

LAB- 1

1 – Docker installation and running first container screenshots

```
lenovo@Vikram: ~  
Failed to start docker.service: Unit docker.service not found.  
lenovo@Vikram:~$ docker run hello-world  
Unable to find image 'hello-world:latest' locally  
latest: Pulling from library/hello-world  
c1ec31eb5944: Pull complete  
Digest: sha256:4bd78111b6914a99dbc560e6a20eab57ff6655aea4a80c50b0c5491968cbc2e6  
Status: Downloaded newer image for hello-world:latest  
  
Hello from Docker!  
This message shows that your installation appears to be working correctly.  
  
To generate this message, Docker took the following steps:  
1. The Docker client contacted the Docker daemon.  
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.  
   (amd64)  
3. The Docker daemon created a new container from that image which runs the  
   executable that produces the output you are currently reading.  
4. The Docker daemon streamed that output to the Docker client, which sent it  
   to your terminal.  
  
To try something more ambitious, you can run an Ubuntu container with:  
$ docker run -it ubuntu bash  
  
Share images, automate workflows, and more with a free Docker ID:  
https://hub.docker.com/  
  
For more examples and ideas, visit:  
https://docs.docker.com/get-started/  
  
lenovo@Vikram:~$ |
```

```
lenovo@Vikram: ~  
latest: Pulling from library/hello-world  
c1ec31eb5944: Pull complete  
Digest: sha256:4bd78111b6914a99dbc560e6a20eab57ff6655aea4a80c50b0c5491968cbc2e6  
Status: Downloaded newer image for hello-world:latest  
  
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lenovo@Vikram:~$ docker images  
REPOSITORY TAG IMAGE ID CREATED SIZE  
hello-world latest d2c94e258dcb 8 months ago 13.3kB  
lenovo@Vikram:~$ docker pull alpine  
Using default tag: latest  
latest: Pulling from library/alpine  
661ff4d9561e: Pull complete  
Digest: sha256:51b67269f354137895d43f3b3d810bfacd3945438e94dc5ac55fdac340352f48  
Status: Downloaded newer image for alpine:latest  
docker.io/library/alpine:latest  
  
What's Next?  
View a summary of image vulnerabilities and recommendations → docker scout quickview alpine  
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drwxr-xr-x 2 root root 4096 Dec 7 09:43 bin  
drwxr-xr-x 5 root root 340 Jan 13 02:04 dev  
drwxr-xr-x 1 root root 4096 Jan 13 02:04 etc  
drwxr-xr-x 2 root root 4096 Dec 7 09:43 home  
drwxr-xr-x 7 root root 4096 Dec 7 09:43 lib  
drwxr-xr-x 5 root root 4096 Dec 7 09:43 media  
drwxr-xr-x 2 root root 4096 Dec 7 09:43 mnt  
drwxr-xr-x 2 root root 4096 Dec 7 09:43 opt  
dr-xr-xr-x 295 root root 0 Jan 13 02:04 proc  
drwx----- 2 root root 4096 Dec 7 09:43 root  
drwxr-xr-x 2 root root 4096 Dec 7 09:43 run  
drwxr-xr-x 2 root root 4096 Dec 7 09:43/sbin  
drwxr-xr-x 2 root root 4096 Dec 7 09:43/srv  
dr-xr-xr-x 11 root root 0 Jan 13 02:04 sys  
drwxrwxrwt 2 root root 4096 Dec 7 09:43 tmp  
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drwxr-xr-x 2 root root 4096 Dec 7 09:43 srv  
