تمرین دوم

مائده میرزازاده - ۹۷۲۶۰۸۰

گام اول

```
# base image --> ubunto
FROM ubuntu:latest
# installs curl and bash and updates the package installer
RUN apt-get update && apt-get install -y curl
# y for yes/no when installing in ubuntu
CMD [ "/bin/bash" ]
```

پس از ایجاد داکر فایل بالا ابتدا ایمیج مورد نظر را با دستور زیر build میکنیم:

```
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 % docker build -t my-curl .
[+] Building 27.5s (6/6) FINISHED
 => [internal] load build definition from Dockerfile                                                    0.0s
 => => transferring dockerfile: 259B                                                                    0.0s
 => [internal] load .dockerignore                                                                       0.0s
 => => transferring context: 2B                                                                         0.0s
 => [internal] load metadata for docker.io/library/ubuntu:latest                                        1.0s
 => CACHED [1/2] FROM docker.io/library/ubuntu:latest@sha256:27cb6e6ccef575a4698b66f5de06c7ecd61589132d5a91d098f7  0.0s
 => [2/2] RUN apt-get update && apt-get install -y curl                                                26.3s
 => exporting to image                                                                                  0.1s
 => => exporting layers                                                                                 0.1s
 => => writing image sha256:072bb91d2b7ee0467564bc3b5e4ca8793957fdc23c4d1a9b3d501c1bd21796a2            0.0s
 => => naming to docker.io/library/my-curl                                                              0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
```

و با دستور زیر آنرا روی داکرهاب قرار میدهیم:

```
sql
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 % docker image push maedemir/my-curl
Using default tag: latest
The push refers to repository [docker.io/maedemir/my-curl]
07a120f43900: Pushed
80ac6c107b7b: Mounted from library/ubuntu
latest: digest: sha256:5c86bda1bdca0ab3c2962717b67f3aa463bf5cd1d8cf873694cc1c4a30d70bc6 size: 741
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 %
```

لیست ایمیج های سیستم

```
exit
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 % docker image ls
REPOSITORY                          TAG           IMAGE ID       CREATED          SIZE
maedemir/my-curl                    latest        072bb91d2b7e   19 minutes ago   113MB
gcr.io/k8s-minikube/kicbase         v0.0.32       ef41443dce8e   6 months ago     1.06GB
mcr.microsoft.com/mssql/server      2019-latest   d78e982c2f2b   11 months ago    1.48GB
mcr.microsoft.com/azure-sql-edge    latest        5dba915af82f   11 months ago    1.83GB
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 %
⚠ 0
```

دانلود ایمیج از داکرهاب:

```
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 % docker pull maedemir/my-curl
Using default tag: latest
latest: Pulling from maedemir/my-curl
Digest: sha256:5c86bda1bdca0ab3c2962717b67f3aa463bf5cd1d8cf873694cc1c4a30d70bc6
Status: Image is up to date for maedemir/my-curl:latest
docker.io/maedemir/my-curl:latest
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 %
```

که چون در سیستم موجود است نشان میدهد که up to date است

حال با دستور زیر یک کانتینر از image مورد نظر میسازیم

```
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 % docker run -it maedemir/my-curl
root@9e0f7ce16c66:/#
0
```

حال با ایجاد یک ترمینال جدید لیست کانتینرهای مورد نظر را میبینیم

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   JUPYTER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 % docker ps
CONTAINER ID   IMAGE                                  COMMAND                  CREATED          STATUS          PORTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
NAMES
9e0f7ce16c66   maedemir/my-curl                     "/bin/bash"              53 seconds ago   Up 52 seconds
objective_dhawan
53775123cff1   gcr.io/k8s-minikube/kicbase:v0.0.32   "/usr/local/bin/entr…"   30 minutes ago   Up 30 minutes   0.0.0.0:57773->22/tcp, 0.0.0.0:57774->2376/tcp, 0.0.0.0:57776->5000/tcp, 0.
0.0.0:57777->8443/tcp, 0.0.0.0:57775->32443/tcp   minikube
maedehmirzazadeh@Maedehs-MacBook-Pro hw2 %
```

و با زدن curl در shell گرفته شده از کانتینر اطلاعات صفحه اول گوگل را داریم:

