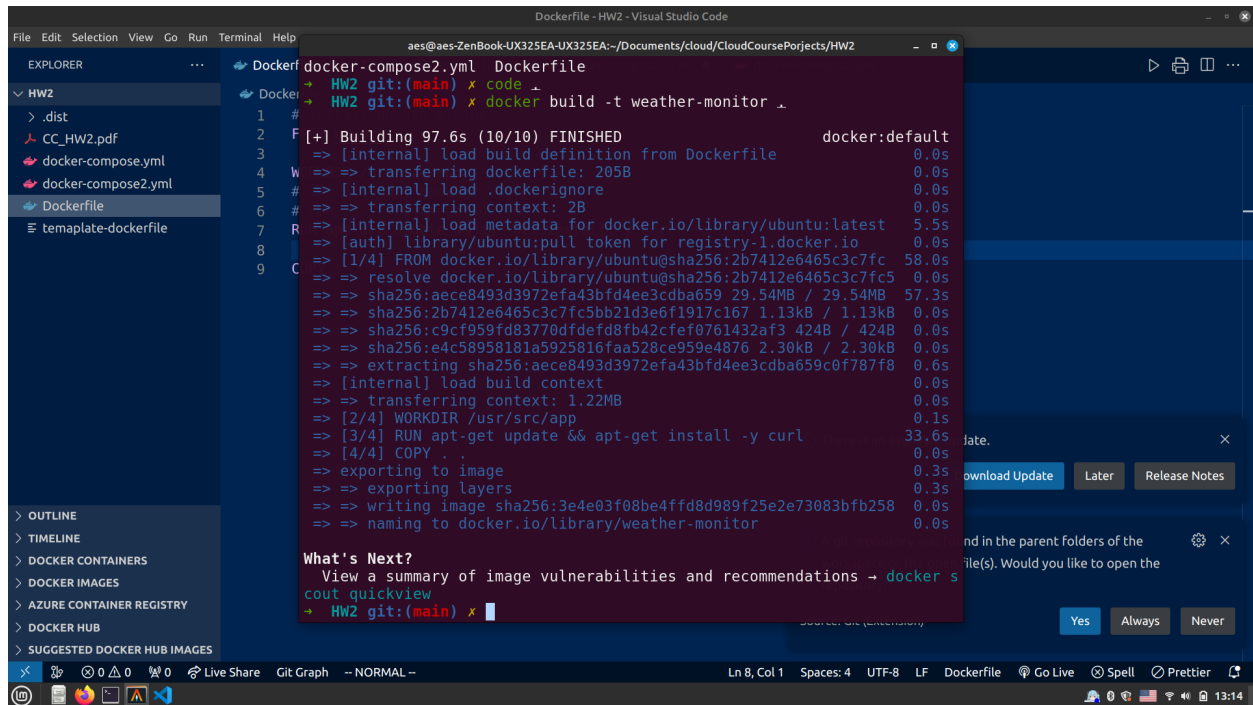


## قسمت اول: ساخت image



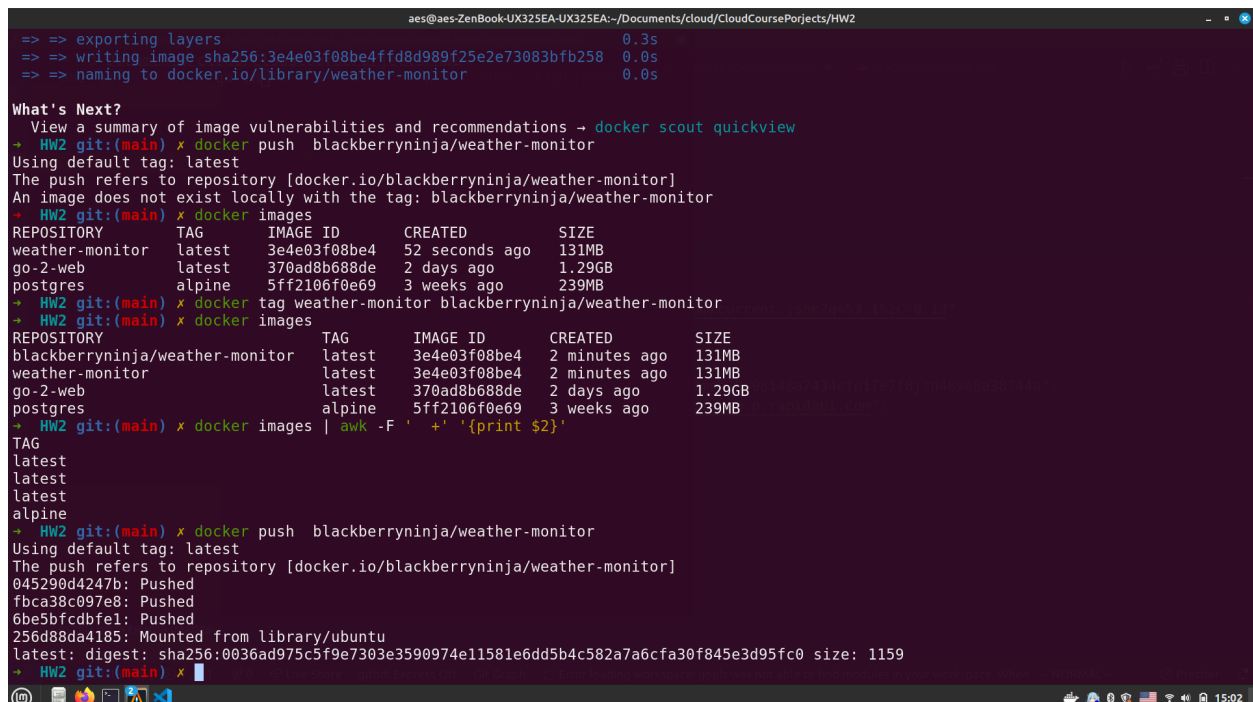
The screenshot shows the Visual Studio Code interface with a Dockerfile open in the editor. The Dockerfile contains the following content:

```
Dockerfile
#
FROM ubuntu:latest
RUN apt-get update && apt-get install -y curl
COPY . .
EXPOSE 80
CMD ["curl", "-s", "https://raw.githubusercontent.com/blackberryninja/weather-monitor/main/README.md"]
```

The terminal output shows the build process:

```
docker build -t weather-monitor .
[+] Building 97.6s (10/10) FINISHED
=> [internal] load build definition from Dockerfile
=> [internal] load .dockerignore
=> [internal] load metadata for docker.io/library/ubuntu:latest
=> [auth] library/ubuntu:pull token for registry-1.docker.io
=> [1/4] FROM docker.io/library/ubuntu@sha256:2b7412e6465c3c7fc5
=> sha256:aece8493d3972efa43bfd4ee3cda659 29.54MB / 29.54MB
=> sha256:2b7412e6465c3c7fc5bb21d3e6f1917c167 1.13kB / 1.13kB
=> sha256:c9cf959f483770dfdef8fb42cfef0761432af3 424B / 424B
=> sha256:e4c58958181a5925816faa528ce959e4876 2.30kB / 2.30kB
=> extracting sha256:aece8493d3972efa43bfd4ee3cda659c0f787f8
=> [internal] load build context
=> transferring context: 1.22MB
=> [2/4] WORKDIR /usr/src/app
=> [3/4] RUN apt-get update && apt-get install -y curl
=> [4/4] COPY . .
=> exporting to image
=> exporting layers
=> writing image sha256:3e4e03f08be4ffd8d989f25e2e73083bfb258
=> naming to docker.io/library/weather-monitor
```