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lenovo@Vikram:~$ docker run alpine /bin/sh  
lenovo@Vikram:~$ docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
lenovo@Vikram:~$
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lenovo@Vikram:~$ docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
3a20d71c3105 alpine "/bin/sh" 57 seconds ago Exited (0) 56 seconds ago hardcore_shtern
387a59b51bfb alpine "echo 'hello from al..." About a minute ago Exited (0) About a minute ago boring_euclid
ffffc95e6061 alpine "ls -l" About a minute ago Exited (0) About a minute ago hopeful_mcclintock
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be31ee1586b0 hello-world "/hello" 2 hours ago Exited (0) 2 hours ago infallible_bhaskara
lenovo@Vikram:~$ docker run -it alpine /bin/sh
/ # ls
bin dev etc home lib media mnt opt proc root run sbin srv sys tmp usr var
/ # uname -a
Linux bb4cb8fd0968 5.15.133.1-microsoft-standard-WSL2 #1 SMP Thu Oct 5 21:02:42 UTC 2023 x86_64 Linux
/ #
```

```
lenovo@Vikram: ~$ docker build build [OPTIONS] PATH | URL | -

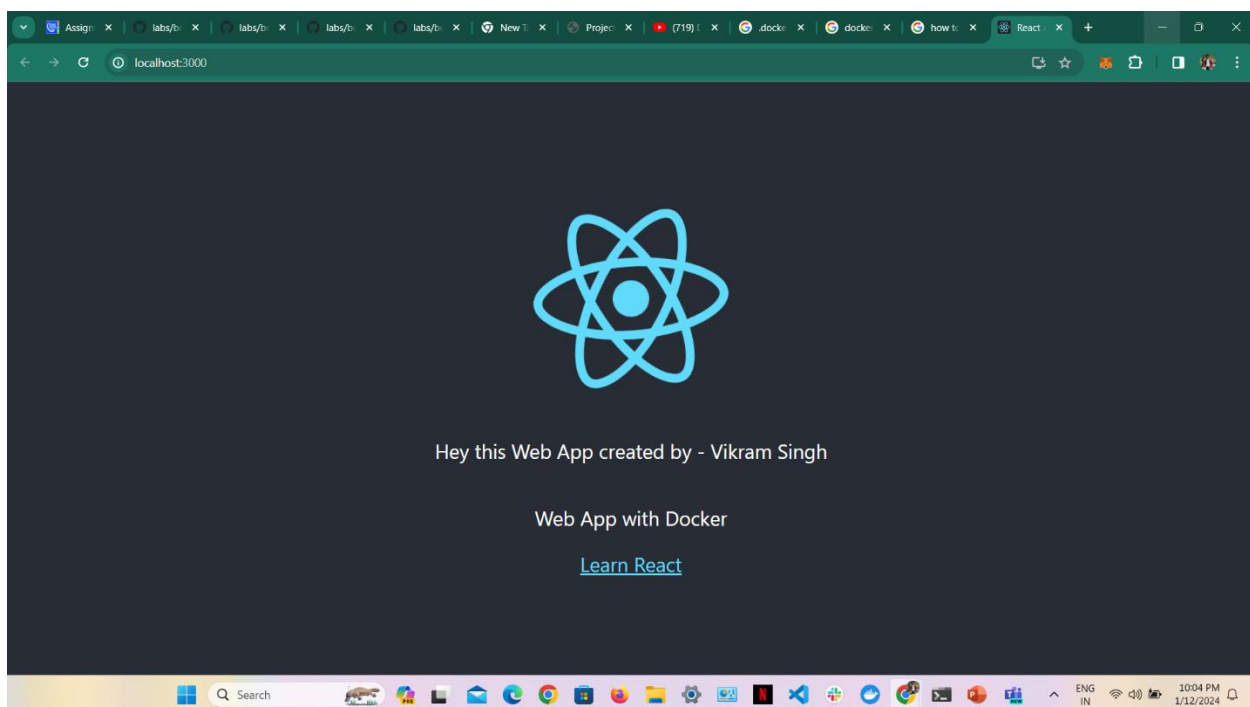
Usage: docker build build [OPTIONS] PATH | URL | -

Start a build
lenovo@Vikram: /mnt/d/my-typescript-app$ docker build -t my-typescript-app .
[*] Building 103.7s (8/10)
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 218B
=> [internal] load .dockerignore
=> => transferring context: 61B
=> [internal] load metadata for docker.io/library/node:18-alpine
=> [auth] library/node:pull token for registry-1.docker.io
=> [internal] load build context
=> => transferring context: 970.71kB
=> [1/5] FROM docker.io/library/node:18-alpine@sha256:b1a0356f7d6b86c958a06949d3db3f7fb27f95f627aa6157cb98bc65c801efa2
=> resolve docker.io/library/node:18-alpine@sha256:b1a0356f7d6b86c958a06949d3db3f7fb27f95f627aa6157cb98bc65c801efa2
=> sha256:8842b060901af71c082cee310b428a2d825e9409d9f9e450e05d726aae66a480 1.16kB / 1.16kB
=> sha256:f3776b6085deec9eb1da7746fa20b3f000bf153408dc896d6606704c83f948d 7.14kB / 7.14kB
=> sha256:0f158788f409a5decd9495205da4aa17df26d8219d6dc12acab5949342866fe 40.24MB / 40.24MB
=> sha256:f028dfff98271801e449c3ebac94a319851128c8ec687e13e00a68b2d98ec4700 2.34MB / 2.34MB
=> sha256:18f25c33785ddc3351cc4893fdbc0a384085bdd0741643798918fa2b0146fd5a9d 451B / 451B
=> sha256:b1a0356f7d6b86c958a06949d3db3f7fb27f95f627aa6157cb98bc65c801efa2 1.43kB / 1.43kB
=> extracting sha256:0f158788f409a5decd9495205da4aa17df26d8219d6dc12acab5949342866fe
=> extracting sha256:f028dfff98271801e449c3ebac94a319851128c8ec687e13e00a68b2d98ec4700
=> extracting sha256:18f25c33785ddc3351cc4893fdbc0a384085bdd0741643798918fa2b0146fd5a9d
=> [2/5] WORKDIR /app
=> [3/5] COPY package*.json ./
=> [4/5] RUN npm install
=> # npm WARN deprecated @babel/plugin-proposal-nullish-coalescing-operator@7.18.6: This proposal has been merged to the ECMAScript standard
=> # d and thus this plugin is no longer maintained. Please use @babel/plugin-transform-nullish-coalescing-operator instead.
