Step two

In this step we wiil create a CryptoCurrency market price tracker. We will use redis as a database and python as a programming language.

also we will use docker to run redis and python-Django.

use redis cache to store data and use Django to get data from API and show it to user.

also use docker Volumes to store data in host machine.

also we nedd to create config file for redis annd Django.

config file contains :

- Django server port
- redis keys expire time : default 5 minutes
- CoinAPI API key

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      - Result
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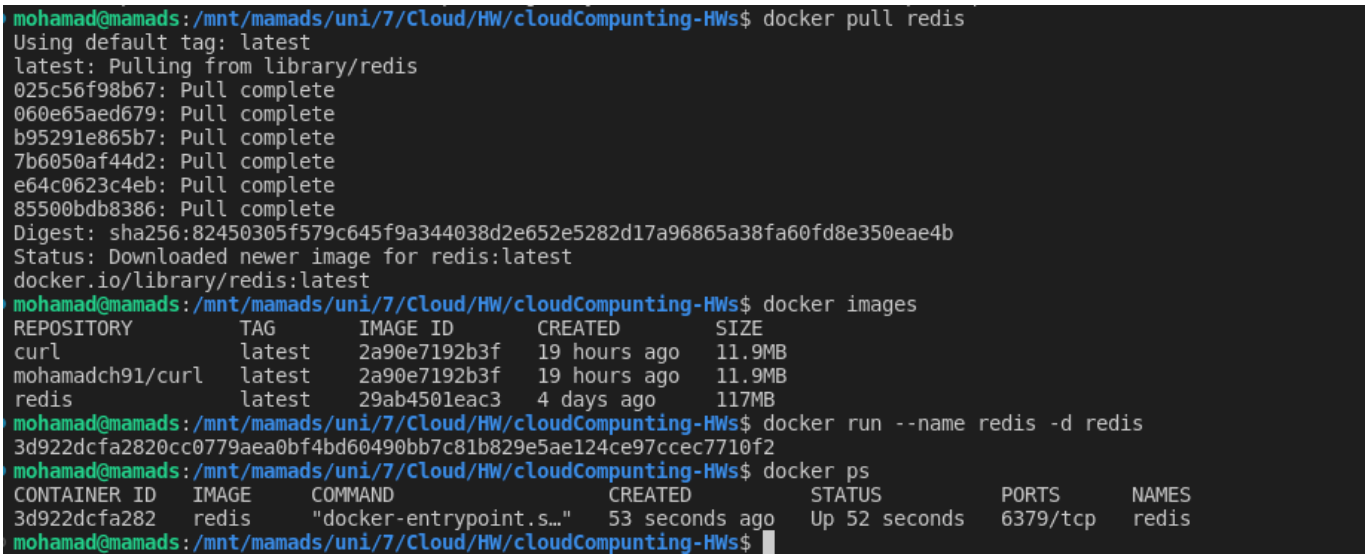
2.1

First we need to pull redis image and make container from pulled image

```
docker pull redis
docker run --name redis_net -d redis
```

Result



2.2

In this step we will create Django project and app and make image from it. then push this image to docker hub.

