```
Terminal  +                                                          ⤢ ⚙

Hit:9 https://deb.nodesource.com/node_14.x xenial InRelease
Get:10 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages [21.0 kB]
Err:7 https://dl.yarnpkg.com/debian stable InRelease
   The following signatures were invalid: KEYEXPIRED 1507181400  KEYEXPIRED 1546376218  KEYEXPIRED 1546372003  KEYEXPIRED 1612319250  KEYEXPIRED 1612319280  K
EYEXPIRED 1612319250  KEYEXPIRED 1507181400  KEYEXPIRED 1546376218  KEYEXPIRED 1546372003  KEYEXPIRED 1612319250  KEYEXPIRED 1612319280  KEYEXPIRED 150718140
0  KEYEXPIRED 1546376218  KEYEXPIRED 1546372003  KEYEXPIRED 1612319250  KEYEXPIRED 1612319280
Fetched 87.2 kB in 0s (113 kB/s)
Reading package lists... Done
W: An error occurred during the signature verification. The repository is not updated and the previous index files will be used. GPG error: https://dl.yarnpk
g.com/debian stable InRelease: The following signatures were invalid: KEYEXPIRED 1507181400  KEYEXPIRED 1546376218  KEYEXPIRED 1546372003  KEYEXPIRED 1612319
250  KEYEXPIRED 1612319280  KEYEXPIRED 1612319250  KEYEXPIRED 1507181400  KEYEXPIRED 1546376218  KEYEXPIRED 1546372003  KEYEXPIRED 1612319250  KEYEXPIRED 161
2319280  KEYEXPIRED 1507181400  KEYEXPIRED 1546376218  KEYEXPIRED 1546372003  KEYEXPIRED 1612319250  KEYEXPIRED 1612319280
W: Failed to fetch https://dl.yarnpkg.com/debian/dists/stable/InRelease  The following signatures were invalid: KEYEXPIRED 1507181400  KEYEXPIRED 1546376218
  KEYEXPIRED 1546372003  KEYEXPIRED 1612319250  KEYEXPIRED 1612319280  KEYEXPIRED 1612319250  KEYEXPIRED 1507181400  KEYEXPIRED 1546376218  KEYEXPIRED 1546372
003  KEYEXPIRED 1612319250  KEYEXPIRED 1612319280  KEYEXPIRED 1507181400  KEYEXPIRED 1546376218  KEYEXPIRED 1546372003  KEYEXPIRED 1612319250  KEYEXPIRED 161
2319280
W: Some index files failed to download. They have been ignored, or old ones used instead.
$ sudo apt-get install docker-ce=18.06.1~ce~3-0~ubuntu
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
   containerd.io libuv1
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED
   docker-ce-cli
The following packages will be DOWNGRADED:
   docker-ce
0 to upgrade, 0 to newly install, 1 to downgrade, 1 to remove and 99 not to upgrade.
Need to get 40.2 MB of archives.
After this operation, 96.7 MB disk space will be freed.
Do you want to continue? [Y/n] Y
Get:1 https://download.docker.com/linux/ubuntu bionic/stable amd64 docker-ce amd64 18.06.1~ce~3-0~ubuntu [40.2 MB]