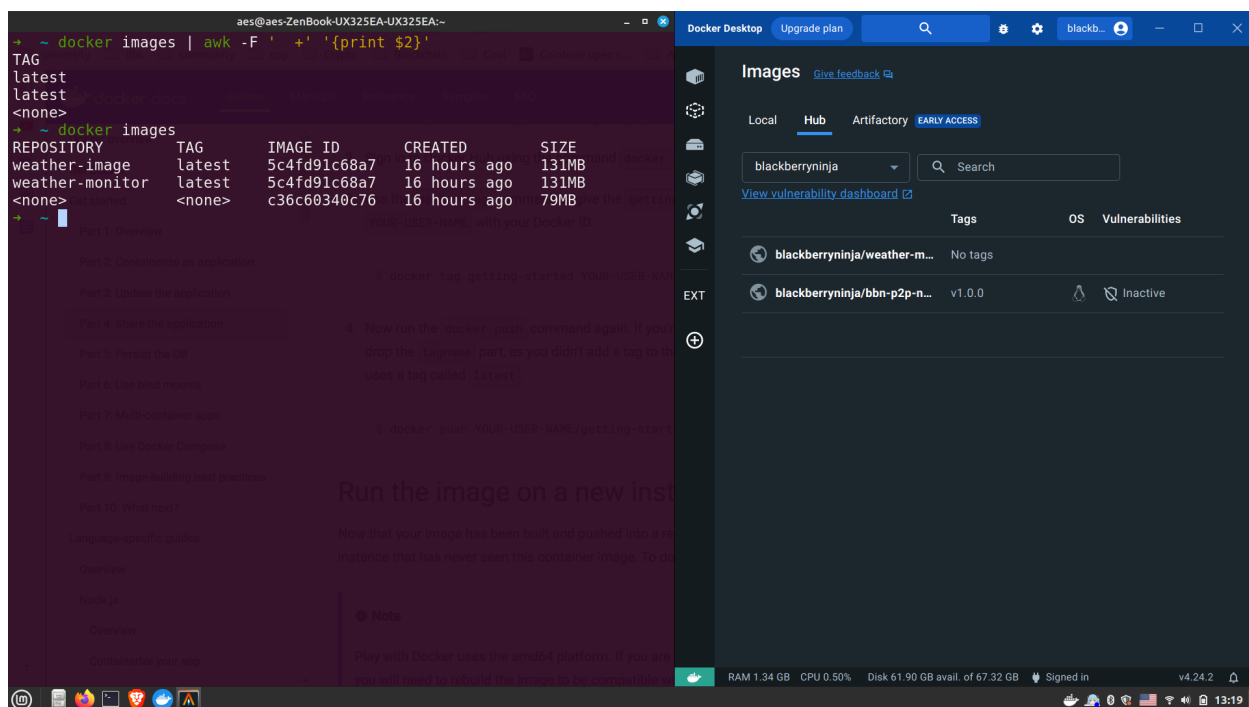
## فرستادن image به dockerhub



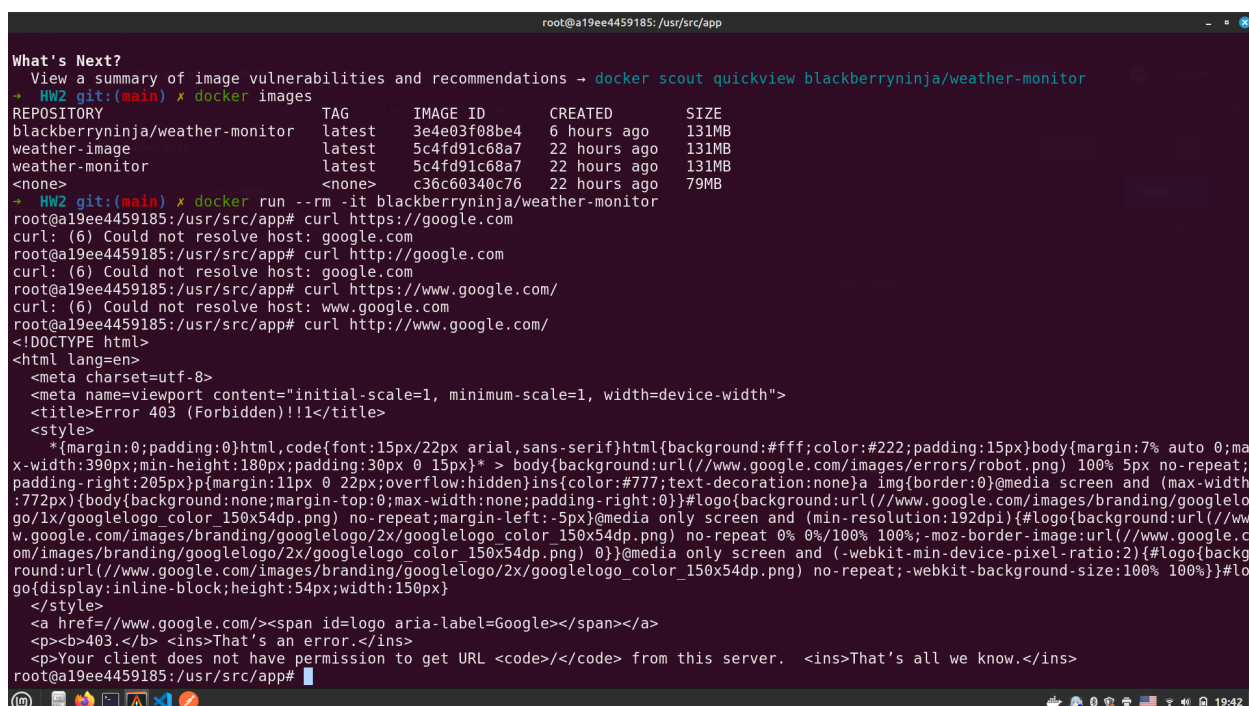
The screenshot shows the terminal output for pushing a Docker image to Docker Hub:

```
docker push blackberryninja/weather-monitor
Using default tag: latest
The push refers to repository [docker.io/blackberryninja/weather-monitor]
An image does not exist locally with the tag: blackberryninja/weather-monitor
+ HW2 git:(main) x docker images
REPOSITORY          TAG          IMAGE ID      CREATED       SIZE
weather-monitor     latest       3e4e03f08be4  52 seconds ago 131MB
go-2-web            latest       370ad8b688de  2 days ago   1.29GB
postgres            alpine       5ff2106f0e69  3 weeks ago   239MB
+ HW2 git:(main) x docker tag weather-monitor blackberryninja/weather-monitor
+ HW2 git:(main) x docker images
REPOSITORY          TAG          IMAGE ID      CREATED       SIZE
blackberryninja/weather-monitor latest       3e4e03f08be4  2 minutes ago 131MB
weather-monitor     latest       3e4e03f08be4  2 minutes ago 131MB
go-2-web            latest       370ad8b688de  2 days ago   1.29GB
postgres            alpine       5ff2106f0e69  3 weeks ago   239MB
+ HW2 git:(main) x docker images | awk -F ' ' '{print $2}'
TAG
latest
latest
latest
alpine
+ HW2 git:(main) x docker push blackberryninja/weather-monitor
Using default tag: latest
The push refers to repository [docker.io/blackberryninja/weather-monitor]
045290d4247b: Pushed
fbca38c097e8: Pushed
6be5bfcdbe1: Pushed
256d88da4185: Mounted from library/ubuntu
latest: digest: sha256:0036ad975c5f9e7303e3590974e11581e6dd5b4c582a7a6cfa30f845e3d95fc0 size: 1159
+ HW2 git:(main) x
```

## لیستی از image ها



- بعد از اجرای دستور `docker pull blackberryinja/weather-monitor:final` یک image جدید اضافه شده (blackberryinja/weather-monito) و بعد از اجرای دستور های قابل مشاهده یک container ساخته شده و در داخل آن فرمان curl اجرا شده است.



