Docker Commands for MicroShop Project

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Introduction

This document lists all Docker commands used in the **MicroShop** project, tailored for your Spring Boot + PostgreSQL microservices setup on MacBook M1 + Mac Mini M2. Commands cover setup, container management, PostgreSQL interaction, network troubleshooting, and debugging.

1 Setup and Build Commands

- **Navigate to project directory**:

```
cd /Users/nareshswami/Documents/microshop
```

- **Build Docker images and start containers**:

```
docker compose up --build
```

- **Stop and remove containers**:

```
docker compose down
```

- **Build Maven project to create JAR**:

```
mvn clean package -DskipTests -f user-service/pom.xml
mvn clean package -DskipTests -f product-service/pom.xml
```

- **Reset PostgreSQL data volume**:

```
rm -rf /Users/nareshswami/Documents/microshop/postgres-data
rm -rf /Users/nareshswami/Documents/microshop/product-postgres-data
```

2 Container Management

- **Check running containers**:

```
docker compose ps
```

- **Check all containers (including stopped)**:

```
docker compose ps -a
```

- **View logs for a service**:

```
docker compose logs db
docker compose logs user-service
docker compose logs product-service
docker compose logs product-db
```

3 PostgreSQL Interaction

- **Access PostgreSQL in user-service database**:

```
docker exec -it microshop-postgres psql -U user -d userdb
```

- **Access PostgreSQL in product-service database**:

```
docker exec -it microshop-product-postgres psql -U user -d
    productdb
```

- **Manually create user and database (if needed)**:

```
CREATE USER "user" WITH PASSWORD 'password';
CREATE DATABASE userdb;
GRANT ALL PRIVILEGES ON DATABASE userdb TO "user";
```

- **List databases and tables in psql**:

```
\l
\dt
```

4 Network Troubleshooting

- **List Docker networks**:

```
docker network ls
```

- **Inspect microshop-network**:

```
docker network inspect microshop-network
```

- **Test network connectivity (if ping installed)**:

```
docker exec -it microshop-user-service ping db
docker exec -it microshop-product-service ping product-db
```

- **Test connectivity using curl (if installed)**:

```
docker exec -it microshop-user-service curl -v telnet://db:5432
```

5 Debugging and Maintenance

- **Check Docker Desktop version**:

  - Open Docker Desktop > Settings > About

- **Remove unused Docker objects**:

```
docker system prune -f
```

- **Check container resource usage**:

```
docker stats
```

6 Common Fixes

- **Fix "undefined network microshop-network"**:

  - Ensure `docker-compose.yml` has:

```
networks:
  microshop-network:
    driver: bridge
```

  - Rebuild:

```
docker compose down
docker compose up --build
```

- **Fix container exited status**:

  - Check logs:

```
docker compose logs db
```

  - Reset volume:

```
rm -rf /Users/nareshswami/Documents/microshop/postgres-data
```

- **Fix "ping not found" error**:

  - Update user-service/Dockerfile:

```
RUN apt-get update && apt-get install -y iputils-ping
```

  - Rebuild:

```
docker compose up --build
```

7 Notes

- Always run commands from **/Users/nareshswami/Documents/microshop**.

- Ensure `MicroShop.jar` exists: `ls user-service/target/MicroShop.jar`.

- Use Postman to test APIs:

  - User Service: `POST http://localhost:8081/users {"name": ""}`
  - Product Service: `POST http://localhost:8082/products {"name": ""}`