



SPRINT4
ALUNO: VINÍCIUS
FREITAS

PREPARANDO O AMBIENTE E CRIANDO CHAVE SSH

The image shows a web browser window with the address bar displaying `ssh.cloud.google.com/v2/ssh/projects/vigilant-signer-462713-t0/zones/us-central1-f/instances/viniciusterrallab`. The browser has a VPN icon and a lock icon. Below the address bar, there are three buttons: "SSH no navegador", "FAZER UPLOAD DO ARQUIVO", and "FAZER O DOWNLOAD DO ARQUIVO".

The terminal window shows the following commands and output:

```
atleticomineiro198@viniciusterrallab:~/sprint4$ git clone git@gitlab.com:emanuel-xavier/base-desafio-infra.git
-bash: git: command not found
atleticomineiro198@viniciusterrallab:~/sprint4$ sudo apt update
sudo apt install git -y
Get:1 file:/etc/apt/mirrors/debian.list Mirrorlist [30 B]
Get:5 file:/etc/apt/mirrors/debian-security.list Mirrorlist [39 B]
Hit:7 https://packages.cloud.google.com/apt google-compute-engine-bookworm-stable InRelease
Hit:8 https://packages.cloud.google.com/apt cloud-sdk-bookworm InRelease
Hit:2 https://deb.debian.org/debian bookworm InRelease
Hit:9 https://packages.cloud.google.com/apt google-cloud-ops-agent-bookworm-2 InRelease
Hit:3 https://deb.debian.org/debian bookworm-updates InRelease
Hit:4 https://deb.debian.org/debian bookworm-backports InRelease
Hit:6 https://deb.debian.org/debian-security bookworm-security InRelease
Reading package lists... Done
Building dependency tree... Done
```

Below the terminal window, the Google Cloud Platform interface for managing SSH keys is visible. The breadcrumb navigation shows "User Settings / SSH Keys / Key GCP". There is a search bar labeled "Search settings". The title is "SSH Key: Key GCP" with a "Delete" button. The "Key details" section contains a table with the following data:

Usage type	Created	Last used	Expires
Authentication & Signing	Jul 3, 2025 8:03pm	Never	Jul 3, 2026 12:00am

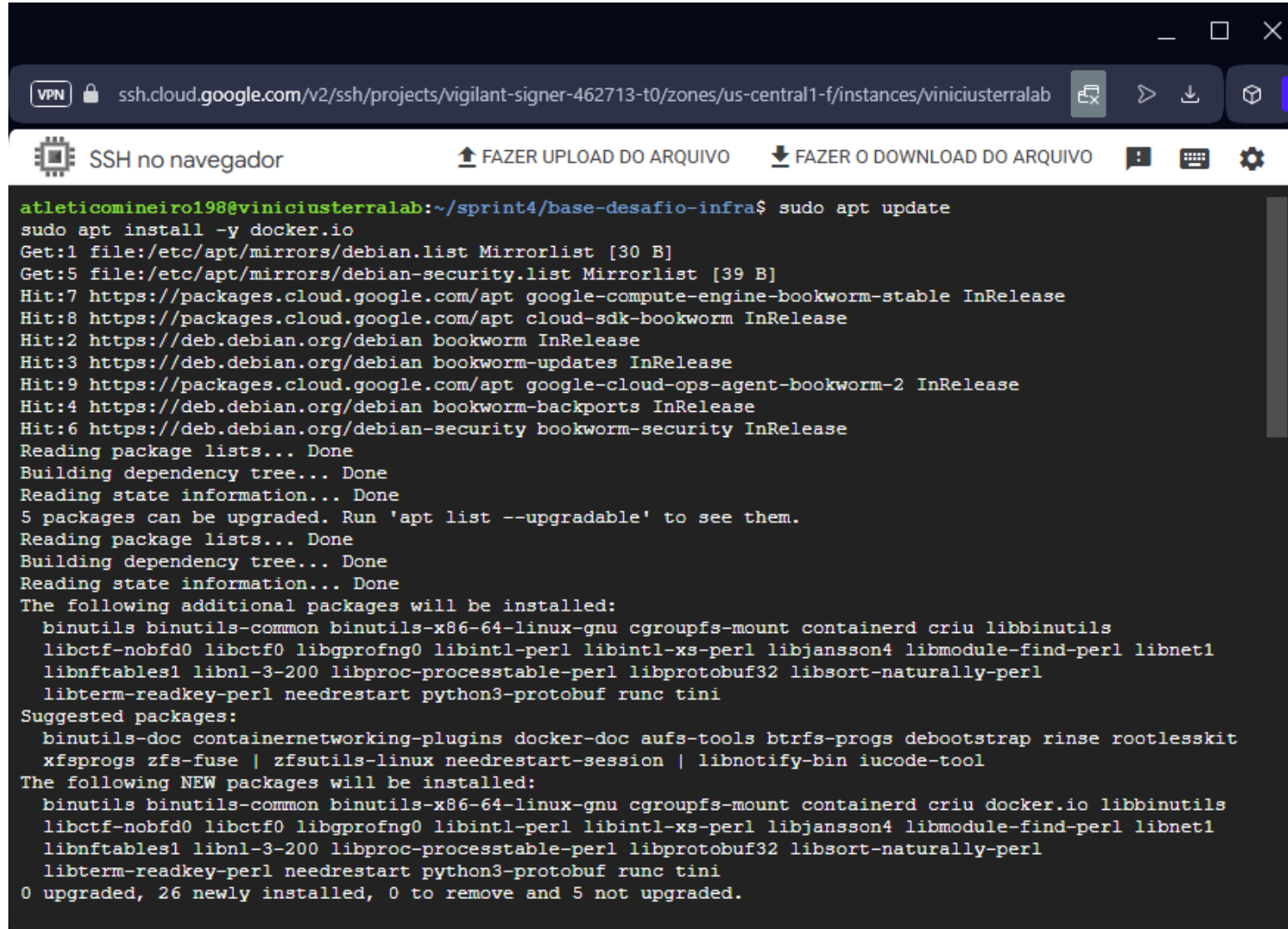
The "SSH Key" section shows the key name and the public key text:

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQACQDHO5vWYfty+8qQumHptH0jy1LUsmSSSC7nUjBwCE08rbm8Q7m9VfMX5Qu6jX02AZjuLp9b8:
```



```
atleticomineiro198@viniciusterrallab:~/sprint4$ ls ~/.ssh/id_rsa.pub
ls: cannot access '/home/atleticomineiro198/.ssh/id_rsa.pub': No such file or directory
atleticomineiro198@viniciusterrallab:~/sprint4$ ssh-keygen -t rsa -b 4096 -C "viniciusterrallab@gmail.com"
Generating public/private rsa key pair.
Enter file in which to save the key (/home/atleticomineiro198/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/atleticomineiro198/.ssh/id_rsa
Your public key has been saved in /home/atleticomineiro198/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:AvdNL+/1XAqACvHNnDn4qcOyTheIPkQTXB9nA27AeF0 viniciusterrallab@gmail.com
The key's randomart image is:
+---[RSA 4096]---+
| . +o.oOE      |
| + o+.+ .      |
| oo. + .       |
| o= B * .       |
| ...+ S + .     |
| .o = o +       |
| .o.+ + o . .   |
| +o.oO . o +.   |
| ++.. . . o    |
+-----[SHA256]-----+
atleticomineiro198@viniciusterrallab:~/sprint4$ cat ~/.ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCAQDHOSvWYfty+0qQumHptH0jylLUsmSS5C7nUjBWCE08rbm8Q7m9VfMX5QuGjX02AZjuLp9b0xfpv