2.2.1

Create a Django project

```
django-admin startproject crypto
```

2.2.2

Create a Django app

```
cd crypto
python manage.py startapp cryptoApp
```

2.2.2.1

Create a class in Views.py file for get data from API and show it to user

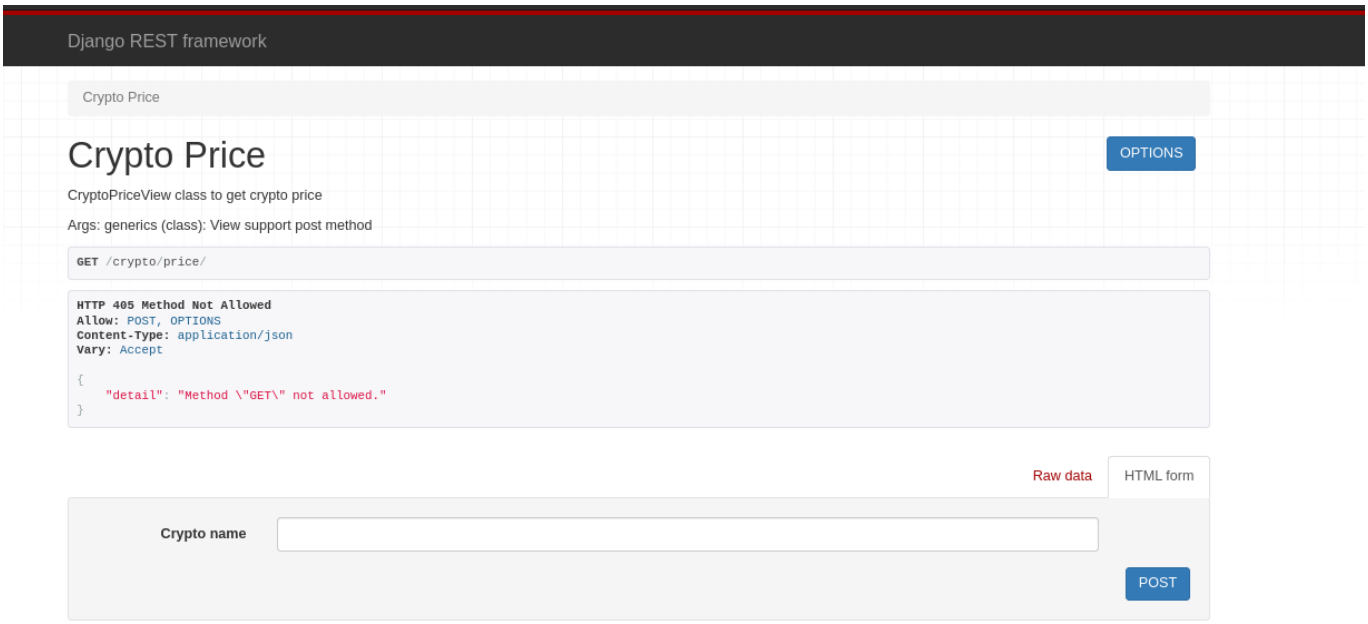
and create a urls.py file for routing

create Serializer class in serializers.py file for serialize data

change settings.py file for add app

and add urls.py file for routing

Results



2.2.3

Create a requirements.txt

```
Django==4.1.4
django-cors-headers==3.13.0
djangorestframework==3.13.1
requests==2.26.0
requests-toolbelt==0.9.1
requests-unixsocket==0.2.0
redis==3.5.3
```

2.2.4

Create a Dockerfile in crypto directory and run Django server

```
FROM python:3.8
ENV PYTHONUNBUFFERED 1
```

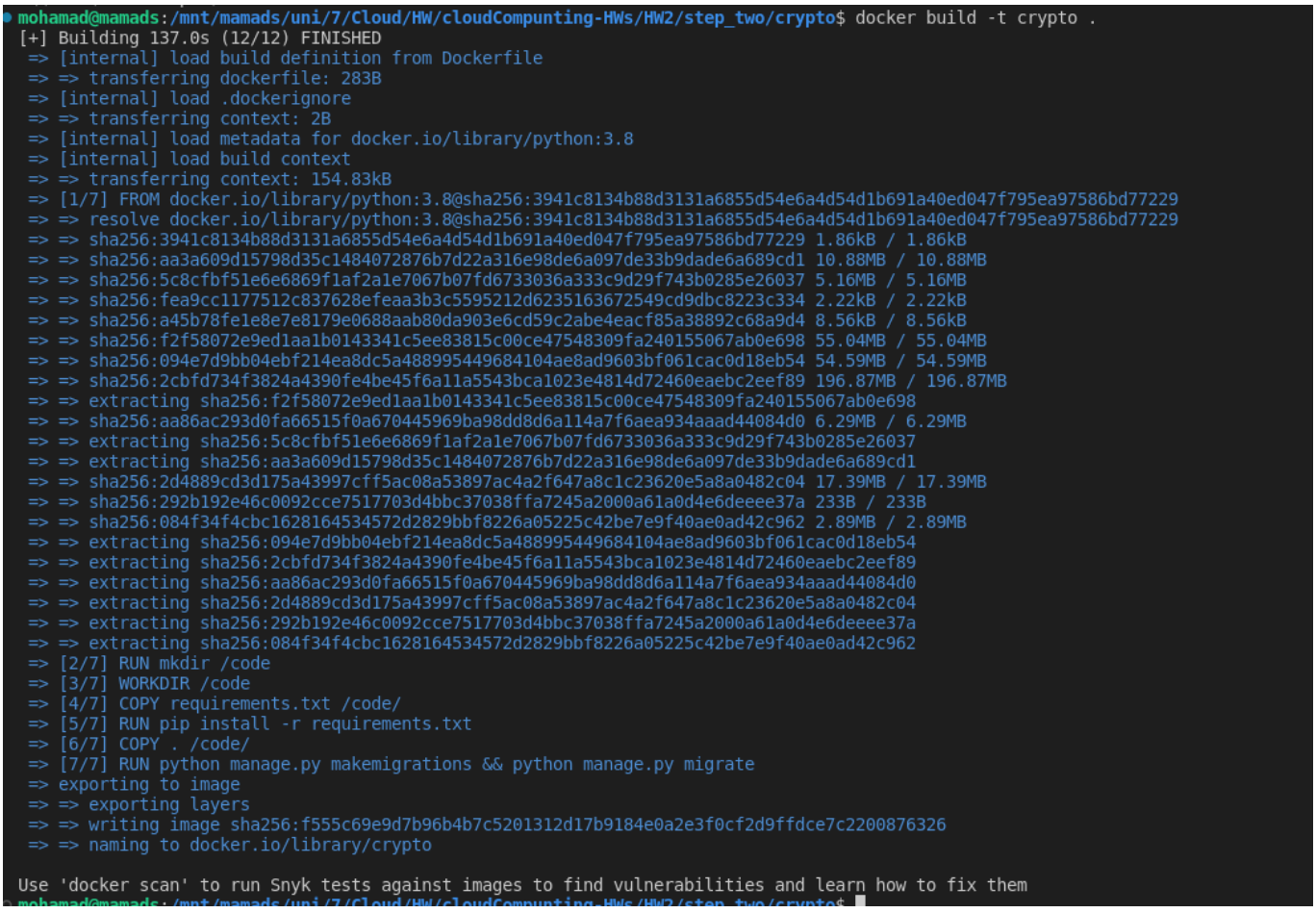
```
RUN mkdir /code
WORKDIR /code
COPY requirements.txt /code/
RUN pip install -r requirements.txt
COPY . /code/
CMD python manage.py runserver
```

