



# Northeastern University

## College of Engineering

### **Data management and Database Design (INFO 6210)**

#### **P3 - Final ERD Team - 20**

#### **Team Members**

Ashwin Muthiah Murugappan ([murugappan.a@husky.neu.edu](mailto:murugappan.a@husky.neu.edu))

Vijayalakshmi Siddappa ([siddappa.v@husky.neu.edu](mailto:siddappa.v@husky.neu.edu))

Naga Mahesh Tiruveedhula ([tiruveedhula.n@husky.neu.edu](mailto:tiruveedhula.n@husky.neu.edu))

## Database Topic

RBAC (Role-based access control) database design for a small enterprise

## Design Changes

Two new entities are introduced into the design and are as follows

### 1. DEPARTMENT

Purpose : Added to provide an overall picture of the enterprise. It depicts which Department the users (employees) from User entity belong to.

Relationship: It has one-to-many identifying relationship with new entity “Team” i.e. one department may have one or more teams associated with it.

Attributes:

- Department Name,
- Department Head\_ID,
- Description

Example : Department name Data Analytics, Head – UserID, Description is department responsible for data analytics and monitoring

### 2. TEAM

Purpose: Added to provide an overall picture of the enterprise. It depicts which Team the users (employees) from User entity belong to.

Relationship:

- It shares one-to-many identifying relationship with User table i.e. one team may have one or more users/employees within it. One user however is associated with one team only.
- Department table shares a one-to-many relationship with Team i.e. one team can belong to one department only, one department can however contain many teams under it.

Attributes:

- Team ID
- Team Name
- Team Manager\_ID
- Tech lead\_ID
- Description

Example: Under Department “Data Analytics” there could be Data analytics development team, Platform team, Monitoring team and Test team. Attributes depict Team ID, Name and Team Manager’s User ID as well as Tech Lead’s User\_ID in addition to description.

The following entities are modified , at that new attributes are added, modified or deleted to better represent the entities.

### **1. USER**

Added Attributes:

- Username
- Email
- DeskPhone
- PersonalPhone
- DOB
- Gender
- Encrypted password

Deleted Attributes

- Contact

Modified Attributes

- Created\_by as Created\_by\_ID
- Deleted as Active

### **2. USER\_GROUP**

Added Attributes:

- Usergroup\_Email
- Admin\_ID
- Usergroup\_type – Static/Dynamic

Modified Attributes

- Deleted as Active
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### **3. ROLE**

Added Attributes:

- Created\_on

### **4. ACCOUNTS**

Added Attributes:

- Admin\_ID
- Subscription Start Date
- Subscription End Date
- Active

Deleted Attributes:

- Name

The primary key is now modified to be composite containing 4 keys namely User ID, Role ID, User\_group ID and Account ID. A unique combination of these 4 primary keys (composite) represents each row in the Accounts table.

## **5. PERMISSIONS**

Added Attributes:

- Description

Modified Attributes:

- Type\_Status as Active

## **6. USER-ACCOUNTS-MAPPING**

Added Attributes:

- Valid until
- Created\_by\_ID
- Last\_logout

## **7. USER-ROLE-MAPPING**

Added Attributes:

- Active

## **8. USER-USER-GROUP-MAPPING**

Added Attributes:

- Active
- Valid until

## **9. ACCOUNT-ROLE-MAPPING**

Added Attributes:

- Created\_by\_ID
- Created\_on

## **10. USERGROUP-ACCOUNT-MAPPING**

Added Attributes:

- Assigned\_by\_ID