بخش دوم:

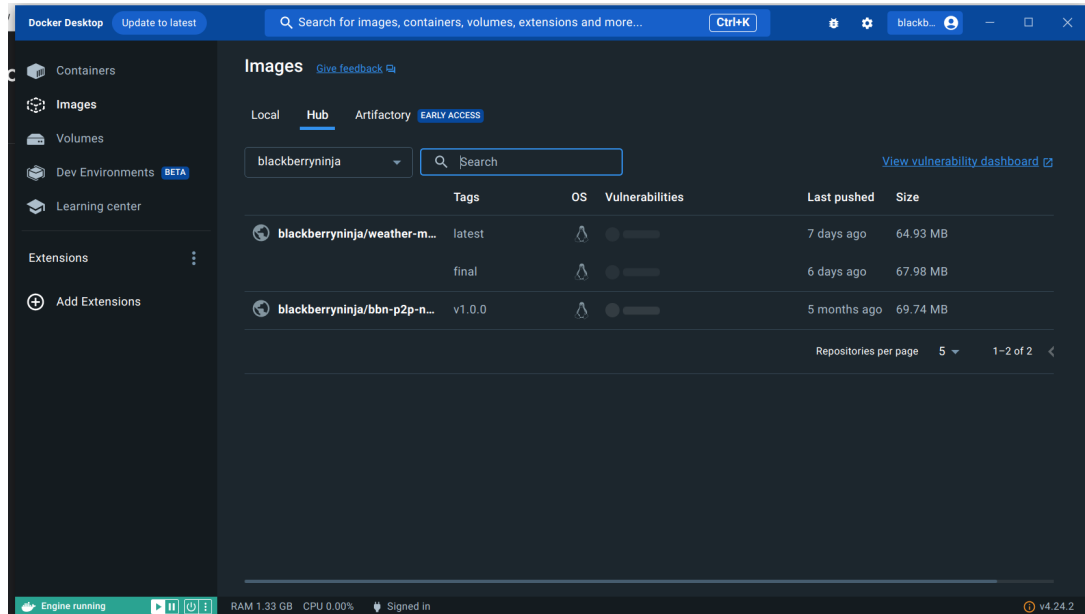
- فرستادن image به داخل dockerhub با دستور push و دریافت آن از dockerhub با دستور pull

```

aes@aes-ZenBook-UX325EA-UX325EA:~/Documents/cloud/CloudCourseProjects/HW2
+ HW2 git:(main) x docker images
REPOSITORY          TAG          IMAGE ID       CREATED        SIZE
hw2-weather          latest       f5a31baed7e8   39 minutes ago 138MB
blackberryininja/weather-monitor latest       3e4e03f08be4   25 hours ago  131MB
go-2-web             latest       370ad8b688de   3 days ago    1.29GB
redis                latest       e579380d4317   11 days ago   138MB
postgres             alpine       5ff2106f0e69   3 weeks ago   239MB
+ HW2 git:(main) x docker tag hw2-weather blackberryininja/weather-monitor:final
+ HW2 git:(main) x docker images
REPOSITORY          TAG          IMAGE ID       CREATED        SIZE
blackberryininja/weather-monitor final         f5a31baed7e8   39 minutes ago 138MB
hw2-weather          latest       f5a31baed7e8   39 minutes ago 138MB
blackberryininja/weather-monitor latest       3e4e03f08be4   25 hours ago  131MB
go-2-web             latest       370ad8b688de   3 days ago    1.29GB
redis                latest       e579380d4317   11 days ago   138MB
postgres             alpine       5ff2106f0e69   3 weeks ago   239MB
+ HW2 git:(main) x docker push blackberryininja/weather-monitor:final
The push refers to repository [docker.io/blackberryininja/weather-monitor]
cb5978f76a46: Pushed
2bd3a2efalla: Pushed
9930a03afb19: Pushed
5f70bf18a086: Mounted from library/redis
256d88da4185: Layer already exists
final: digest: sha256:9414978736050c91c8283b965ad34cd0ad396099e66458a9c045383ae8ce3775 size: 1365
+ HW2 git:(main) x docker rmi blackberryininja/weather-monitor:final
Untagged: blackberryininja/weather-monitor:final
Untagged: blackberryininja/weather-monitor@sha256:9414978736050c91c8283b965ad34cd0ad396099e66458a9c045383ae8ce3775
+ HW2 git:(main) x docker pull blackberryininja/weather-monitor:final
final: Pulling from blackberryininja/weather-monitor
Digest: sha256:9414978736050c91c8283b965ad34cd0ad396099e66458a9c045383ae8ce3775
Status: Downloaded newer image for blackberryininja/weather-monitor:final
docker.io/blackberryininja/weather-monitor:final

What's Next?
View a summary of image vulnerabilities and recommendations → docker scout quickview blackberryininja/weather-monitor:final
+ HW2 git:(main) x docker images
REPOSITORY          TAG          IMAGE ID       CREATED        SIZE
hw2-weather          latest       f5a31baed7e8   44 minutes ago 138MB
blackberryininja/weather-monitor final         f5a31baed7e8   44 minutes ago 138MB
blackberryininja/weather-monitor latest       3e4e03f08be4   25 hours ago  131MB
go-2-web             latest       370ad8b688de   3 days ago    1.29GB
redis                latest       e579380d4317   11 days ago   138MB
postgres             alpine       5ff2106f0e69   3 weeks ago   239MB