2.2.5

Make image from Dockerfile

```
docker build -t crypto .
```

Result



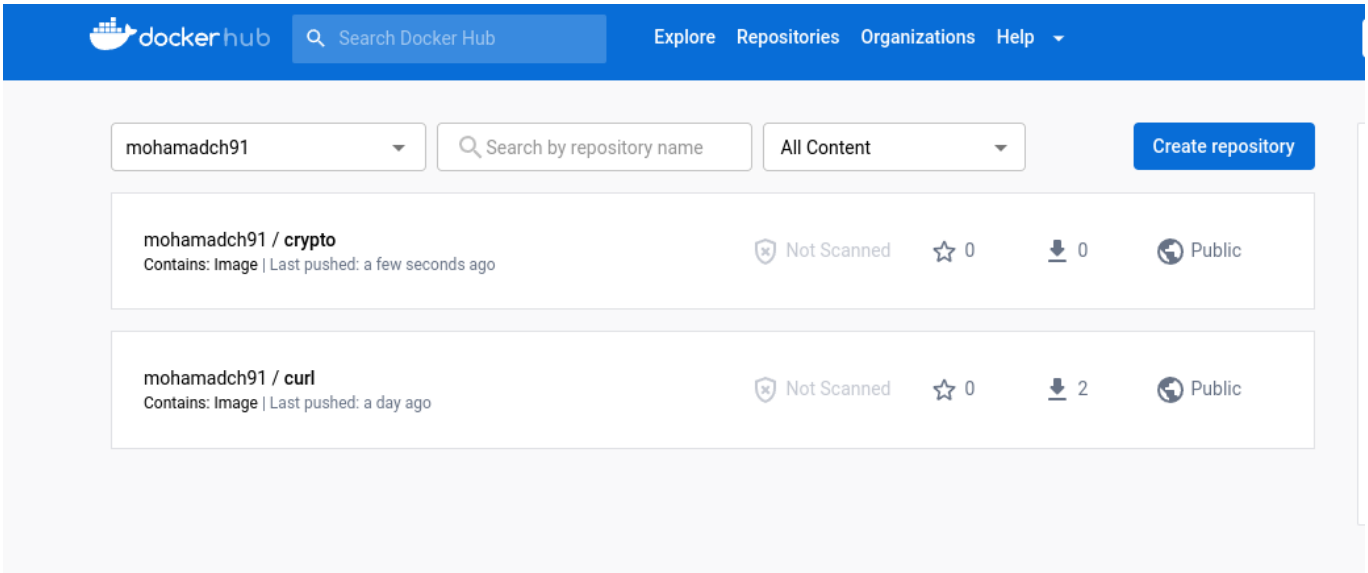
2.2.6

Push image to docker hub

```
docker tag crypto:latest mohamadch91/crypto:latest
docker push mohamadch91/crypto:latest
```

Result

```
mohamad@mamads:/mnt/mamads/uni/7/Cloud/HW/cloudComputing-HWs/HW2/step_two/crypto$ docker tag crypto:latest mohamadch91/crypto:latest
mohamad@mamads:/mnt/mamads/uni/7/Cloud/HW/cloudComputing-HWs/HW2/step_two/crypto$ docker push mohamadch91/crypto:latest
The push refers to repository [docker.io/mohamadch91/crypto]
0723222627fe: Pushed
533bac51672b: Pushed
1d72542129d4: Pushed
b62d6fdcb816: Pushed
5f70bf18a086: Pushed
6562eb326337: Pushed
69b8c938e1b0: Mounted from library/python
c1b4f27bd6bc: Mounted from library/python
33653abce00f: Mounted from library/python
1cad4dc57058: Mounted from library/python
4ff8844d474a: Mounted from library/python
b77487480ddb: Mounted from library/python
cd247c0fb37b: Mounted from library/python
cfdd5c3bd77e: Mounted from library/python
870a241bfebd: Mounted from library/python
latest: digest: sha256:d6655a5f3dc026f55c5fe30ca3e4a75ef9bea31652eaf8e53c182e843a19dc79 size: 3469
```



2.3

In this step we need to create config file for Django and redis

Create a .env file for Django and redis in Dockerfile

```
CACHE_TTL=300
REDIS_HOST=redis
REDIS_PORT=6379
DJANGO_PORT=8000
COINAPI_KEY=YOUR_API
```

2.3.1

Change setting.py file for env

```
runserver.default_port = os.environ.get('DJANGO_PORT', '8001')

COINAPI_KEY = os.environ.get('COINAPI_KEY', 'Your key')
```

