

# Experiment 13

## Docker Basic Commands

Roll no: R171218009

'docker images' command is used to list docker images present in system

```
$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
ubuntu               latest              f975c5035748       2 years ago        112MB
alpine               latest              3fd9065eaf02       2 years ago        4.14MB
$
```

'docker search' command is used to search specified docker images (from public repository of docker)

```
$ docker search redis
NAME                DESCRIPTION                               STARS               OFFICIAL
  AUTOMATED
redis               Redis is an open source key-value store that...  8789                [OK]
bitnami/redis       Bitnami Redis Docker Image                 167
[OK]
sameersbn/redis     82
[OK]
grokzen/redis-cluster Redis cluster 3.0, 3.2, 4.0, 5.0, 6.0       72
rediscommander/redis-commander Alpine image for redis-commander - Redis man...  47
[OK]
kubeguide/redis-master redis-master with "Hello World!"           33
redislabs/redisearch Redis With the RedisSearch module pre-loaded...  29
redislabs/redis     Clustered in-memory database engine compatib...  27
oliver006/redis_exporter Prometheus Exporter for Redis Metrics. Supp...  22
```

'docker pull' command is used to pull a docker image from public repository of docker

```
$ docker pull redis
Using default tag: latest
latest: Pulling from library/redis
852e50cd189d: Pull complete
76190fa64fb8: Pull complete
9cbb1b61e01b: Pull complete
d048021f2aae: Pull complete
6f4b2af24926: Pull complete
1cf1d6922fba: Pull complete
Digest: sha256:5b98e32b58cdbf9f6b6f77072c4915d5ebec43912114031f37fa5fa25b032489
Status: Downloaded newer image for redis:latest
```

‘docker ps’ command lists all running containers and ‘docker ps -a’ command lists all the containers (both running and stopped)

```
$ docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED         STATUS         PORTS
NAMES
$
$ docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED         STATUS         PORTS
NAMES
```

Running docker container in detached mode i.e., the container will run in background:

```
$ docker run -d redis
384129443e1a34a0d756f2b2dd0d537141869affee34fc18402b8fdc028b3211
$
```

Run ‘docker ps’ command to confirm that the container is in running state:

```
$ docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED         STATUS         PORTS
NAMES
384129443e1a   redis      "docker-entrypoint.s..." 13 seconds ago  Up 12 seconds  6379/tcp
eloquent_noyce
$
```

A random name gets assigned to docker container. We can specify name of our container using the command shown in below figure:

```
$ docker run -d --name img1 redis
d3205f115ea668e94523ce21d4dfcd109660e2acb33a7ac7108884bfe02346d6
```

It can be observed that this time ‘img1’ name is assigned to the container:

```
$ docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED         STATUS         PORTS
NAMES
d3205f115ea6   redis      "docker-entrypoint.s..." 8 seconds ago   Up 7 seconds   6379/tcp
img1
384129443e1a   redis      "docker-entrypoint.s..." 5 minutes ago   Up 5 minutes   6379/tcp
eloquent_noyce
```

‘docker stop’ command is used to stop a running container

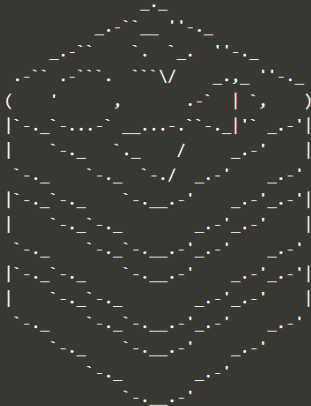
```
$ docker stop d3205f115ea6
d3205f115ea6
```

```
$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS
384129443e1a      redis              "docker-entrypoint.s..." 7 minutes ago      Up 7 minutes       6379/tcp
eloquent_noyce
```

```
$ docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
d3205f115ea6	redis	"docker-entrypoint.s..."	2 minutes ago	Exited (0) 8 seconds ago	
	img1				
384129443e1a	redis	"docker-entrypoint.s..."	7 minutes ago	Up 7 minutes	6379/tcp
p_	eloquent_noyce				

```
$ docker run -it --name redis_2 redis
1:C 21 Nov 2020 17:32:39.942 # oOoOoOoOoOoOo Redis is starting oOoOoOoOoOoOo
1:C 21 Nov 2020 17:32:39.949 # Redis version=6.0.9, bits=64, commit=00000000, modified=0, pid=1, just started
1:C 21 Nov 2020 17:32:39.949 # Warning: no config file specified, using the default config. In order to specify a confi
g file use redis-server /path/to/redis.conf
```



