CS23401 Database Management Systems
Course Instructor: V P Jayachitra

Week 4 Assignment

Topic: ER Diagram and Mapping to Relation

Instructions:

1. Draw an ER diagram using any free drawing software/tool.

2. Create the necessary SQL commands for designing relations. At least two entries should be inserted to confirm the scenario's information and the limitation.

3. To verify that the work was completed by you, a textbox or comment with your name and register number should be drawn in the ER diagram.

4. A record with your name and register number details must be inserted in any relation of each scenario in order to confirm that the task was accomplished by you.

Q.No 1   Draw the ER diagram for the Company scenario. Implement the database design by applying the translation rule.

The company is organized into departments. Each department has a name, a unique number, and must be managed by exactly one employee, though not all employees are managers. The start date when the employee began managing the department is recorded. A department may have several locations. Each department may control any number of projects, while every project must be controlled by exactly one department. Each

project has a name, unique number, and single location. We store each employee's personal information including their name (divided into Fname, Minit, and Lname), SSN, address, salary, gender, and birth date. Every employee must be assigned to exactly one department, and may work on several projects, which are not necessarily controlled by their assigned department. For each project an employee works on, we keep track of the number of hours per week they contribute. We also keep track of the direct supervisor of each employee, where an employee may supervise zero or more employees, and each employee may have at most one supervisor. For insurance purposes, we maintain records of employee dependents, where each dependent (if they exist) must be associated with exactly one employee. For each dependent, we store their name, gender, birth date, and relationship to the employee.

Q.No 2 Draw the ER diagram for the WhatsApp scenario. Implement the database design by applying the translation rule.

WhatsApp is a messaging platform that manages users, chats, messages, and groups. Each user is identified by a unique phone number and must have a name, while optionally maintaining a profile picture, status, and last seen timestamp. Every user must participate in at least one chat. The system manages chats, where each chat has a unique chat ID, chat type (individual/group), and

creation timestamp. Message must have a unique message ID, content, sending timestamp, message type (text/image/video/audio), and read status. Every message must belong to exactly one chat and must have exactly one sender, while users and chats can have zero or more messages. The platform also includes groups, where each group is identified by a unique group ID and must have a group name, creation timestamp, and member count, while description and group picture are optional. Every group must be associated with exactly one chat, and every group must have at least one administrator from among its members. Users can be members of multiple groups, and groups can have multiple members. A user can be an administrator for multiple groups, and groups can have multiple administrators, though every group must have at least one administrator.