

## Experiment 9

Title:	To study and implement Docker as a repository for storing images		<b>LO6</b>
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Sign here to indicate that you have read all relevant material provided/ available on Moodle/ Classroom while performing and writing this experiment			<i>Vivian</i>

### Rubrics:

Criteria	Excellent	Good	Satisfactory	Poor	Total Marks
<b>Dockerfile &amp; Image Creation</b>	Optimized, correct Dockerfile syntax, clean image build	Minor issues in Dockerfile, builds successfully	Basic Dockerfile with inefficiencies or minor build issues	Dockerfile is incorrect or image fails to build	6 5
<b>Application Deployment</b>	App runs in container, accessible via exposed port, no errors	App runs with minor config or port issues	App deploys partially or shows limited output	App does not run in container	6 5
<b>Execution &amp; Demonstration</b>	All Docker commands correct, shows running container and proper cleanup	Most commands correct, some minor mistakes	Basic command usage, limited cleanup or understanding	Commands are incorrect or fail, incomplete demonstration	6 5
<b>Conceptual Understanding</b>	Clear, confident explanation of Docker concepts and deployment steps	Good understanding, few gaps	Partial understanding, requires prompting	Cannot explain Docker basics or deployment process	2 02
<b>Total Marks</b>					17

Date of Performance	Date of Submission	Signature of the Teacher
6/04/25	18/04/25	<i>Savitri</i>

```
↳ docker version
```

Client:

Version:	28.0.4
API version:	1.48
Go version:	go1.24.1
Git commit:	b8034c0ed7
Built:	Thu Apr 3 10:43:40 2025
OS/Arch:	linux/amd64
Context:	default

Server:

Engine:

Version:	28.0.4
API version:	1.48 (minimum version 1.24)
Go version:	go1.24.1
Git commit:	6430e49a55
Built:	Thu Apr 3 10:43:40 2025
OS/Arch:	linux/amd64
Experimental:	false

containerd:

Version:	v2.0.4
GitCommit:	1a43cb6a1035441f9aca8f5666a9b3ef9e70ab20.m

runc:

Version:	1.2.6
----------	-------

GitCommit:

docker-init:

Version:	0.19.0
GitCommit:	de40ad0

```
→ docker container ls
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
```

```
↳ docker image ls -a
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
alpine/mysql	latest	814e676d3f36	13 days ago	52.1MB
golang	alpine	dce68b1cd229	3 weeks ago	261MB
oven/bun	alpine	528741d5981e	3 weeks ago	92.1MB
dbeaver/cloudbeaver	latest	b647c7f83171	4 weeks ago	800MB
mongo	latest	b1d4ab2a0342	4 weeks ago	887MB
postgres	alpine	0150e3200277	8 weeks ago	278MB
alpine	latest	aded1e1a5b37	2 months ago	7.83MB
nginx	alpine	1ff4bb4faebc	2 months ago	47.9MB
python	alpine	e0566e0d46dc	2 months ago	45MB
ubuntu	latest	a04dc4851cbc	2 months ago	78.1MB
busybox	latest	ff7a7936e930	7 months ago	4.28MB
mongo-express	latest	870141b735e7	13 months ago	182MB
wongnai/grpcui	latest	321096a38a44	5 years ago	28.2MB

```
↳ docker pull ubuntu:latest
latest: Pulling from library/ubuntu
2726e237d1a3: Pull complete
Digest: sha256:1e622c5f073b4f6bfad6632f2616c7f59ef256e96fe78bf6a595d1dc4376ac02
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
```

```
↳ docker pull alpine/mysql:latest
latest: Pulling from alpine/mysql
f18232174bc9: Already exists
82f85dc18586: Pull complete
Digest: sha256:b6d68a4e25eb69d39f848b4c74338c08c1e9c4c1eab2654ad51525471373fa69
Status: Downloaded newer image for alpine/mysql:latest
docker.io/alpine/mysql:latest
```

→ docker images

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
alpine/mysql	latest	ac164c3c669d	6 days ago	52.1MB
alpine/mysql	<none>	814e676d3f36	13 days ago	52.1MB
ubuntu	latest	602eb6fb314b	2 weeks ago	78.1MB
golang	alpine	dce68b1cd229	3 weeks ago	261MB
oven/bun	alpine	528741d5981e	3 weeks ago	92.1MB
dbeaver/cloudbeaver	latest	b647c7f83171	4 weeks ago	800MB
mongo	latest	b1d4ab2a0342	4 weeks ago	887MB
postgres	alpine	0150e3200277	8 weeks ago	278MB
alpine	latest	aded1e1a5b37	2 months ago	7.83MB
nginx	alpine	1ff4bb4faebc	2 months ago	47.9MB
python	alpine	e0566e0d46dc	2 months ago	45MB
ubuntu	<none>	a04dc4851cbc	2 months ago	78.1MB
busybox	latest	ff7a7936e930	7 months ago	4.28MB
mongo-express	latest	870141b735e7	13 months ago	182MB
wongnai/grpcui	latest	321096a38a44	5 years ago	28.2MB

