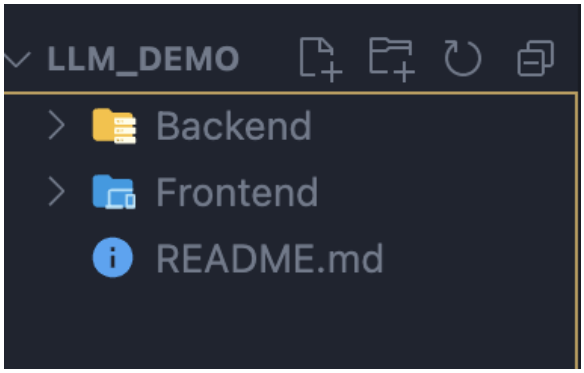
Project Deployment of GCP cloud run
LLM-BI

Steps for Setting up Locally :

⇒ File Structure



For backend

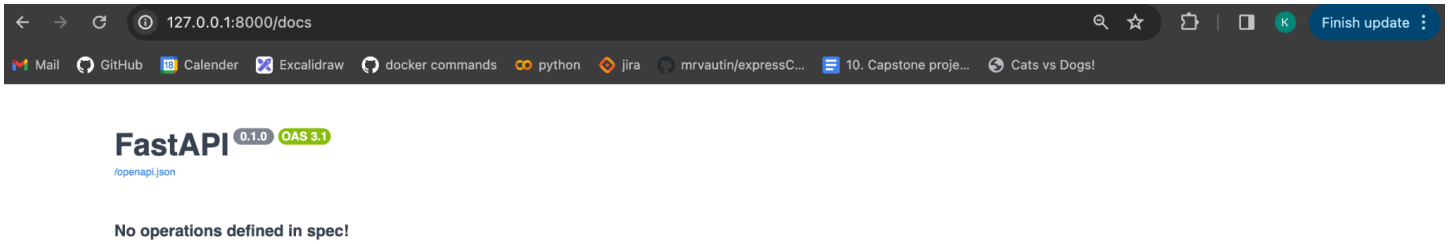
1. Go to directory:
```
cd Backend
```

2. Create a python virtual environment using venv names (env):
```
python3 -m venv env
```

3. Activating the virtual environment
```
# Linux / Unix
source /env/bin/activate

# Windows
env/Scripts/activate
```

4. Installing necessary dependencies :
```
pip install -r requirements.txt
```

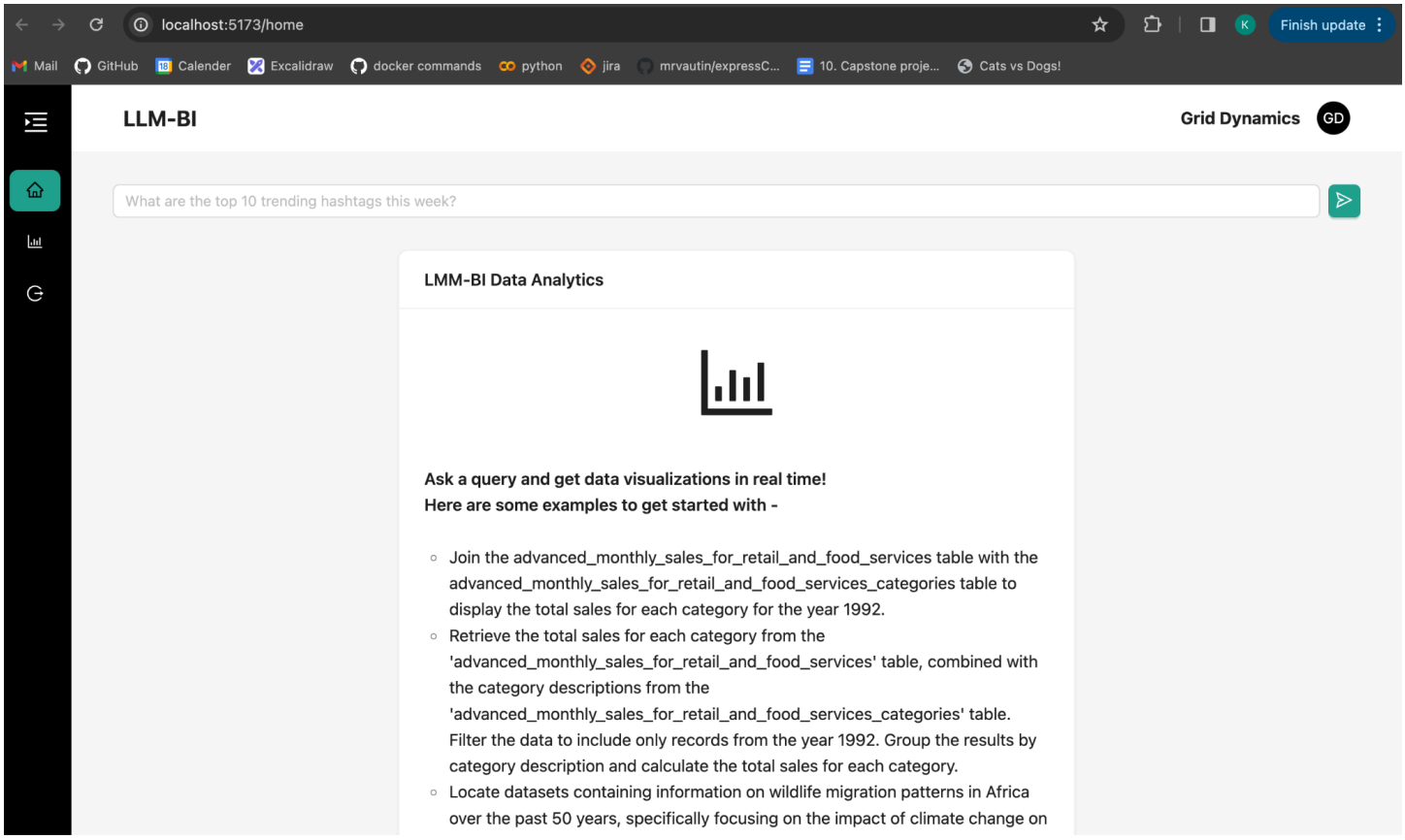
5. Running the server
```
uvicorn main:app -reload
```



Now the Backend is fully Up.

For Frontend :

1. Go to frontend directory
```
cd ../Frontend
```
2. Install Node
```
Brew install node
(make sure brew is installed)
```
3. Install node modules
```
npm i
```
4. Run the server
```
npm run dev
```
5. For building
```
npm run build
```



Now the project is fully deployed locally.
For deploying it in Google Cloud (Cloud Run) First we have to make the docker image for both frontend and backend separately.

STEPS :

1. Install docker on your machine by following the instructions given in this doc
   https://docs.docker.com/engine/install/

2. Make Dockerfile for both frontend and backend by going in their respective directories.
   For Backend

```
FROM python

WORKDIR ./app

COPY . .

RUN pip install -r requirements.txt

CMD uvicorn main:app --port=8000 --host=0.0.0.0
```

   For frontend

```docker
FROM node as build

WORKDIR /app

COPY . .

RUN npm i --force

CMD ["npm", "run", "build"]

FROM nginx

COPY --from=build /app/dist /usr/share/nginx/html

```

3. Now we have make docker images -
   Run following commands by going to their respective directories.

```
docker build . -t backend:v1
```

```
docker build . -t frontend:v1
```

```
docker buildx build --platform linux/amd64 -t frontend .
docker buildx build --platform linux/amd64 -t backend .
```