Fetched 40.2 MB in 0s (54.3 MB/s)
dpkg: docker-ce-cli: dependency problems, but removing anyway as you requested:
 docker-ce depends on docker-ce-cli.

(Reading database ... 115521 files and directories currently installed.)
Removing docker-ce-cli (5:19.03.13~3-0~ubuntu-bionic) ...
Processing triggers for man-db (2.7.5-1) ...
dpkg: warning: downgrading docker-ce from 5:19.03.13~3-0~ubuntu-bionic to 18.06.1~ce~3-0~ubuntu
(Reading database ... 115316 files and directories currently installed.)
Preparing to unpack .../docker-ce_18.06.1~ce~3-0~ubuntu_amd64.deb ...
Unpacking docker-ce (18.06.1~ce~3-0~ubuntu) over (5:19.03.13~3-0~ubuntu-bionic) ...
Processing triggers for ureadahead (0.100.0-19.1) ...
Processing triggers for systemd (229-4ubuntu21.29) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up docker-ce (18.06.1~ce~3-0~ubuntu) ...
$ docker -v
Docker version 18.06.1-ce, build e68fc7a
$
```

```
debconf: (No usable dialog-like program is installed, so the dialog based frontend cannot be used. at /usr/share/perl5/Debconf/FrontEnd/Dialog.pm line 78.)
debconf: falling back to frontend: Readline
Updating certificates in /etc/ssl/certs...
129 added, 0 removed; done.
Setting up ssl-cert (1.1.0+nmu1) ...
debconf: unable to initialize frontend: Dialog
debconf: (No usable dialog-like program is installed, so the dialog based frontend cannot be used. at /usr/share/perl5/Debconf/FrontEnd/Dialog.pm line 78.)
debconf: falling back to frontend: Readline
Setting up libgdbm-compat4:amd64 (1.19-2) ...
Setting up libperl5.32:amd64 (5.32.1-4+deb11u2) ...
Setting up procps (2:3.3.17-5) ...
Setting up libcurl4:amd64 (7.74.0-1.3+deb11u1) ...
Setting up apache2-utils (2.4.53-1~deb11u1) ...
Setting up perl (5.32.1-4+deb11u2) ...
Setting up mailcap (3.69) ...
Setting up mime-support (3.66) ...
Setting up apache2-bin (2.4.53-1~deb11u1) ...
Setting up apache2 (2.4.53-1~deb11u1) ...
Enabling module mpm_event.
Enabling module authz_core.
Enabling module authz_host.
Enabling module authn_core.
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of start.
Processing triggers for libc-bin (2.31-13+deb11u3) ...
Processing triggers for ca-certificates (20210119) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
```
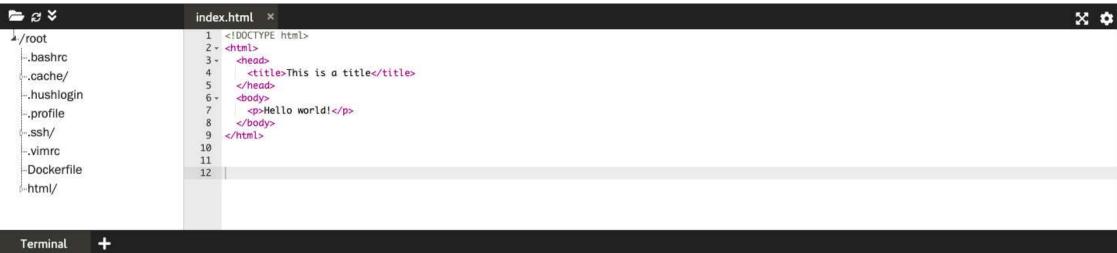
index.html ✕

```html
1   <!DOCTYPE html>
2   <html>
3     <head>
4       <title>This is a title</title>
5     </head>
6     <body>
7       <p>Hello world!</p>
8     </body>
9   </html>
10
11
12
```