```



- برای ساختن شبکه بین کانتینر ها یا باید از دستور های `docker network create my_network` و `docker run --name container1 --network my_network my_image1` استفاده و یا اگر در داخل داکر کامپوز انجام میدهیم با استفاده از خط های ۳۱ تا ۳۵, 28, 29, 15, 16 این کار را انجام میدهیم.

```

1  version: '3.8'
2  services:
3    weather:
4      build: .
5      container_name: weather_cont
6      ports:
7        - "8080:80" # Map port 80 of the custom service to port 8080 on the host
8      env_file:
9        - .env
10     volumes:
11       - ./usr/src
12     stdin_open: true
13     tty: true
14     command: ["/bin/bash"]
15     networks:
16       - my_network
17     depends_on:
18       - db
19     links:
20       - "db:red"
21   db:
22     image: redis
23     container_name: redis_cont
24     ports:
25       - "6379:6379" # Map Redis port to the host
26     volumes:
27       - redis-db:/var/lib/redis/data
28     networks:
29       - my_network
30
31 volumes:
32   redis-db:
33 networks:
34   my_network:
35     driver: bridge

```

- برای persist کردن اطلاعات پایگاه داده هم از خطوط 31 32 برای تعریف مخزن و از 26 27 استفاده از آن استفاده میکنیم.
- تصویر زیر دریافت image redis و اجرای آن را نشان میدهد که البته در خطوط ۲۲ تا ۲۹ هم تنظیمات آن دیده میشوند.

```

aes@aes-ZenBook-UX325EA-UX325EA:~/Documents/cloud/CloudCourseProjects/HW2
➔ HW2 git:(main) x docker pull redis
Using default tag: latest
latest: Pulling from library/redis
578acb154839: Pull complete
536258f1438d: Pull complete
b2c17634dc83: Pull complete
0a9ed92f5eca: Pull complete
8e9838754832: Pull complete
4f4fb700ef54: Pull complete
8e7abba29a95: Pull complete
Digest: sha256:d2f4d823a498f366c540b81e6b69bce397062f980f2e42340402225af0d9b5ab
Status: Downloaded newer image for redis:latest
docker.io/library/redis:latest

What's Next?
View a summary of image vulnerabilities and recommendations → docker scout quickview redis
➔ HW2 git:(main) x docker run --name some-redis -d redis
32a041fa1d435ecf91dd27aaf4c2f78e7c7664d40ecf6df4d973cb8aee8fc6f4
➔ HW2 git:(main) x

