DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ANNA UNIVERSITY

B.E. COMPUTER SCIENCE AND ENGINEERING (BATCH – Q)

FOURTH SEMESTER

(DECEMBER 2025 TO APRIL 2026)

CS23401: DATABASE MANAGEMENT SYSTEMS

ACTIVITY – III (31.12.2025)

1.	Consider the following relational schema for a Boat Management Application for A Beach Resort:
	SAILOR (**SID**, NAME, DOB, GENDER, RATING) DOB – Date of Birth RATING can take the vales ('F','G'','E') F – FAIR, G – GOOD, E – EXCELLENT BOAT (**BID**, BTYPE, BNAME, COLOR) BTYPE can take two values (D, S) D – Deluxe; S – Super Deluxe TOURIST (**AADHAAR**, TOURIST_NAME, MOBILE_NUMBER) SAILS (**SID,** BID, **DOT**, SHIFT) DOT – Date of Trip SEAT_AVAILABILITY (**BID**, **DOT**, **SHIFT**, NOS) The default NOS (Number of Seats) available is 36. While creating the relation for SEAT_AVAILABILITY after specifying the data type for SEAT_AVAILABILITY specify DEFAULT 36. [SEAT_AVAILABILITY NUMMBER (2) DEFAULT 36] While inserting a record into the SEAT_AVAILABILITY relation the following syntax should be used: INSERT INTO SEAT_AVAILABILITY (BID, DOT, SHIFT) VALUES (Value for BID, Value for DOT, Value for Shift) RESERVES_BOAT (**AADHAAR**, BID, **DOT**, **SHIFT**) DOT – Date of Trip; SHIFT can take two values – FN or AN A sailor is assigned a boat on a day. A sailor is permitted to sail the boat for only one shift on a day. The primary key of each relation is underlined.

(a)	Develop DDL to implement the above Schema specifying appropriate data types for each attribute enforcing primary key, check constraints and foreign key constraints.
(b)	Populate the database with a rich data set.
(c)	Develop a SQL query to list the details of boats whose Color is 'RED'.
(d)	Develop a SQL query to list the details of boats whose Color is 'RED' and Boat Type is Super Deluxe.
(e)	Develop a SQL query to list the details of sailors whose rating is 'EXCELLENT'.
(f)	Develop a SQL query to list the AADHAAR, TOURIST_NAME, BID, BTYPE, BNAME, COLOR, DOT and SHIFT.
(g)	Illustrate Insert Statements, Update Statements and Delete Statements that will violate Referential Integrity constraints.
(h)	Illustrate Insert Statements and Update Statements that will violate Primary Key constraints and Check Constraints.
2.	Using Dia Diagram Editor open-source tool create an Entity-Relationship Diagram for the Company Database Schema presented below:

A Company is organized into departments. Each department has employees working in it. The attributes of Department include Department Number and Department Name. The attributes of Employee include Employee Number, Employee Name, Date of Birth, Gender, Date of Joining, Designation, Basic Pay, PAN and Skill. Skill is a multivalued attribute. Each department has a manager managing it. There are also supervisors in each department who supervise a set of employees. Each department controls a number of projects. The attributes of Project include Project Code and Project Name. A project is controlled only by one department. An employee can work in any number of distinct projects on a day. The Date an Employee Worked, In Time and Out Time has to recorded. The company also keeps track of the dependents of each employee. The attributes of Dependent include Dependent Name, Date of Birth, Gender and Relationship with the employee.