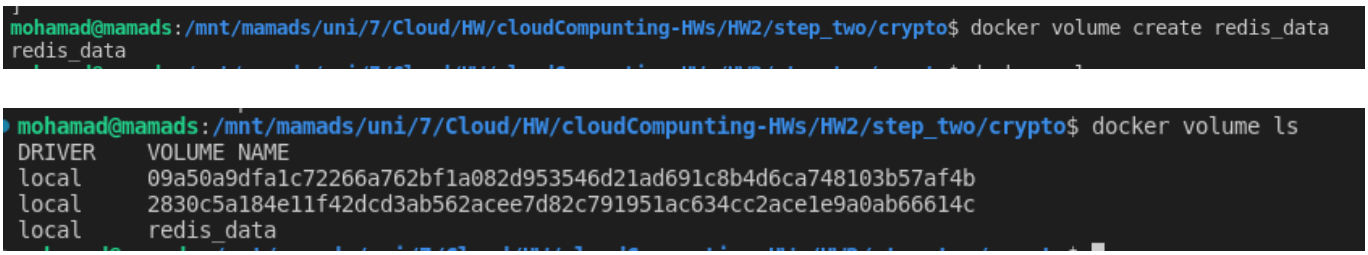
```
CACHE_TTL=os.environ.get('CACHE_TTL', '350')
```

2.4

In this step we need to create volumes for redis

```
```bash
docker volume create redis_data
```
```

Result

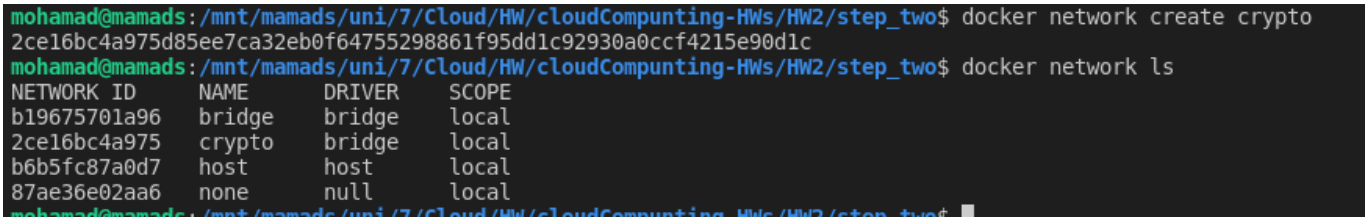


2.5

In this step we need to create network for redis and Django

```
docker network create crypto
```

Result



2.6

now we need to write docker-compose.yml file for run redis and Django to volume and network