```
root@9e0f7ce16c66:/# curl https://www.google.com
<!doctype html><html itemscope="" itemtype="http://schema.org/WebPage" lang="en-GB"><head><meta content="text/html; charset=UTF-8" http-equiv="Content-Type"><meta content="/logos/doodles
/2022/seasonal-holidays-2022-6753651837109831.4-law.gif" itemprop="image"><meta content="Seasonal Holidays 2022" property="twitter:title"><meta content="" property="twitter:description">
<meta content="summary_large_image" property="twitter:card"><meta content="@GoogleDoodles" property="twitter:site"><meta content="https://www.google.com/logos/doodles/2022/seasonal-holid
ays-2022-6753651837109831.2-2xa.gif" property="twitter:image"><meta content="https://www.google.com/logos/doodles/2022/seasonal-holidays-2022-6753651837109831.2-2xa.gif" property="og:ima
ge"><meta content="1150" property="og:image:width"><meta content="460" property="og:image:height"><meta content="https://www.google.com/logos/doodles/2022/seasonal-holidays-2022-67536518
37109831.2-2xa.gif" property="og:url"><meta content="video.other" property="og:type"><title>Google</title><script nonce="tjCySYa2yEc3-hvtOJc0vQ">(function(){window.google={kEI:'4BefY8rXL
YWIlwT25LuwDw',kEXPI:'0,1359409,6059,206,4804,2316,383,246,5,1129120,1197773,628,380090,16114,28684,22431,1361,12320,17579,4998,13228,3847,10622,22741,5081,887,708,1277,2742,149,1103,840
,6297,3514,606,2025,2295,14670,3228,2844,7,29074,4698,1848,2615,13142,3,346,230,1014,1,5445,148,11323,2652,4,1528,2304,7039,27731,7357,13658,21223,5818,2539,4094,4052,3,3541,1,42154,2,14
022,2715,23024,5679,1021,2380,28741,4569,6255,23421,1252,5835,14968,4332,5017,2467,5627,5780,15675,8155,7381,2,15968,873,19633,7,1922,5784,3995,21391,388,1129,8414,4832,23188,3315,20233,
3890,751,6618,8151,117,679,1622,1778,2208,1644,1125,1747,7241,5903,1742,813,1794,578,1447,45,1497,2,32,534,913,3,72,1506,588,351,488,97,427,1033,333,2261,1,407,867,12,287,482,1411,20,3,2
61,606,2261,283,196,846,403,244,953,843,1376,947,857,1030,2408,226,17,62,3,539,598,552,485,432,167,6,261,761,187,394,1087,164,1088,5,29,777,713,129,90,19,462,219,84,238,115,10,78,368,174
,2,1135,729,8,119,341,500,62,118,1380,2,2699,1200,104,35,582,1369,290,2,240,890,132,918,1199,295,81,140,804,168,1171,40,1731,45,136,35,41,2,355,197,983,434,358,185,348,2,536,1115,691,527
6192,83,49,86,211,8798849,3311,141,795,19735,1,1,346,3570,9,6,2,14,2,1,18,6,17,5,14,23946820,4042143,1964,16672,3103,303,5595,11,3834,6899,75,224,503511,976165',kBL:'Dl4b'};google.sn='we
bhp';google.kHL='en-GB';})();(function(){
var f=this||self;var h,k=[];function l(a){for(var b;a&&(!a.getAttribute||!(b=a.getAttribute("eid")));)a=a.parentNode;return b||h}function m(a){for(var b=null;a&&(!a.getAttribute||!(b=a.g
etAttribute("leid")));)a=a.parentNode;return b}
function n(a,b,c,d,g){var e="";c||-1!==b.search("&ei=")||(e="&ei="+l(d),-1===b.search("&lei=")&&(d=m(d))&&(e+="&lei="+d));d="";!c&&f._cshid&&-1===b.search("&cshid=")&&"slh"!==a&&(d="&csh
id="+f._cshid);c=c||"/"+(g||"gen_204")+"?atyp=i&ct="+a+"&cad="+b+e+"&zx="+Date.now()+d;/^http:/i.test(c)&&"https:"===window.location.protocol&&(google.ml&&google.ml(Error("a"),!1,{src:c,
glmm:1}),c="");return c};h=google.kEI;google.getEI=l;google.getLEI=m;google.ml=function(){return null};google.log=function(a,b,c,d,g){if(c=n(a,b,c,d,g)){a=new Image;var e=k.length;k[e]=a
;a.onerror=a.onload=a.onabort=function(){delete k[e]};a.src=c}};google.logUrl=n;}).call(this);(function(){google.y={};google.sy=[];google.x=function(a,b){if(a)var c=a.id;else{do c=Math.r
andom();while(google.y[c])}google.y[c]=[a,b];return!1};google.sx=function(a){google.sy.push(a)};google.lm=[];google.plm=function(a){google.lm.push.apply(google.lm,a)};google.lq=[];google
.load=function(a,b,c){google.lq.push([[a],b,c])};google.loadAll=function(a,b){google.lq.push([a,b])};google.bx=!1;google.lx=function(){};}).call(this);google.f={};(function(){
document.documentElement.addEventListener("submit",function(b){var a;if(a=b.target){var c=a.getAttribute("data-submitfalse");a="1"===c||"q"===c&&!a.elements.q.value?!0:!1}else a=!1;a&&(b
.preventDefault(),b.stopPropagation())},!0);document.documentElement.addEventListener("click",function(b){var a;a:{for(a=b.target;a&&a!==document.documentElement;a=a.parentElement)if("A"
===a.tagName){a="1"===a.getAttribute("data-nohref");break a}a=!1}a&&b.preventDefault()},!0);}).call(this);</script><style>#gbar,#guser{font-size:13px;padding-top:1px !important;}#gbar{he
ight:22px}#guser{padding-bottom:7px !important;text-align:right}.gbh,.gbd{border-top:1px solid #c9d7f1;font-size:1px}.gbh{height:0;position:absolute;top:24px;width:100%}@media all{.gb1{h
eight:22px;margin-right:.5em;vertical-align:top}#gbar{float:left}}a.gb1,a.gb4{text-decoration:underline !important}a.gb1,a.gb4{color:#00c !important}.gbi .gb4{color:#dd8e27 !important}.g
bf .gb4{color:#900 !important}
</style><style>body,td,a,p,.h{font-family:arial,sans-serif}body{margin:0;overflow-y:scroll}#gog{padding:3px 8px 0}td{line-height:.8em}.gac_m td{line-height:17px}form{margin-bottom:20px}.
h{color:#1558d6}em{font-weight:bold;font-style:normal}.lst{height:25px;width:496px}.gsfi,.lst{font:18px arial,sans-serif}.gsfs{font:17px arial,sans-serif}.ds{display:inline-box;display:i
nline-block;margin:3px 0 4px;margin-left:4px}input{font-family:inherit}body{background:#fff;color:#000}a{color:#4b11a8;text-decoration:none}a:hover,a:active{text-decoration:underline}.fl
```

گام دوم

1- ابتدا ایمیج redis را دانلود و از آن یک کانتینر میسازیم. چون برای اولین بار این ایمیج در لوکال نیست با زدن دستور زیر هم ایمیج آن دانلود می شود و هم کانتینری با نام myredis از آن ساخته میشود.