You will something this type output in terminal

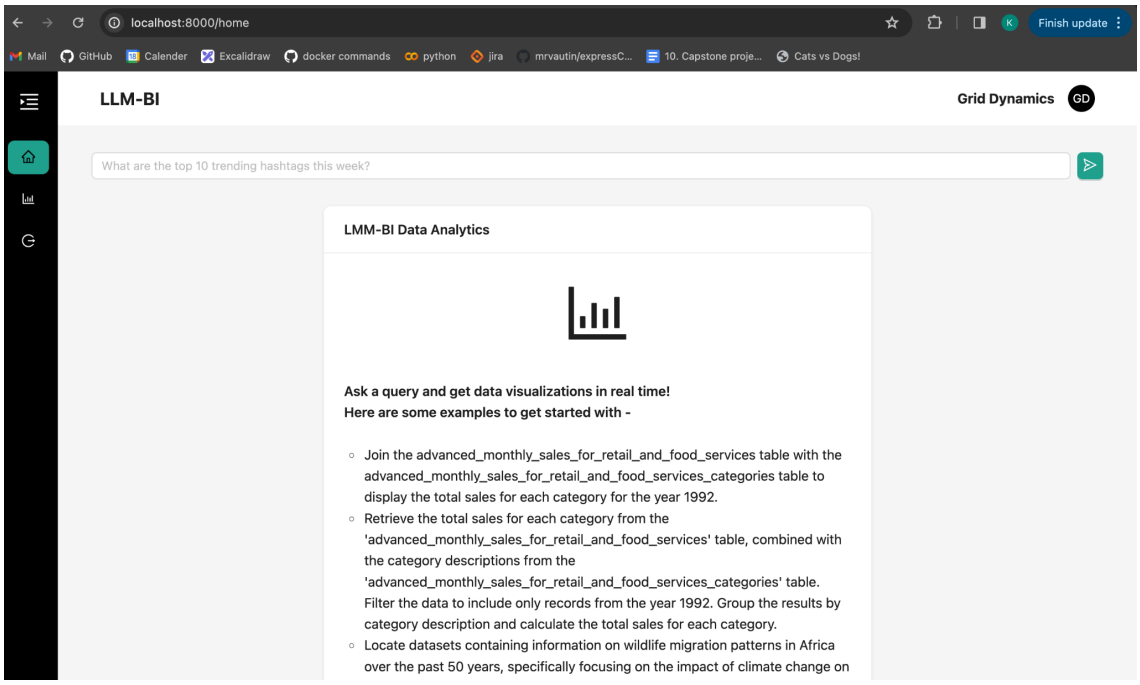
```
[+] Building 14.9s (14/14) FINISHED
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 196B
 => [internal] load metadata for docker.io/library/nginx:latest
 => [internal] load metadata for docker.io/library/node:latest
 => [auth] library/nginx:pull token for registry-1.docker.io
 => [auth] library/node:pull token for registry-1.docker.io
 => [build 1/4] FROM docker.io/library/node@sha256:b9ccc4aca32eebf124e0ca0fd573dacffba2b9236987a1d4d2625ce3c162ecc8
 => [internal] load build context
 => => transferring context: 2.96MB
 => [stage-1 1/2] FROM docker.io/library/nginx@sha256:6db391d1c0cfb30588ba0bf72ea999404f2764febf0f1f196acd5867ac7efa7e
 => CACHED [build 2/4] WORKDIR /app
 => [build 3/4] COPY . .
 => [build 4/4] RUN npm i --force
 => CACHED [stage-1 2/2] COPY --from=build /app/dist /usr/share/nginx/html
 => exporting to image
 => => exporting layers
 => => writing image sha256:c8be3362c68239843abea8c59ac35d6df737f08026b41d9c1d0eb8d24ab5ba0c
 => => naming to docker.io/library/frontend:v3

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/4fakzqm2g2wtup1ku9jdfcma2

What's Next?
  View a summary of image vulnerabilities and recommendations → docker scout quickview
```

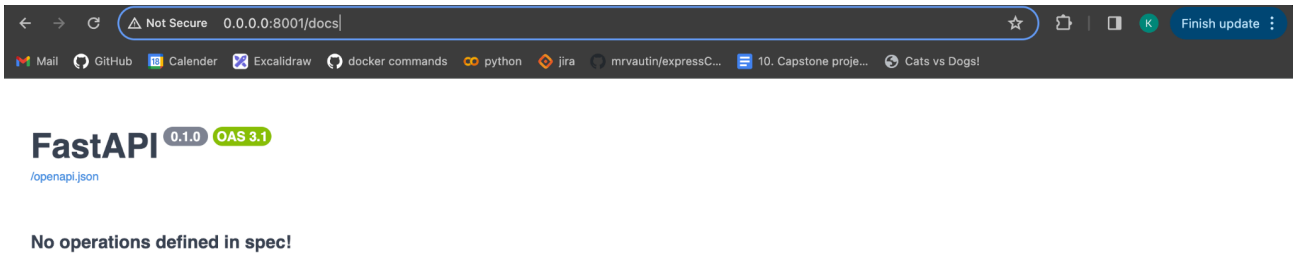
Now we can run these images by making their container and port binding with the host.

```
# for frontend
docker run -p 8000:80 frontend:v1
```

```
# for backend
docker run -p 8001:8000 backend:v1
```