wulcoXpp2zF9hu3MXRknMkjW32KbnSglqa4wyTqlMvnu4Eu5c9TcvEEJHV8+t4x4dl8kFgyaQ5oKbHnAbRppLhBKvwFmyCLORye06GmXjFJ7XDXc3
7kiZZ/cHdP4M5QJ4ivu5T0RVTmSxP6CTtsk1otCLwmkbGy7u+P+OIL+U12rFLt/+ebIYy2BCG5oaGMFQtNWCvZwgGHcDxQvNy9cj snBO9JT1D1bgr
tEjsJIn/pqXNyrFn+dKZ2yYHrLicWy0VwBOSE6BLf4qqVE2nrHb+QwdV/Y9Gy3gqpjVNEHx6z3fkZ+hVzaxYyvI+qopFA0NDqKpz3PhxoMJZpLhLd
QREAzPwgvEwSc85/kr3JwfI1lUNwOI1tHsSV9FQRVsutq51SBpPl2NQKwPgpoiFX9jWLqVGKkIUOcSh5fLmKJRgqtpkT1xCB9Zt/1DdsDIAvzjF8e
uJftKcuu7uSk7JGscFwnP7f4DeFx2nlC0048sLm2rGwL09qnZoqlVb03XPFX1PWTs+n6QLs59oHrd6dOuOicNB2F+rHMWqnMRpuBhp0y8q9usrmq
yt5WS2/jsKcH7NZWBzUW00Xj2GWouGXj+PKcTUD/sMfw== viniciusterrallab@gmail.com
atleticomineiro198@viniciusterrallab:~/sprint4$
```

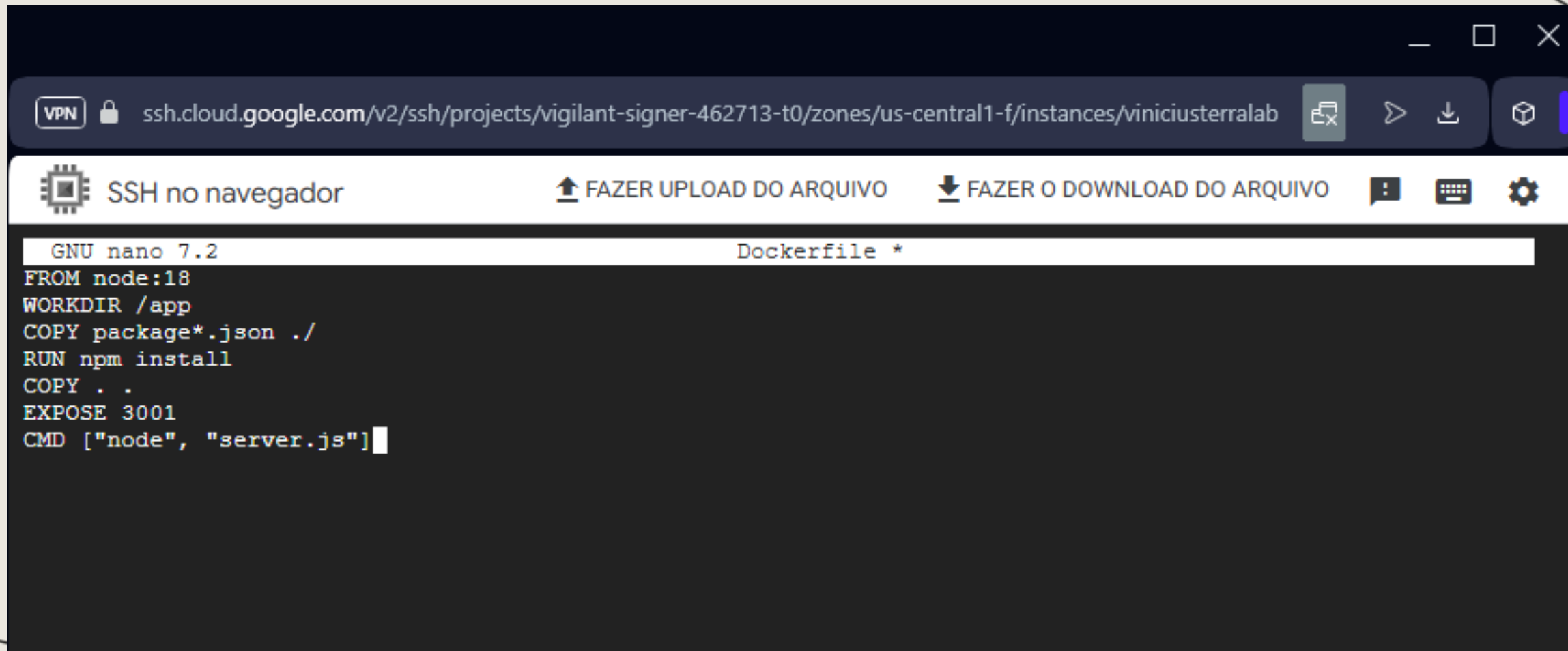
INSTALANDO DEPENDÊNCIAS E APLICATIVOS



The screenshot shows a terminal window with a dark background. The title bar of the window reads "SSH no navegador" and includes buttons for "FAZER UPLOAD DO ARQUIVO" and "FAZER O DOWNLOAD DO ARQUIVO". The address bar shows the URL "ssh.cloud.google.com/v2/ssh/projects/vigilant-signer-462713-t0/zones/us-central1-f/instances/viniciusterrallab". The terminal output shows the execution of the following commands and their results:

```
atleticomineiro198@viniciusterrallab:~/sprint4/base-desafio-infra$ sudo apt update
sudo apt install -y docker.io
Get:1 file:/etc/apt/mirrors/debian.list Mirrorlist [30 B]
Get:5 file:/etc/apt/mirrors/debian-security.list Mirrorlist [39 B]
Hit:7 https://packages.cloud.google.com/apt google-compute-engine-bookworm-stable InRelease
Hit:8 https://packages.cloud.google.com/apt cloud-sdk-bookworm InRelease
Hit:2 https://deb.debian.org/debian bookworm InRelease
Hit:3 https://deb.debian.org/debian bookworm-updates InRelease
Hit:9 https://packages.cloud.google.com/apt google-cloud-ops-agent-bookworm-2 InRelease
Hit:4 https://deb.debian.org/debian bookworm-backports InRelease
Hit:6 https://deb.debian.org/debian-security bookworm-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
5 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu cgroupfs-mount containerd criu libbinutils
  libctf-nobfd0 libctf0 libgprofng0 libint1-perl libint1-xs-perl libjansson4 libmodule-find-perl libnet1
  libnftables1 libnl-3-200 libproc-processtable-perl libprotobuf32 libsort-naturally-perl
  libterm-readkey-perl needrestart python3-protobuf runc tini
Suggested packages:
  binutils-doc containernetworking-plugins docker-doc aufs-tools btrfs-progs debootstrap rinse rootlesskit
  xfsprogs zfs-fuse | zfsutils-linux needrestart-session | libnotify-bin iucode-tool
The following NEW packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu cgroupfs-mount containerd criu docker.io libbinutils
  libctf-nobfd0 libctf0 libgprofng0 libint1-perl libint1-xs-perl libjansson4 libmodule-find-perl libnet1
  libnftables1 libnl-3-200 libproc-processtable-perl libprotobuf32 libsort-naturally-perl
  libterm-readkey-perl needrestart python3-protobuf runc tini
0 upgraded, 26 newly installed, 0 to remove and 5 not upgraded.
```

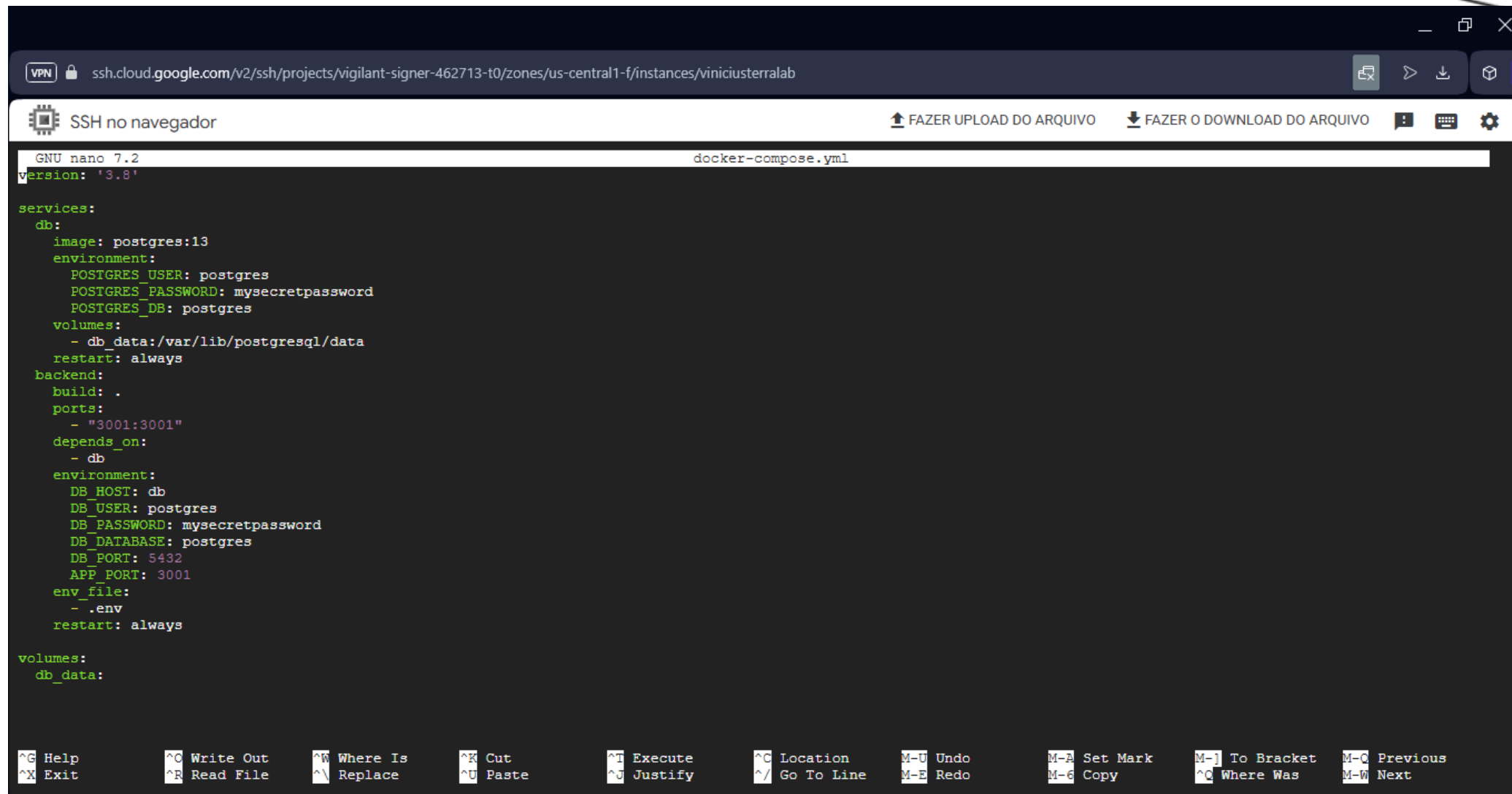
MONTANDO O DOCKERFILE



The screenshot shows a web browser window with the address bar displaying `ssh.cloud.google.com/v2/ssh/projects/vigilant-signer-462713-t0/zones/us-central1-f/instances/viniciusterrallab`. The browser interface includes a top bar with a "VPN" icon, a lock icon, and a search bar. Below the address bar, there is a navigation bar with the text "SSH no navegador" and two buttons: "FAZER UPLOAD DO ARQUIVO" and "FAZER O DOWNLOAD DO ARQUIVO". The main content area displays a terminal window titled "GNU nano 7.2" and "Dockerfile *". The terminal content shows the following Dockerfile instructions:

```
FROM node:18
WORKDIR /app
COPY package*.json ./
RUN npm install
COPY . .
EXPOSE 3001
CMD ["node", "server.js"]
```

MONTANDO O DOCKER-COMPOSE



The screenshot shows a terminal window titled "SSH no navegador" with a dark theme. The browser address bar shows a Google Cloud SSH session. The terminal displays the nano 7.2 editor editing a file named "docker-compose.yml". The content of the file is a Docker Compose configuration for a PostgreSQL database and a backend service. The configuration includes service definitions for 'db' and 'backend', with various environment variables, volumes, and port mappings. The 'backend' service depends on the 'db' service. The 'volumes' section defines a 'db_data' volume.

```
GNU nano 7.2 docker-compose.yml
version: '3.8'

services:
  db:
    image: postgres:13
    environment:
      POSTGRES_USER: postgres
      POSTGRES_PASSWORD: mysecretpassword
      POSTGRES_DB: postgres
    volumes:
      - db_data:/var/lib/postgresql/data
    restart: always
  backend:
    build: .
    ports:
      - "3001:3001"
    depends_on:
      - db
    environment:
      DB_HOST: db
      DB_USER: postgres
      DB_PASSWORD: mysecretpassword
      DB_DATABASE: postgres
      DB_PORT: 5432
      APP_PORT: 3001
    env_file:
      - .env
    restart: always

volumes:
  db_data:
```

At the bottom of the terminal, a list of nano editor shortcuts is displayed:

^G Help	^O Write Out	^W Where Is	^K Cut	^T Execute	^C Location	M-U Undo	M-A Set Mark	M-] To Bracket	M-^ Previous
^X Exit	^R Read File	^N Replace	^U Paste	^J Justify	^/_ Go To Line	M-E Redo	M-6 Copy	^C Where Was	M-W Next

COLOCANDO OS CONTAINERS PARA RODAR

```
VPN ssh.cloud.google.com/v2/ssh/projects/vigilant-signer-462713-t0/zones/us-central1-f/instances/viniusterrallab
SSH no navegador FAZER UPLOAD DO ARQUIVO FAZER O DOWNLOAD DO ARQUIVO