```
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 % docker run --name myredis redis
Unable to find image 'redis:latest' locally
latest: Pulling from library/redis
6064e7e5b6af: Pull complete
f6bd55a0e6ff: Pull complete
7525aa3c12b6: Pull complete
e64bc40eb9ab: Pull complete
2d63145a0c4b: Pull complete
ca0411fb9ec8: Pull complete
Digest: sha256:fdaa0102e0c66802845aa5c961cb89a091a18805681180238366 0cd9e10889da
Status: Downloaded newer image for redis:latest
1:C 20 Dec 2022 15:13:36.362 # oO0OoO0OoO0Oo Redis is starting oO0OoO0OoO0Oo
1:C 20 Dec 2022 15:13:36.362 # Redis version=7.0.7, bits=64, commit=00000000, modified=0, pid=1, just started
1:C 20 Dec 2022 15:13:36.362 # Warning: no config file specified, using the default config. In order to specify a config file use redis-server /path/to/redi
s.conf
1:M 20 Dec 2022 15:13:36.363 * monotonic clock: POSIX clock_gettime
1:M 20 Dec 2022 15:13:36.363 * Running mode=standalone, port=6379.
1:M 20 Dec 2022 15:13:36.363 # Server initialized
1:M 20 Dec 2022 15:13:36.365 * Ready to accept connections
```

حال در محیط کانتینر ردیس قرار داریم

2- در این مرحله شبکه لازم برای برقراری ارتباط بین کانتینرها را میسازیم:

```
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 % docker network create mynetwork
d5329c0b18d92923d9c2607c7d6bb3e2623ed8b2ca09e913741b89909d7f1602
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 % docker network ls
NETWORK ID     NAME                 DRIVER    SCOPE
8c2122366806   bridge               bridge    local
b27f5d67f6aa   host                 host      local
0f3406d628c6   hw2-phase2_default   bridge    local
b143d4d7eaf3   minikube             bridge    local
d5329c0b18d9   mynetwork            bridge    local
1c14847c99dd   none                 null      local
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 %
```

3- حال volume برای persist کردن اطلاعات کش ردیس را میسازیم

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL JUPYTER: VARIABLES

```
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 % docker volume create myvolume
myvolume
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 % docker volume ls
DRIVER    VOLUME NAME
local     0b6cfdab261207272470c9633624f45ba8118bb079431abc4c50936898e6815c
local     7b45bdb6a2d16c4f11569bccc45d62ef9a854bdbffdad8be7fadfb0120ea5113
local     68d837f32ae3da7da84925182785d8381aa791c21fd2ab305dcf845f62f18085
local     89e769662728a9102c3bdb8e35a97aeace17865b38221e4922917c5d53b08e54
local     48504332eccc06a33218180ebd2900f28bd55bc9c34d1f8ff59fe91d8b163570
local     a0b75af112ceab7dd36d2bcbb3552020e076bf35152fe141ad2957659200da43
local     c74d5f5bc17ac8a8d6962ae049940b74be754a3b5489f9719ae10dbe74859b82
local     d681106ccf7c4d4510a804bbe57cd085508af6457b74c5e765fd1dc2c1d705a4
local     minikube
local     myvolume
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 %
```

4- برای ساختن ایمیج‌ها و ران‌کردن کانتینرها از دستور docker-compose up استفاده میکنیم.فایل مربوط به کامپوز کردن به شکل زیر است:

```yaml
docker-compose.yml
networks: # define a network
  mynetwork:
    driver: bridge
volumes: # define a volume
  myvolume:
    driver: local
services:
  redis:
    image: redislabs/redismod
    container_name: redis
    ports:
      - '6379:6379'  # port mapping
    volumes:
      - myvolume:/database
    networks:
      - mynetwork
  web:
    build: .
    container_name: web
    ports:
      - "5000:5000"
    depends_on:
      - redis
    networks:
      - mynetwork
```

و داکر فایل ما نیز به شکل زیر است:

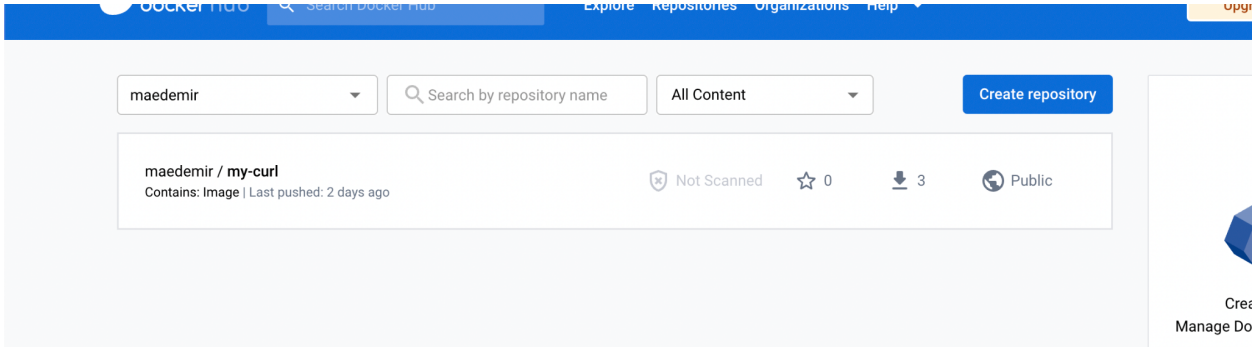
```python
FROM python:3.11.0a6-alpine3.15
WORKDIR .
COPY requirements.txt .
RUN pip install -r requirements.txt
COPY . .
CMD python Price-Server.py 5000
# 5000 is the port number
```

در قسمت اول نتورک و والیوم را تعریف کردیم. سپس سرویس‌های وب و ردیس را به طور مجزا تعریف نموده‌ایم و در هر کدام نتورک تعریف شده را قرار میدهیم. برای کش ردیس نیز والیوم مورد نظر را assign کرده‌ایم.

پس از اجرای دستور docker-compose up ایمیج‌ها دانلود شده و از آنها کانتینر ساخته میشود