Files:
- /root
  - .bashrc
  - .cache/
  - .hushlogin
  - .profile
  - .ssh/
  - .vimrc
  - Dockerfile
  - html/

Terminal +

```
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of start.
Processing triggers for libc-bin (2.27-3ubuntu1.5) ...
Removing intermediate container 66846717cdea
 ---> ff64d2d1591a
Step 3/4 : COPY html /var/www/html
 ---> 7dae242ddc0a
Step 4/4 : CMD ["apache2ctl", "-DFOREGROUND"]
 ---> Running in dbcc7a96bc9a
Removing intermediate container dbcc7a96bc9a
 ---> 4b7401c30d20
Successfully built 4b7401c30d20
Successfully tagged webserver:latest
$ docker run -d -p 8090:80 --name www1 webserver
```

```
somelargefile.img
$ echo passwords.txt >> .dockerignore
$ docker build -t nopassword .
Sending build context to Docker daemon   5.12kB
Step 1/4 : FROM alpine
 ---> d6e46aa2470d
Step 2/4 : ADD . /app
 ---> 555dd988d54d
Step 3/4 : COPY cmd.sh /cmd.sh
 ---> cfd025c7a764
Step 4/4 : CMD ["sh", "-c", "/cmd.sh"]
 ---> Running in a6f8eb937414
Removing intermediate container a6f8eb937414
 ---> 1aba5e0fe74c
Successfully built 1aba5e0fe74c
Successfully tagged nopassword:latest
$ docker run nopassword ls /app
Dockerfile
cmd.sh
somelargefile.img
$ docker build -t large-file-context .
Sending build context to Docker daemon   5.12kB
Step 1/4 : FROM alpine
 ---> d6e46aa2470d
Step 2/4 : ADD . /app
 ---> Using cache
 ---> 555dd988d54d
Step 3/4 : COPY cmd.sh /cmd.sh
 ---> Using cache
 ---> cfd025c7a764
Step 4/4 : CMD ["sh", "-c", "/cmd.sh"]
 ---> Using cache
 ---> 1aba5e0fe74c
Successfully built 1aba5e0fe74c
Successfully tagged large-file-context:latest
$ echo somelargefile.img >> .dockerignore
$ docker build -t no-large-file-context .
Sending build context to Docker daemon   4.096kB
Step 1/4 : FROM alpine
 ---> d6e46aa2470d
Step 2/4 : ADD . /app
 ---> 075ba7a7f3f9
Step 3/4 : COPY cmd.sh /cmd.sh
 ---> 105889bdbe4c
Step 4/4 : CMD ["sh", "-c", "/cmd.sh"]
 ---> Running in 2ad0f6f60101
Removing intermediate container 2ad0f6f60101
 ---> 085ace7bf0a3
Successfully built 085ace7bf0a3
Successfully tagged no-large-file-context:latest
$
```

Press `esc` to exit full screen

```
        "-c",
        "counter=0; while counter=$((counter+1)); do echo $counter; sleep 1; done"
    ],
    "Image": "loodse/counter",
    "Volumes": null,
    "WorkingDir": "",
    "Entrypoint": null,
    "OnBuild": null,
    "Labels": {}
},
"NetworkSettings": {
    "Bridge": "",
    "SandboxID": "c5957936db0b7e20cd2eaec16d2f91ad9eaf5b7f7cbf708a98f79176d03a12cb",
    "HairpinMode": false,
    "LinkLocalIPv6Address": "",
    "LinkLocalIPv6PrefixLen": 0,
    "Ports": {},
    "SandboxKey": "/var/run/docker/netns/c5957936db0b",
    "SecondaryIPAddresses": null,
    "SecondaryIPv6Addresses": null,
    "EndpointID": "98d37bf5590e13ed8bbda7b1cb7ed6ed5fa7343b1d2d33a92e0c68dfa6ad1679",
    "Gateway": "172.18.0.1",
    "GlobalIPv6Address": "",
    "GlobalIPv6PrefixLen": 0,
    "IPAddress": "172.18.0.2",
    "IPPrefixLen": 24,
    "IPv6Gateway": "",
    "MacAddress": "02:42:ac:12:00:02",
    "Networks": {
        "bridge": {
            "IPAMConfig": null,
            "Links": null,
            "Aliases": null,
            "NetworkID": "aa66d107db535c7692951886ccee359ffc07d7fcee6bd489757ed87e2b5650ae",
            "EndpointID": "98d37bf5590e13ed8bbda7b1cb7ed6ed5fa7343b1d2d33a92e0c68dfa6ad1679",
            "Gateway": "172.18.0.1",
            "IPAddress": "172.18.0.2",
            "IPPrefixLen": 24,
            "IPv6Gateway": "",
            "GlobalIPv6Address": "",
            "GlobalIPv6PrefixLen": 0,
            "MacAddress": "02:42:ac:12:00:02",
            "DriverOpts": null
        }
    }
}
}
]
$ docker inspect -f '{{json .Created}}' counter
"2022-04-29T08:15:07.74031154Z"
$ ▯
```

