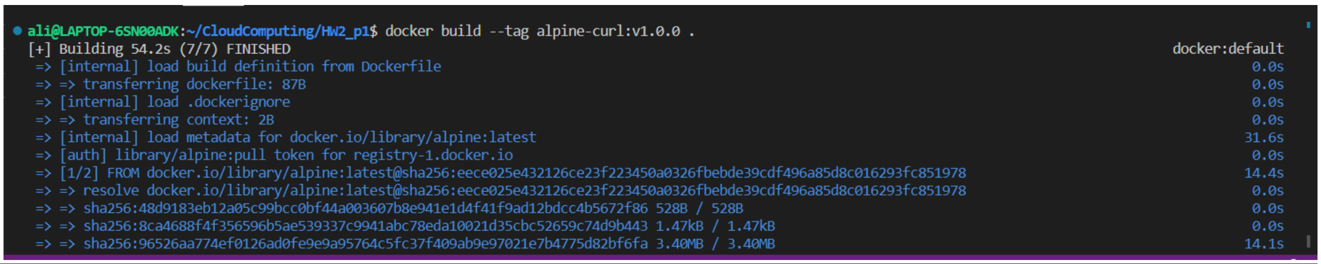
علی بازشوشتری ۹۹۲۳۰۰۸

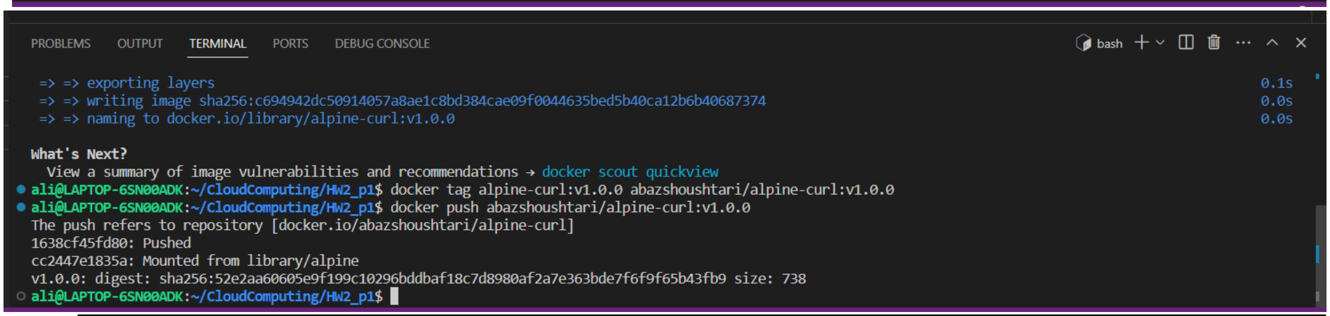
گزارش تمرین دوم رایانش ابری

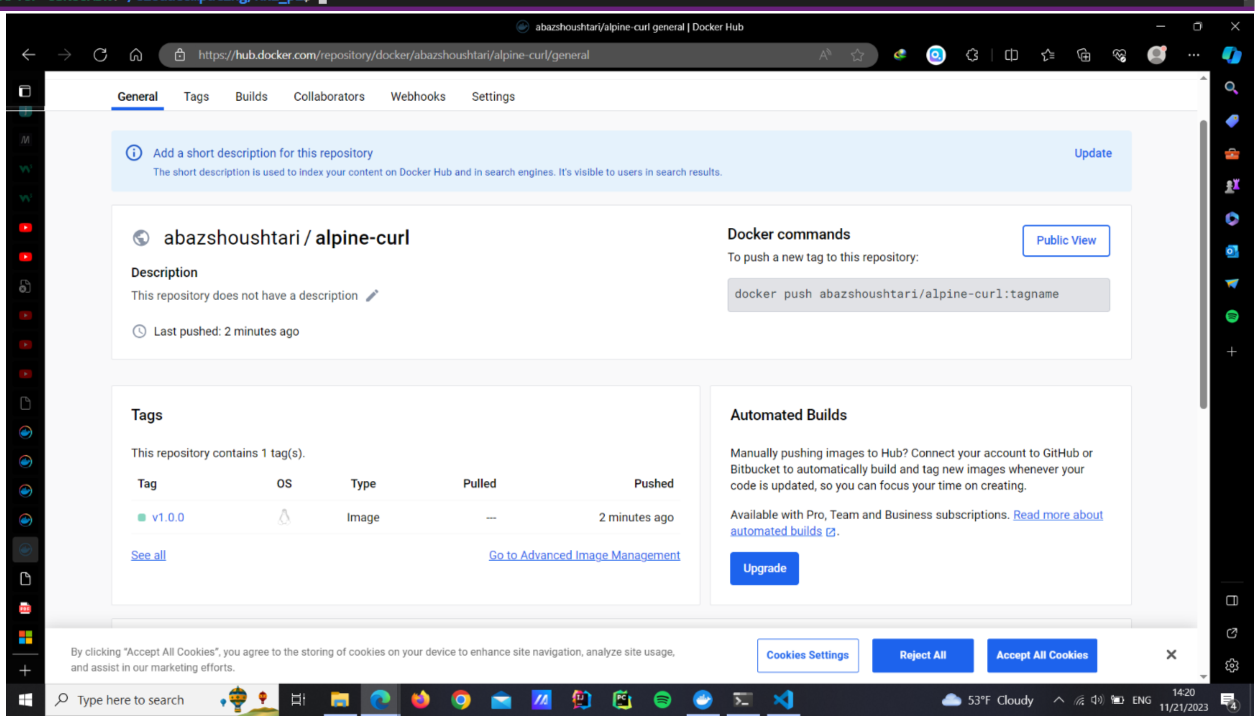
بخش اول

گام اول

- ارسال ایمیج ساخته شده بر روی داکرهاب

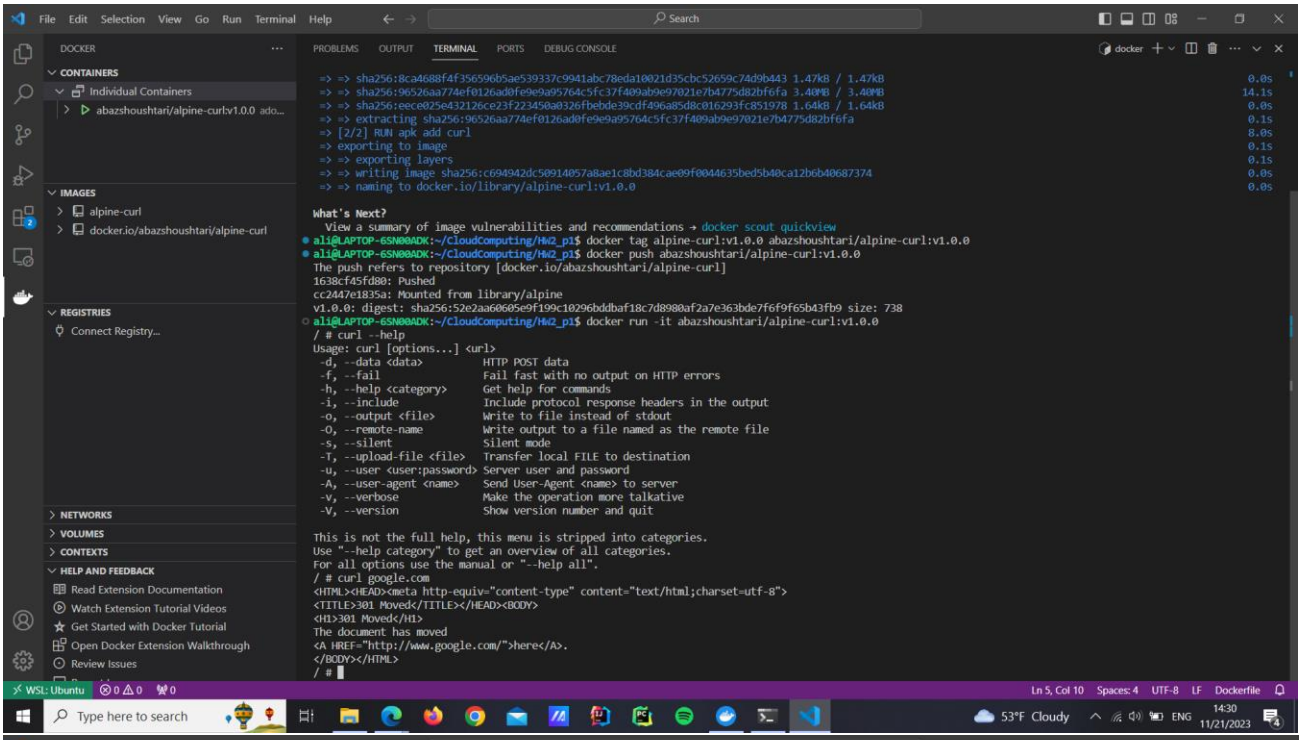


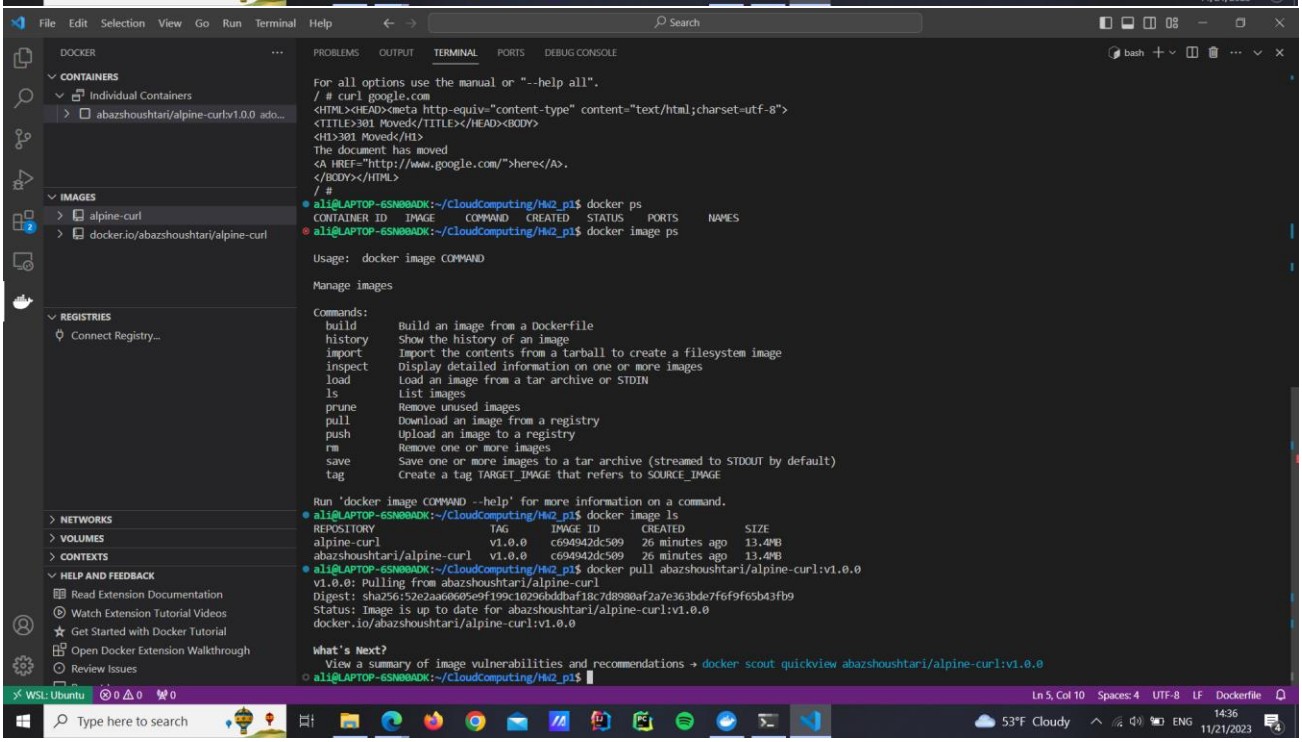




علی بازشوشتری ۹۹۲۳۰۰۸

- نمایش لیست ایمیج های موجود بر روی سیستم خود
- دریافت ایمیج ساخته شده از داکرهاب
- ساختن کانتینر از ایمیج دریافت شده از داکرهاب
- اجرا دستور curl





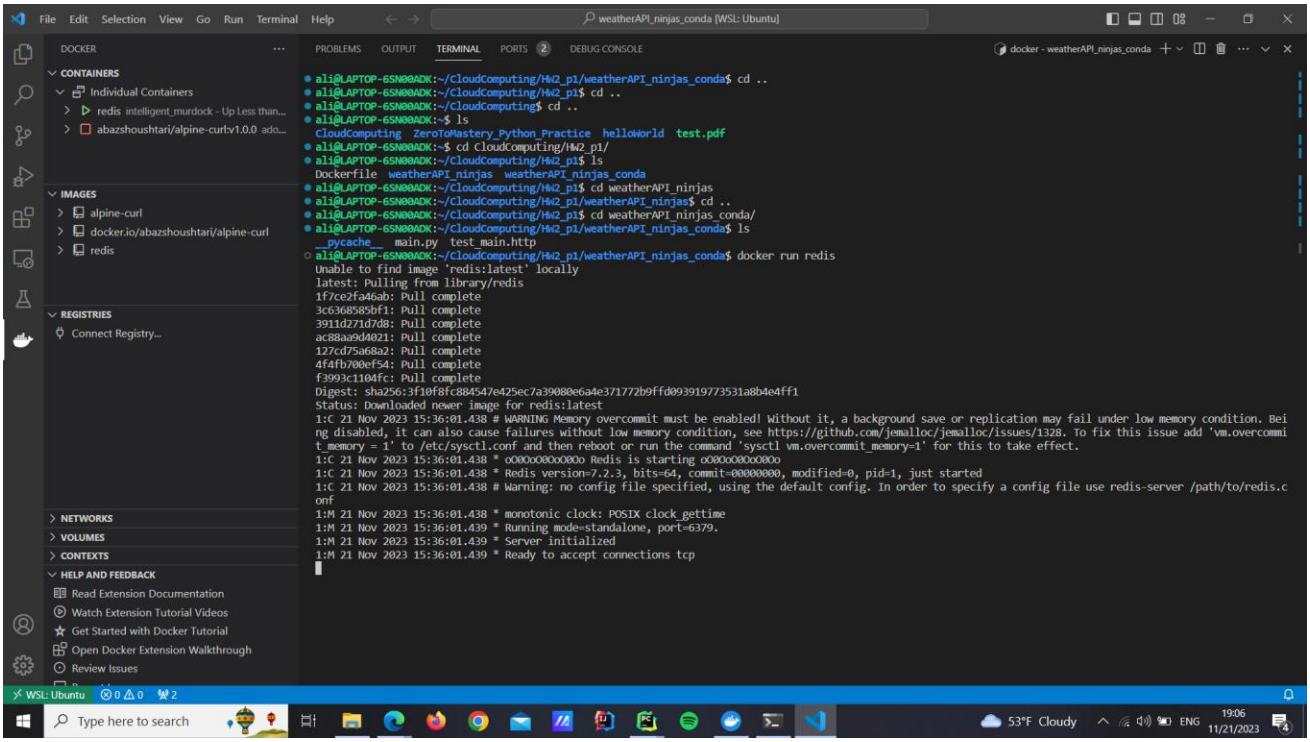
علی بازشوشتری ۹۹۲۳۰۰۸

Docker commit

```
87d4cda9137a   abazshoushtari/alpine-curl:v1.0.0   "sh"                     6 days ago   Up About a minute
                                                                                        adoring_driscoll
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p1$ docker commit 87d4cda9137a abazshoushtari/alpine-curl-using-commit:v1.0.0
sha256:01f5bf20220aee4e94e7abd2948b6b5d7f615bd6c8a5ef8992c9873e4e14e044
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p1$
```

