

Docker Compose

SK

Successfully deployed three microservices using Docker Compose for multi-container application orchestration:



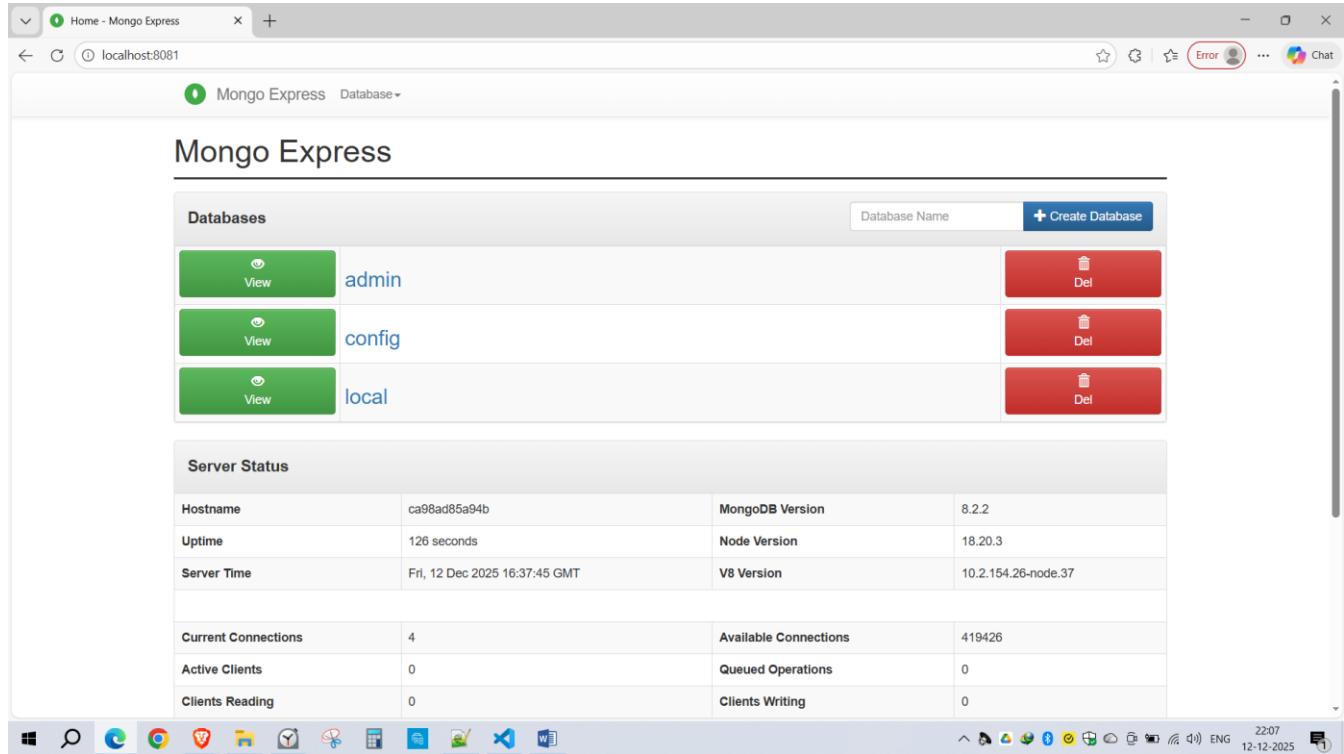
```
devops2025@Senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose$ docker-compose -f docker-compose.yaml up -d
WARN[0000] /mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose/docker-compose.yaml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion
[+] Running 4/4
  ✓ Network docker-compose_default Created
  ✓ Container demo-mongo Healthy
  ✓ Container demo-flask Started
  ✓ Container demo-mongo-express Started
 0.1s
13.5s
14.2s
14.1s
devops2025@Senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose$
```

Listed all running containers created via Docker Compose:



CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
f2abd8651b99	mongo-express	"/sbin/tini -- /dock..."	56 seconds ago	Up 44 seconds	0.0.0.0:8081->8081/tcp, [::]:8081->8081/tcp
846e8de64176	docker-compose-web	"flask run --host=0...."	56 seconds ago	Up 44 seconds (health: starting)	0.0.0.0:5000->5000/tcp, [::]:5000->5000/tcp
ca98ad85a94b	mongo	"docker-entrypoint.s..."	57 seconds ago	Up 55 seconds (healthy)	0.0.0.0:27017->27017/tcp, [::]:27017->27017/tcp
/tcp	demo-mongo				