Press `esc` to exit full screen

```
Your Interactive Bash Terminal.

$
$ docker run -d --name redis-server redis
593fb48a49b823c08caee59559465550fe4d6a1080f4c04bbb6edefca5f2545b
$
$ docker logs redis-server
1:C 29 Apr 2022 08:17:23.621 # oO0OoO0OoO0Oo Redis is starting oO0OoO0OoO0Oo
1:C 29 Apr 2022 08:17:23.621 # Redis version=6.0.9, bits=64, commit=00000000, modified=0, pid=1, just started
1:C 29 Apr 2022 08:17:23.621 # Warning: no config file specified, using the default config. In order to specify a config file use redis-server /path/to/redis
.conf
1:M 29 Apr 2022 08:17:23.623 * Running mode=standalone, port=6379.
1:M 29 Apr 2022 08:17:23.624 # WARNING: The TCP backlog setting of 511 cannot be enforced because /proc/sys/net/core/somaxconn is set to the lower value of 1
28.
1:M 29 Apr 2022 08:17:23.624 # Server initialized
1:M 29 Apr 2022 08:17:23.624 # WARNING overcommit_memory is set to 0! Background save may fail under low memory condition. To fix this issue add 'vm.overcomm
it_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 29 Apr 2022 08:17:23.624 * Ready to accept connections
$ docker run -d --name redis-syslog --log-driver=syslog redis
7409f9c8e5bd3485496830b29b99ce9c8c795e2be59a6b11a1f33bba3cb86570
docker: Error response from daemon: failed to initialize logging driver: Unix syslog delivery error.
$ docker run -d --name redis-none --log-driver=none redis
5b37b91f8ea995f96fa66def1b16a1463f3ca468b8e1370b8786a394a6006036
$ docker inspect --format '{{ .HostConfig.LogConfig }}' redis-server
{json-file map[]}
$ docker inspect --format '{{ .HostConfig.LogConfig }}' redis-syslog
{syslog map[]}
$ docker inspect --format '{{ .HostConfig.LogConfig }}' redis-none
{none map[]}
$
```

