🧩 FIRST: VERY IMPORTANT CONCEPT

You work in **2 places**:

🖥️ Linux Shell

Looks like:

```
[ec2-user@ip-xxx ~]$
```

Used for:

- Installing software
- Running `mysqldump`
- Connecting to RDS

🗄️ MariaDB Prompt

Looks like:

```
MariaDB [(none)]>
```

Used for:

- SQL commands only

(`CREATE`, `USE`, `INSERT`, `SELECT`)

☑️ PART 1: Install MariaDB on EC2 (Amazon Linux 2023)

📍 Where: Linux shell

📍 Why: OS-level install

```
sudo dnf update -y
sudo dnf install mariadb105-server -y
sudo systemctl start mariadb
sudo systemctl enable mariadb
```

☑ PART 2: Create DB & Dummy Data on EC2

📍 Where: Linux shell → then MariaDB

📍 Why: Need source data

```
mysql -u root -p
CREATE DATABASE demo;
USE demo;

CREATE TABLE users (
  id INT AUTO_INCREMENT PRIMARY KEY,
  name VARCHAR(50),
  email VARCHAR(50)
);

INSERT INTO users (name,email) VALUES
('Alice','alice@test.com'),
('Bob','bob@test.com'),
('Charlie','charlie@test.com');

SELECT * FROM users;
```

⚠ Common mistake (your error)

❌ `SELECT * FROM demo;`

✅ `USE demo; SELECT * FROM users;`

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🔁 MIGRATION 1: EC2 ➜ RDS

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☑ PART 3: Take Backup FROM EC2

📍 Where: Linux shell

📍 Why: `mysqldump` is Linux command

```
mysqldump -u root -p demo > ec2_backup.sql
```

☑ PART 4: Create MariaDB RDS (AWS Console)

📍 Where: AWS Console → RDS → Create database

Steps:

- Creation: **Standard create**
- Engine: **MariaDB**
- Template: Free tier / Dev
- DB name: `mariadb-rds`
- Username: `admin`
- Same VPC as EC2
- Public access: Yes (lab)
- SG: allow **3306 from EC2 SG**

Copy **Endpoint**:

`xxxxx.rds.amazonaws.com`

☑ PART 5: Connect to RDS

📍 Where: Linux shell

📍 Why: Connect from EC2 to RDS

```
mysql -h <RDS-ENDPOINT> -u admin -p --ssl
```

☑ PART 6: Create DB in RDS

📍 Where: MariaDB prompt

```
CREATE DATABASE demo;
EXIT;
```

☑ PART 7: Restore EC2 Backup into RDS

📍 Where: Linux shell

```
mysql -h <RDS-ENDPOINT> -u admin -p --ssl demo < ec2_backup.sql
```

Verify:

```
mysql -h <RDS-ENDPOINT> -u admin -p --ssl
USE demo;
SELECT * FROM users;
```

➞ This completes **EC2 ➜ RDS migration**

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🔁 MIGRATION 2: RDS ➜ EC2

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Now we reverse it.

☑ PART 8: Take Backup FROM RDS

📍 Where: Linux shell

```
mysqldump -h <RDS-ENDPOINT> -u admin -p --ssl demo > rds_backup.sql
```

☑ PART 9: Create DB on EC2

📍 Where: MariaDB prompt

```
mysql -u root -p
CREATE DATABASE demo_from_rds;
EXIT;
```

☑ PART 10: Restore RDS Backup into EC2

📍 Where: Linux shell

```
mysql -u root -p demo_from_rds < rds_backup.sql
```

Verify:

```
mysql -u root -p
USE demo_from_rds;
SELECT * FROM users;
```

➞ This completes **RDS ➜ EC2 migration**

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🧠 INTERVIEW CHEAT SHEET

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Q: How do you migrate EC2 DB to RDS?

I take a logical backup using mysqldump and restore it into RDS using the mysql client.

Q: How do you migrate RDS DB to EC2?

I dump the RDS database using mysqldump and restore it into EC2.

Q: What is mysqldump?

A logical backup tool for MySQL/MariaDB.

Q: Multi-AZ vs Read Replica?

Multi-AZ is for high availability, Read Replica is for read scaling.

Q: Why RDS over EC2 DB?

Managed backups, patching, monitoring, and high availability.

🔑 GOLDEN RULE

Task	Where
Install DB	Linux shell
Backup	Linux shell
Connect to DB	Linux shell
SQL (CREATE/INSERT/SELECT)	MariaDB prompt