- compose file

2.7

now we run de compose file

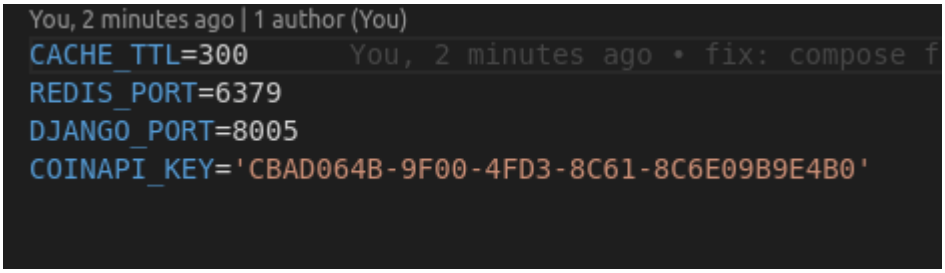
```

```

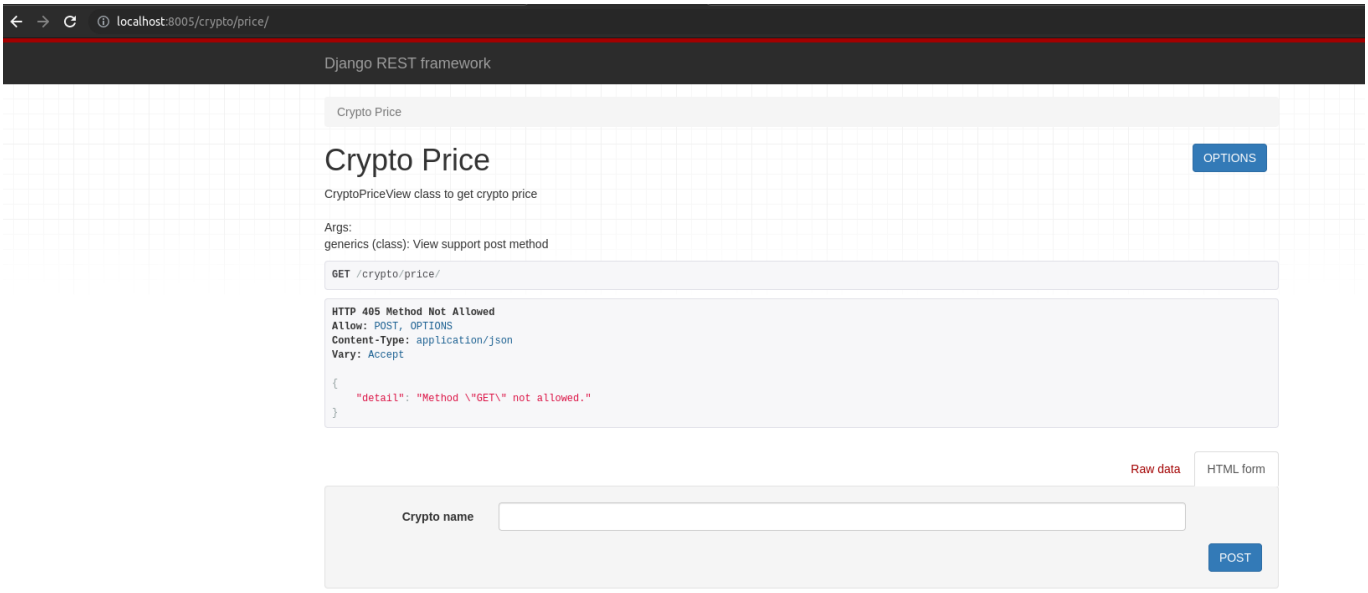
```
docker compose up -d
```

Results

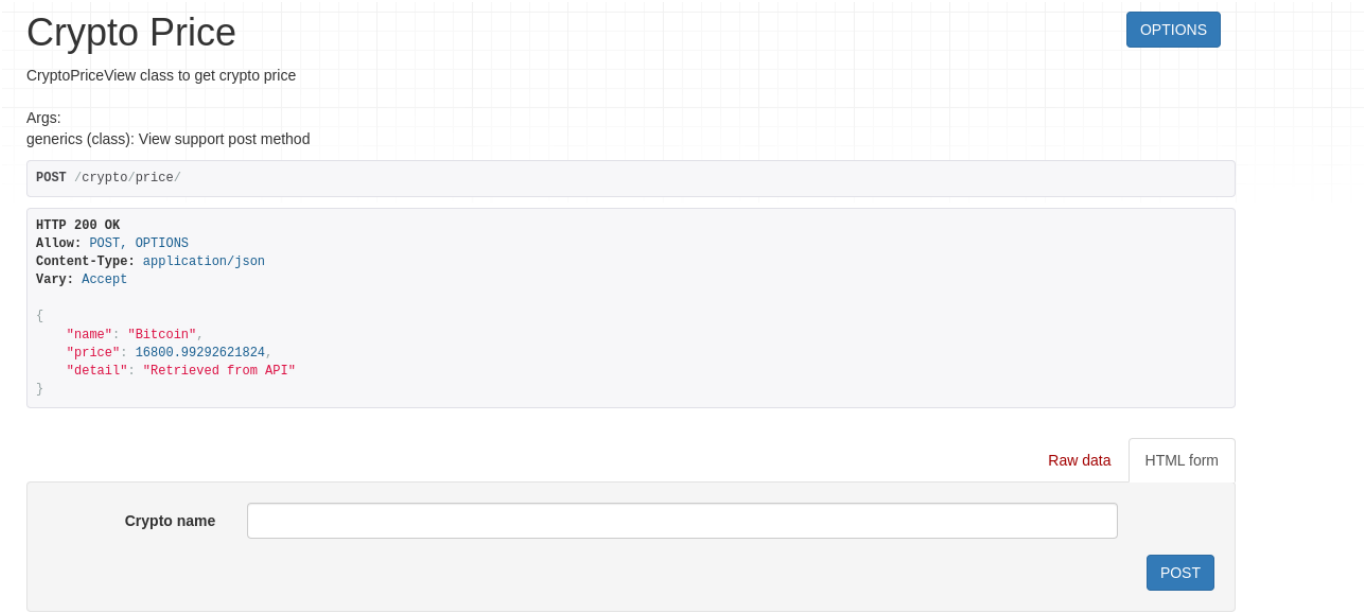
- env file



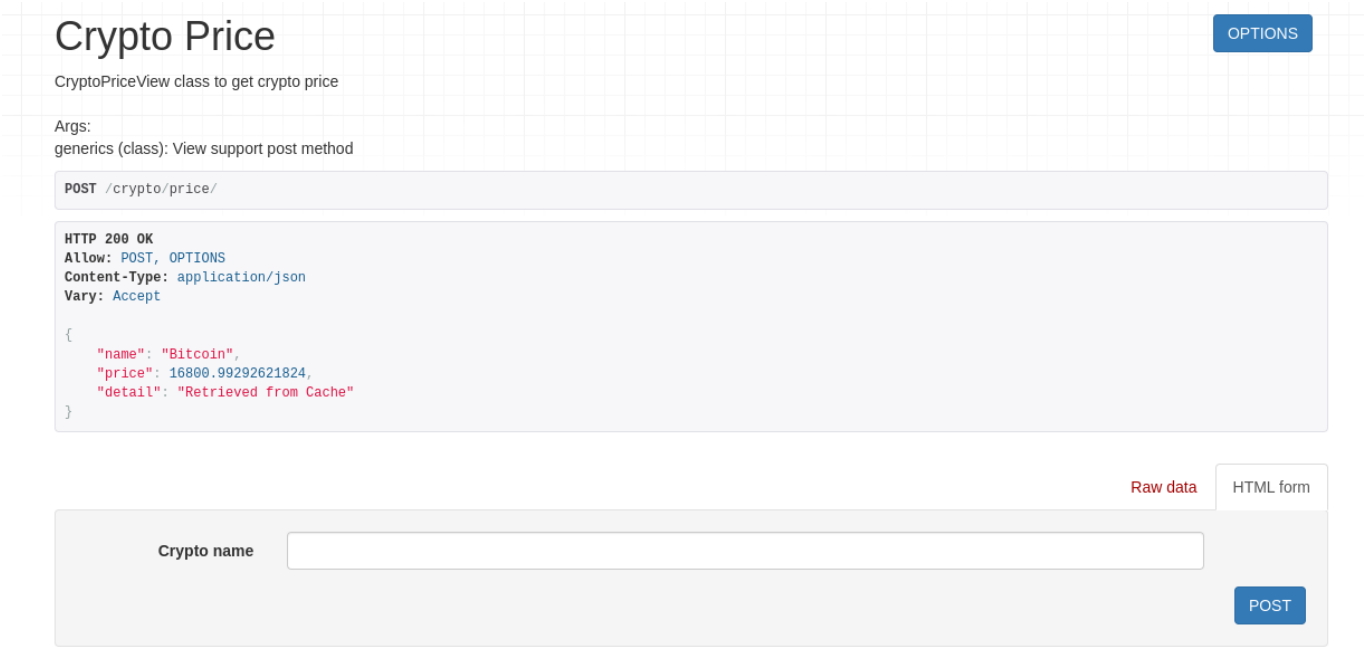
we see upcoming on port 8005



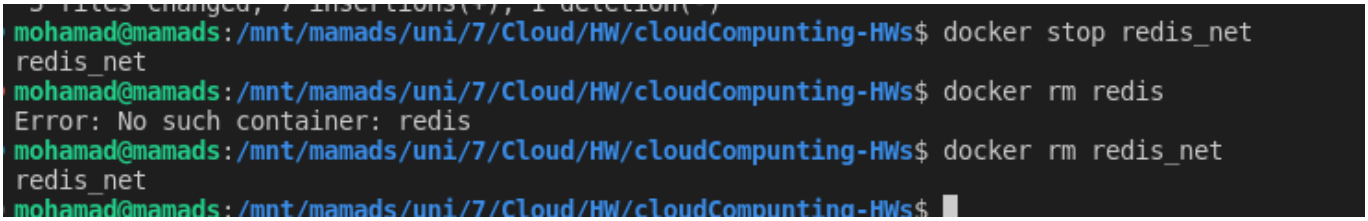
Get btc data



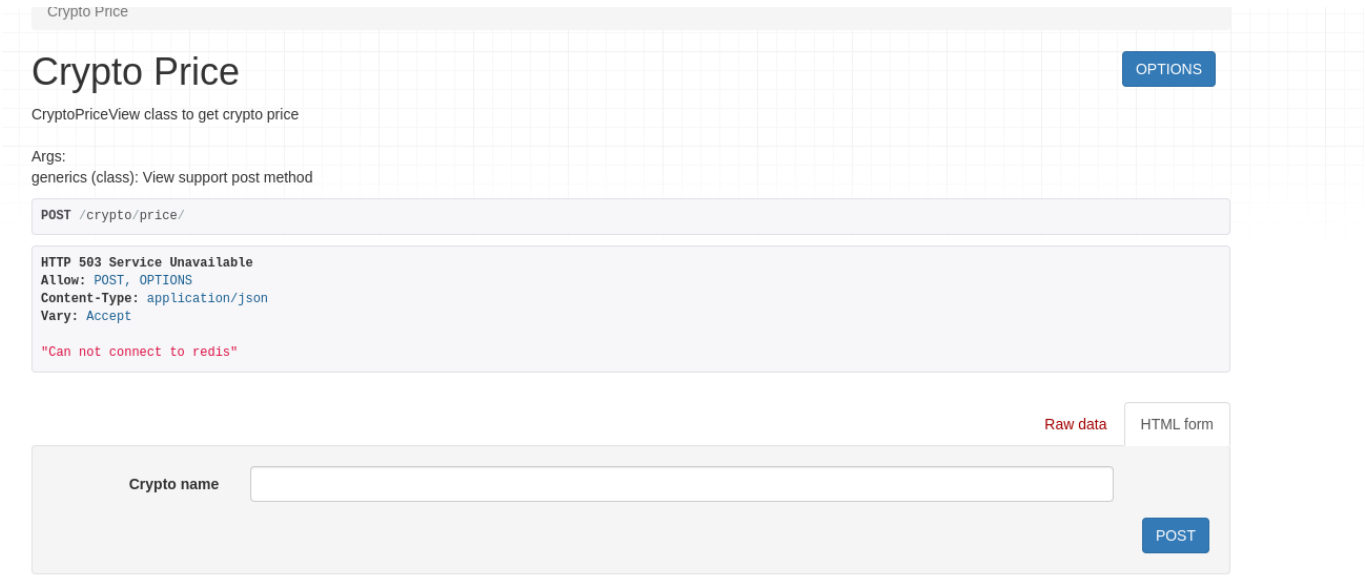
Get btc for second time



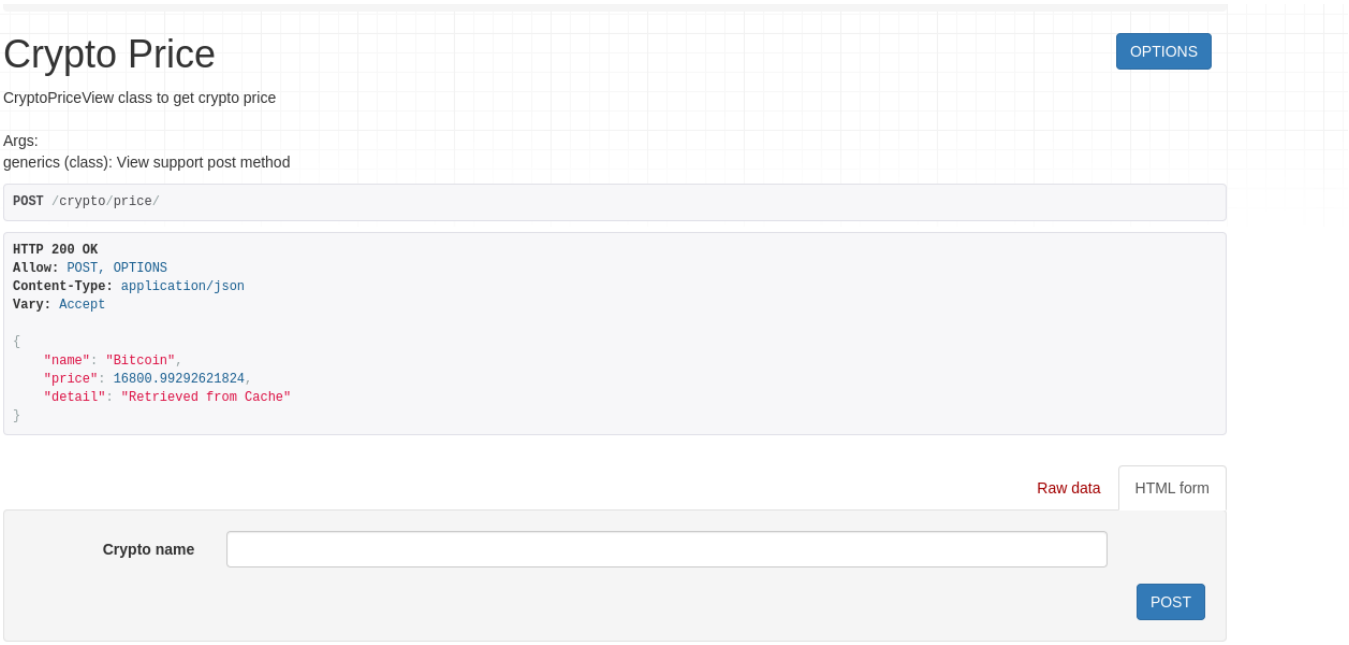
Remove redis



API response on no redis



Start again redis and check API



Report details

Inspect server

Inspect server image with

```
docker image inspect mohamadch91/crypto
```

```
mohamad@mamads:~/Desktop/uni/7/Cloud/HW/cloudCompunting-HWs/HW2/step_two/crypto$ docker image inspect mohamadch91/crypto
[
    {
        "Id": "sha256:0b5e105ac83c31aeea2a30f674916d2e904f7f7033ae9256d57055e0e7176f5d",
        "RepoTags": [
            "crypto:latest",
            "mohamadch91/crypto:latest"
        ],
        "RepoDigests": [
            "mohamadch91/crypto@sha256:172d5f460b66892250e54fbac9e92b0321988c1d13a697caeef46b4d9092f41d"
        ],
        "Parent": "",
        "Comment": "buildkit.dockerfile.v0",
        "Created": "2022-12-21T17:06:03.034176633Z",
        "Container": "",
        "ContainerConfig": {
            "Hostname": "",
            "Domainname": "",
            "User": "",
            "AttachStdin": false,
            "AttachStdout": false,
            "AttachStderr": false,
            "Tty": false,
            "OpenStdin": false,
            "StdinOnce": false,
            "Env": null,
            "Cmd": null,
            "Image": "",
            "Volumes": null,
            "WorkingDir": "",
            "Entrypoint": null,
            "OnBuild": null,
            "Labels": null