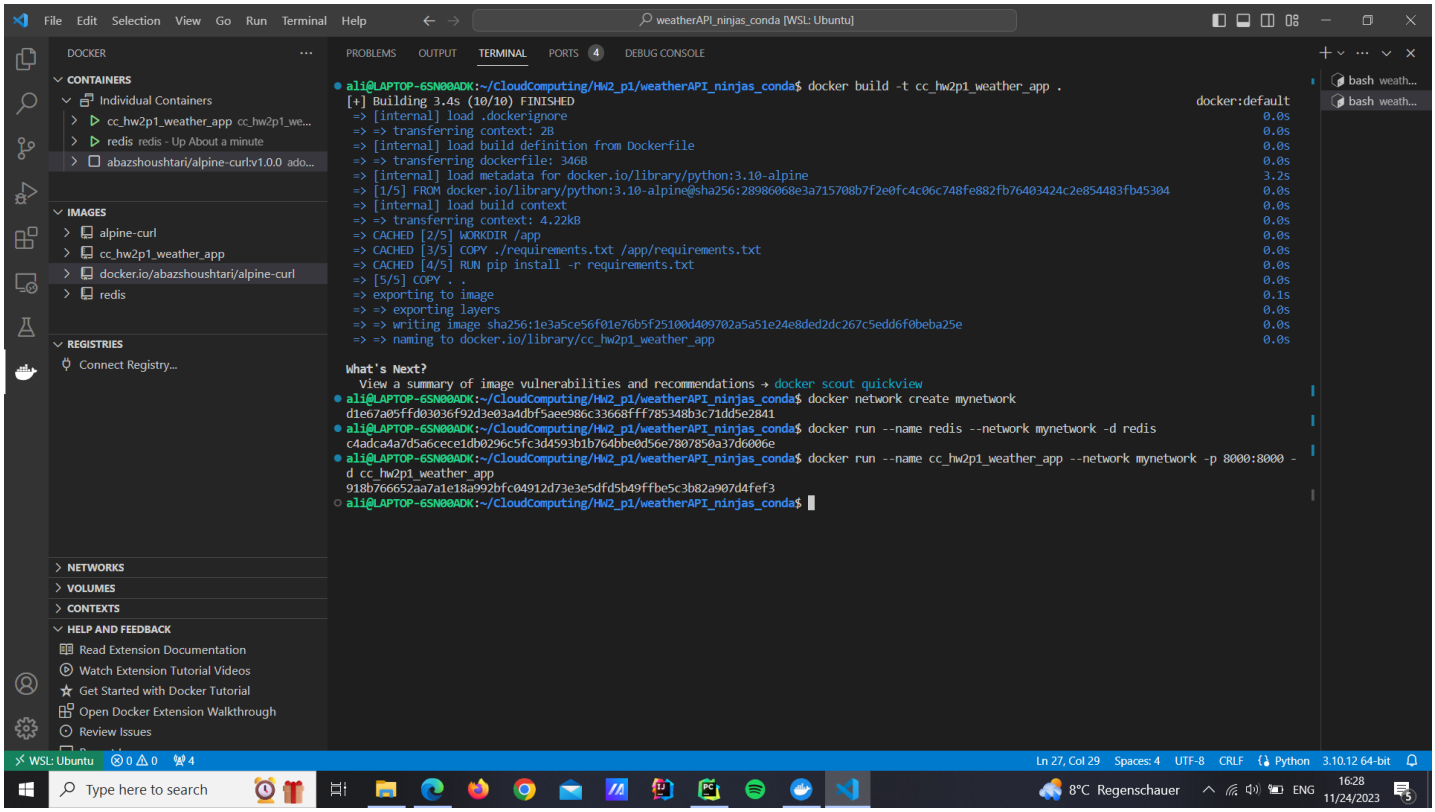
گام دوم

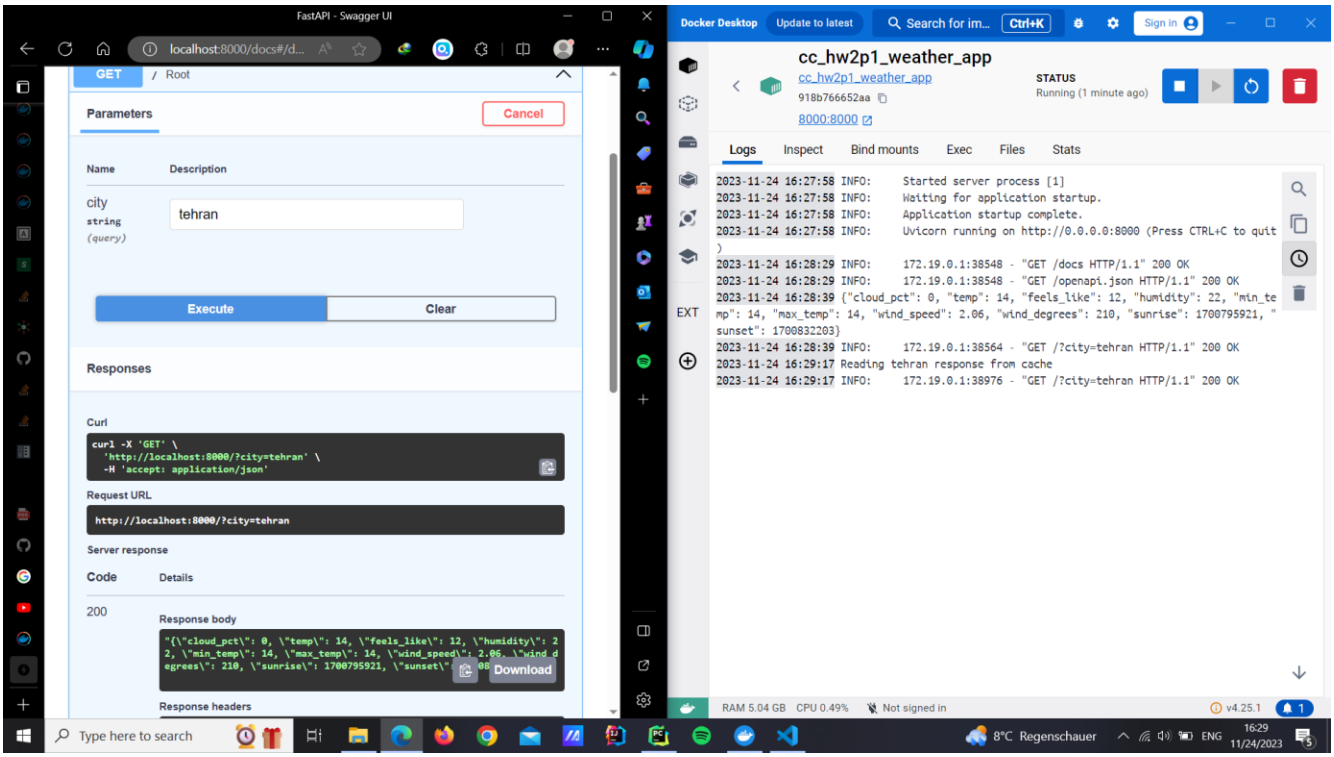
- دریافت ایمیج ردیس و ساختن کانتینر از آن



علی بازشوشتری ۹۹۲۳۰۰۸

- ساختن شبکه برای برقراری ارتباط بین دو کانتینر
- ساختن ایمیج سرور نوشته شده با استفاده از داکر فایل