```
redis  |
redis  | 1:M 20 Dec 2022 16:00:47.172 * <rg> Found python installation under: /var/opt/redislabs/modules/rg//python3_1.2.4/
redis  | 1:M 20 Dec 2022 16:00:47.746 * Module 'rg' loaded from /usr/lib/redis/modules/redisgears.so
redis  | 1:M 20 Dec 2022 16:00:47.757 * Ready to accept connections
web    |  * Serving Flask app 'Price-Server'
web    |  * Debug mode: off
web    | WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
web    |  * Running on all addresses (0.0.0.0)
web    |  * Running on http://127.0.0.1:5000
web    |  * Running on http://172.21.0.3:5000
web    | Press CTRL+C to quit
```

محتوای داکرهاب قبل از پوش کردن:

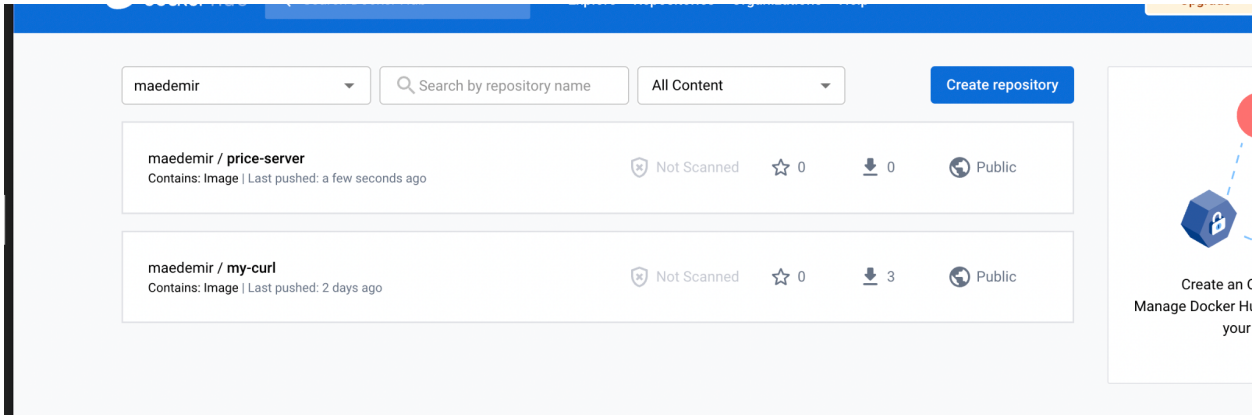


و بعد از دستور استفاده میکنیم تا ایمیج‌ها را روی داکرهاب قرار دهیم:

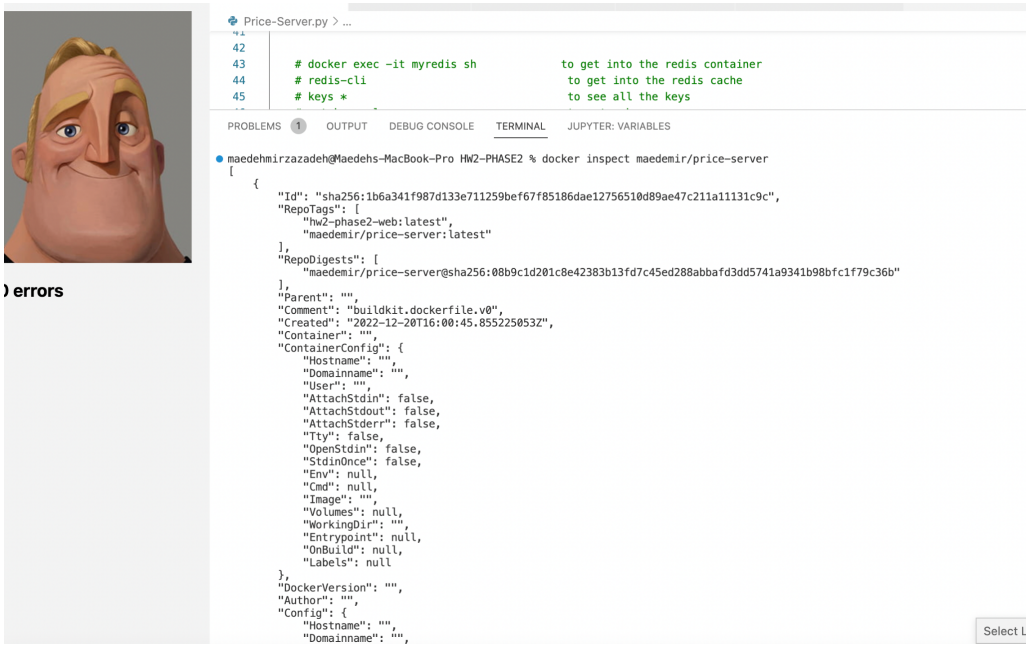
```
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 % docker images
REPOSITORY                          TAG           IMAGE ID       CREATED         SIZE
hw2-phase2-web                      latest        1b6a341f987d   4 minutes ago   71MB
maedemir/my-curl                    latest        072bb91d2b7e   2 days ago      113MB
redis                               latest        77eeab39abf0   3 days ago      111MB
redislabs/redismod                  latest        88923bcac4ad   5 months ago    1.68GB
gcr.io/k8s-minikube/kicbase         v0.0.32       ef41443dce8e   6 months ago    1.06GB
mcr.microsoft.com/mssql/server      2019-latest   d78e982c2f2b   11 months ago   1.48GB
mcr.microsoft.com/azure-sql-edge    latest        5dba915af82f   11 months ago   1.83GB
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 % docker tag hw2-phase2-web maedemir/price-server
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 % docker images
REPOSITORY                          TAG           IMAGE ID       CREATED         SIZE
