1- Install docker

2- List all running containers

```
bayaderalomari@Bayaders-MacBook-Pro ~ % docker container rename kind_khayyam bayader
bayaderalomari@Bayaders-MacBook-Pro ~ % docker ps
CONTAINER ID   IMAGE         COMMAND                 CREATED          STATUS          PORTS     NAMES
148762e8f29a   nginx         "/docker-entrypoint.…"  3 minutes ago    Up 3 minutes    80/tcp    bayader
d61345639674   2edf9c994f19  "/kube-vpnkit-forwar…"  13 minutes ago   Up 13 minutes             k8s_vpnkit-controller_vpnkit-control
```

3- List all containers in your system

```
bayaderalomari@Bayaders-MacBook-Pro ~ % docker ps -a
CONTAINER ID   IMAGE         COMMAND                 CREATED          STATUS                    PORTS     NAMES
1ad1812c2d92   nginx         "/docker-entrypoint.…"  15 seconds ago   Exited (0) 10 seconds ago           youthful_shockley
6190d6ac691b   ubuntu        "bash"                  2 minutes ago    Exited (0) 30 seconds ago           dazzling_rosalind
92f61f0f3a0d   ubuntu        "bash"                  5 minutes ago    Exited (0) 2 minutes ago            wizardly_dubinsky
6939c076f761   ubuntu        "bash"                  7 minutes ago    Exited (0) 7 minutes ago            festive_diffie
656c8e54e8b1   ubuntu        "bash"                  7 minutes ago    Exited (0) 7 minutes ago            magical_tu
906f78bf893e   ubuntu        "bash"                  9 minutes ago    Exited (0) 9 minutes ago            angry_tharp
466ea44b33be   2edf9c994f19  "/kube-vpnkit-forwar…"  14 minutes ago   Up 14 minutes                       k8s_vpnkit-controller_vpnkit-controller_kube-system_b2f24c60-2f32-4385-bb33-62405bfad507_23
90f8f1e4fdda   nginx         "/docker-entrypoint.…"  15 minutes ago   Exited (0) 11 minutes ago           serene_lovelace
148762e8f29a   nginx         "/docker-entrypoint.…"  About an hour ago Exited (0) 18 minutes ago          bayader
c17475ca9cfe   nginx         "/docker-entrypoint.…"  About an hour ago Exited (0) About an hour ago       mystifying_mahavira
f1f1f80e3090   c027a58fa0bb  "/storage-provisione…"  About an hour ago Up About an hour                   k8s_storage-provisioner_storage-provisioner_kube-system_0ad87069-bf6b-4430-b076-27a65c2513e9_2
57de1acbb8bf   d665e23ad35c  "/usr/local/bin/kube…"  About an hour ago Up About an hour                   k8s_kube-proxy_kube-proxy-qnmc6_kube-system_8e1ed3ef-5894-4009-b4c3-9b8eaffd1599_1
5fe270060950   k8s.gcr.io/pause:3.5  "/pause"        About an hour ago Up About an hour
```

4- List all images in your system

```
      modest_yonath
bayaderalomari@Bayaders-MacBook-Pro ~ % docker images
REPOSITORY                              TAG                                          IMAGE ID       CREATED         SIZE
ubuntu                                  latest                                       a457a74c9aaa   13 days ago     65.6MB
nginx                                   latest                                       2e7e2ec411a6   2 weeks ago     134MB
docker/desktop-kubernetes               kubernetes-v1.22.5-cni-v0.8.5-critools-v1.17.0-debian  c99a50b755d7   6 weeks ago     287MB
k8s.gcr.io/kube-apiserver               v1.22.5                                      66ba38aa55f7   2 months ago    119MB
k8s.gcr.io/kube-controller-manager      v1.22.5                                      fc9438491212   2 months ago    113MB
k8s.gcr.io/kube-proxy                   v1.22.5                                      d665e23ad35c   2 months ago    97.4MB
k8s.gcr.io/kube-scheduler               v1.22.5                                      ecf6859f4d39   2 months ago    49.3MB
docker/getting-started                  latest                                       720f449e5af2   2 months ago    27.2MB
k8s.gcr.io/etcd                         3.5.0-0                                      2252d5eb703b   8 months ago    364MB
k8s.gcr.io/coredns/coredns              v1.8.4                                       6d3ffc2696ac   8 months ago    44.4MB
docker/desktop-vpnkit-controller        v2.0                                         2edf9c994f19   9 months ago    19.2MB
docker/desktop-storage-provisioner      v2.0                                         c027a58fa0bb   9 months ago    39.8MB
k8s.gcr.io/pause                        3.5                                          f7ff3c404263   11 months ago   484kB
bayaderalomari@Bayaders-MacBook-Pro ~ %
```

5- Pull nginx image and give it a name

```
bayaderalomari@Bayaders-MacBook-Pro ~ % docker container rename kind_khayyam bayader
bayaderalomari@Bayaders-MacBook-Pro ~ % docker ps
CONTAINER ID   IMAGE              COMMAND                 CREATED          STATUS          PORTS      NAMES
148762e8f29a   nginx              "/docker-entrypoint.…"  3 minutes ago    Up 3 minutes    80/tcp     bayader
d61345639674   2edf9c894f19       "/kube-vpnkit-forwar…"  13 minutes ago   Up 13 minutes              k8s_vpnkit-controller_vpnkit-control
```

