✔ green-vault-analyzer Built 0.0s
✔ green-vault-internal Built 0.0s
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$
```

3. Verify the images were created by running **docker images**

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
green-vault-ui       latest             c1a7c8527156       About a minute ago 759MB
green-vault-analyzer latest             49ea304b7bcf       About a minute ago 767MB
green-vault-internal latest             918685d0929f       10 days ago        21.6MB
postgres             16                08d5fe3fa89c       13 days ago        451MB
cgr.dev/chainguard/postgres latest             45fff01d4e95       3 weeks ago        369MB
```

4. Startup Green Vault by running **docker compose up**, and wait for services to start (takes a few seconds).

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ docker compose up
```

```
rodrigo@rodrigo-ThinkPad-X13-Gen-4: ~/Desktop/InstallationGuide/Green-Vault
rodrigo@rodrigo-ThinkPad-X13-Gen-4:~/Desktop/InstallationGuide/Green-Vault$ docker compose up
[+] Running 5/5
 ✓ Network green-vault_default Created                                0.1s
 ✓ Container postgres-db Created                                    0.1s
 ✓ Container green-vault-internal-1 Created                        0.1s
 ✓ Container green-vault-analyzer-1 Created                       0.1s
 ✓ Container green-vault-ui-1 Created                             0.1s
Attaching to analyzer-1, internal-1, ui-1, postgres-db
postgres-db
postgres-db      PostgreSQL Database directory appears to contain a database; Skipping initialization
postgres-db      2025-11-28 18:12:50.489 UTC [1] LOG:  starting PostgreSQL 18.0 on x86_64-pc-linux-gnu, compiled by x86_64-pc-linux-gnu-gcc (W
postgres-db      olfi 15.2.0-r4) 15.2.0, 64-bit
postgres-db      2025-11-28 18:12:50.489 UTC [1] LOG:  listening on IPv4 address "0.0.0.0", port 5432
postgres-db      2025-11-28 18:12:50.489 UTC [1] LOG:  listening on IPv6 address "::", port 5432
postgres-db      2025-11-28 18:12:50.504 UTC [1] LOG:  listening on Unix socket "/tmp/.s.PGSQL.5432"
postgres-db      2025-11-28 18:12:50.518 UTC [32] LOG:  database system was shut down at 2025-11-28 18:10:31 UTC
postgres-db      2025-11-28 18:12:50.528 UTC [1] LOG:  database system is ready to accept connections
internal-1
internal-1      2025/11/28 18:12:56 [✓] Database connected and migrations applied!
internal-1      2025/11/28 18:12:56 Go API listening on :8080
ui-1
ui-1            npm warn Unknown builtin config "globalignorefile". This will stop working in the next major version of npm.
ui-1            npm warn Unknown builtin config "python". This will stop working in the next major version of npm.
ui-1            > dev
ui-1            > vite --host 0.0.0.0 --port 5173
ui-1
ui-1            VITE v5.4.0  ready in 161 ms
ui-1            → Local:    http://localhost:5173/
ui-1            → Network: http://172.18.0.5:5173/
analyzer-1      INFO:    Started server process [1]
analyzer-1      INFO:    Waiting for application startup.
analyzer-1      INFO:    Application startup complete.
analyzer-1      INFO:    Uvicorn running on http://0.0.0.0:8080 (Press CTRL+C to quit)
```

5. Open <http://localhost:5173/> and enjoy Green Vault!