hw2-phase2-web                      latest        1b6a341f987d   4 minutes ago   71MB
maedemir/price-server               latest        1b6a341f987d   4 minutes ago   71MB
maedemir/my-curl                    latest        072bb91d2b7e   2 days ago      113MB
redis                               latest        77eeab39abf0   3 days ago      111MB
redislabs/redismod                  latest        88923bcac4ad   5 months ago    1.68GB
gcr.io/k8s-minikube/kicbase         v0.0.32       ef41443dce8e   6 months ago    1.06GB
mcr.microsoft.com/mssql/server      2019-latest   d78e982c2f2b   11 months ago   1.48GB
mcr.microsoft.com/azure-sql-edge    latest        5dba915af82f   11 months ago   1.83GB
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 %
```

مشاهده میشود ایمیج ما با نام جدید در لیست ایمیج‌ها قرار گرفت. حال باید آنرا روی داکرهاب قرار دهیم:

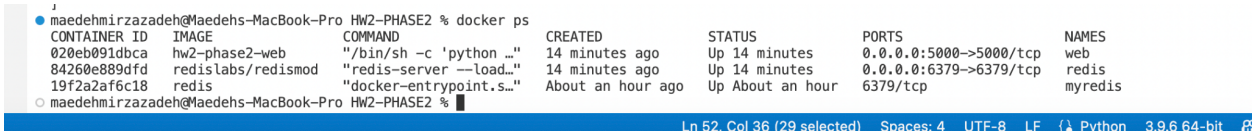
```
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 % docker push maedemir/price-server
Using default tag: latest
The push refers to repository [docker.io/maedemir/price-server]
4e136f448214: Pushed
45e78b69c986: Pushed
d07dd32095ae: Pushed
dde5e1423a9f: Mounted from library/python
50e7e093fcef: Mounted from library/python
4e1b79615f40: Mounted from library/python
3618203fbcc2: Mounted from library/python
4f4ce317c6bb: Mounted from library/python
latest: digest: sha256:08b9c1d201c8e42383b13fd7c45ed288abbafd3dd5741a9341b98bfc1f79c36b size: 1994
maedehmirzazadeh@Maedehs-MacBook-Pro HW2-PHASE2 %
```



5- با زدن دستور docker inspect <image name> میتوانیم اطلاعات ایمیج سرور خود را مشاهده کنیم:



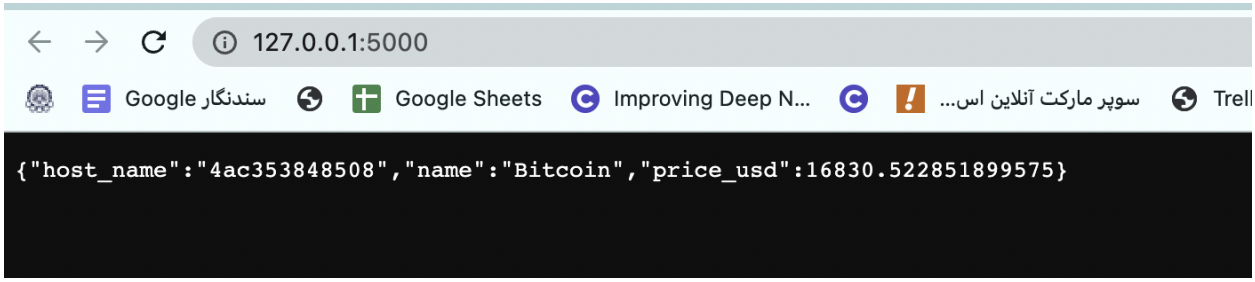
6- با دستور زیر لیست کانتینرهای سیستم را مشاهده میکنیم:



7- با استفاده از دستور stats می توانیم میزان استفاده کانتینرها از منابع سیستم را ببینیم:

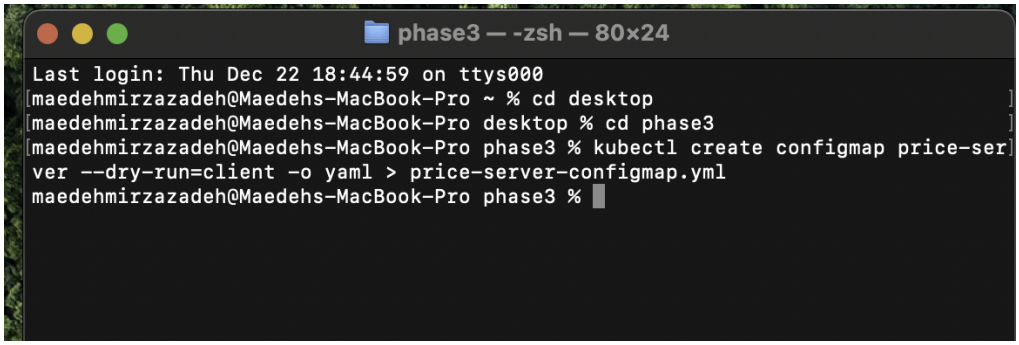
```
PROBLEMS 1   OUTPUT   DEBUG CONSOLE   TERMINAL   JUPYTER: VARIABLES