Now we can see these containers deployed on Docker

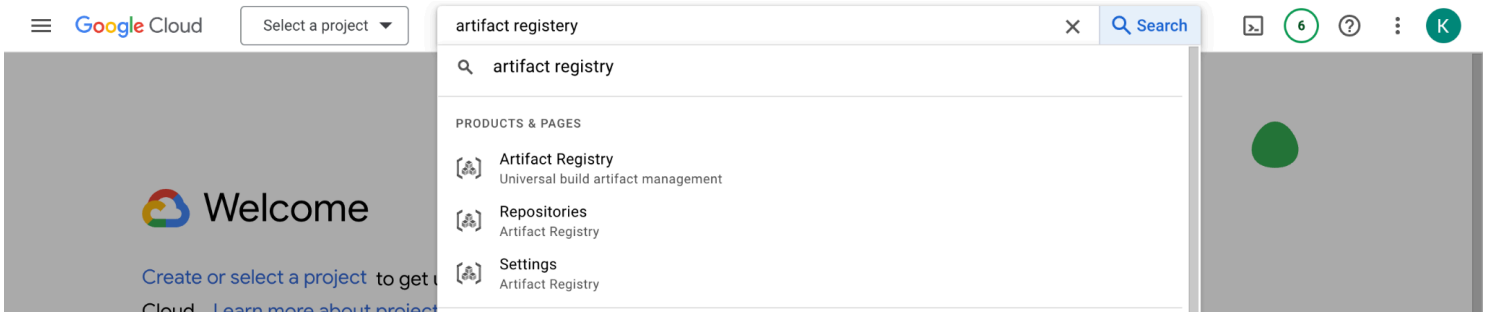




Now here come GCP part ⇒

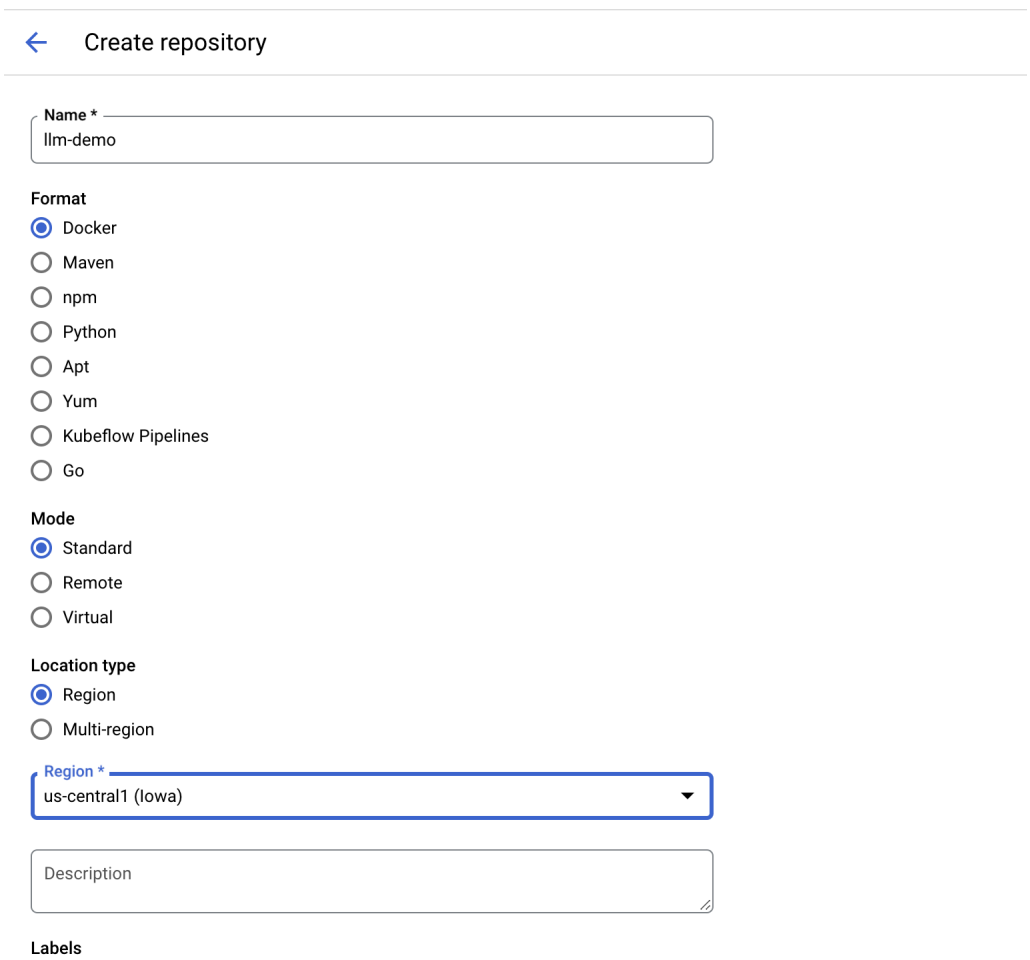
For deploying in it google cloud platform first we have to push the container of both frontend and backend to the artifact registry.