Configured MongoDB to run as a service and integrated Mongo Express for database management:



Server Status			
Hostname	ca98ad85a94b	MongoDB Version	8.2.2
Uptime	126 seconds	Node Version	18.20.3
Server Time	Fri, 12 Dec 2025 16:37:45 GMT	V8 Version	10.2.154.26-node.37
Current Connections	4	Available Connections	419426
Active Clients	0	Queued Operations	0
Clients Reading	0	Clients Writing	0

Enabled user data creation through a Python application integrated with the frontend:

The screenshot shows a web browser window titled "Python + MongoDB Demo" at "localhost:5000". The main content is a table titled "Items (MongoDB)" with columns: id, name, designation, and city. The data is as follows:

id	name	designation	city
1	Sam	Account manager	Pune
2	Mike	Product manager	Chennai
3	Isaac	Director	Mumbai
4	John	Devops engineer	Bangalore
5	David	Architect	Hyderabad

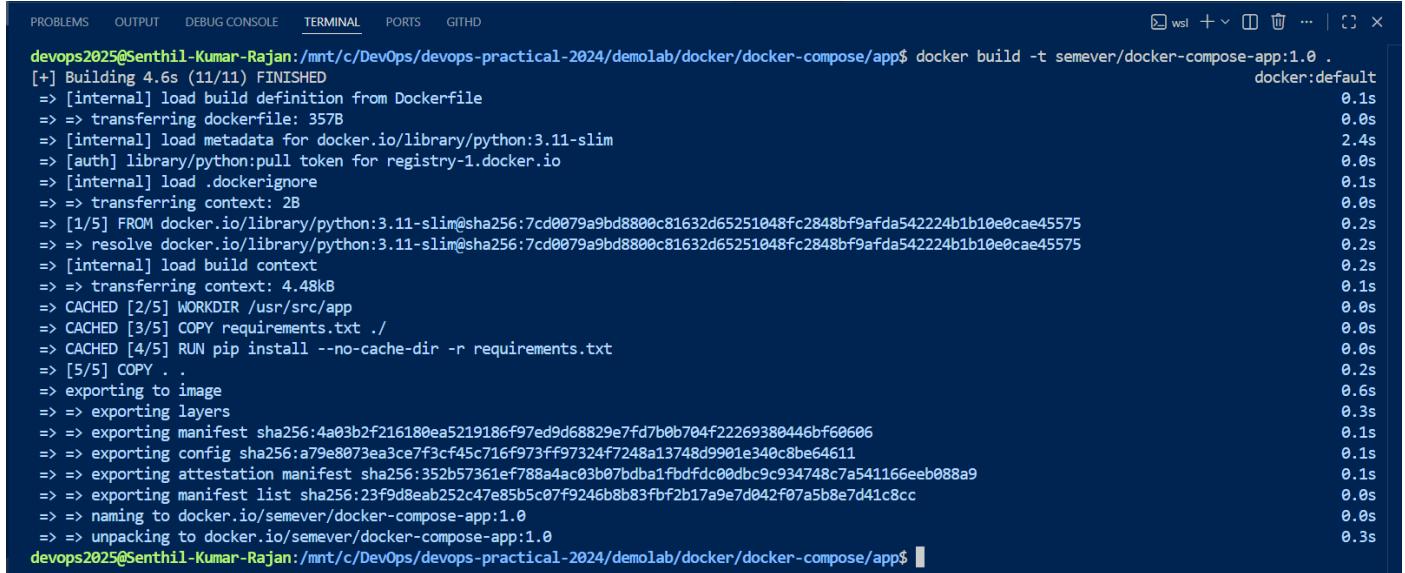
Below the table is a form titled "Add item" with fields for id, name, designation, and city, followed by a "Add" button.