CONTAINER ID   NAME      CPU %    MEM USAGE / LIMIT    MEM %    NET I/O         BLOCK I/O    PIDS
020eb091dbca   web       0.01%    27.87MiB / 3.84GiB   0.71%    2.19kB / 886B   0B / 270kB   1
84260e889dfd   redis     1.28%    55.17MiB / 3.84GiB   1.40%    2.42kB / 745B   0B / 246kB   27
19f2a2af6c18   myredis   0.06%    2.582MiB / 3.84GiB   0.07%    1.67kB / 0B     0B / 0B      5
```

پس از اجرای سرور داریم:



گام سوم

ساختن فایل کانفیگ مپ



ساختن فایل deployment

```
zsh: maedemir/price-server not found
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl create deployment price-se
rver --image=maedemir/price-server --dry-run=client -o yaml > price-server-deplo
yment.yml
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

ساختن فایل سرویس

```
maedehmirzazadeh@Maedehs-MacBook-Pro ~ % cd desktop/phase3
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl create service clusterip price-server-service --tcp=5000:5000 --dry-run=client -o yaml > price-server-service.yml
```

دیپلوی کردن

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f price-server-configmap.yml
configmap/price-server-config created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f price-server-deploument.yml
error: the path "price-server-deploument.yml" does not exist
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f price-server-deployment.yml
deployment.apps/price-server created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f price-server-service.yml
service/price-server-service created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

ساختن فایلهای ردیس

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f price-server-configmap.yml
configmap/price-server-config created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f price-server-deploument.yml
error: the path "price-server-deploument.yml" does not exist
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f price-server-deployment.yml
deployment.apps/price-server created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f price-server-service.yml
service/price-server-service created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl create configmap redis --dry-run=client -o yaml > redis-configmap.yml
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl create deployment redis --image=redis --dry-run=client -o yaml > redis-deployment.yml
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl create service clusterip redis-service --tcp=6379:6379 --dry-run=client -o yaml > redis-service.yml
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f redis-configmap.yml
configmap/redis created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f redis-deployment.yml
deployment.apps/redis created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f redis-service.yml
service/redis-service created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f redis-pv.yml
persistentvolume/redis created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl apply -f redis-pvc.yml
persistentvolumeclaim/redis-pvc created
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

مشاهده config map ها

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl get configMap
NAME                  DATA   AGE
kube-root-ca.crt      1      4d5h
price-server-config   5      58m
redis                 0      77s
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

مشاهده deployment ها

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl get deployment
NAME            READY   UP-TO-DATE   AVAILABLE   AGE
price-server    2/2     2            2           9s
redis           1/1     1            1           12m
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

مشاهده سرویس‌ها

```
redis-889559cc4-qqhwf            1/1     Running   0          12m
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl get service
NAME                  TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)    AGE
kubernetes            ClusterIP   10.96.0.1       <none>        443/TCP    4d5h
price-server-service  ClusterIP   10.104.79.3     <none>        5000/TCP   70m
redis-service         ClusterIP   10.102.47.219   <none>        6379/TCP   13m
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

مشاهده endpoint ها

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl get ep
NAME                    ENDPOINTS                          AGE
kubernetes              192.168.49.2:8443                  4d7h
price-server-service    172.17.0.3:5000,172.17.0.4:5000    72s
redis-service           172.17.0.5:6379                    3s
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

مشاهده پاد ها

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl get pods
NAME                              READY   STATUS    RESTARTS   AGE
price-server-797fddbd79-6sxxv     1/1     Running   0          32s
price-server-797fddbd79-l95kk     1/1     Running   0          32s
redis-889559cc4-qqnwf             1/1     Running   0          12m
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

مشاهده pv

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl get pv
NAME    CAPACITY   ACCESS MODES   RECLAIM POLICY   STATUS   CLAIM                 STORAGECLASS   REASON   AGE
redis   100Mi      RWO            Retain           Bound    default/redis-pvc     manual                  14m
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

مشاهده pvc

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 % kubectl get pvc
NAME        STATUS   VOLUME   CAPACITY   ACCESS MODES   STORAGECLASS   AGE
redis-pvc   Bound    redis    100Mi      RWO            manual         14m
maedehmirzazadeh@Maedehs-MacBook-Pro phase3 %
```