atleticomineiro198@viniusterrallab:~/sprint4/base-desafio-infra$ docker-compose down -v && docker-compose u
p -d --build
[+] Running 4/2
✓ Container base-desafio-infra-backend-1 Removed 10.4s
✓ Container base-desafio-infra-db-1 Removed 0.3s
✓ Volume base-desafio-infra_db_data Removed 0.1s
! Network base-desafio-infra_default Resource is still i... 0.0s
[+] Building 0.6s (10/10) FINISHED docker:default
=> [backend internal] load build definition from Dockerfile 0.0s
=> => transferring dockerfile: 31B 0.0s
=> [backend internal] load .dockerignore 0.0s
=> => transferring context: 2B 0.0s
=> [backend internal] load metadata for docker.io/library/node:18 0.4s
=> [backend 1/5] FROM docker.io/library/node:18@sha256:c6ae79e38498325db67193d391e6ec1d224d96c693a8a 0.0s
=> [backend internal] load build context 0.0s
=> => transferring context: 2.22kB 0.0s
=> CACHED [backend 2/5] WORKDIR /app 0.0s
=> CACHED [backend 3/5] COPY package*.json ./ 0.0s
=> CACHED [backend 4/5] RUN npm install 0.0s
=> CACHED [backend 5/5] COPY . . 0.0s
=> [backend] exporting to image 0.0s
=> => exporting layers 0.0s
=> => writing image sha256:1d3b83c8a0510fc16da781c5beea47e17d764aa8b641801d22a5b3374d86db4b 0.0s
=> => naming to docker.io/library/base-desafio-infra-backend 0.0s
WARN[0001] Found orphan containers ([base-desafio-infra-frontend-1]) for this project. If you removed or ren
amed this service in your compose file, you can run this command with the --remove-orphans flag to clean it
up.
[+] Running 2/3
! Volume "base-desafio-infra_db_data" Created 1.8s
✓ Container base-desafio-infra-db-1 Started 0.9s
✓ Container base-desafio-infra-backend-1 Started 1.7s
atleticomineiro198@viniusterrallab:~/sprint4/base-desafio-infra$
```

O parâmetro `restart: always` no `docker-compose.yml` garante que os contêineres do backend e do banco de dados sejam reiniciados automaticamente caso parem por qualquer motivo, como falhas inesperadas, erro de inserção duplicada ou reinicialização da máquina virtual da GCP. Isso assegura que a aplicação volte a funcionar sem necessidade de intervenção manual, aumentando a resiliência e disponibilidade do sistema, conforme exigido no projeto.