        },
        "DockerVersion": "",
        "Author": "",
        "Config": {
            "Hostname": "",
            "Domainname": "",
            "User": "",
            "AttachStdin": false,
            "AttachStdout": false,
            "AttachStderr": false,
            "Tty": false,
            "OpenStdin": false,
            "StdinOnce": false,
            "Env": [
                "PATH=/usr/local/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin",
                "LANG=C.UTF-8",
                "GPG_KEY=E3FF2839C048B25C084DEBE9B26995E310250568",
                "PYTHON_VERSION=3.8.16",
                "PYTHON_PIP_VERSION=22.0.4",
                "PYTHON_SETUPTOOLS_VERSION=57.5.0",
                "PYTHON_GET_PIP_URL=https://github.com/pypa/get-pip/raw/66030fa03382b4914d4c4d0896961a0bdeeeb274/public/get-pip.py",
                "PYTHON_GET_PIP_SHA256=1e501cf004eac1b7eb1f97266d28f995ae835d30250bec7f8850562703067dc6",
                "PYTHONUNBUFFERED=1"
```


```
            ],
            "Cmd": [
                "/bin/sh",
                "-c",
                "python manage.py runserver"
            ],
            "ArgsEscaped": true,
            "Image": "",
            "Volumes": null,
            "WorkingDir": "/code",
            "Entrypoint": null,
            "OnBuild": null,
            "Labels": null
        },
        "Architecture": "amd64",
        "Os": "linux",
        "Size": 966495371,
        "VirtualSize": 966495371,
        "GraphDriver": {
            "Data": {
                "LowerDir": "/var/lib/docker/overlay2/m8vgghd0ta3n5cfsowfr5aci8/diff:/var/lib/docker/overlay2/fd6p7qvq6u57516dbm21hg9wh/diff:/var/lib/docker/overlay2/rzp6rv0u07290vo16mnd7it28/diff:/var/lib/docker/overlay2/khqrlxjai6wrem9o