```

- منابع redis:

```

},
"CapAdd": null,
"CapDrop": null,
"CgroupsMode": "private",
"Dns": null,
"DnsOptions": null,
"DnsSearch": null,
"ExtraHosts": [],
"GroupAdd": null,
"IpcMode": "private",
"Cgroup": "",
"Links": null,
"OomScoreAdj": 0,
"PidMode": "",
"Privileged": false,
"PublishAllPorts": false,
"ReadOnlyRootfs": false,
"SecurityOpt": null,
"UTSMode": "",
"UsernsMode": "",
"ShmSize": 67108864,
"Runtime": "runc",
"Isolation": "",
"CpuShares": 0,
"Memory": 0,
"NanoCpus": 0,
"CgroupParent": "",
"BlkioWeight": 0,
"BlkioWeightDevice": null,
"BlkioDeviceReadBps": null,
"BlkioDeviceWriteBps": null,
"BlkioDeviceReadIops": null,
"BlkioDeviceWriteIops": null,
"CpuPeriod": 0,
"CpuQuota": 0,
"CpuRealtimePeriod": 0,
"CpuRealtimeRuntime": 0,
"CpusetCpus": "",
"CpusetMems": "",
"Devices": null,
"DeviceGroupRules": null,
"DeviceRequests": null,
"MemoryReservation": 0,
"MemorySwap": 0,
"MemorySwappiness": null,
"OomKillDisable": null,
"PidsLimit": null,
"Ulimits": null,
"CpuCount": 0,
"CpuPercent": 0,
"IOMaximumIops": 0,
"IOMaximumBandwidth": 0,

```

- منابع `weather_image`:

```

"CapAdd": null,
"CapDrop": null,
"CgroupsMode": "private",
"Dns": null,
"DnsOptions": null,
"DnsSearch": null,
"ExtraHosts": [],
"GroupAdd": null,
"IpcMode": "private",
"Cgroup": "",
"Links": null,
"OomScoreAdj": 0,
"PidMode": "",
"Privileged": false,
"PublishAllPorts": false,
"ReadOnlyRootfs": false,
"SecurityOpt": null,
"UTSMode": "",
"UsernsMode": "",
"ShmSize": 67108864,
"Runtime": "runc",
"Isolation": "",
"CpuShares": 0,
"Memory": 0,
"NanoCpus": 0,
"CgroupParent": "",
"BlkioWeight": 0,
"BlkioWeightDevice": null,
"BlkioDeviceReadBps": null,
"BlkioDeviceWriteBps": null,
"BlkioDeviceReadIops": null,
"BlkioDeviceWriteIops": null,
"CpuPeriod": 0,
"CpuQuota": 0,
"CpuRealtimePeriod": 0,
"CpuRealtimeRuntime": 0,
"CpusetCpus": "",
"CpusetMems": "",
"Devices": null,
"DeviceGroupRules": null,
"DeviceRequests": null,
"MemoryReservation": 0,
"MemorySwap": 0,
"MemorySwappiness": null,
"OomKillDisable": null,
"PidsLimit": null,
"Ulimits": null,
"CpuCount": 0,
"CpuPercent": 0,
"IOMaximumIops": 0,
"IOMaximumBandwidth": 0,
"MaskedPaths": [

```

- ساختن کانٹینر ها و اجرای دستور `docker ps -a`

```

aes@aes-ZenBook-UX325EA-UX325EA:~/Documents/cloud/CloudCourseProjects/HW2
+ hw2 git:(main) # docker compose up -d --force-recreate
[+] Building 0.0s (0/0)
[+] Running 2/2
  ✓ Container redis cont Started 0.0s
  ✓ Container weather cont Started 0.0s
+ hw2 git:(main) # docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
ea3a25346c06   hw2-weather   "/bin/bash"             8 seconds ago Up 7 seconds  0.0.0.0:8080->80/tcp, :::8080->80/tcp weather_cont
bb2a26ea902da   redis         "docker-entrypoint.s..." 8 seconds ago Up 7 seconds  0.0.0.0:6379->6379/tcp, :::6379->6379/tcp redis_cont
00f03c779a6c   kicbase/stable:v0.0.40 "usr/local/bin/entr..." 25 hours ago  Exited (130) 24 hours ago minikube