Press `esc` to exit full screen

```
xLen":0,"MacAddress":"","DriverOpts":null}}
$ docker run -d -p 8080:80 --net host --name hostnetdemo nginx          Press  esc  to exit full screen
WARNING: Published ports are discarded when using host network mode
2d04ef23971b2706bc73e0ad502829d9f4456f5c33c41f7ed226bfd5849b9e83
$ docker inspect hostnetdemo -f '{{json .NetworkSettings.Networks}}'
{"host":{"IPAMConfig":null,"Links":null,"Aliases":null,"NetworkID":"8b89e3388c320dfee8884f0dcdcab6737c3e64f94dc9bb2b919ab0368114e7cb","EndpointID":"3664b1bbb
fd84cd87127e4d268d990c7239286ab874e9d82a9999baaa272aa2c","Gateway":"","IPAddress":"","IPPrefixLen":0,"IPv6Gateway":"","GlobalIPv6Address":"","GlobalIPv6Prefi
xLen":0,"MacAddress":"","DriverOpts":null}}
$ docker run -d  --name maincontainer nginx
0e8b209c0ca33c2c0fde9d0476ca1c2e5843dc2660d6a332dc68f201c4b2d9b1
$ docker run --net container:maincontainer --name secondarycontainer -d busybox sh -c "while true; do $(echo date); sleep 1; done"
Unable to find image 'busybox:latest' locally
latest: Pulling from library/busybox
50e8d59317eb: Retrying in 15 seconds
50e8d59317eb: Downloading  772.8kB/772.8kB
latest: Pulling from library/busybox
50e8d59317eb: Pull complete
Digest: sha256:d2b53584f580310186df7a2055ce3ff83cc0df6caacf1e3489bff8cf5d0af5d8
Status: Downloaded newer image for busybox:latest
bc11dbaf86c13e02ec10fcf7ef13c61edbad92c61589815e7747fd312965bd77
$ docker exec -it secondarycontainer sh
/ # wget localhost
Connecting to localhost (127.0.0.1:80)
saving to 'index.html'
index.html           100% |********************************************|   615  0:00:00 ETA
'index.html' saved
/ # cat index.html
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
/ #
```

```
Terminal  +                                              ⤢ ⚙

Your Interactive Bash Terminal.
$
$ docker run  -v /docker/redis-data:/data \
>   --name r1 -d redis \
>   redis-server --appendonly yes
ece9fd170c549306ca9883209fd32630b7b06fe3a4ad0269ea7a1fa6c9ad4988
$ cat data | docker exec -i r1 redis-cli --pipe
cat: data: No such file or directory
All data transferred. Waiting for the last reply...
Last reply received from server.
errors: 0, replies: 0
$ docker exec -i r1 redis-cli GET counter

$ ls -lah /docker/redis-data
total 8.0K
drwxr-xr-x 2  999 root    4.0K Apr 29 08:45 .
drwxr-xr-x 3 root root    4.0K Apr 29 08:45 ..
-rw-r--r-- 1  999 docker     0 Apr 29 08:45 appendonly.aof
$ docker run  -v /docker/redis-data:/backup ubuntu ls /backup
appendonly.aof
$ docker run  -v /docker/redis-data:/backup ubuntu ls /backup
appendonly.aof
$ docker run --volumes-from r1 -it ubuntu ls /data
appendonly.aof
$
```

```
172.18.0.2.
apache2ctl -DFOREGROUND
^D
^C
^C
^C
echo "Send Ctrl+C to Terminal"

root@8206abf92acd:/#
root@8206abf92acd:/# echo "Send Ctrl+C to Terminal"
Send Ctrl+C to Terminal
root@8206abf92acd:/# EXIT
bash: EXIT: command not found
root@8206abf92acd:/# exit
exit
$ docker ps -a
CONTAINER ID      IMAGE           COMMAND              CREATED          STATUS                      PORTS         NAMES
8206abf92acd      ubuntu          "/bin/bash"          7 minutes ago    Exited (127) 23 seconds ago               eloquent_euclid
cfd758cfca8e      alpine          "echo sharat"        9 minutes ago    Exited (0) 9 minutes ago                  magical_golick
449a3fa3c7b3      alpine          "echo sharar"        10 minutes ago   Exited (0) 10 minutes ago                 confident_noyce
4292c263661a      alpine          "echo hello world"   10 minutes ago   Exited (0) 10 minutes ago                 adoring_germain
$ docker rm$(docker ps -ap)
unknown shorthand flag: 'p' in -p
See 'docker ps --help'.
"docker rm" requires at least 1 argument.
See 'docker rm --help'.

Usage:  docker rm [OPTIONS] CONTAINER [CONTAINER...]

Remove one or more containers
$ docker rm $(docker ps -aq)
8206abf92acd
cfd758cfca8e
449a3fa3c7b3
4292c263661a
$ docker ps -a
CONTAINER ID      IMAGE           COMMAND              CREATED          STATUS          PORTS         NAMES
$ docker ps -a
CONTAINER ID      IMAGE           COMMAND              CREATED          STATUS          PORTS         NAMES
$ docker rm $(docker ps -aq)
"docker rm" requires at least 1 argument.
See 'docker rm --help'.

Usage:  docker rm [OPTIONS] CONTAINER [CONTAINER...]

Remove one or more containers
$ docker ps -a
CONTAINER ID      IMAGE           COMMAND              CREATED          STATUS          PORTS         NAMES
$ IMAGE
IMAGE: command not found
$ 
```