6- Try to run nginx.
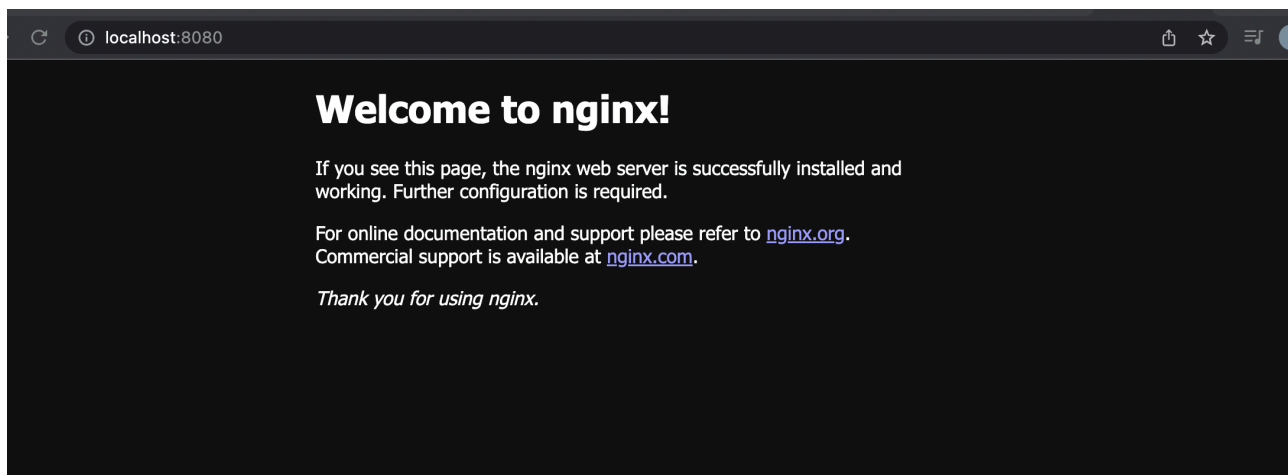
* Did it work? Yes

* Why? I port it to 8080

* How to make it work? By porting it to 8080

7- Watch container logs

```
bayaderalomari@Bayaders-MacBook-Pro ~ % docker logs 6d0a5cd82cb5
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2022/02/17 14:17:47 [notice] 1#1: using the "epoll" event method
2022/02/17 14:17:47 [notice] 1#1: nginx/1.21.6
2022/02/17 14:17:47 [notice] 1#1: built by gcc 10.2.1 20210110 (Debian 10.2.1-6)
2022/02/17 14:17:47 [notice] 1#1: OS: Linux 5.10.76-linuxkit
2022/02/17 14:17:47 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2022/02/17 14:17:47 [notice] 1#1: start worker processes
2022/02/17 14:17:47 [notice] 1#1: start worker process 32
2022/02/17 14:17:47 [notice] 1#1: start worker process 33
2022/02/17 14:17:47 [notice] 1#1: start worker process 34
2022/02/17 14:17:47 [notice] 1#1: start worker process 35
```

8- Try inspect container ip

```
        "bridge": {
            "IPAMConfig": null,
            "Links": null,
            "Aliases": null,
            "NetworkID": "bc92b0847c4a46e96bb26b2f5ae7af7b7108f12a82f744bc892a6897b7417e19",
            "EndpointID": "7807d722ebec129307364ce117e605117d1d11960b7c88074361cea1e0a9338d",
            "Gateway": "172.17.0.1",
            "IPAddress": "172.17.0.2",
            "IPPrefixLen": 16,
            "IPv6Gateway": "",
            "GlobalIPv6Address": "",
            "GlobalIPv6PrefixLen": 0,
            "MacAddress": "02:42:ac:11:00:02",
            "DriverOpts": null
        }
    }
  }
 }
]
bayaderalomari@Bayaders-MacBook-Pro ~ %
```

9- Try to execute inside nginx continer

```
bayaderalomari@Bayaders-MacBook-Pro ~ % docker exec -t -i 148762e8f29 /bin/bash
root@148762e8f29a:/#
```

10- Try to remove nginx image.

```
bayaderalomari@Bayaders-MacBook-Pro ~ % docker rmi nginx
Error response from daemon: conflict: unable to remove repository reference "nginx" (must force) - container c17475ca9cfe is using its referen
ced image 2e7e2ec411a6
bayaderalomari@Bayaders-MacBook-Pro ~ %
```

* Did it work? No

* Why? Because it has dependency

* How to solve it? Remove dependency first

11- Try run ubuntu container.

```
bayaderalomari@Bayaders-MacBook-Pro ~ % docker run ubuntu
bayaderalomari@Bayaders-MacBook-Pro ~ % docker run -it ubuntu
root@92f61f0f3a0d:/# ls
```

12- Create a file inside ubuntu container

```
root@92f61f0f3a0d:/# touch b.txt
root@92f61f0f3a0d:/# ls
b.txt  boot   etc    lib      mnt   proc   run    srv   tmp   var
bin    dev    home   media    opt   root   sbin   sys   usr
root@92f61f0f3a0d:/#
```

13- Exit the container.

14- Try to start it again.

```
bayaderalomari@Bayaders-MacBook-Pro ~ % docker run -it ubuntu
root@6190d6ac691b:/# ls
bin    dev    home   media    opt    root   sbin   sys   usr
boot   etc    lib    mnt      proc   run    srv    tmp   var
root@6190d6ac691b:/#
```

* Did you find the file? No