```
Redis 6.0.9 (00000000/0) 64 bit

Running in standalone mode
Port: 6379
PID: 1

http://redis.io
```

```
1:M 21 Nov 2020 17:32:39.950 # WARNING: The TCP backlog setting of 511 cannot be enforced because /proc/sys/net/core/so
maxconn is set to the lower value of 128.
1:M 21 Nov 2020 17:32:39.950 # Server initialized
1:M 21 Nov 2020 17:32:39.950 # WARNING overcommit_memory is set to 0! Background save may fail under low memory conditi
on. To fix this issue add 'vm.overcommit_memory = 1' to /etc/sysctl.conf and then reboot or run the command 'sysctl vm.
overcommit_memory=1' for this to take effect.
1:M 21 Nov 2020 17:32:39.950 # WARNING you have Transparent Huge Pages (THP) support enabled in your kernel. This will
create latency and memory usage issues with Redis. To fix this issue run the command 'echo madvise > /sys/kernel/mm/tra
nsparent_hugepage/enabled' as root, and add it to your /etc/rc.local in order to retain the setting after a reboot. Red
is must be restarted after THP is disabled (set to 'madvise' or 'never').
1:M 21 Nov 2020 17:32:39.951 * Ready to accept connections
```

Use -p option with 'docker run' to expose container port to outside of host (exposing container's port 6379 on the host's port 6379)

Command syntax: 'docker run -p host\_port:container\_port docker\_image'

```
$ docker run -d --name redisHostPort -p 6379:6379 redis:latest
1e71b08d50bf360bcf647941b4c0af6c9c445d7538c604ab97b1ac811ece73e1
```

```
$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
1e71b08d50bf	redis:latest	"docker-entrypoint.s..."	4 minutes ago	Up 4 minutes	0.0.0.0:6379->6379/tcp

'docker inspect' command is used to get detailed information of a container (in JSON form)

```
$ docker inspect redisHostPort
[
  {
    "Id": "1e71b08d50bf360bcf647941b4c0af6c9c445d7538c604ab97b1ac811ece73e1",
    "Created": "2020-11-21T17:40:40.515481866Z",
    "Path": "docker-entrypoint.sh",
    "Args": [
      "redis-server"
    ],
    "State": {
      "Status": "running",
      "Running": true,
      "Paused": false,
      "Restarting": false,
      "OOMKilled": false,
      "Dead": false,
      "Pid": 3257,
      "ExitCode": 0,
      "Error": "",
      "StartedAt": "2020-11-21T17:40:40.988316885Z",
      "FinishedAt": "0001-01-01T00:00:00Z"
    },
    "Image": "sha256:4e8db158f18dc71307f95260e532df39a9b604b51d4e697468e82845c50cfe28",
```

In NetworkSettings section of output, we can see the port binding information, (by default docker exposes container port to all IP addresses (0.0.0.0), we can modify it)

```
"NetworkSettings": {
  "Bridge": "",
  "SandboxID": "82c038003d72f951ad29aae3108b6f31a98b259b5126aa9c2fa5fb7173d1f6de",
  "HairpinMode": false,
  "LinkLocalIPv6Address": "",
  "LinkLocalIPv6PrefixLen": 0,
  "Ports": {
    "6379/tcp": [
      {
        "HostIp": "0.0.0.0",
        "HostPort": "6379"
      }
    ]
  }
},
```

Running new ubuntu container with name “ubuntu\_1” in background:

```
$ docker run --name ubuntu_1 -dit ubuntu
3ade497b471656fad6d270632965f2b3c33996e18438dc14796f9ce2a9be808f
```

```
$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
3ade497b4716	ubuntu	"/bin/bash"	6 seconds ago	Up 5 seconds	
1e71b08d50bf	redis:latest	"docker-entrypoint.s..."	12 minutes ago	Up 12 minutes	0.0.0.0:6379->

```
6379/tcp  redisHostPort
$
```

‘docker attach’ command is used to attach to the container’s terminal

```
$ docker attach ubuntu_1
root@3ade497b4716:/# ls
bin boot dev etc home lib lib64 media mnt opt proc root run sbin srv sys tmp usr var
root@3ade497b4716:/# exit
exit
$
```

We can use ‘docker stop’ command to and stop a running container

```
$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
1e71b08d50bf	redis:latest	"docker-entrypoint.s..."	19 minutes ago	Up 19 minutes	0.0.0.0:6379->

```
6379/tcp  redisHostPort
$
```

```
$ docker stop redisHostPort
redisHostPort
```

```
$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
--------------	-------	---------	---------	--------	-------

```
NAMES
```

Similarly, ‘docker start’ command to start a stopped container

```
$ docker start redisHostPort
redisHostPort
$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
1e71b08d50bf	redis:latest	"docker-entrypoint.s..."	19 minutes ago	Up 4 seconds	0.0.0.0:6379->

```
6379/tcp  redisHostPort
$
```