گام چهارم

ابتدا فایل دیپلویمنت را برای my-curl میسازیم

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase4 % kubectl get pods
NAME                              READY   STATUS    RESTARTS   AGE
my-curl-5c8dbbf57b-vdfjk          1/1     Running   0          5s
price-server-797fddbd79-9jv85     1/1     Running   0          20m
price-server-797fddbd79-tmqh9     1/1     Running   0          20m
redis-889559cc4-pxlms             1/1     Running   0          20m
maedehmirzazadeh@Maedehs-MacBook-Pro phase4 %
```

گرفتن شل از pod مربوط

```
maedehmirzazadeh@Maedehs-MacBook-Pro phase4 % kubectl exec my-curl-5c8dbbf57b-vdfjk -it -- sh
# curl www.google.com
<!doctype html><html itemscope="" itemtype="http://schema.org/WebPage" lang="en"><head><meta content="Search the world's information, including webpages, images, videos and more. Google has many special f
eatures to help you find exactly what you're looking for." name="description"><meta content="noodp" name="robots"><meta content="text/html; charset=UTF-8" http-equiv="Content-Type"><meta content="/logos/d
oodles/2022/seasonal-holidays-2022-6753651837109831.4-law.gif" itemprop="image"><meta content="Seasonal Holidays 2022" property="twitter:title"><meta content="" property="twitter:description"><meta conten
t="summary_large_image" property="twitter:card"><meta content="@GoogleDoodles" property="twitter:site"><meta content="https://www.google.com/logos/doodles/2022/seasonal-holidays-2022-6753651837109831.2-2x
a.gif" property="twitter:image"><meta content="https://www.google.com/logos/doodles/2022/seasonal-holidays-2022-6753651837109831.2-2xa.gif" property="og:image"><meta content="1150" property="og:image:widt
h"><meta content="460" property="og:image:height"><meta content="https://www.google.com/logos/doodles/2022/seasonal-holidays-2022-6753651837109831.2-2xa.gif" property="og:url"><meta content="video.other"
property="og:type"><title>Google</title><script nonce="OcHw_W7Mi1vdobRUv3GIKQ">(function(){window.google={kEI:'E7-kY53yDJTN0PEP_uOD-AM',kEXPI:'0,1359409,6058,207,4804,2316,383,246,5,1129120,1197781,380710
,16114,28684,22431,1361,12315,4750,12834,4998,13228,3847,18622,22741,5081,1593,1279,2742,149,1103,840,1983,4314,3514,686,2023,2297,14670,3228,2844,7,29074,4696,1850,2615,3783,8927,432,3,346,1244,1,5444,14
9,11325,2650,4,1528,2304,7039,20309,1714,5708,7357,13658,2980,1457,15351,1435,5818,2539,4094,4052,3,3541,1,11942,30212,2,14022,2373,342,23024,5679,1020,2381,28741,4569,6255,23421,1252,5835,14968,4332,2204
,2812,2468,445,2,2,1,24626,2006,8155,7381,2,3,15964,873,9626,10008,7,1922,5784,3995,19130,1509,752,9931,4832,26504,90,837,5781,13428,14,82,3890,751,11873,3013,679,109,830,683,899,880,2207,1644,1125,3785,5
203,5903,1742,813,86,1428,2305,41,1501,2,563,916,75,969,422,704,351,89,398,97,426,1034,42,291,2260,409,723,925,403,1008,283,607,135,2126,289,135,55,1249,246,951,2219,947,1,311,229,4,6,306,563,1204,1467,34
,21,149,234,71,3,538,599,552,156,327,601,6,261,764,184,394,1087,1051,201,5,342,459,434,284,130,108,462,219,84,161,67,33,91,10,132,30,265,17,3,174,1,370,1,1025,71,3,405,118,337,3,501,61,1518,2682,602,505,9
3,101,38,164,297,12,105,1372,293,1,242,885,131,920,620,873,219,117,2,2027,1771,214,2,41,2,354,200,353,626,725,69,417,595,60,698,5277382,352,8798843,3311,141,795,19735,1,1,346,3571,8,2,6,9,6,3,14,3,28,30,2
3946805,552,4041590,1964,16672,2894,512,5595,11,132,3702,1924,4975,299',kBL:'Dl4b'};google.sn='webhp';google.kHL='en';})();(function(){
var f=this||self;var h,k=[];function l(a){for(var b;a&&(!a.getAttribute||!(b=a.getAttribute("eid")));)a=a.parentNode;return b||h}function m(a){for(var b=null;a&&(!a.getAttribute||!(b=a.getAttribute("leid"
)));)a=a.parentNode;return b}
function n(a,b,c,d,g){var e="";c||-1!==b.search("&ei=")||(e="&ei="+l(d),-1===b.search("&lei=")&&(d=m(d))&&(e+="&lei="+d));d="";!c&&f._cshid&&-1===b.search("&cshid=")&&"slh"!==a&&(d="&cshid="+f._cshid);c=c
||"/"+(g||"gen_204")+"?atyp=i&ct="+a+"&cad="+b+e+"&zx="+Date.now()+d;/^http:/i.test(c)&&"https:"===window.location.protocol&&(google.ml&&google.ml(Error("a"),!1,{src:c,glmm:1}),c="");return c};h=google.kE
I;google.getEI=l;google.getLEI=m;google.ml=function(){return null};google.log=function(a,b,c,d,g){if(c=n(a,b,c,d,g)){a=new Image;var e=k.length;k[e]=a;a.onerror=a.onload=a.onabort=function(){delete k[e]};
a.src=c}};google.logUrl=n;}).call(this);(function(){google.y={};google.sy=[];google.x=function(a,b){if(a)var c=a.id;else{do c=Math.random();while(google.y[c])}google.y[c]=[a,b];return!1};google.sx=functio
n(a){google.sy.push(a)};google.lm=[];google.plm=function(a){google.lm.push.apply(google.lm,a)};google.lq=[];google.load=function(a,b,c){google.lq.push([[a],b,c])};google.loadAll=function(a,b){google.lq.pu
sh([a,b])};google.bx=!1;google.lx=function(){};}).call(this);google.f={};(function(){
document.documentElement.addEventListener("submit",function(b){var a;if(a=b.target){var c=a.getAttribute("data-submitfalse");a="1"===c||"q"===c&&!a.elements.q.value?!0:!1}else a=!1;a&&(b.preventDefault(),
b.stopPropagation())},!0);document.documentElement.addEventListener("click",function(b){var a;a:{for(a=b.target;a&&a!==document.documentElement;a=a.parentElement)if("A"===a.tagName){a="1"===a.getAttribute
("data-nohref");break a}a=!1}a&&b.preventDefault()},!0);}).call(this);</script><style>#gbar,#guser{font-size:13px;padding-top:1px !important;}#gbar{height:22px}#guser{padding-bottom:7px !important;text-al
ign:right}.gbh,.gbd{border-top:1px solid #c9d7f1;font-size:1px}.gbh{height:0;position:absolute;top:24px;width:100%}@media all{.gb1{height:22px;margin-right:.5em;vertical-align:top}#gbar{float:left}}a.gb1,
a.gb4{text-decoration:underline !important}a.gb1,a.gb4{color:#00c !important}.gbi .gb4{color:#dd8e27 !important}.gbf .gb4{color:#900 !important}
</style><style>body,td,a,p,.h{font-family:arial,sans-serif}body{margin:0;overflow-y:scroll}#gog{padding:3px 8px 0}td{line-height:.8em}.gac_m td{line-height:17px}form{margin-bottom:20px}.h{color:#1558d6}em
{font-weight:bold;font-style:normal}.lst{height:25px;width:496px}.gsfi,.lst{font:18px arial,sans-serif}.gsfs{font:17px arial,sans-serif}.ds{display:inline-box;display:inline-block;margin:3px 0 4px;margin-
left:4px}input{font-family:inherit}body{background:#fff;color:#000}a{color:#4b11a8;text-decoration:none}a:hover,a:active{text-decoration:underline}.fl a{color:#1558d6}a:visited{color:#4b11a8}.sblc{padding
-top:5px}.sblc a{display:block;margin:2px 0;margin-left:13px;font-size:11px}.lsbb{background:#f8f9fa;border:solid 1px;border-color:#dadce0 #70757a #70757a #dadce0;height:30px}.lsbb{display:block}#WqQANb a
{display:inline-block;margin:0 12px}.lsb{background:url(/images/nav_logo229.png) 0 -261px repeat-x;border:none;color:#000;cursor:pointer;height:30px;margin:0;outline:0;font:15px arial,sans-serif;vertical-
align:top}.lsb:active{background:#dadce0}.lst:focus{outline:none}</style><script nonce="OcHw_W7Mi1vdobRUv3GIKQ">(function(){window.google.erd={jsr:1,bv:1702,de:true};
var h=this||self;var k,l=null!=(k=h.mei)?k:1,n,p=null!=(n=h.sdo)?n:!0,q=0,r,t=google.erd,v=t.jsr;google.ml=function(a,b,d,m,e){e=void 0===e?2:e;b&&(r=a&&a.message);if(google.dl)return google.dl(a,e,d),nul
l;if(0>v){window.console&&console.error(a,d);if(-2===v)throw a;b=!1}else b=!a||!a.message||"Error loading script"===a.message||q>=l&&!m?!1:!0;if(!b)return null;q++;d=d||{};b=encodeURIComponent;var c="/gen_
```

درخواست دادن به service

