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ClubConnect Database Design

1. ERD Schema

University(<u>universityID</u>, name, emailDomain, address, zipCode, city, state, website)
Club(<u>clubID</u>, name, description, constitution, startDate, email, logo, *universityID, clubCategory*)
Student(<u>studentID</u>, firstName, lastName, <u>emailAddress</u>, program, graduationDate, enrollmentYear, dateOfBirth, profilePicture, *universityID*)
Role(<u>roleID</u>, roleTitle, roleDescription)
Membership(*<u>clubID</u>*, *<u>roleID</u>*, *<u>studentID</u>*, description, joinDate, isActive, *memberType*)
Event(<u>eventID</u>, date, time, title, location, description, contact, *statusID*, *clubID, eventType*)
Status(statusID, status)
Interview(<u>interviewID</u>, date, time, *studentID*, *roleID*, *platform, statusID, clubID*)

2. Functional Dependencies of the ERD Schema by each entity (with proof of BCNF)

A relation is in BCNF if for every functional dependency X→Y, where X is a superkey.

University

- This relation is already in BCNF since **<u>universityID</u>** is the primary key (or super key) and there are no partial or transitive dependencies.
- Functional dependency:
    - universityID → name, emailDomain, address, zipCode, city, state, website

Club

- This relation is in BCNF because **<u>clubID</u>** is the primary key (or super key) and determines all the other attributes.
- Functional dependency:
    - clubID → name, description, constitution, startDate, email, logo, universityID, clubCategory

Student

- This relation is in BCNF because **<u>studentID</u>** is the primary key (or super key) and determines all the other attributes.
- Functional dependency:
    - studentID → firstName, lastName, emailAddress, program, graduationDate, enrollmentYear, dateOfBirth, profilePicture, universityID

Role

- This relation is in BCNF because **<u>roleID</u>** is the primary key (or super key) and determines all the other attributes.

- Functional dependency:
    - roleID ⟶ roleTitle, roleDescription

Membership

- This relation is in BCNF because the composite key (**clubID**, **roleID**, **studentID**) is the primary key (or super key) and determines all the other attributes.
- Functional dependency:
    - (clubID, roleID, studentID) ⟶ description, joinDate, isActive, memberType

Event

- This relation is in BCNF because **eventID** is the primary key (or super key) and determines all the other attributes.
- Functional dependency:
    - eventID ⟶ date, time, title, location, description, contact, statusID, clubID, eventType

Status

- This relation is in BCNF because **statusID** is the primary key (or super key) and determines status.
- Functional dependency:
    - statusID ⟶ status

Interview

- This relation is in BCNF because **interviewID** is the primary key (or super key) and determines all the other attributes.
- Functional dependency:
    - interviewID ⟶ date, time, roleID, platform, statusID, clubID, studentID

3. UML Class Diagram and ERD Link

ClubConnect_UML-ERD