ssh.cloud.google.com/v2/ssh/projects/vigilant-signer-462713-t0/zones/us-central1-f/instances/viniciusterrallab



SSH no navegador



FAZER UPLOAD DO ARQUIVO



FAZER O DOWNLOAD DO ARQUIVO



atleticomineiro198@viniciusterrallab:~/sprint4/base-desafio-infra\$ docker ps

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
546a37e0ee6c	base-desafio-infra-backend	"docker-entrypoint.s..."	30 minutes ago	Up 29 minutes	0.0.0.
0:3001->3001/tcp		base-desafio-infra-backend-1			
4d99bdac127e	postgres:13	"docker-entrypoint.s..."	30 minutes ago	Up 30 minutes	5432/t
cp		base-desafio-infra-db-1			

atleticomineiro198@viniciusterrallab:~/sprint4/base-desafio-infra\$

CRIANDO UMA TAG DE REDE PARA LIBERAR A PORTA DO BACK-END

Google Cloud

My First Project

regras de firewall

Pesquisa

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Painel

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Versões

Instâncias

Filas de tarefas

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Google App Engine

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Criar aplicativo

Cloud Run offers the most modern fully managed application hosting experience with lower minimum billable times and support for GPUs on demand for your AI/ML workloads. Deploy code written in any programming language supported by App Engine on Cloud Run.

<input type="checkbox"/>	Nome	Tipo	Destinos	Filtros	Protocolos / portas	Ação	Prioridade	Rede	
<input type="checkbox"/>	backend	Entrada	backend-vm	Intervalos	tcp:80, 3001	Permitir	1000	defa	▼

Instâncias da VM

 Criar Instância

 Importar VM

 Atualizar




Instâncias

Observabilidade

Programações de instâncias

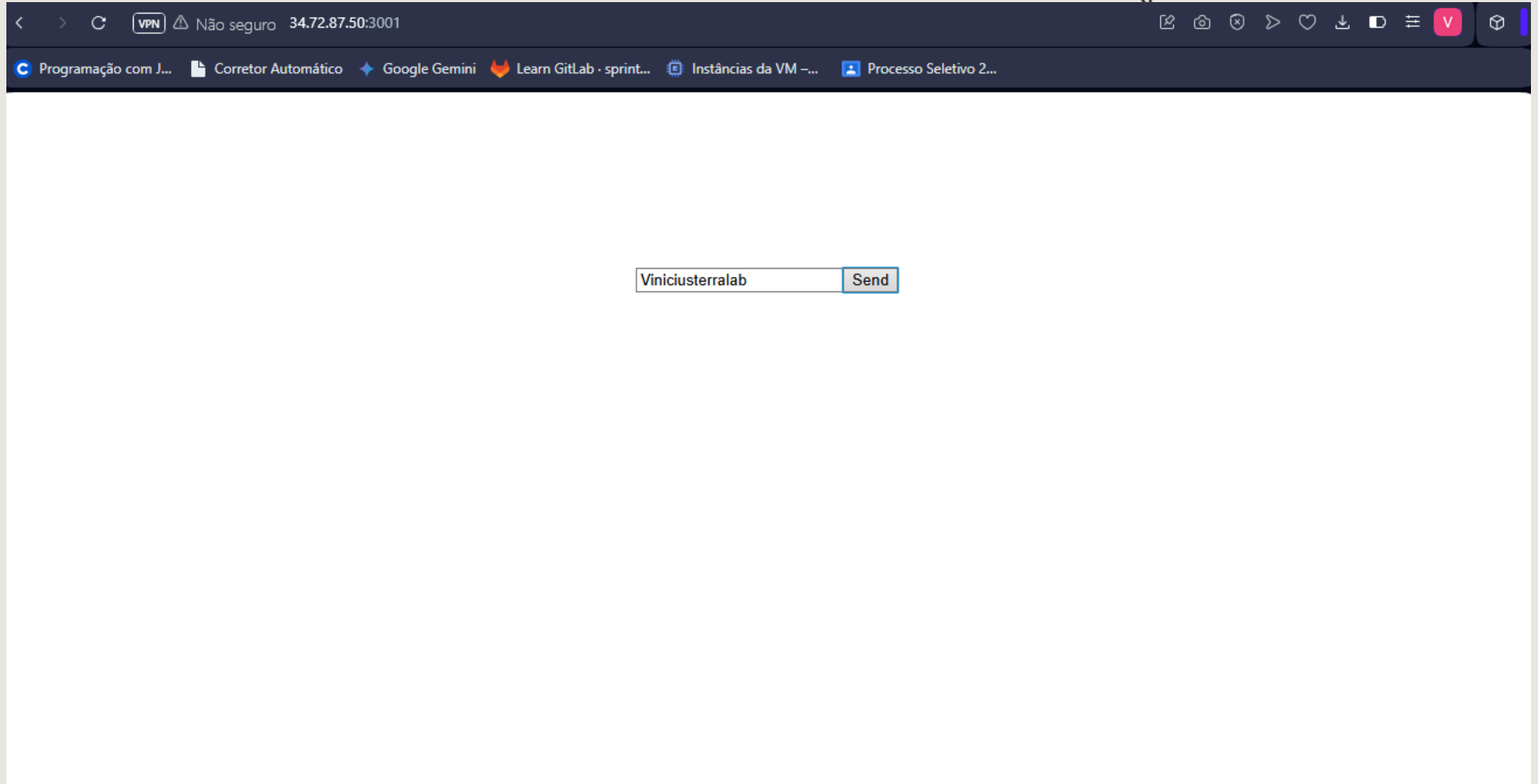
Instâncias da VM

 Filtro Insira o nome ou o valor da propriedade



Zona	Recomendações	Em uso por	IP interno	IP externo	Tags de rede	Conectar
us-central1-f	 Economize \$ 12 / mês		10.128.0.2 (nic0)	34.72.87.50  (nic0)	<div>backend-vm</div> <div>http-server</div> <div>https-server</div>	SSH  

FAZENDO A CONEXÃO EXTERNA



VERIFICANDO SE O BANCO DE DADOS DEU CERTO