Search on GCP platform “artifact registry click on that”



By going to the artifact registry.

⇒ Click on “Create repository”
Interface will come like this



Provide docker repository name and region and leave rest of the settings.
Once the repo is created we have to push the docker images which we have built earlier in our machine for this we need to setup **gcloud** locally.

1. Follow the instructions written in this doc
   https://cloud.google.com/sdk/docs/install

2. For authorize yourself run :
   `gcloud auth login`

   `Page will open u need to authenticate yourself`

3. For authorize yourself run :
   `gcloud auth login`

4. Configure docker

   Run the following command to configure `gcloud` as the credential helper for the Artifact Registry domain associated with this repository's location:

   ```
   gcloud auth configure-docker \
         us-central1-docker.pkg.dev
   ```

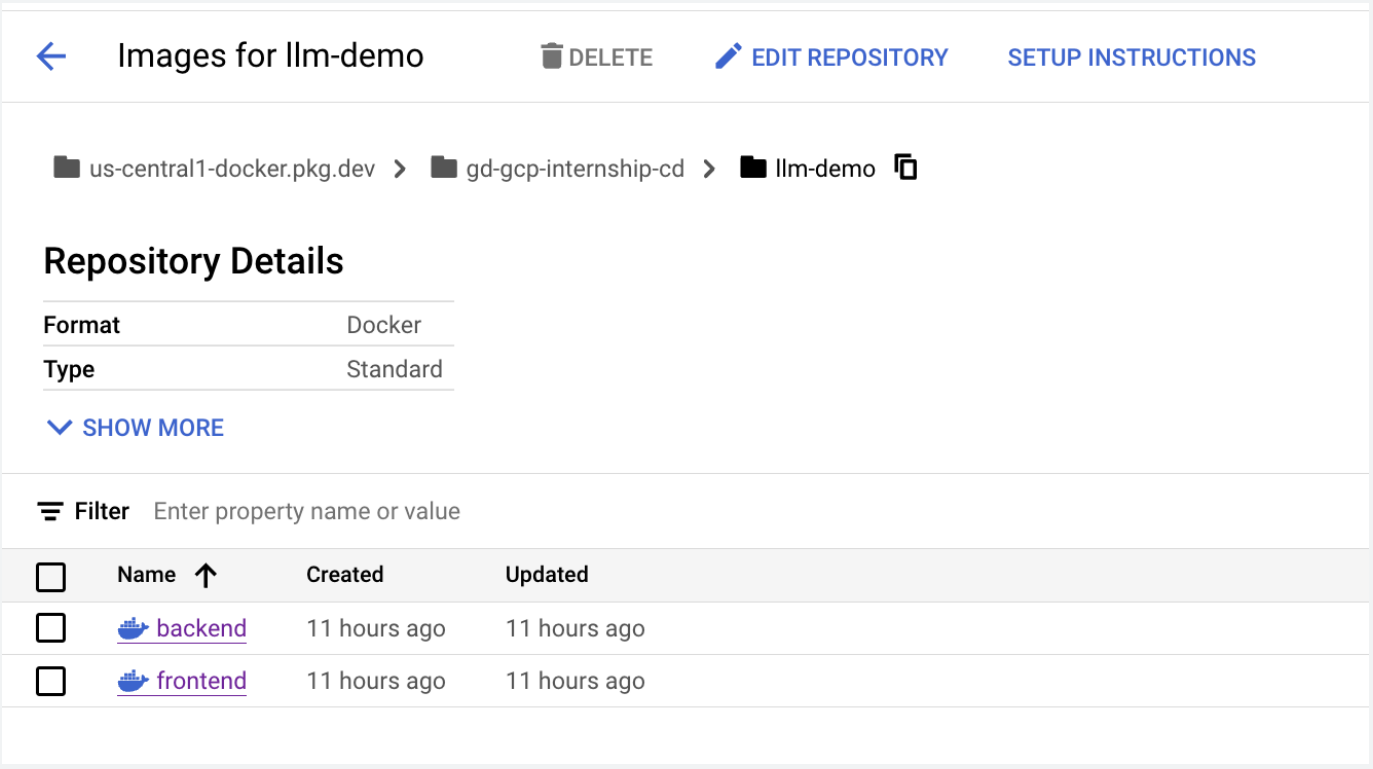
5. Necessary step tag the images with given command

