

Activity 5:-

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Autonomous Vehicle Management System:

1. Begin transaction for inserting new autonomous vehicle logs.
2. Create savepoint BeforeRouteUpdate.
3. Update vehicle routes for deliveries.
4. Rollback to BeforeRouteUpdate if route conflicts detected.
5. Commit all verified route updates.
6. Set transaction isolation to SERIALIZABLE.
7. Begin transaction for updating battery status of vehicles.
8. Commit after validation of all vehicles.
9. Rollback if vehicle ID duplicates exist.

```
mysql> CREATE DATABASE AutonomousVehicleDB;
Query OK, 1 row affected (0.07 sec)

mysql> USE AutonomousVehicleDB;
Database changed
mysql> CREATE TABLE VehicleLogs (LogID INT PRIMARY KEY AUTO_INCREMENT,VehicleID INT NOT NULL,Route VARCHAR(100),BatteryStatus INT,LogTime TIMESTAMP
DEFAULT CURRENT_TIMESTAMP);
Query OK, 0 rows affected (0.09 sec)

mysql> CREATE TABLE Vehicles (VehicleID INT PRIMARY KEY,Route VARCHAR(100),BatteryStatus INT);
Query OK, 0 rows affected (0.10 sec)

mysql> INSERT INTO Vehicles (VehicleID, Route, BatteryStatus) VALUES (101, 'Route-A', 75), (102, 'Route-B', 80), (103, 'Route-C', 65);
Query OK, 3 rows affected (0.08 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> START TRANSACTION;
Query OK, 0 rows affected (0.00 sec)

mysql> INSERT INTO VehicleLogs (VehicleID, Route, BatteryStatus) VALUES (101, 'Route-A', 75);
Query OK, 1 row affected (0.03 sec)

mysql> SAVEPOINT BeforeRouteUpdate;
Query OK, 0 rows affected (0.00 sec)

mysql> UPDATE Vehicles SET Route = 'Route-X' WHERE VehicleID = 101;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> ROLLBACK TO BeforeRouteUpdate;
Query OK, 0 rows affected (0.03 sec)

mysql> COMMIT;
Query OK, 0 rows affected (0.06 sec)

mysql> SET TRANSACTION ISOLATION LEVEL SERIALIZABLE;
Query OK, 0 rows affected (0.00 sec)

mysql> START TRANSACTION;
Query OK, 0 rows affected (0.00 sec)
```

```
mysql> UPDATE Vehicles SET BatteryStatus = 90 WHERE VehicleID = 102;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> COMMIT;
Query OK, 0 rows affected (0.07 sec)

mysql> START TRANSACTION;
Query OK, 0 rows affected (0.00 sec)

mysql> INSERT INTO Vehicles (VehicleID, Route, BatteryStatus) VALUES (101, 'Route-Z', 60);
ERROR 1062 (23000): Duplicate entry '101' for key 'vehicles.PRIMARY'
mysql> ROLLBACK;
Query OK, 0 rows affected (0.00 sec)
```