



Mahavir Education Trust's

Shah & Anchor Kutchhi Engineering College

An Autonomous Institute Affiliated to University of Mumbai

UG Program in Artificial Intelligence & Data Science Bachelor of Technology

Experiment No. – 4

Date of Performance:	20/08/2025			
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Program Execution (06)	Viva (02)	Professional Ethics (02)	Experiment Total (10)	Sign with Date

Experiment No. 4

1.1 Aim:

Implement DBaaS using AWS RDS, Azure SQL, MongoDB Atlas, or Firebase.

1.2 Course Outcome:

Deploy cloud service models (IaaS, PaaS, SaaS) to build problem-oriented solutions while following best practices for operational accuracy.

1.3 Learning Outcomes:

Provision and connect to managed database instances using cloud DBaaS tools while adhering to data privacy best practices.

1.4 Requirements:

Windows OS/ Ubuntu OS, AWS, MS Azure



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1.5 Related Theory:

Database as a Service:

Database as a Service (DBaaS) refers to a cloud computing service that provides users with access to a fully managed database without the need to provision hardware, install software, or handle administrative tasks like backups, patching, and scaling. The service provider manages the underlying infrastructure and database operations, allowing users to focus on application development and data utilization. DBaaS offerings typically operate on a pay-as-you-go model, where users are charged based on their consumption of resources.

Key Benefits:

- High availability and scalability
- Automated backups and maintenance
- Reduced operational costs
- Focus on application development rather than infrastructure

AWS RDS:

Amazon RDS is a fully managed relational database service on AWS, supporting engines such as Amazon Aurora, MySQL, PostgreSQL, MariaDB, Oracle, and SQL Server. AWS RDS automates hardware provisioning, database setup, patching, and backups, while offering features like Multi-AZ deployment for high availability, read replicas for performance, and seamless scaling. It is ideal for web applications and enterprise workloads requiring production-grade reliability.

Azure SQL:

Azure SQL is Microsoft's fully managed, intelligent relational database service. It supports single databases, elastic pools, and managed instances while providing SQL Server functionalities in the cloud. Key features include automatic backups, built-in performance optimization, advanced security, high availability, and elastic pooling for multiple databases. Azure SQL is suitable for applications in the Microsoft ecosystem and enterprises leveraging SQL Server technologies.

MongoDB Atlas:

MongoDB Atlas is a managed, globally distributed NoSQL database service for MongoDB. It provides a scalable, highly available platform for document-based data with automated backups, monitoring, and deployment across multiple cloud providers including AWS, Azure, and Google Cloud. MongoDB Atlas is ideal for applications requiring flexible schemas, big data handling, and real-time processing.

Firebase:

Firebase, provided by Google, is a cloud platform for mobile and web applications. Its database services, **Firebase Realtime Database** and **Cloud Firestore**, are NoSQL DBaaS solutions offering real-time synchronization, offline support, and integration with Firebase development tools. Firebase is well-suited for dynamic, collaborative, or live-update applications like chat apps, real-time dashboards, and collaborative platforms.



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1.6 Procedure:

- 1) Log in to AWS and navigate to RDS.
- 2) Create a new database instance in Amazon Aurora.
- 3) Obtain the **endpoint** of the database (e.g., database-1.c5u62mmgu03j.eu-north-1.rds.amazonaws.com).
- 4) Open Windows CMD and navigate to MySQL bin folder.
- 5) Connect to the RDS instance using:
`mysql -h <endpoint> -p 3306 -u <username> -p`
- 6) Create a new database, tables, and insert sample data.
- 7) Verify the inserted data with a SELECT query.

1.7 Program and Output:

Program:

```
CREATE DATABASE demo;  
USE demo;  
CREATE TABLE students (  
    id INT AUTO_INCREMENT PRIMARY KEY,  
    name VARCHAR(100)  
);  
INSERT INTO students (name) VALUES ('Prami'),('Shravan');  
SELECT * FROM students;
```



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Output:

```
Command Prompt - mysql -h X + v
Microsoft Windows [Version 10.0.26100.4946]
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C:\Users\lab206>cd..
C:\Users>cd..
C:\>cd "Program Files"
C:\Program Files>cd MySQL
C:\Program Files\MySQL>cd "MySQL Server 8.0"
C:\Program Files\MySQL\MySQL Server 8.0>cd bin
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql --version
mysql Ver 8.0.36 for Win64 on x86_64 (MySQL Community Server - GPL)
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql -h database-1.c5u62mmgu03j.eu-north-1.rds.amazonaws.com -P 3306 -u admin -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 63
Server version: 8.0.42 Source distribution

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE demo;
Query OK, 1 row affected (0.17 sec)

mysql> USE demo;
Database changed
mysql> CREATE TABLE students (
  -> id INT AUTO_INCREMENT PRIMARY KEY,
  -> name VARCHAR(100)
  -> );
Query OK, 0 rows affected (0.22 sec)

mysql>
mysql> INSERT INTO students (name) VALUES ('Prami'),('Shravan');
Query OK, 2 rows affected (0.16 sec)
Records: 2 Duplicates: 0 Warnings: 0

mysql>
mysql> SELECT * FROM students;
+----+-----+
| id | name  |
+----+-----+
| 1  | Prami |
| 2  | Shravan |
+----+-----+
2 rows in set (0.15 sec)

mysql> |
```

1.8 Conclusion:

In this experiment, I successfully created and connected to a cloud database using **AWS RDS**. I was able to create a database and a table, insert records, and retrieve them using MySQL commands. This helped me understand how **DBaaS works in real-time**, and I learned how cloud databases simplify management by handling backups, scaling, and security automatically. Overall, it was a great hands-on experience with cloud database services