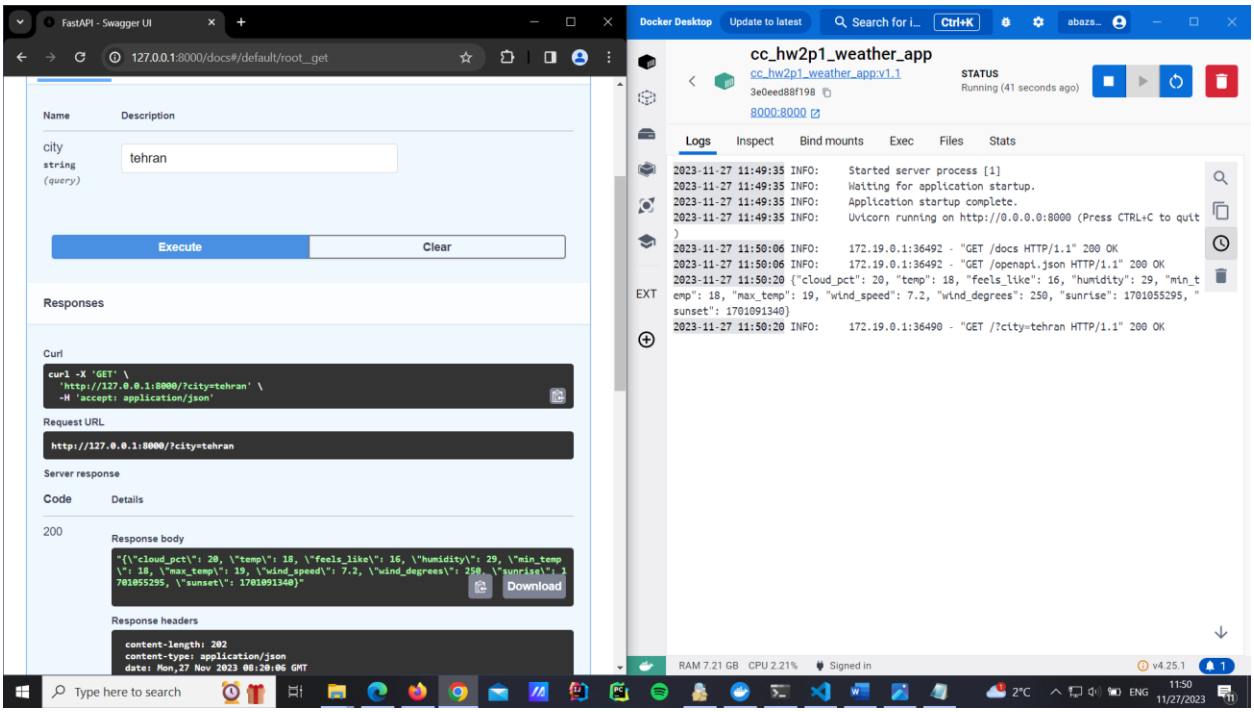


- ساختن Volume جهت persist کردن اطلاعات کش ردیس

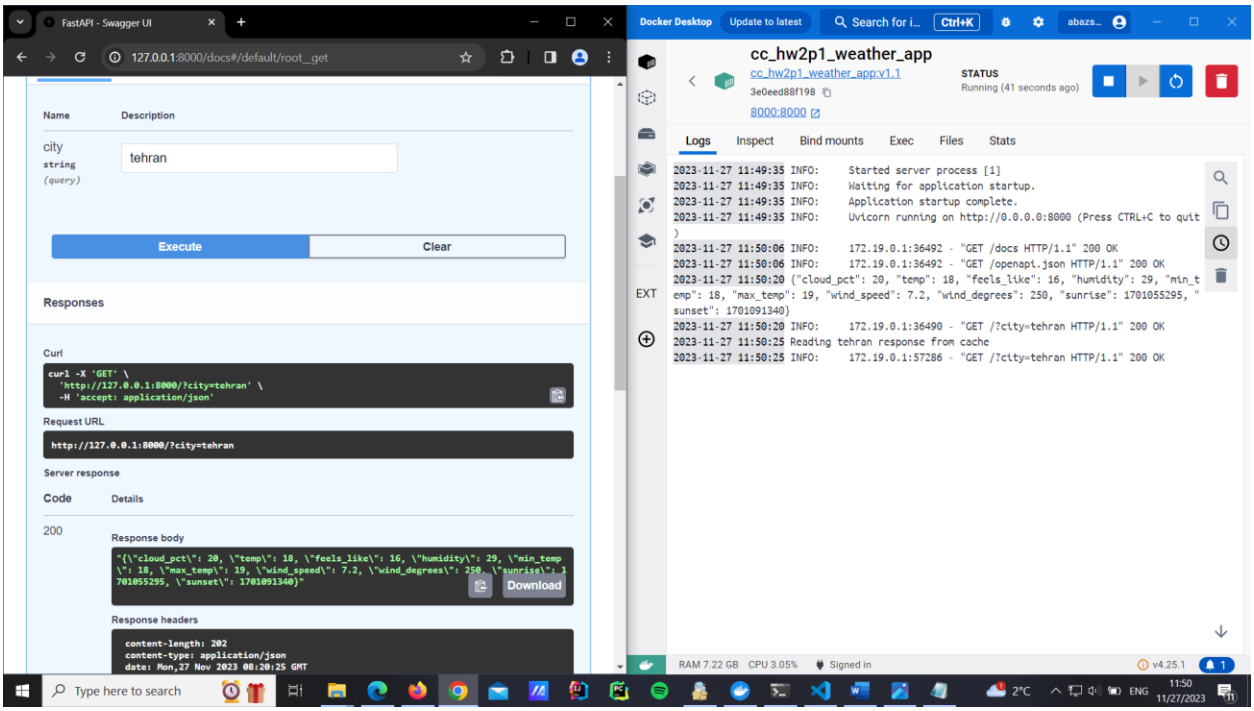
```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p1/weatherAPI_ninjas_conda$ docker volume create redis_data
redis_data
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p1/weatherAPI_ninjas_conda$ docker run --name redis --network mynetwork -v redis_data:/data -d redis
bb021967a56123482e275861e39111c33f4246a0f8f42e1b4f45db5c1defc295

ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p1/weatherAPI_ninjas_conda$ docker run --name cc_hw2p1_weather_app --network mynetwork -p 8000:8000 -
d cc_hw2p1_weather_app:v1.1
3e0eed88f198713e4f9595d337c25cf3e9757a85446d70ac0c1aed7c30844ce2
```

یک درخواست به سرور میزنیم و چون اطلاعات در سرور موجود نیست، API Call انجام می شود. در دفعه دوم چون اطلاعات در cache ذخیره شده است، اطلاعات از cache خوانده می شوند.