```
→ docker run -d ubuntu  
fbafaa3b004e38e869801f8f2729f3e2f98781d47468e1e0edb1c24d3ef7c71
```

```
↳ docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	PORTS	NAMES
fbafaa3b004e	ubuntu	"/bin/bash"	23 seconds ago		Exited (0) 22 seconds ago
8b42d857389c	ubuntu	"-d"	38 seconds ago		Created

```
↳ docker run -it --rm ubuntu /bin/bash
root@13636dc5d4d5:/# uname -a
Linux 13636dc5d4d5 6.14.2-arch1-1 #1 SMP PREEMPT_DYNAMIC Thu, 10 Apr 2025 18:43:59 +0000 x86_64 x86_64 GNU/Linux
root@13636dc5d4d5:/# █
```

```
↳ docker run -p 80:80 nginx:alpine
/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: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/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
2025/04/25 15:09:53 [notice] 1#1: using the "epoll" event method
2025/04/25 15:09:53 [notice] 1#1: nginx/1.27.4
2025/04/25 15:09:53 [notice] 1#1: built by gcc 14.2.0 (Alpine 14.2.0)
2025/04/25 15:09:53 [notice] 1#1: OS: Linux 6.14.2-arch1-1
2025/04/25 15:09:53 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1024:524288
2025/04/25 15:09:53 [notice] 1#1: start worker processes
2025/04/25 15:09:53 [notice] 1#1: start worker process 30
2025/04/25 15:09:53 [notice] 1#1: start worker process 31
2025/04/25 15:09:53 [notice] 1#1: start worker process 32
2025/04/25 15:09:53 [notice] 1#1: start worker process 33
2025/04/25 15:09:53 [notice] 1#1: start worker process 34
2025/04/25 15:09:53 [notice] 1#1: start worker process 35
2025/04/25 15:09:53 [notice] 1#1: start worker process 36
2025/04/25 15:09:53 [notice] 1#1: start worker process 37
```

reading

instructions 1

mail 2

Welcome to nginx 3

# Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to [nginx.org](http://nginx.org).  
Commercial support is available at [nginx.com](http://nginx.com).

*Thank you for using nginx.*

```
↳ docker run -p 80:80 -d nginx:alpine  
ece2a393cdd3e85b6dfc4457913bbce7c625c745702273e514c1bca04
```

```
↳ docker run -p 80:80 -d nginx:alpine  
ece2a393cdd3e85b6dfc4457913bbbce7c625c745702273e514a87914c1bca04
```

```
└─ ↳ /Pictures/screenshots  
↳ docker container ls
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
ece2a393cdd3	nginx:alpine	/docker-entrypoint..."	17 seconds ago	Up 17 seconds	0.0.0.0:80->80/tcp, [::]:80->80/tcp	sweet_meninsky

```
└─ ↳ /Pictures/screenshots  
↳ docker container stop sweet_meninsky  
sweet_meninsky
```

```
→ docker container rm sweet_meninsky  
sweet_meninsky
```

```
→ docker ps -a
```

```
↳ docker run -d -it ubuntu /bin/bash  
6ce3ccf3eea22b59e4852fbc8ab3c7c49a31e1dacebd926a1166eba1ad7c64b9
```

```
└─ ↳ /Pictures/screenshots  
↳ ls
```

```
└─ ↳ /Pictures/screenshots  
↳ docker container top great_dubinsky
```

UID	PID	PPID	C	TTY	TIME	CMD
root	14672	14649	0	pts/0	00:00:00	/bin/bash

```
↳ docker container inspect great_dubinsky
```

```
[
```

```
{  
    "Id": "6ce3ccf3eea22b59e4852fbc8ab3c7c49a31e1dacebd926a1166eba1ad7c64b9",  
    "Created": "2025-04-25T15:12:43.537739083Z",  
    "Path": "/bin/bash",  
    "Args": [],  
    "State": {  
        "Status": "running",  
        "Running": true,  
        "Paused": false,  
        "Restarting": false,  
        "OOMKilled": false,  
        "Dead": false,  
        "Pid": 14672,  
        "ExitCode": 0,  
        "Error": "",  
        "StartedAt": "2025-04-25T15:12:43.564559462Z",  
        "FinishedAt": "0001-01-01T00:00:00Z"  
    }  
}
```

default 1 docker /home/shadow/Pictures/screenshots 20:43

CONTAINER ID	NAME	CPU %	MEM USAGE / LIMIT	MEM %	NET I/O	BLOCK I/O	PIDS
6ce3ccf3eea2	great_dubinsky	0.00%	1012KiB / 7.496GiB	0.01%	946B / 126B	0B / 0B	1