   ```
   docker tag {image-name}
   us-central1-docker.pkg.dev/gd-gcp-internship-cd/llm-demo/frontend

   docker tag {image-name}
   us-central1-docker.pkg.dev/gd-gcp-internship-cd/llm-demo/backend
   ```

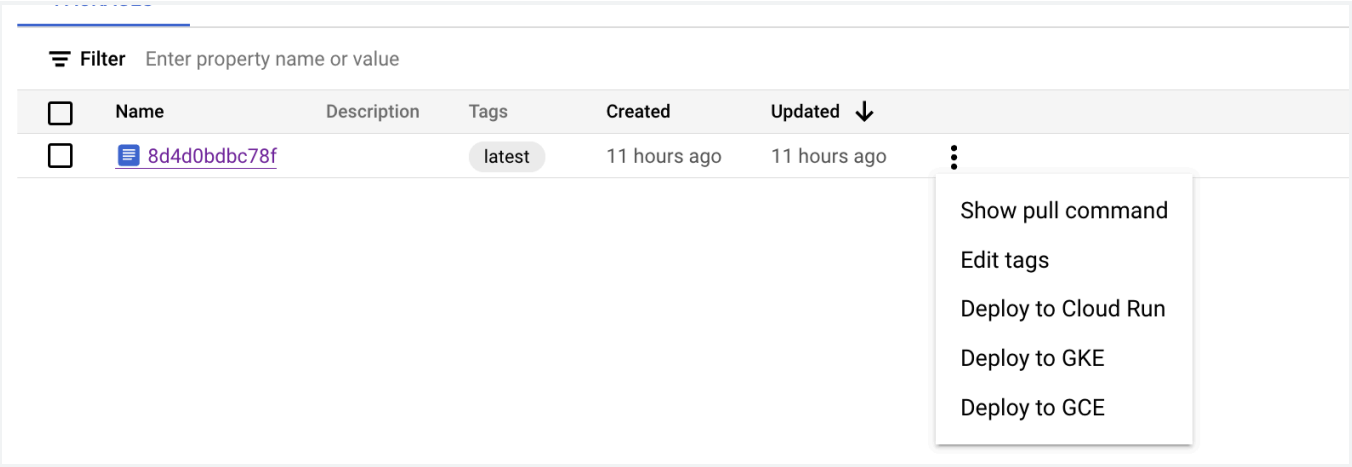
6. Push the docker images

   ```
   docker push us-central1-docker.pkg.dev/gd-gcp-internship-cd/llm-demo/frontend
   docker push us-central1-docker.pkg.dev/gd-gcp-internship-cd/llm-demo/backend
   ```

After pushing interface will look like this



Click on **Deploy on Cloud Run**



Just change the container port to 80
And click on create.

Cloud Run

Create service

A service exposes a unique endpoint and automatically scales the underlying infrastructure to handle incoming requests. Service name and region cannot be changed later.

Artifact Registry

Docker Hub

GitHub

Deploy one revision from an existing container image

Continuously deploy from a repository

Container image URL

us-central1-docker.pkg.dev/gd-gcp-internship-cd/llm-demo/frontend:lates

SELECT

TEST WITH A SAMPLE CONTAINER

Should listen for HTTP requests on $PORT and not rely on local state. How to build a container?

Configure

Service name *

frontend

Region *

us-central1 (Iowa)

How to pick a region?

Authentication *

You do not have the permission to change IAM policy on Cloud Run services. You need the `run.services.setIamPolicy` permission, which is included in the Cloud Run Admin IAM

CREATE

CANCEL

After this it takes some time to deploy. . . . .

Final Deployed Screenshot :