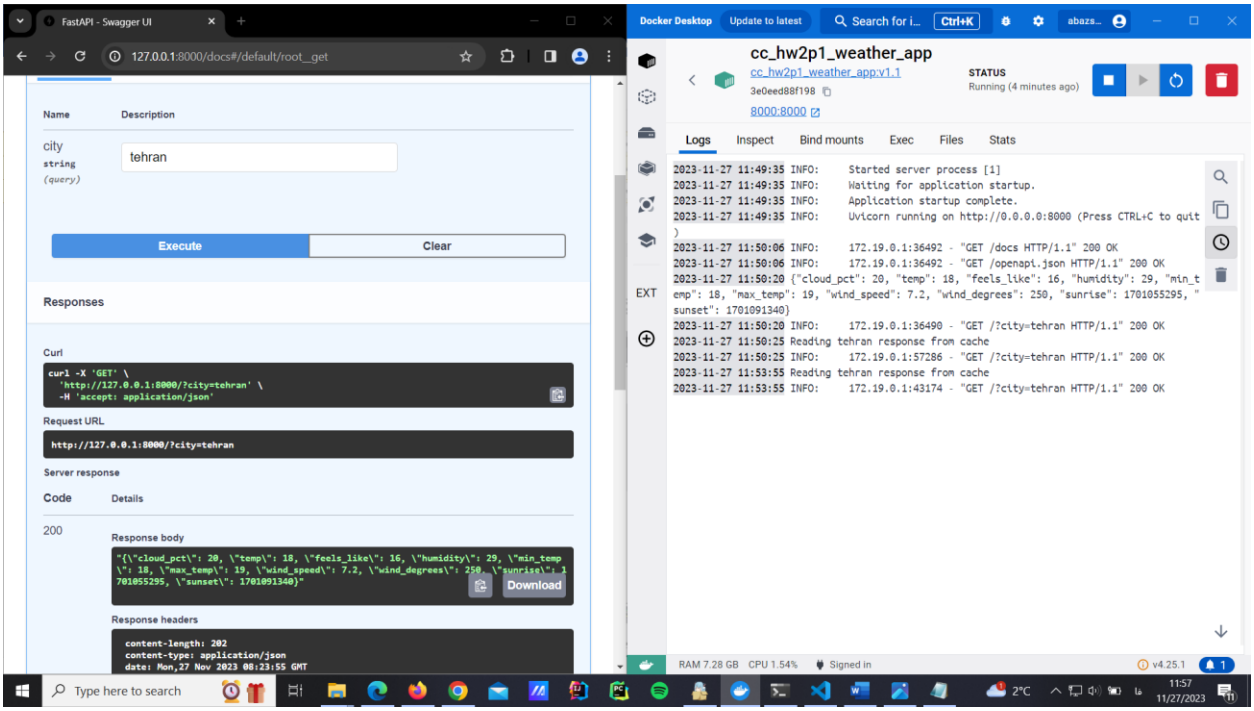


علی بازشوشتری ۹۹۲۳۰۰۸

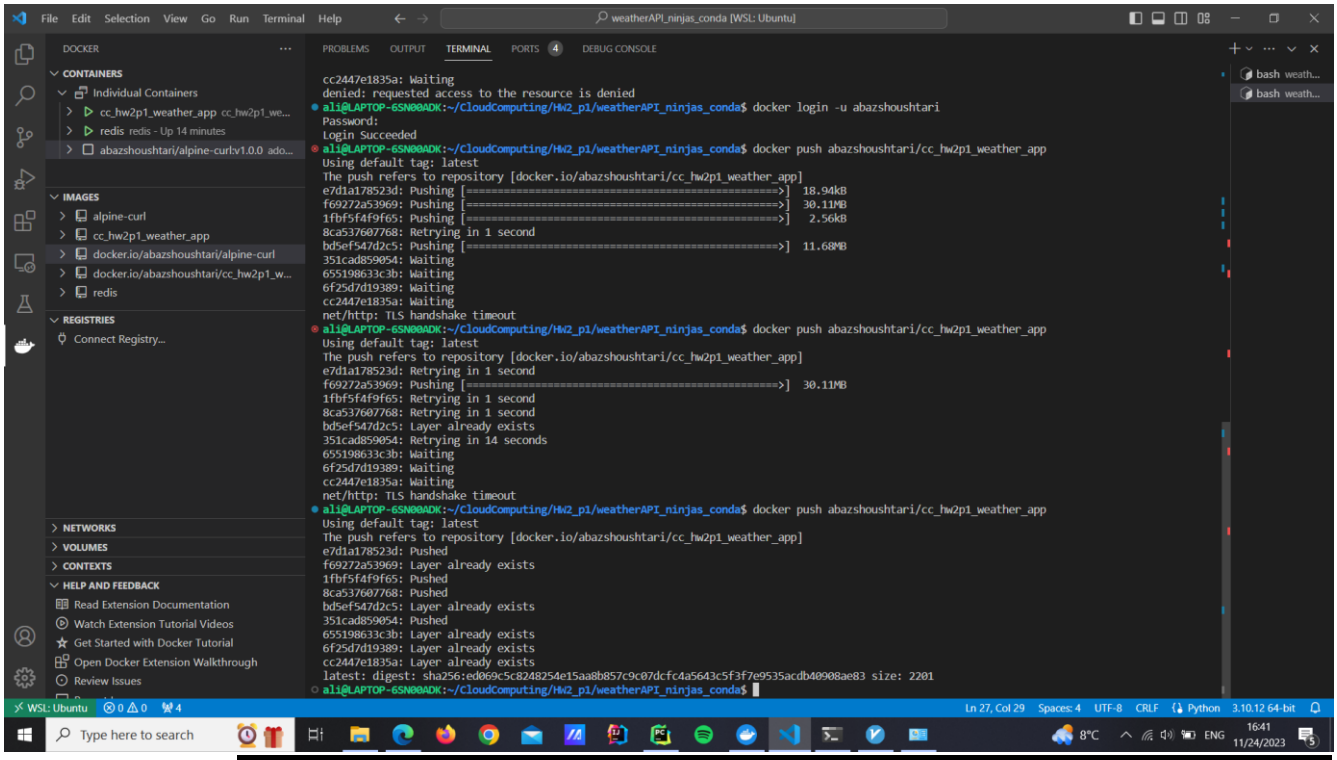


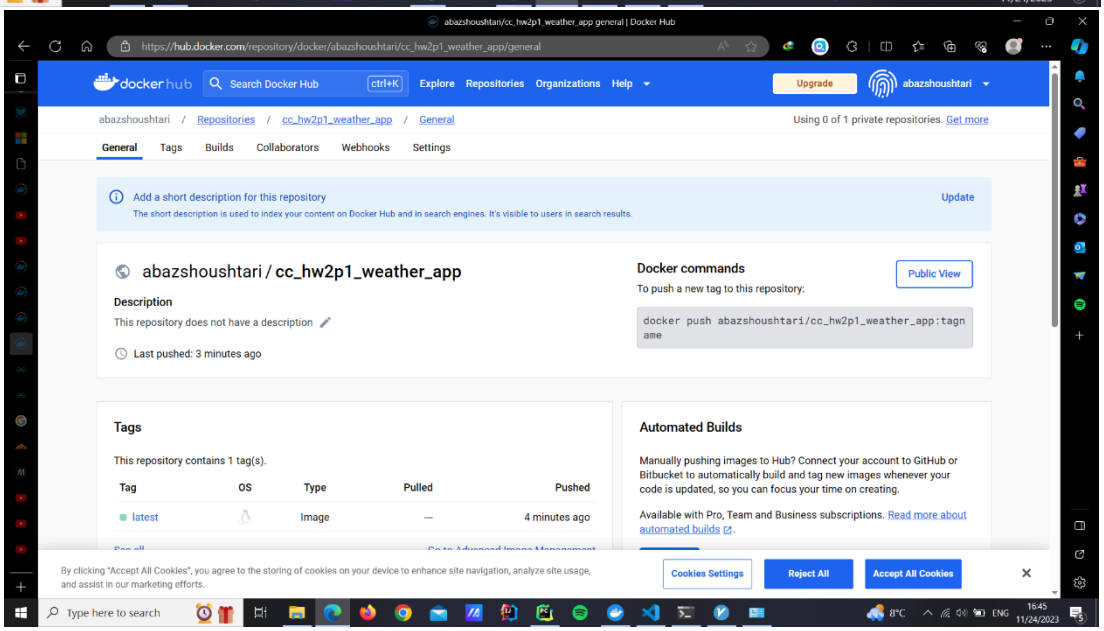
اکنون کانتینر مربوط به ردیس را stop و remove کرده و پس از آن مجدد یک کانتینر ردیس می سازیم و مجدد درخواست میزنیم و مشاهده میکنیم که مجدد اطلاعات از ردیس خوانده می شوند.

```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p1/weatherAPI_ninjas_conda$ docker stop redis
redis
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p1/weatherAPI_ninjas_conda$ docker rm redis
redis
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p1/weatherAPI_ninjas_conda$ docker run --name redis --network mynetwork -v redis_data:/data -d redis
6deebdc1d79eade4587daade6772db6ed358ba92547f591dd91fb0fdcdba41b6
```

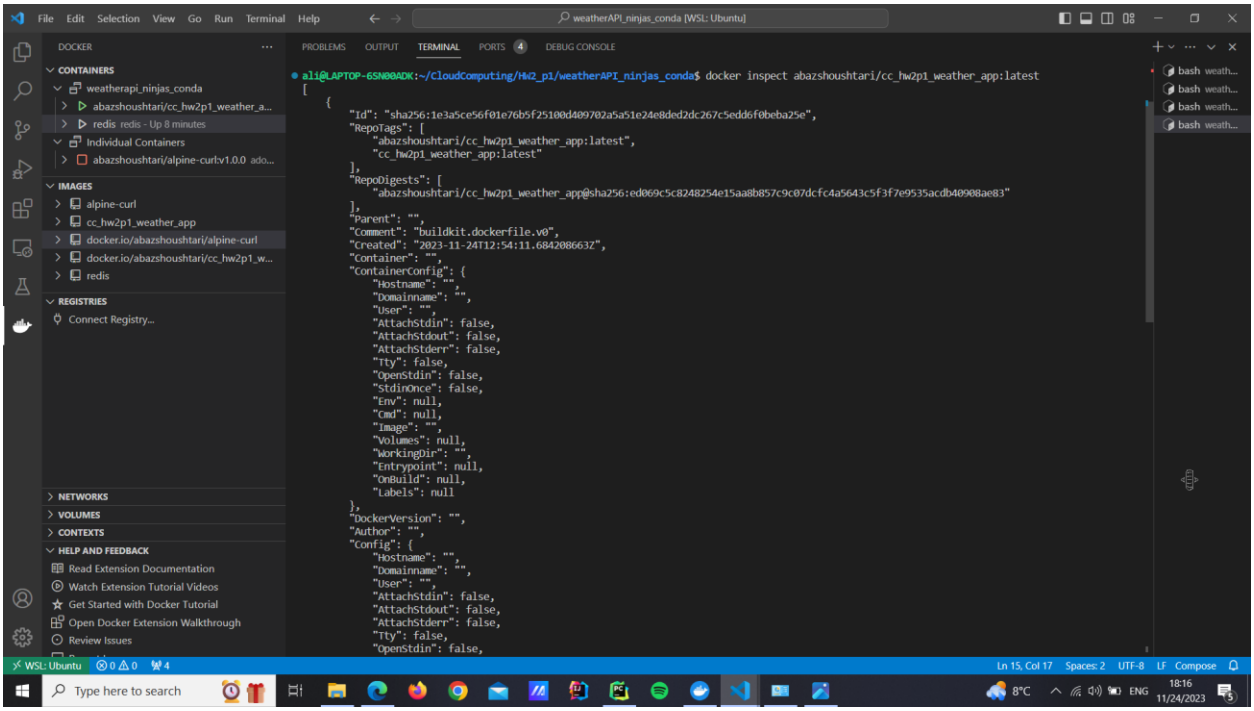


- ارسال ایمیج ساخته شده بر روی داکرهاب و نمایش نتیجه آن

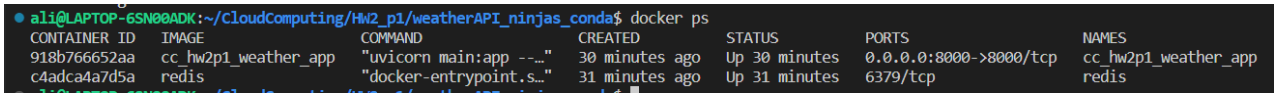




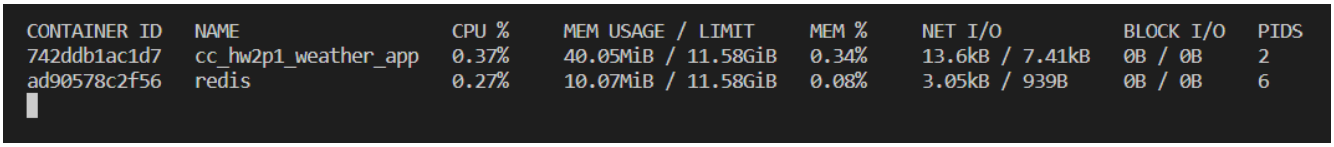
- نمایش اطلاعات ایمیج سرور خود با استفاده از دستور docker inspect



- نمایش کانتینرهای موجود در سیستم خود با استفاده از دستور docker ps



- نمایش میزان منابع استفاده شده توسط کانتینرهای موجود با استفاده از دستور docker stats



بخش دوم

گزارش بخش ۱

.A

```
ali@LAPTOP-6SN00ADK:~$ minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured

ali@LAPTOP-6SN00ADK:~$ kubectl get node
NAME       STATUS   ROLES           AGE   VERSION
minikube   Ready    control-plane   26h   v1.28.3
```

گزارش بخش ۲ و ۳

.2A

در این قسمت فایل های yaml. مربوطه برای Deployment، Service و ConfigMap را مینویسم.

همانطور که در پایین مشاهده می شود دیپلویمنت، پادهای مورد نیاز را ساخته است.

```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl get pods
NAME                                  READY   STATUS    RESTARTS   AGE
redis-54d86b576b-bhqqb                1/1     Running   0          2m23s
weatherapp-deployment-cc7c44cd7-667mb 1/1     Running   0          2m23s
weatherapp-deployment-cc7c44cd7-7xlrs 1/1     Running   0          2m23s
weatherapp-deployment-cc7c44cd7-b47b9 1/1     Running   0          2m23s
```

نام پادها بر اساس نامی که در دیپلویمنت مشخص کرده ایم مشخص می شود و در آخر آنها یک hash اضافه می شود.

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: weatherapp-deployment
  labels:
    app: weatherapp
```

.2B

در این قسمت IP پادها را مشاهده میکنیم. سپس اقدام به حذف یکی از پادها میکنیم و مشاهده میکنیم که IP پاد عوض می شود.