```
↳ docker container exec -it distracted_cannon /bin/sh  
/ # uname -a  
Linux bfffc0d6ec7c5 6.14.2-arch1-1 #1 SMP PREEMPT_DYNAMIC Thu, 10 Apr 2025 18:43:59 +0000 x86_64 Linux  
/ # █
```

```
↳ docker ps -a
```

	CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
	1330017c1dab	nginx:alpine	/docker-entrypoint.."	4 seconds ago	Up 4 seconds	0.0.0.0:80->80/tcp, [::]:80->80/tcp	nginx-running-instance

```
↳ cat Dockerfile
```

```
FROM oven/bun:alpine AS builder
WORKDIR /app
COPY package*.json .
RUN bun install
COPY . .
RUN bun run build

FROM nginx:alpine
COPY --from=builder /app/dist /usr/share/nginx/html
EXPOSE 80
```

```
└─ css/verify-hash/backend (⎈ main)
    └─ cat Dockerfile
FROM oven/bun:alpine

WORKDIR /app

COPY package*.json .

RUN bun install

COPY . .

CMD ["bun", "run", "start"]
# can use entrypoint for static
```

```
↳ cat compose.yaml
services:
  frontend:
    build: frontend/
    container_name: verify-hash-frontend
    ports:
      - '80:80'
    networks:
      - verify-hash-private-network
    restart: unless-stopped
    depends_on:
      - backend

  backend:
    build: backend/
    container_name: verify-hash-backend
    ports:
      - '3000:3000'
    networks:
      - verify-hash-private-network
    depends_on:
      - db
    restart: unless-stopped
```

```
↳ docker compose up --build
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 0.2s (23/23) FINISHED
=> [backend internal] load build definition from Dockerfile
=> => transferring dockerfile: 184B
=> [frontend internal] load metadata for docker.io/oven/bun:alpine
=> [backend internal] load .dockerignore
=> => transferring context: 347B
=> [frontend builder 1/6] FROM docker.io/oven/bun:alpine
=> [backend internal] load build context
=> => transferring context: 157B
=> CACHED [frontend builder 2/6] WORKDIR /app
=> CACHED [backend 3/5] COPY package*.json .
=> CACHED [backend 4/5] RUN bun install
=> CACHED [backend 5/5] COPY . .
=> [backend] exporting to image
=> => exporting layers
=> => writing image sha256:8f1ebe7fd3b487f05de61c9c256ca2f2f4583dd1842253359be06f67ff5fd12b
=> => naming to docker.io/library/verify-hash-backend
=> [backend] resolving provenance for metadata file
=> [frontend internal] load build definition from Dockerfile
=> => transferring dockerfile: 229B
=> [frontend internal] load metadata for docker.io/library/nginx:alpine
=> [frontend internal] load .dockerignore
=> => transferring context: 348B
=> [frontend stage-1 1/2] FROM docker.io/library/nginx:alpine
=> [frontend internal] load build context
=> => transferring context: 1.02kB
=> CACHED [frontend builder 3/6] COPY package*.json .
=> CACHED [frontend builder 4/6] RUN bun install
```

reading

instructions 1

mail 2

Vite + React + TS 3

## Sign Up

Create a new account

Username

Password

Account created successfully!

Create Account

## Login

Sign in to your account

Username

Password

Log In

## Server Response

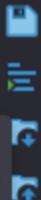
### Sign Up Response:

Field	Value
username	hifyn
salt	909c38f21ce19016f42121bb7f39c283
normalHash	303b38edc07f4839eb05ad2021b8134be220334888d1f1451d55905c2ee6bb3a
saltHash	1c2e1a65e3aa69aa62013eaac2acd98760efe721c34ed5ff0e4bf640b2380bfa
pepperHash	dcf3e1a051cedb6b2115b5eab9c0e887965ef433dff7d0f228478edf28e70dd

default 1 docker

/home/shadow/Public/collage/css/verify hash 20:49