=> # npm WARN deprecated sourcemap-codec@1.4.8: Please use @jridgewell/sourcemap-codec instead
=> # npm WARN deprecated w3c-hr-time@1.0.2: Use your platform's native performance.now() and performance.timeOrigin.
=> # npm WARN deprecated @babel/plugin-proposal-optional-chaining@7.21.0: This proposal has been merged to the ECMAScript standard and thus
=> # this plugin is no longer maintained. Please use @babel/plugin-transform-optional-chaining instead.
[!t[2~
```

```
lenovo@Vikram: ~$ docker build -t my-typescript-app .
[+] Building 199.8s (11/11) FINISHED
=> [internal] load build definition from Dockerfile
=> transferring dockerfile: 218B
=> [internal] load .dockerignore
=> transferring context: 61B
=> [internal] load metadata for docker.io/library/node:18-alpine
=> [auth] library/node:pull token for registry-1.docker.io
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=> sha256:b1a0356f7d6b86c958a06949d3db3f7fb27f95f627aa6157cb98bc65c881efa2 1.43kB / 1.43kB
=> extracting sha256:0f158788f409a5decd9495205da4faa17df26d8219d6dc12acab5949342866fe
=> extracting sha256:f028dff98271801e449c3ebac94a319851128c8ec687e13e08a68b2d98ec4700
=> extracting sha256:18f25c33705ddc3351cc4893fddc8a38405bdd8741643798918fa2b0146fd5a9d
[2/5] WORKDIR /app
[3/5] COPY package*.json ./
[4/5] RUN npm install
[5/5] COPY . .
=> exporting to image
=> exporting layers
=> writing image sha256:8534815b4824a01711ea43899cf4f7a221367aa484c78028b999f087c2eb63f0
=> naming to docker.io/library/my-typescript-app
```



```
lenovo@Vikram: ~  
lenovo@Vikram: /mnt/d/my-1  
lenovo@Vikram:/mnt/d/my-typescript-app$ docker run -p 3000:3000 my-typescript-app  
  
> my-typescript-app@0.1.0 start  
> react-scripts start  
  
(node:25) [DEP_WEBPACK_DEV_SERVER_ON_AFTER_SETUP_MIDDLEWARE] DeprecationWarning: 'onAfterSetupMiddleware' option is deprecated. Please use the 'setupMiddlewares' option.  
(Use 'node --trace-deprecation ...' to show where the warning was created)  
(node:25) [DEP_WEBPACK_DEV_SERVER_ON_BEFORE_SETUP_MIDDLEWARE] DeprecationWarning: 'onBeforeSetupMiddleware' option is deprecated. Please use the 'setupMiddlewares' option.  
Starting the development server...  
  
One of your dependencies, babel-preset-react-app, is importing the  
"@babel/plugin-proposal-private-property-in-object" package without  
declaring it in its dependencies. This is currently working because  
"@babel/plugin-proposal-private-property-in-object" is already in your  
node_modules folder for unrelated reasons, but it may break at any time.  
  
babel-preset-react-app is part of the create-react-app project, which  
is not maintained anymore. It is thus unlikely that this bug will  
ever be fixed. Add "@babel/plugin-proposal-private-property-in-object" to  
your devDependencies to work around this error. This will make this message  
go away.  
  
Compiled successfully!  
  
You can now view my-typescript-app in the browser.  
  
Local:      http://localhost:3000  
On Your Network: http://172.17.0.3:3000  
  
Note that the development build is not optimized.  
To create a production build, use npm run build.  