```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl get pods -o wide
NAME                                   READY   STATUS    RESTARTS   AGE     IP           NODE       NOMINATED NODE   READINESS GATES
redis-54d86b576b-bhqqb                 1/1     Running   0          2m46s   10.244.0.3   minikube   <none>           <none>
weatherapp-deployment-cc7c44cd7-667mb  1/1     Running   0          2m46s   10.244.0.6   minikube   <none>           <none>
weatherapp-deployment-cc7c44cd7-7xlrs  1/1     Running   0          2m46s   10.244.0.4   minikube   <none>           <none>
weatherapp-deployment-cc7c44cd7-b47b9  1/1     Running   0          2m46s   10.244.0.5   minikube   <none>           <none>
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl delete weatherapp-deployment-cc7c44cd7-667mb
error: the server doesn't have a resource type "weatherapp-deployment-cc7c44cd7-667mb"
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl delete pod weatherapp-deployment-cc7c44cd7-667mb
pod "weatherapp-deployment-cc7c44cd7-667mb" deleted
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl get pods -o wide
NAME                                   READY   STATUS    RESTARTS   AGE     IP           NODE       NOMINATED NODE   READINESS GATES
redis-54d86b576b-bhqqb                 1/1     Running   0          5m7s    10.244.0.3   minikube   <none>           <none>
weatherapp-deployment-cc7c44cd7-7xlrs  1/1     Running   0          5m7s    10.244.0.4   minikube   <none>           <none>
weatherapp-deployment-cc7c44cd7-b47b9  1/1     Running   0          5m7s    10.244.0.5   minikube   <none>           <none>
weatherapp-deployment-cc7c44cd7-x5tc6  1/1     Running   0          9s      10.244.0.7   minikube   <none>           <none>
```

در نتیجه از آیپی نمیتوان استفاده کرد و باید سرویس تعریف کرد تا آیپی ثابتی وجود داشته باشد.

.2C

سرویس را به صورت cluster ip تعریف می کنیم که خود سرویس یک آیپی ثابت می گیرد. هر موقع که نیاز به درخواست زدن به یک پاد داشته باشیم، به این سرویس و آیپی درخواست می زنیم و سرویس درخواست ما را به یکی از پادها می فرستد. این نوع فقط از داخل کلاستر قابل دستیابی است و از بیرون کلاستر نمی توان به آن درخواست زد. برای درخواست های خارج از کلاستر از node port استفاده می کنیم.

دلیل اینکه نیاز نیست نوع سرویس را حتما نوع سرویس را مشخص کنیم آن است که سرویس هایی که تعریف می کنیم به صورت پیش فرض cluster ip هستند.

.2D

```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl get svc/weatherapp-service -oyaml
apiVersion: v1
kind: Service
metadata:
  annotations:
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"v1","kind":"Service","metadata":{"annotations":{},"name":"weatherapp-service","namespace":"default"},"spec":{"ports":[{"port":8000,"protoc
ol":"TCP","targetPort":8000}],"selector":{"app":"weatherapp"}}}
  creationTimestamp: "2023-11-26T11:01:01Z"
  name: weatherapp-service
  namespace: default
  resourceVersion: "1855"
  uid: 4225786e-8ad7-4599-9457-580f94c45314
spec:
  clusterIP: 10.97.61.60
  clusterIPs:
  - 10.97.61.60
  internalTrafficPolicy: Cluster
  ipFamilies:
  - IPv4
  ipFamilyPolicy: SingleStack
  ports:
  - port: 8000
    protocol: TCP
    targetPort: 8000
  selector:
    app: weatherapp
  sessionAffinity: None
  type: ClusterIP
status:
  loadBalancer: {}
```

.3

ابتداا‌د ردیس را پاک میکنیم. پس از مدتی دیپلویمنت یک پاد جدید برای ردیس می سازد.

```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl delete pod redis-54d86b576b-6mpng
pod "redis-54d86b576b-6mpng" deleted
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ k get pods
NAME                                   READY   STATUS    RESTARTS   AGE
redis-54d86b576b-98j4c                 1/1     Running   0          13s
weatherapp-deployment-cc7c44cd7-4jzt5  1/1     Running   0          44m
weatherapp-deployment-cc7c44cd7-8nqs9  1/1     Running   0          44m
weatherapp-deployment-cc7c44cd7-hrg5q  1/1     Running   0          44m
```

پس از دوباره زدن دستور curl مشاهده می کنیم که کش پاک شده و مجدد API Call انجام می شود.

```
/ # curl http://weatherapp-service:8000
"{\"cloud_pct\": 75, \"temp\": 15, \"feels_like\": 13, \"humidity\": 38, \"min_temp\": 10, \"max_temp\": 15, \"wind_speed\": 2.06, \"wind_degre
es\": 60, \"sunrise\": 1701055295, \"sunset\": 1701091340}\nhostname: 10.244.0.74"/ #
```

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```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ k logs weatherapp-deployment-bc5b8db8d-9gm6q
INFO:     Started server process [1]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Uvicorn running on http://0.0.0.0:8000 (Press CTRL+C to quit)
{"cloud_pct": 75, "temp": 15, "feels_like": 13, "humidity": 38, "min_temp": 10, "max_temp": 15, "wind_speed": 0, "wind_degrees": 0, "sunrise":
1701055295, "sunset": 1701091340}
INFO:     10.244.0.74:49016 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:42914 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:42918 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:42924 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:48550 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:48564 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:51000 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:51016 - "GET / HTTP/1.1" 200 OK
{"cloud_pct": 75, "temp": 15, "feels_like": 13, "humidity": 38, "min_temp": 10, "max_temp": 15, "wind_speed": 2.06, "wind_degrees": 60, "sunris
e": 1701055295, "sunset": 1701091340}
INFO:     10.244.0.74:38222 - "GET / HTTP/1.1" 200 OK
```

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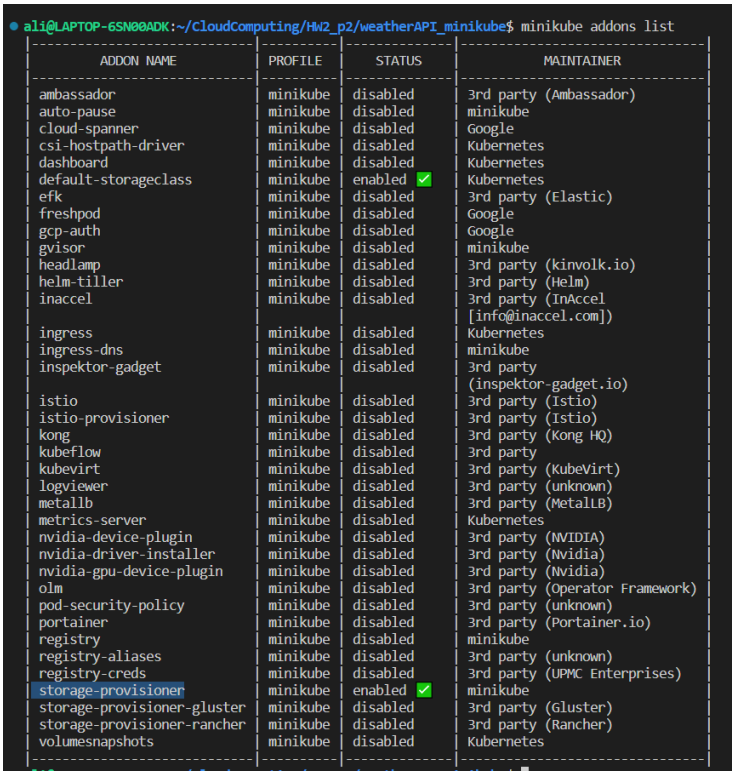
گزارش بخش ۴

.A

با استفاده از دستور minikube addons list می توان مشاهده نمود که storage-provisioner فعال است پس در نتیجه در minikube، dynamic provisioning به صورت پیش فرض فعال است.



```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ minikube addons list
|-----------------------------|----------|--------------|--------------------------------|
|         ADDON NAME          | PROFILE  |    STATUS    |           MAINTAINER           |
|-----------------------------|----------|--------------|--------------------------------|
| ambassador                  | minikube | disabled     | 3rd party (Ambassador)         |
| auto-pause                  | minikube | disabled     | minikube                       |
| cloud-spanner               | minikube | disabled     | Google                         |
| csi-hostpath-driver         | minikube | disabled     | Kubernetes                     |
| dashboard                   | minikube | disabled     | Kubernetes                     |
| default-storageclass        | minikube | enabled ✅   | Kubernetes                     |
| efk                         | minikube | disabled     | 3rd party (Elastic)            |
| freshpod                    | minikube | disabled     | Google                         |
| gcp-auth                    | minikube | disabled     | Google                         |
| gvisor                      | minikube | disabled     | minikube                       |
| headlamp                    | minikube | disabled     | 3rd party (kinvolk.io)         |
| helm-tiller                 | minikube | disabled     | 3rd party (Helm)               |
| inaccel                     | minikube | disabled     | 3rd party (InAccel             |
|                             |          |              | [info@inaccel.com])            |
| ingress                     | minikube | disabled     | Kubernetes                     |
| ingress-dns                 | minikube | disabled     | minikube                       |
| inspektor-gadget            | minikube | disabled     | 3rd party                      |
|                             |          |              | (inspektor-gadget.io)          |
| istio                       | minikube | disabled     | 3rd party (Istio)              |
| istio-provisioner           | minikube | disabled     | 3rd party (Istio)              |
| kong                        | minikube | disabled     | 3rd party (Kong HQ)            |
| kubeflow                    | minikube | disabled     | 3rd party                      |
| kubevirt                    | minikube | disabled     | 3rd party (KubeVirt)           |
| logviewer                   | minikube | disabled     | 3rd party (unknown)            |
| metallb                     | minikube | disabled     | 3rd party (MetalLB)            |
| metrics-server              | minikube | disabled     | Kubernetes                     |
| nvidia-device-plugin        | minikube | disabled     | 3rd party (NVIDIA)             |
| nvidia-driver-installer     | minikube | disabled     | 3rd party (Nvidia)             |
| nvidia-gpu-device-plugin    | minikube | disabled     | 3rd party (Nvidia)             |
| olm                         | minikube | disabled     | 3rd party (Operator Framework) |
| pod-security-policy         | minikube | disabled     | 3rd party (unknown)            |
| portainer                   | minikube | disabled     | 3rd party (Portainer.io)       |
| registry                    | minikube | disabled     | minikube                       |
| registry-aliases            | minikube | disabled     | 3rd party (unknown)            |
| registry-creds              | minikube | disabled     | 3rd party (UPMC Enterprises)   |
| storage-provisioner         | minikube | enabled ✅   | minikube                       |
| storage-provisioner-gluster | minikube | disabled     | 3rd party (Gluster)            |
| storage-provisioner-rancher | minikube | disabled     | 3rd party (Rancher)            |
| volumesnapshots             | minikube | disabled     | Kubernetes                     |
|-----------------------------|----------|--------------|--------------------------------|
```