```

- اجرای دستور `docker stats`

docker stats								
CONTAINER ID	NAME	CPU %	MEM USAGE / LIMIT	MEM %	NET I/O	BLOCK I/O	PIDS	
94cd8690e1d9	weather_cont	0.00%	9.289MiB / 15.32GiB	0.06%	14.6kB / 3.18kB	23.8MB / 0B	1	
e640079a503e	redis_cont	0.17%	6.113MiB / 15.32GiB	0.04%	8.07kB / 596B	14.9MB / 0B	5	

- اجرای curl و دریافت نتیجه یک بار در حالتی که cache موجو هست و یکبار هم حالتی که موجود نیست.

```

root@94cd8690e1d9: /usr/src
+ HW2 git:(main) x docker attach weather_cont
root@94cd8690e1d9:/usr/src# ls
CC_HW2.pdf Dockerfile docker-compose.yml docker-compose2.yml fw.sh src template-dockerfile
root@94cd8690e1d9:/usr/src# fw
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total   Spent    Left   Speed
100 277    0 277    0 0    298    0 --:--:-- --:--:-- --:--:-- 298
OK
Data fetched and cached: Tehran:{"messages":"Sorry, we are unable to provide RapidAPI services to your location. RapidAPI is required to
comply with US laws that restrict the use of our services in embargoed countries. If you believe you receiving this message in error, p
lease contact support@rapidapi.com."} c
root@94cd8690e1d9:/usr/src# docker stats
bash: docker: command not found
root@94cd8690e1d9:/usr/src# fw
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total   Spent    Left   Speed
100 671    0 671    0 0    307    0 --:--:-- 0:00:02 --:--:-- 307
OK
Data fetched and cached: Tehran:{"location":{"name":"Tehran","region":"Tehran","country":"Iran","lat":35.73,"lon":51.33,"tz_id":"Asia/Te
hran","localtime_epoch":1699088929,"localtime":"2023-11-04 12:38"},"current":{"last_updated_epoch":1699088400,"last_updated":"2023-11-04
12:30","temp_c":15.4,"temp_f":59.8,"is_day":1,"condition":{"text":"Patchy rain possible","icon":"","cdn.weatherapi.com/weather/64x64/day
/176.png","code":1063},"wind_mph":6.3,"wind_kph":10.1,"wind_degree":264,"wind_dir":"W","pressure_mb":1015.0,"pressure_in":29.99,"precip_
mm":0.11,"precip_in":0.0,"humidity":55,"cloud":81,"feelslike_c":15.4,"feelslike_f":59.8,"vis_km":10.0,"vis_miles":6.0,"uv":4.0,"gust_mph
":7.3,"gust_kph":11.7}} c
root@94cd8690e1d9:/usr/src# fw
Data found in cache: Tehran:15.4 c
root@94cd8690e1d9:/usr/src#

```

- تصویر dockerfile

```

Welcome Dockerfile X
Dockerfile > ...
1 # install ubuntu alpine
2 FROM ubuntu
3 WORKDIR /usr/src
4 # install curl package
5 RUN apt-get update && \
6     apt-get install -y curl redis jq; \
7     echo "alias fw='/usr/src/fw.sh'" >> ~/.bashrc; \
8     apt-get install redis;
9 # Set an alias for your script
10 # RUN echo "alias fw='/usr/src/fw.sh'" >> ~/.bashrc
11 # Copy your script into the container
12 COPY . .

```

- و فایل env. که مقادیر environment variable ها را نگهداری میکند

```

.env
1 PORT=8080
2 TTL=300
3 CITY=Tehran
4 API_KEY=19819fe2d2msh28c98148a7434efp17e7f8jsn489e8a38744a
5

```