  
webpack compiled successfully
```



```
lenovo@Vikram: ~  
lenovo@Vikram: /mnt/d/my-ty  
lenovo@Vikram: $ docker ps  
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                    NAMES  
d70a25aac807   my-typescript-app "docker-entrypoint.s..." 3 minutes ago  Up 3 minutes  0.0.0.0:3000->3000/tcp    eloquent_curie  
bb4cb8fd0968   alpine        "/bin/sh"               About an hour ago  Up About an hour  beautiful_snyder  
lenovo@Vikram: $
```

```
lenovo@Vikram: ~  
lenovo@Vikram: /mnt/d/my-ty  
lenovo@Vikram: $ docker ps  
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                    NAMES  
d70a25aac807   my-typescript-app "docker-entrypoint.s..." 3 minutes ago  Up 3 minutes  0.0.0.0:3000->3000/tcp    eloquent_curie  
bb4cb8fd0968   alpine        "/bin/sh"               About an hour ago  Up About an hour  beautiful_snyder  
lenovo@Vikram: $ docker login  
Authenticating with existing credentials...  
Login Succeeded  
lenovo@Vikram: $
```

This screenshot show image is upload to docker hub

```
lenovo@Vikram: ~$ docker tag
"docker tag" requires exactly 2 arguments.
See 'docker tag --help'.

Usage:  docker tag SOURCE_IMAGE[:TAG] TARGET_IMAGE[:TAG]

Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE
lenovo@Vikram: ~$ docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                    NAMES
d70a25aac807   my-typescript-app  "docker-entrypoint.s..."  2 hours ago   Up 2 hours    0.0.0.0:3000->3000/tcp    eloquent_curie
bb4cb8fd0968   alpine          "/bin/sh"                3 hours ago   Up 3 hours                    beautiful_snyder
lenovo@Vikram: ~$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
my-typescript-app  latest   8534815b4824   2 hours ago   426MB
alpine         latest   f8c20f8bbcb6   5 weeks ago   7.38MB
hello-world     latest   d2c94e258dcb   8 months ago   13.3kB
lenovo@Vikram: ~$ docker tag my-typescript-app vikramsingh2580/my-typescript-app:my-typescript-app
lenovo@Vikram: ~$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
my-typescript-app  latest   8534815b4824   3 hours ago   426MB
vikramsingh2580/my-typescript-app  my-typescript-app  8534815b4824   3 hours ago   426MB
alpine         latest   f8c20f8bbcb6   5 weeks ago   7.38MB
hello-world     latest   d2c94e258dcb   8 months ago   13.3kB
lenovo@Vikram: ~$ docker push vikramsingh2580/my-typescript-app:my-typescript-app
The push refers to repository [docker.io/vikramsingh2580/my-typescript-app]
87685d297397: Pushed
496072a59103: Pushed
0d0e91c565bc: Pushed
173ddbaf9b5b: Pushed
0ae13a02eeea: Pushed
aec6514001fe: Pushed
62bb8375428b: Pushed
5af4f8f59b76: Pushed
my-typescript-app: digest: sha256:d2e9934fd7dcef08e096755b22801717e81536d438df8f0ef3168b18f73b5496 size: 1996
lenovo@Vikram: ~$
```

3 – Swarm deployment

```
lenovo@Vikram: /mnt/d/my-t$ docker stack deploy -c docker-compose.yml my-stack
Ignoring unsupported options: build

Creating service my-stack_client
lenovo@Vikram: /mnt/d/my-typescript-app$ docker service ls
ID                NAME                MODE                REPLICAS        IMAGE                PORTS
xotuq4ktg3r2     my-react-app_hardcore_bhabha replicated          0/3              vikramsingh2580/my-react-app:my-react-app  *:8000->3000/tcp
ln2brdfw60fb     my-stack_client     replicated          0/1              vikramsingh2580/my-typescript-app:my-typescript-app  *:8080->80/tcp
fil7w0xpz3r9     my-typescript-app_bold_shannon replicated          0/1              vikramsingh2580/my-typescript-app:my-typescript-app  *:5000->3000/tcp
wqb8cykoem2k     up.frontend         replicated          0/1              vikramsingh2580/my-typescript-app:my-typescript-app  *:3000->3000/tcp
lenovo@Vikram: /mnt/d/my-typescript-app$ docker node ls
ID                HOSTNAME            STATUS             AVAILABILITY     MANAGER STATUS     ENGINE VERSION