با استفاده از دستور kubectl get pv می توان وضعیت volume و همچنین به کمک kubectl get pvc وضعیت claim را مشاهده نمود.

```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl get pv
NAME           CAPACITY   ACCESS MODES   RECLAIM POLICY   STATUS   CLAIM                   STORAGECLASS   REASON   AGE
redis-volume   512Mi      RWO            Retain           Bound    default/redis-pv-claim   manual                  2m37s
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl get pvc
NAME             STATUS   VOLUME         CAPACITY   ACCESS MODES   STORAGECLASS   AGE
redis-pv-claim   Bound    redis-volume   512Mi      RWO            manual         25h
```

.B

خیر بعد از اختصاص یک pv به یک pvc، pvcهای دیگر نمی توانند به آن pv متصل شوند.

در صورتی که تمام pvcها روی یک نود باشند میتوانند به یک pv در همان نود باند شوند.

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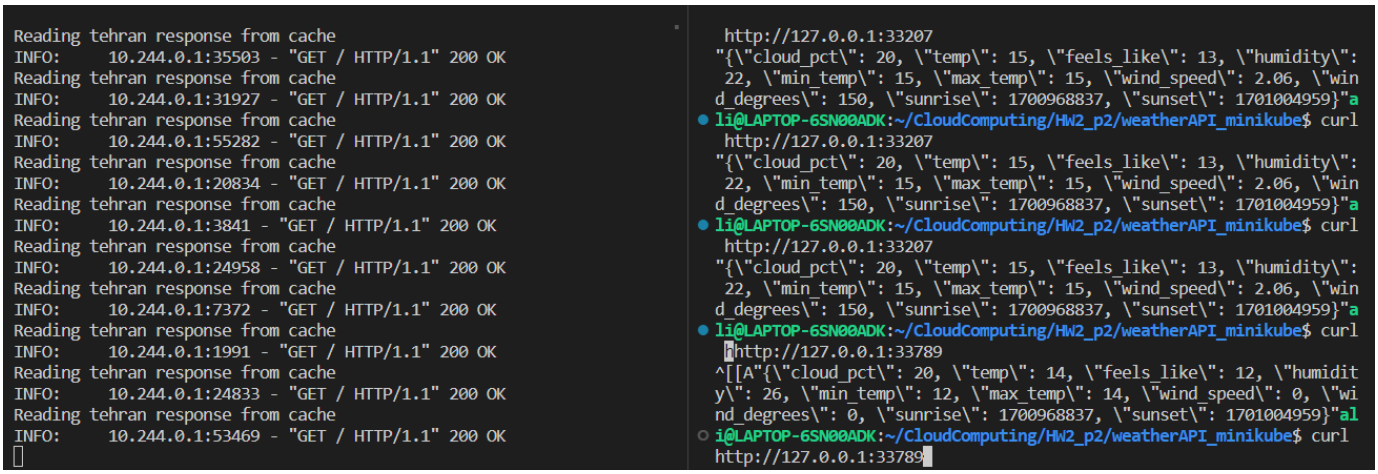
مزیت این سیاست آن است که دیگر پادها به دیتای یکدیگر دسترسی ندارند و کوبرنتیز دیگر نگران مدیریت این فضا نمی باشد و پیاده سازی راحت تر است.

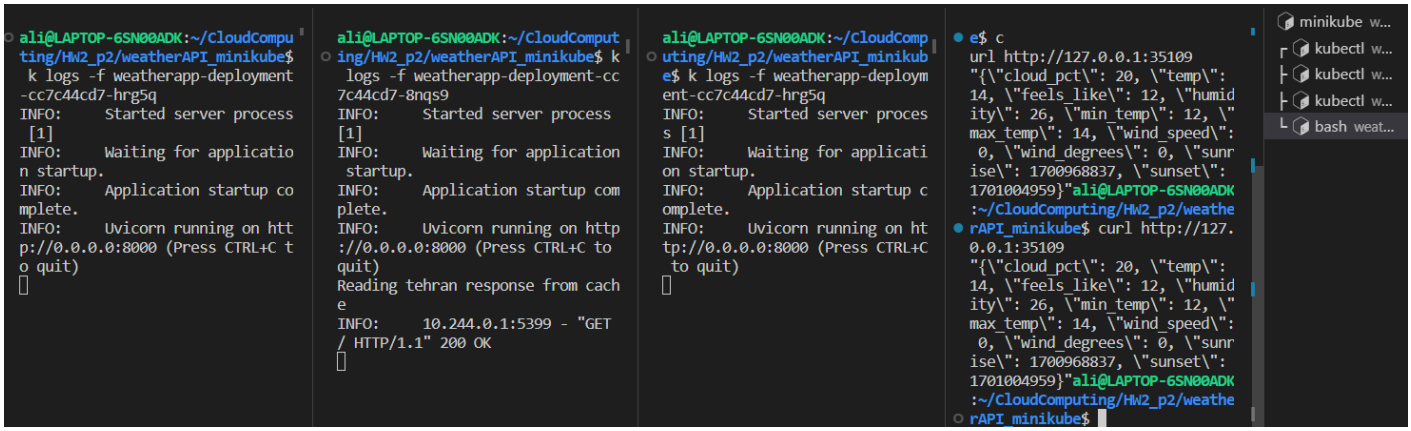
گزارش بخش ۵

صحت اجرای سرویس و لود بالانسینگ



```
Reading tehran response from cache
INFO:     10.244.0.1:35503 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache
INFO:     10.244.0.1:31927 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache
INFO:     10.244.0.1:55282 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache
INFO:     10.244.0.1:20834 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache
INFO:     10.244.0.1:3841 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache
INFO:     10.244.0.1:24958 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache
INFO:     10.244.0.1:7372 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache
INFO:     10.244.0.1:1991 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache
INFO:     10.244.0.1:24833 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache
INFO:     10.244.0.1:53469 - "GET / HTTP/1.1" 200 OK
```

```
 http://127.0.0.1:33207
"{\"cloud_pct\": 20, \"temp\": 15, \"feels_like\": 13, \"humidity\":
 22, \"min_temp\": 15, \"max_temp\": 15, \"wind_speed\": 2.06, \"win
d_degrees\": 150, \"sunrise\": 1700968837, \"sunset\": 1701004959}"a
li@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ curl
 http://127.0.0.1:33207
"{\"cloud_pct\": 20, \"temp\": 15, \"feels_like\": 13, \"humidity\":
 22, \"min_temp\": 15, \"max_temp\": 15, \"wind_speed\": 2.06, \"win
d_degrees\": 150, \"sunrise\": 1700968837, \"sunset\": 1701004959}"a
li@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ curl
 http://127.0.0.1:33207
"{\"cloud_pct\": 20, \"temp\": 15, \"feels_like\": 13, \"humidity\":
 22, \"min_temp\": 15, \"max_temp\": 15, \"wind_speed\": 2.06, \"win
d_degrees\": 150, \"sunrise\": 1700968837, \"sunset\": 1701004959}"a
li@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ curl
 hhttp://127.0.0.1:33789
^[[A"{\"cloud_pct\": 20, \"temp\": 14, \"feels_like\": 12, \"humidit
y\": 26, \"min_temp\": 12, \"max_temp\": 14, \"wind_speed\": 0, \"wi
nd_degrees\": 0, \"sunrise\": 1700968837, \"sunset\": 1701004959}"al
i@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ curl
http://127.0.0.1:33789
```



```
ali@LAPTOP-6SN00ADK:~/CloudCompu
ting/HW2_p2/weatherAPI_minikube$
 k logs -f weatherapp-deployment
-cc7c44cd7-hrg5q
INFO:     Started server process
 [1]
INFO:     Waiting for applicatio
n startup.
INFO:     Application startup co
mplete.
INFO:     Uvicorn running on htt
p://0.0.0.0:8000 (Press CTRL+C t
o quit)
```

```
ali@LAPTOP-6SN00ADK:~/CloudComput
ing/HW2_p2/weatherAPI_minikube$ k
 logs -f weatherapp-deployment-cc
7c44cd7-8nqs9
INFO:     Started server process
[1]
INFO:     Waiting for application
 startup.
INFO:     Application startup com
plete.
INFO:     Uvicorn running on http
://0.0.0.0:8000 (Press CTRL+C to
quit)
Reading tehran response from cach
e
INFO:     10.244.0.1:5399 - "GET
/ HTTP/1.1" 200 OK
```

```
ali@LAPTOP-6SN00ADK:~/CloudComp
uting/HW2_p2/weatherAPI_minikub
e$ k logs -f weatherapp-deploym
ent-cc7c44cd7-hrg5q
INFO:     Started server proces
s [1]
INFO:     Waiting for applicati
on startup.
INFO:     Application startup c
omplete.
INFO:     Uvicorn running on ht
tp://0.0.0.0:8000 (Press CTRL+C
 to quit)
```

```
e$ c
url http://127.0.0.1:35109
"{\"cloud_pct\": 20, \"temp\":
14, \"feels_like\": 12, \"humid
ity\": 26, \"min_temp\": 12, \"
max_temp\": 14, \"wind_speed\":
 0, \"wind_degrees\": 0, \"sunr
ise\": 1700968837, \"sunset\":
1701004959}"ali@LAPTOP-6SN00ADK
:~/CloudComputing/HW2_p2/weathe
rAPI_minikube$ curl http://127.
0.0.1:35109
"{\"cloud_pct\": 20, \"temp\":
14, \"feels_like\": 12, \"humid
ity\": 26, \"min_temp\": 12, \"
max_temp\": 14, \"wind_speed\":
 0, \"wind_degrees\": 0, \"sunr
ise\": 1700968837, \"sunset\":
1701004959}"ali@LAPTOP-6SN00ADK
:~/CloudComputing/HW2_p2/weathe
rAPI_minikube$
```