```
cloudbeaver | 25-04-2025 15:19:35.538 [main] DEBUG i.c.server.graphql.GraphQLEndpoint - Schema extensi...ingCore, WebSe...rviceBindingNavigator, WebServiceBindingSQL, CECoreModelExtender, WebServiceBindingAdmin, WebServiceBindingAuth, WebServiceBindingDataTransfer, WebServiceBind...dingFS, WebServiceBindingMetadata, WebServiceBindingRM
cloudbeaver | 25-04-2025 15:19:35.772 [main] DEBUG i.c.server.jetty.JettyUtils - Max http session idle time: 1800s
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - Active servlets:
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - static: [/]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - images: [/api/images/*]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - status: [/status]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - graphql: [/api/gql/*]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - sqlResultValueViewer: [/api/sql-result-value/*]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - sqlUploadFile: [/api/resultset/blob/*]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - adminLogs: [/api/logs/*]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - dataTransfer: [/api/data/*]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - dataTransferImport: [/api/data/import/*]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - fileSystems: [/api/fs-data/*]
cloudbeaver | 25-04-2025 15:19:35.776 [main] DEBUG i.c.server.jetty.CBJettyServer - Active websocket mappings:
cloudbeaver | 25-04-2025 15:19:35.776 [main] INFO i.c.server.jetty.CBJettyServer - Refreshing Jetty configuration
cloudbeaver | 25-04-2025 15:19:35.779 [main] INFO org.eclipse.jetty.server.Server - jetty-12.0.15; built: 2024-11-05T19:44:57.623Z; git: 8281ae9740d4b4225e8166cc476bad237c70213a; jvm 21.0.6+7-LTS
cloudbeaver | 25-04-2025 15:19:35.795 [main] INFO o.e.j.s.DefaultSessionIdManager - Session workerName=
cloudbeaver | 25-04-2025 15:19:35.835 [main] INFO o.e.j.server.handler.ContextHandler - Started oeje10s.ServletContextHandler@c5a2d5{ROOT, /, b=file:///opt/cloudbeaver/web/, a=AVAILABLE, h=icsj.CBSessionHandler@185339ed{STARTED}}
cloudbeaver | 25-04-2025 15:19:35.848 [main] INFO o.e.j.e.s.ServletContextHandler - Started oeje10s.ServletContextHandler@c5a2d5{ROOT, /, b=fi...le:///opt/cloudbeaver/web/, a=AVAILABLE, h=icsj.CBSessionHandler@185339ed{STARTED}}
cloudbeaver | 25-04-2025 15:19:35.856 [main] INFO o.e.jetty.server.AbstractConnector - Started ServerConnector@4a7db5a{HTTP/1.1, (http/1.1)}{0.0.0.0:8978}
cloudbeaver | 25-04-2025 15:19:35.859 [main] INFO org.eclipse.jetty.server.Server - Started oejs.Server@2bcb1414{STARTING}[12.0.15, sto=0] @3200ms
postgres-database | 2025-04-25 15:19:42.524 UTC [40] FATAL: database "myapp" does not exist
verify-hash-backend | Sign up request received {
verify-hash-backend |   username: "hifyn",
verify-hash-backend |   password: "Pa$$w0rd!123",
verify-hash-backend | }
postgres-database | 2025-04-25 15:19:52.571 UTC [48] FATAL: database "myapp" does not exist
```

sql-1 sql-2 (PostgreSQL@db (3)) ...
▶ 1 `select * from users;`

Result - 1 ...

Enter a SQL expression to filter results, e.g. column\_name=10

Ln 1, Col 21, Pos 20

#	A-Z username	A-Z salt	A-Z normalhash	A-Z salthash
1	vijabyju	3c4b4ad8042ffd6c88691bc806ce25a2	303b38edc07f4839eb05ad2021b8134be220334888d1f1451d55905c2ee6bb3a	719608f4e095fcba6de644bfd3eab706e22515a6ae35060fb071fdfb1
2	puxyma	a126d9725f316d9c03d7b15e38d22298	303b38edc07f4839eb05ad2021b8134be220334888d1f1451d55905c2ee6bb3a	851f29ffce25a8213a55b9f0238ec540f4d97ae971845a201be2f434c1
3	tazajyla	b57e7fe9657835c761cf239b4e79f08d	303b38edc07f4839eb05ad2021b8134be220334888d1f1451d55905c2ee6bb3a	65d47d183b213a1a70214a9bb0dc386beb2c2175dc45475c85ebd0b
4	hifyn	909c38f21ce19016f42121bb7f39c283	303b38edc07f4839eb05ad2021b8134be220334888d1f1451d55905c2ee6bb3a	1c2e1a65e3aa69aa62013eaac2acd98760efe721c34ed5ff0e4bf640b

Q 200
4
+
-
...
SAVE
CANCEL
SCRIPT
EXPORT

Executed - 120ms

VALUE
GROUPING
...