Press `esc` to exit full screen

Press esc to exit full screen

        "LinkLocalIPv6PrefixLen": 0,
        "Ports": {},
        "SandboxKey": "/var/run/docker/netns/c6831a2dab71",
        "SecondaryIPAddresses": null,
        "SecondaryIPv6Addresses": null,
        "EndpointID": "2ecab8d748926ebb2a5272b2cc8647d188b61d5b190d30ae883a625032f2fe12",
        "Gateway": "172.18.0.1",
        "GlobalIPv6Address": "",
        "GlobalIPv6PrefixLen": 0,
        "IPAddress": "172.18.0.2",
        "IPPrefixLen": 24,
        "IPv6Gateway": "",
        "MacAddress": "02:42:ac:12:00:02",
        "Networks": {
            "bridge": {
                "IPAMConfig": null,
                "Links": null,
                "Aliases": null,
                "NetworkID": "e38cec3cd9edcc7a9dcc336eefe8922154ca098d1c412a2801821651e3415b20",
                "EndpointID": "2ecab8d748926ebb2a5272b2cc8647d188b61d5b190d30ae883a625032f2fe12",
                "Gateway": "172.18.0.1",
                "IPAddress": "172.18.0.2",
                "IPPrefixLen": 24,
                "IPv6Gateway": "",
                "GlobalIPv6Address": "",
                "GlobalIPv6PrefixLen": 0,
                "MacAddress": "02:42:ac:12:00:02",
                "DriverOpts": null
            }
        }
    }
}
]
$ docker ps
CONTAINER ID   IMAGE   COMMAND   CREATED   STATUS   PO

Extra Interactive Bash Terminal

```
$
$ docker ps -a
CONTAINER ID      IMAGE              COMMAND          CREATED          STATUS           PORTS            NAMES
f9bb309d7030      loodse/demo-www    "./wrapper.sh"   7 minutes ago    Up 7 minutes                      affectionate_villani
$
```

Interacting with Containers

‹ **Step 5 of 5**

Step 5
Kill a container

Start a new container using

```
docker run -d -it --name newcounter
loodse/counter ✓
```

.

You can kill a container using

```
docker kill newcounter ✓
```

.

The main process inside the container will be sent `SIGKILL`, or any signal specified with option `--signal`.

Terminal   Terminal 2   Terminal 3   ➕

```
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73
$ docker run -d -it --name newcounter loodse/counter
b6c77981b6cc431012514322ca30d516e6a9941ebdadd1523c2af25e48ce5aa7
$ docker kill newcounter
newcounter
$
```

```
            ]
        },
        "Metadata": {
            "LastTagTime": "0001-01-01T00:00:00Z"
        }
    }
]
$ docker inspect debian | grep Cmd --after-context=10
            "Cmd": [
                "/bin/sh",
                "-c",
                "#(nop) ",
                "CMD [\"bash\"]"
            ],
            "Image": "sha256:b4c5ffa368c24b9caf6cbd7cea21eb07b6dd350464c1a3d23f7970e6a98e0d44",
            "Volumes": null,
            "WorkingDir": "",
            "Entrypoint": null,
            "OnBuild": null,
--
            "Cmd": [
                "bash"
            ],
            "Image": "sha256:b4c5ffa368c24b9caf6cbd7cea21eb07b6dd350464c1a3d23f7970e6a98e0d44",
            "Volumes": null,
            "WorkingDir": "",
            "Entrypoint": null,
            "OnBuild": null,
            "Labels": null
        },
        "Architecture": "amd64",
$ docker inspect debian | grep User --before-context=5
        "Created": "2022-04-20T04:43:16.367340706Z",
        "Container": "106471097ca251afa15d7b1e9fe1ec165f36b2026a62fffb6e3707729ff6e142",
        "ContainerConfig": {
            "Hostname": "106471097ca2",
            "Domainname": "",
            "User": "",
--
        "DockerVersion": "20.10.12",
        "Author": "",
        "Config": {
            "Hostname": "",
            "Domainname": "",
            "User": "",
$ docker inspect debian | grep Id
            "Id": "sha256:a11311205db1d20ae0c5373473525e45ff36ec83f472b276f283b34173af5513",
$ docker run -it sha256:0af60a5c6dd017d7023f6b6c71f3ffbb9beb2948d842bcb1ba36d597fb96e75a
docker: Error response from daemon: No such image: sha256:0af60a5c6dd017d7023f6b6c71f3ffbb9beb2948d842bcb1ba36d597fb96e75a.
See 'docker run --help'.
$ []
```