```
maedehmirzazadeh@Maedehs-MacBook-Pro ~ % kubectl get pods
NAME                              READY   STATUS    RESTARTS   AGE
my-curl-5c8dbbf57b-vdfjk          1/1     Running   0          42h
price-server-797fddbd79-bpjpz     1/1     Running   0          24s
price-server-797fddbd79-wt9b6     1/1     Running   0          24s
redis-889559cc4-m59h8             1/1     Running   0          21h
maedehmirzazadeh@Maedehs-MacBook-Pro ~ % kubectl exec my-curl-5c8dbbf57b-vdfjk -it -- sh
# curl price-server-service:5000
{"host_name":"price-server-797fddbd79-bpjpz","name":"btc","value":"16830.522851899575"}
# curl price-server-service:5000
{"host_name":"price-server-797fddbd79-bpjpz","name":"btc","value":"16830.522851899575"}
# curl price-server-service:5000
{"host_name":"price-server-797fddbd79-wt9b6","name":"btc","value":"16830.522851899575"}
# curl price-server-service:5000
{"host_name":"price-server-797fddbd79-bpjpz","name":"btc","value":"16830.522851899575"}
# curl price-server-service:5000
```

هاست نیم نشان میدهد با دادن ریکوئستهای متعدد توزیع بار بین دو پاد مختلف است