Load balancing که چند تا دستور curl زده شده اما همگی به یک پاد نخورده و پس از چند درخواست به یکی از پادها خورده

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```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ k get pods
NAME                                   READY   STATUS    RESTARTS       AGE
alpine-curl                            1/1     Running   4 (168m ago)   25h
redis-54d86b576b-j6gcp                 1/1     Running   6 (168m ago)   28h
weatherapp-deployment-bc5b8db8d-9gm6q  1/1     Running   3 (168m ago)   25h
weatherapp-deployment-bc5b8db8d-fq5mz  1/1     Running   3 (168m ago)   25h
weatherapp-deployment-bc5b8db8d-hkv8d  1/1     Running   3 (168m ago)   25h
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ kubectl exec -it alpine-curl -- sh
/ # curl http://weatherapp-service:8000
"{\"cloud_pct\": 75, \"temp\": 15, \"feels_like\": 13, \"humidity\": 38, \"min_temp\": 10, \"max_temp\": 15, \"wind_speed\": 0, \"wind_degrees
```

اجرای curl از طریق ایمیج alpine-curl که در پارت ۱ تمرین ساختیم

پس از چند بار دستور curl زدن به سرویس اکنون log پادها را مشاهده می کنیم و میبینیم که دستورات به پادهای مختلفی خورده اند.

```
INFO:     Application startup complete.
INFO:     Uvicorn running on http://0.0.0.0:8000 (Press CTRL+C to quit)
{"cloud_pct": 75, "temp": 15, "feels_like": 13, "humidity": 38, "min_temp": 10, "max_temp": 15, "wind_speed": 0, "wind_degrees": 0, "sunrise": 1701055295, "sunset": 1701091340}
INFO:     10.244.0.74:49016 - "GET / HTTP/1.1" 200 OK
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ k logs weatherapp-deployment-bc5b8db8d-9gm6q
INFO:     Started server process [1]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Uvicorn running on http://0.0.0.0:8000 (Press CTRL+C to quit)
{"cloud_pct": 75, "temp": 15, "feels_like": 13, "humidity": 38, "min_temp": 10, "max_temp": 15, "wind_speed": 0, "wind_degrees": 0, "sunrise": 1701055295, "sunset": 1701091340}
INFO:     10.244.0.74:49016 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:42914 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:42918 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:42924 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:48550 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:48564 - "GET / HTTP/1.1" 200 OK
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$
```

```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ k
 logs weatherapp-deployment-bc5b8db8d-fq5mz
INFO:     Started server process [1]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Uvicorn running on http://0.0.0.0:8000 (Press CTRL+C to quit)
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ k logs weatherapp-deployment-bc5b8db8d-fq5mz
INFO:     Started server process [1]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Uvicorn running on http://0.0.0.0:8000 (Press CTRL+C to quit)
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ k logs weatherapp-deployment-bc5b8db8d-fq5mz
INFO:     Started server process [1]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Uvicorn running on http://0.0.0.0:8000 (Press CTRL+C to quit)
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:51020 - "GET / HTTP/1.1" 200 OK
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$
```

```
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ k logs weatherapp-deployment-bc5b8db8d-hkv8d
INFO:     Started server process [1]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Uvicorn running on http://0.0.0.0:8000 (Press CTRL+C to quit)
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:42938 - "GET / HTTP/1.1" 200 OK
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$ k logs weatherapp-deployment-bc5b8db8d-hkv8d
INFO:     Started server process [1]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
INFO:     Uvicorn running on http://0.0.0.0:8000 (Press CTRL+C to quit)
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:42938 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:48544 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:48556 - "GET / HTTP/1.1" 200 OK
Reading tehran response from cache. hostname: 10.244.0.74
INFO:     10.244.0.74:51348 - "GET / HTTP/1.1" 200 OK
ali@LAPTOP-6SN00ADK:~/CloudComputing/HW2_p2/weatherAPI_minikube$
```

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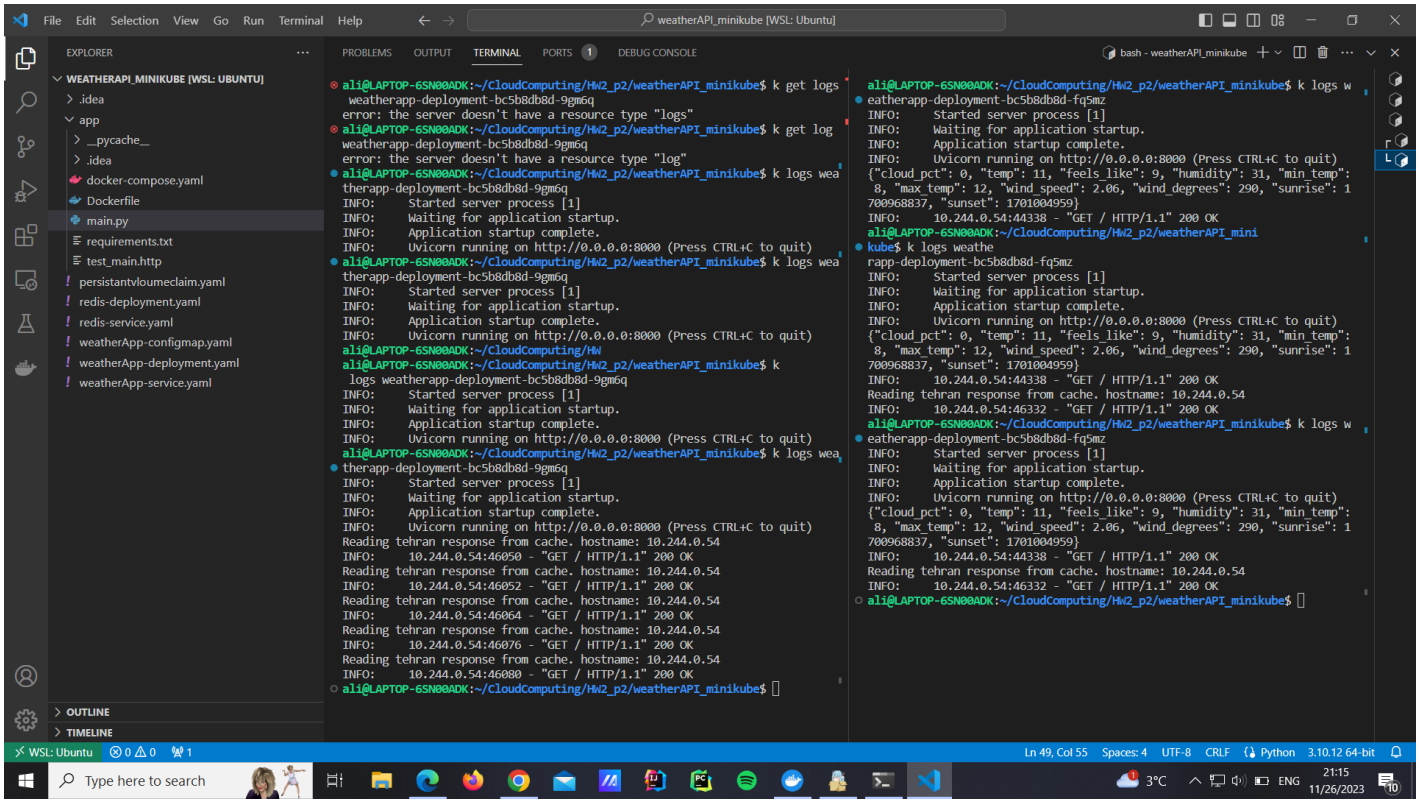

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