```
atleticomineiro198@viniciusterrallab:~/sprint4/base-desafio-infra$ docker exec -it base-desafio-infra-db-1 ps
ql -U postgres -d postgres
psql (13.21 (Debian 13.21-1.pgdg120+1))
Type "help" for help.

postgres=# \dt
           List of relations
 Schema | Name   | Type  | Owner
-----+-----+-----+-----
 public | person | table | postgres
(1 row)

postgres=# SELECT * FROM person;
 id |          name          |      time
----+-----+-----+-----
  1 | Viniciusterrallab | 21:09:40
  2 | Viniciusterrallab | 21:09:53
  3 | Viniciusterrallab | 21:09:55
(3 rows)

postgres=#
```

```
atleticomineiro198@viniciusterralab:~/sprint4/base-desafio-infra$ docker exec -it base-desafio-infra-db-1 ps
```

```
ql -U postgres -d postgres
```

```
psql (13.21 (Debian 13.21-1.pgdg120+1))
```

```
Type "help" for help.
```

```
postgres=# \dt
```

```
List of relations
```

Schema	Name	Type	Owner
public	person	table	postgres

(1 row)

```
postgres=# SELECT * FROM person;
```

id	name	time
1	Viniciusterralab	21:09:40
2	Viniciusterralab	21:09:53
3	Viniciusterralab	21:09:55

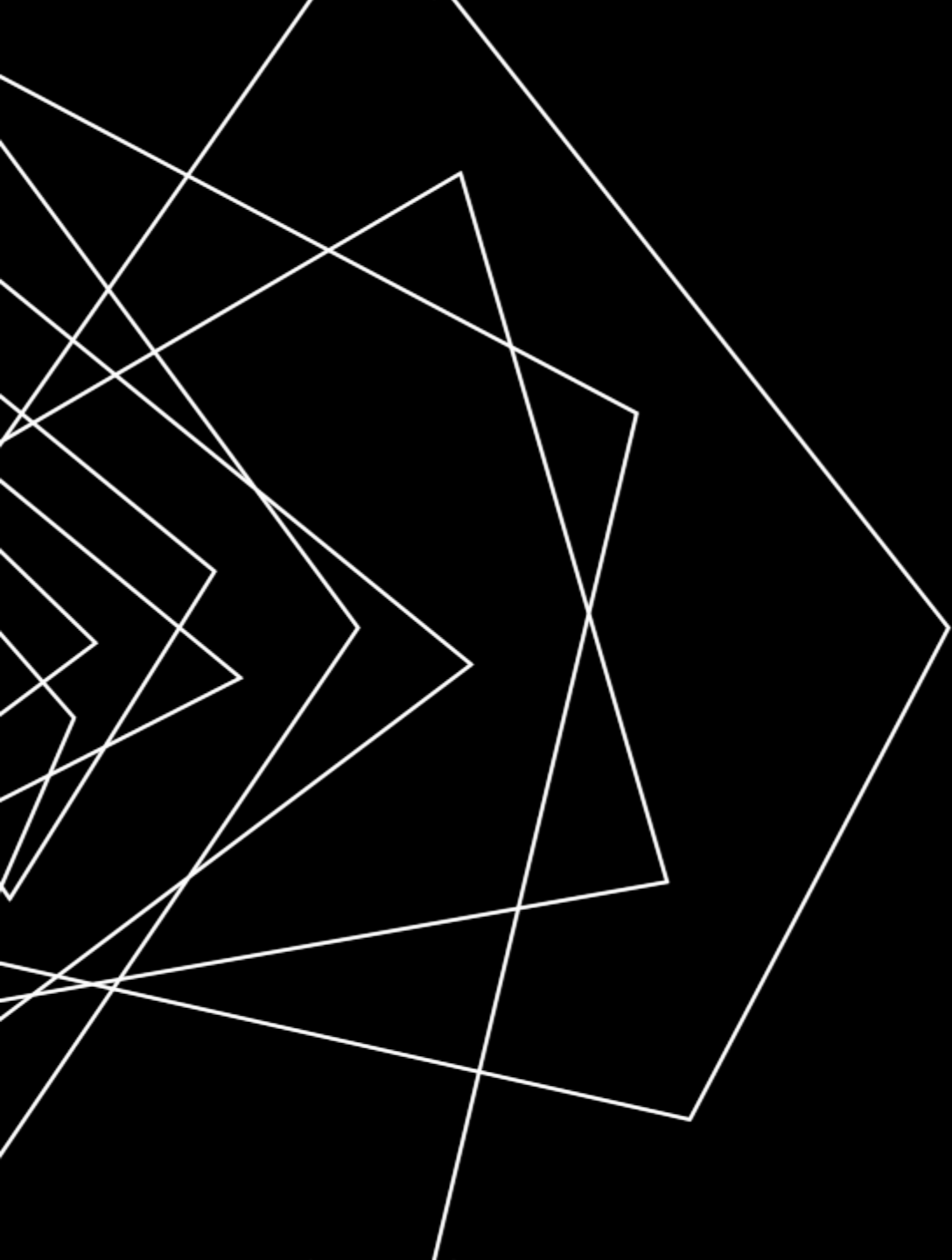
(3 rows)

```
postgres=# SELECT * FROM person;
```

id	name	time
1	Viniciusterralab	21:09:40
2	Viniciusterralab	21:09:53
3	Viniciusterralab	21:09:55
4	vinicius freitas	21:16:40

(4 rows)

```
postgres=# █
```



OBRIKADO!