ikuy4vms150xyos8xc5u5nq9f *  docker-desktop    Ready             Active            Leader              24.0.7
lenovo@Vikram: /mnt/d/my-typescript-app$ docker service inspect my-stack_client
[
  {
    "ID": "ln2brdfw60fbr5m4cyca4lc5d",
    "Version": {
      "Index": 4906
    },
    "CreatedAt": "2024-01-14T19:42:25.521810154Z",
    "UpdatedAt": "2024-01-14T19:42:26.877478092Z",
    "Spec": {
      "Name": "my-stack_client",
      "Labels": {
        "com.docker.stack.image": "vikramsingh2580/my-typescript-app:my-typescript-app",
        "com.docker.stack.namespace": "my-stack"
      },
      "TaskTemplate": {
        "ContainerSpec": {
          "Image": "vikramsingh2580/my-typescript-app:my-typescript-app@sha256:d2e9934fd7dcef08e096755b22801717e81536d438df8f0ef3168b18f73b5496",
          "Labels": {
            "com.docker.stack.namespace": "my-stack"
          },
          "Privileges": {
            "CredentialSpec": null,
            "SELinuxContext": null
          },
          "StopGracePeriod": "1000000000",
          "DNSConfig": {}
        }
      }
    }
  }
]
```



```
lenovo@Vikram: /mnt/d/my-1 x + v
},
"StopGracePeriod": 1000000000,
"DNSConfig": {},
"Isolation": "default"
},
"Resources": {},
"RestartPolicy": {
  "Condition": "any",
  "Delay": 5000000000,
  "MaxAttempts": 0
},
"Placement": {
  "Platforms": [
    {
      "Architecture": "amd64",
      "OS": "linux"
    }
  ]
},
"Networks": [
  {
    "Target": "puv0ho6qf9llvohysq9oolawl",
    "Aliases": [
      "client"
    ]
  }
],
"ForceUpdate": 0,
"Runtime": "container"
},
"Mode": {
  "Replicated": {
    "Replicas": 1
  }
},
"UpdateConfig": {
  "Parallelism": 1,
  "FailureAction": "pause",
  "Monitor": 5000000000,
  "MaxFailureRatio": 0,

```

```
lenovo@Vikram: /mnt/d/my-1 x + v
"UpdateConfig": {
  "Parallelism": 1,
  "FailureAction": "pause",
  "Monitor": 5000000000,
  "MaxFailureRatio": 0,
  "Order": "stop-first"
},
"RollbackConfig": {
  "Parallelism": 1,
  "FailureAction": "pause",
  "Monitor": 5000000000,
  "MaxFailureRatio": 0,
  "Order": "stop-first"
},
"EndpointSpec": {
  "Mode": "vip",
  "Ports": [
    {
      "Protocol": "tcp",
      "TargetPort": 80,
      "PublishedPort": 8080,
      "PublishMode": "ingress"
    }
  ]
},
"Endpoint": {
  "Spec": {
    "Mode": "vip",
    "Ports": [
      {
        "Protocol": "tcp",
        "TargetPort": 80,
        "PublishedPort": 8080,
        "PublishMode": "ingress"
      }
    ]
  },
  "Ports": [
    {

```

```
lenovo@Vikram: /mnt/d/my-1 x + v
    "TargetPort": 80,
    "PublishedPort": 8080,
    "PublishMode": "ingress"
  }
},
"Ports": [
  {
    "Protocol": "tcp",
    "TargetPort": 80,
    "PublishedPort": 8080,
    "PublishMode": "ingress"
  }
],
"VirtualIPs": [
  {
    "NetworkID": "vmenf0n3smm4syaafqa3kuqfj",
    "Addr": "10.0.0.30/24"
  },
  {
    "NetworkID": "puv0ho6qf9llvohysq9oolawl",
    "Addr": "10.0.4.2/24"
  }
]
}
]
lenovo@Vikram:/mnt/d/my-typescript-app$ docker service logs my-stack_client
lenovo@Vikram:/mnt/d/my-typescript-app$ docker service logs my-stack_client
lenovo@Vikram:/mnt/d/my-typescript-app$ docker service ps my-stack_client
ID            NAME            IMAGE                                     NODE            DESIRED STATE  CURRENT STATE
ERROR        PORTS
papa4wr41qxo  my-stack_client.1  vikramsingh2580/my-typescript-app:my-typescript-app  docker-desktop  Running        Running 2 minutes ago
lenovo@Vikram:/mnt/d/my-typescript-app$ docker service ps my-stack_client
ID            NAME            IMAGE                                     NODE            DESIRED STATE  CURRENT STATE  ERROR
PORTS
papa4wr41qxo  my-stack_client.1  vikramsingh2580/my-typescript-app:my-typescript-app  docker-desktop  Running        Running 6 minutes ago
lenovo@Vikram:/mnt/d/my-typescript-app$
```