n7kofila7/diff:/var/lib/docker/overlay2/oqm0mka9z05w24xj8fx8g8nq5/diff:/var/lib/docker/overlay2/36ef3ec449dfa6cd5c11710636639d7f614c57af89990ide60b1c5b6d7ccca4c/diff:/var/lib/docker/overlay2/99420fcaf2304c34b389528b631bb3ab21be6cc670da9c2
5a4eefe3852590284/diff:/var/lib/docker/overlay2/87708d6eef4d49ca84ed3a9797d2dc4e0be2757f83e3d9a895ee0e0783cdbe6b/diff:/var/lib/docker/overlay2/5e7a315046bbd78aaf4995bab7ad729c853e08e81aad21dbc64484785a8643ad/diff:/var/lib/docker/overlay2/
f9a13cc955264d557157d2348d32928b6d0a380d8393fe0681a0371c40aca016/diff:/var/lib/docker/overlay2/02fd6321cea4831136d69a930e61c58e0449c9bb3f543f370975a7da5846c85b/diff:/var/lib/docker/overlay2/ff61b08c642313d281207b03935411ad91dc8168b45fbfaf
de447a43de049223/diff:/var/lib/docker/overlay2/cd889c716b4ebe5904cca61060b7767bc5ee14e31a8be7ae1d2cffccce442280/diff:/var/lib/docker/overlay2/e90e4457999667292026d7056055253c894595510fb673df66157c26b123fad8/diff",
                "MergedDir": "/var/lib/docker/overlay2/65ik8i4wx3rphdg0as9tfemgo/merged",
                "UpperDir": "/var/lib/docker/overlay2/65ik8i4wx3rphdg0as9tfemgo/diff",
                "WorkDir": "/var/lib/docker/overlay2/65ik8i4wx3rphdg0as9tfemgo/work"
            },
            "Name": "overlay2"
        },
        "RootFS": {
            "Type": "layers",
            "Layers": [
                "sha256:870a241bfebd02ea6be466c73f4484cba43d9253a075894c2f23a39aa5cca005",
                "sha256:cfdd5c3bd77ec13918bde28e5ae1ccd2b90c94c9c8fc6a5e408e10bcec293c2ff",
                "sha256:cd247c0fb37bbc78410545c04d2d77a0782cf04ab14370c105d7a4115b179e8e",
                "sha256:b77487480ddb9d6808d99a147a199df289b14b675cfff8cea31ec14880a6aee9",
                "sha256:4ff8844d474a51dc64d18f5cccb22635bd7435c93877f686bab048e3f3811a51",
                "sha256:1cad4dc570586a4dc41423b2dcf31024456b9803843ff7119c265a4dbdb1379f",