Designed and executed MongoDB insert operations to persist application data:

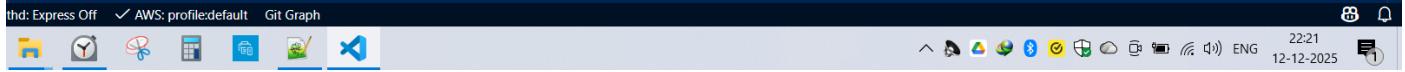
The screenshot shows the Mongo Express interface at "localhost:8081/db/mydb/items". The title bar says "items - Mongo Express". The main area is titled "Viewing Collection: items". It features a search bar with "Simple" and "Advanced" tabs, and a "Find" button. Below the search bar is a red button labeled "Delete all 5 documents retrieved". The data table has columns: _id, id, name, designation, and city. The data is identical to the one shown in the previous screenshot:

_id	id	name	designation	city
693c451069f7f4b2b672d8b9	1	Sam	Account manager	Pune
693c452369f7f4b2b672d8ba	2	Mike	Product manager	Chennai
693c453769f7f4b2b672d8bb	3	Isaac	Director	Mumbai
693c456169f7f4b2b672d8bc	4	John	Devops engineer	Bangalore
693c45b969f7f4b2b672d8bd	5	David	Architect	Hyderabad

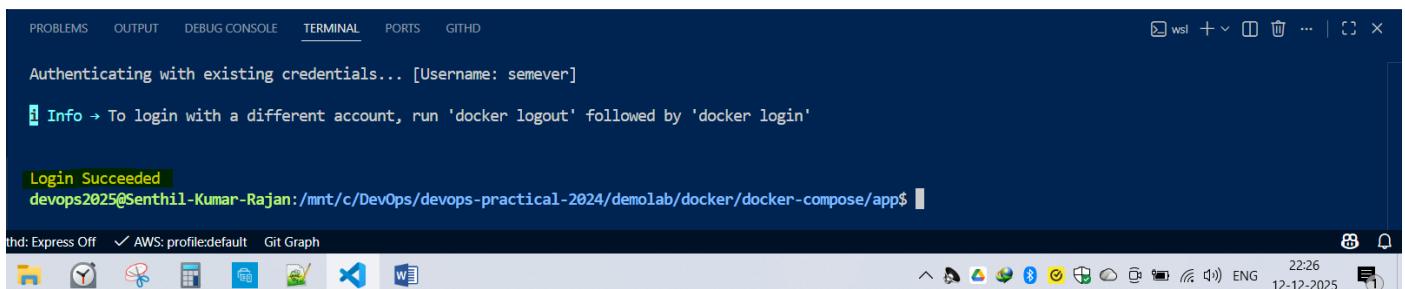
Built Docker images for the application:



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITHD
devops2025@senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose/app$ docker build -t semever/docker-compose-app:1.0 .
[+] Building 4.6s (11/11) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 357B
=> [internal] load metadata for docker.io/library/python:3.11-slim
=> [auth] library/python:pull token for registry-1.docker.io
=> [internal] load .dockerrcignore
=> => transferring context: 2B
=> [1/5] FROM docker.io/library/python:3.11-slim@sha256:7cd0079a9bd8800c81632d65251048fc2848bf9afda542224b1b10e0cae45575
=> => resolve docker.io/library/python:3.11-slim@sha256:7cd0079a9bd8800c81632d65251048fc2848bf9afda542224b1b10e0cae45575
=> [internal] load build context
=> => transferring context: 4.48kB
=> CACHED [2/5] WORKDIR /usr/src/app
=> CACHED [3/5] COPY requirements.txt .
=> CACHED [4/5] RUN pip install --no-cache-dir -r requirements.txt
=> [5/5] COPY . .
=> exporting to image
=> => exporting layers
=> => exporting manifest sha256:4a03b2f216180ea5219186f97ed9d68829e7fd7b0b704f22269380446bf60606
=> => exporting config sha256:a79e8073ea3ce7f3cf45c716f973ff97324f7248a13748d9901e340c8be64611
=> => exporting attestation manifest sha256:352b57361ef788a4c03b07bdbaf1bfd0dc00dbc9c934748c7a541166eeb088a9
=> => exporting manifest list sha256:23f9d8ebab252c47e85b5c07f9246b8b83fbf2b17a9e7d042f07a5b8e7d41c8cc
=> => naming to docker.io/semever/docker-compose-app:1.0
=> => unpacking to docker.io/semever/docker-compose-app:1.0
devops2025@senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose/app$
```



Logged into DockerHub via CLI to enable secure image push and pull operations:



PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITHD

```
devops2025@Senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose/app$ docker push semever/docker-compose-app:1.0
The push refers to repository [docker.io/semever/docker-compose-app]
a2c70d73528f: Pushed
5462c5f4a4cf: Pushed
1733a4cd5954: Pushed
4d55cfecf366: Pushed
3f0cdcba744e: Pushed
80372c6d6c40: Pushed
6c94c56dddea: Pushed
2449c3068184: Pushed
72cf4c3b8301: Pushed
1.0: digest: sha256:23f9d8eab252c47e85b5c07f9246b8b83fbf2b17a9e7d042f07a5b8e7d41c8cc size: 856
devops2025@Senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose/app$
```

thd: Express Off ✓ AWS: profile:default Git Graph

22:27 12-12-2025 ENG

Published the Docker image to DockerHub repository:

[Repositories](#) / [docker-compose-app](#) / [Tags](#)

Using 1 of 1 private repositories.

semever/docker-compose-app

Last pushed 1 minute ago • Repository size: 50.6 MB • ⭐0 • ⌂0

Docker Compose App

Add a category

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TAG	docker pull semever/docker-compose-app:1.0		
1.0	Last pushed 1 minute by semever		
Digest	OS/ARCH	Last pull	Compressed size
4a03b2f21618	linux/amd64	less than 1 day	50.62 MB

thd: Express Off ✓ AWS: profile:default Git Graph

22:28 12-12-2025 ENG

Deployed the application using Docker Compose with images pulled from DockerHub:

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITHD

```
devops2025@Senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose$ docker-compose -f docker-compose.yaml up -d
WARN[0000] /mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose/docker-compose.yaml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion
[+] Running 4/4
✓ Network docker-compose_default Created
✓ Container demo-mongo Healthy
✓ Container demo-flask Started
✓ Container demo-mongo-express Started
devops2025@Senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose$ docker ps
CONTAINER ID IMAGE NAMES COMMAND CREATED STATUS PORTS
8c140eedeac1 semever/docker-compose-app:1.0 "flask run --host=0...." 16 seconds ago Up 4 seconds (health: starting) 0.0.0.0:5000->5000/tcp, [::]:5000
0->5000/tcp demo-flask
31e93875d5c7 mongo-express "/sbin/tini -- /dock..." 16 seconds ago Up 4 seconds 0.0.0.0:8081->8081/tcp, [::]:8081
1->8081/tcp demo-mongo-express
d577cad490dd mongo "docker-entrypoint.s..." 16 seconds ago Up 15 seconds (healthy) 0.0.0.0:27017->27017/tcp, [::]:27017
7017->27017/tcp demo-mongo
devops2025@Senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024/demolab/docker/docker-compose$
```

thd: Express Off ✓ AWS: profile:default Git Graph

22:40 12-12-2025 ENG

Application deployed from a DockerHub image:

The screenshot shows a web application titled "Items (MongoDB)". At the top, there is a table with four columns: id, name, designation, and city. One row is present with id=1, name=docker hub, designation=repository, and city=online. Below the table is a form titled "Add item" with four input fields corresponding to the table columns, followed by a "Add" button.

id	name	designation	city
1	docker hub	repository	online

Add item

1 docker hub repository online Add

The screenshot shows the Mongo Express interface for the "items" collection. At the top, there are buttons for "New Document" and "New Index". Below is a search bar with "Simple" and "Advanced" tabs, and a "Find" button. A red banner at the bottom says "Delete all 1 documents retrieved". The main area displays a table with the following data:

_id	id	name	designation	city
693c4d0727fec535b9d972c0	1	docker hub	repository	online

Below the table is a "Rename Collection" section with a dropdown menu showing "mydb . items" and a "Rename" button. The bottom of the screen shows a Windows taskbar with various icons and system status.

New Document New Index

Simple Advanced

Find

Delete all 1 documents retrieved

_id	id	name	designation	city
693c4d0727fec535b9d972c0	1	docker hub	repository	online

Rename Collection

mydb . items Rename

Tools