                "sha256:33653abce00fb86569389d0d734fd5fa34b3c81d8ef73bff9af80602154e7b0a",
                "sha256:c1b4f27bd6bc66bd512bf9279879c7730ce27eb8525346361b1332bb05fa27b9",
                "sha256:69b8c938e1b010b6b97ce18b538844b883494df8d413fec7b93b0733979509fd",
                "sha256:6562eb32633767a127c2cbd14295bfecb3413af60c92ce5c7004ceb6d8ea68a",
                "sha256:5f70bf18a086007016e948b04aed3b82103a36bea41755b6cddfaf10ace3c6ef",
                "sha256:b62d6fdcb816513d6e44c0025c83ee38dfc3bb8e3c2bce68600253808a2dc1d",
                "sha256:1d72542129d4c4064c9be95216383583a3e63b0bfedd77fd83ea8040d480c269",
                "sha256:ab7f12eaaeaa7916ad794ec96cb26d83e7ba67771bdfde69fbb4f59c0f663ed5",
                "sha256:2eb20d8487021968c1db3706805028ba54cd5231955e0b784d22dd71a508bf42"
            ]
        },
```


Containers list

get list of containers

```
docker ps
```

```
mohamad@mamads:~/Desktop/uni/7/Cloud/HW/cloudCompunting-HWs/HW2/step_two/crypto$ docker ps
CONTAINER ID   IMAGE                COMMAND                  CREATED         STATUS         PORTS                    NAMES
387f62b9f39a   mohamadch91/crypto   "/bin/sh -c 'python …"   9 minutes ago   Up 9 minutes   0.0.0.0:8005->8000/tcp   crypto
cc7ad5f2f12d   redis                "docker-entrypoint.s…"   9 minutes ago   Up 9 minutes   0.0.0.0:6379->6379/tcp   redis_net
```

System stats

get status of system with

```
docker stats
```

```
CONTAINER ID   NAME        CPU %     MEM USAGE / LIMIT     MEM %     NET I/O       BLOCK I/O     PIDS
387f62b9f39a   crypto      1.13%     65.3MiB / 3.605GiB    1.77%     1.01kB / 0B   0B / 131kB    4
cc7ad5f2f12d   redis_net   0.16%     2.613MiB / 3.605GiB   0.07%     1.23kB / 0B   0B / 0B       5
```