Company Name:

Triple A & Jack

Project Title:

Advertisement Posting Management on Campus

Team Members:

- Jack Boeri (MySQL Expert)
- Alex Chia Liang, Liu (MS SQL Server Expert)

Weekly Meeting Hours:

We will meet and work on the project every **Monday from 2:00 PM to 3:00 PM**.

Project Description:

Create a database in which students, professors, staff in a college and non-college-members can post advertisements on approved boards installed in various locations around the campus. If someone is not a member of the college, they must register into the database and enter their data. The main difference between college members and non-members is that members have a collegeID (staff ID, student ID, …) and members are affiliated with a department. People (students, professors, and staff) can send a message to the person who posted the advertisement. These communications (sender name, receiver name, message, date, time, regarding post (post number and post title)) are also stored in the database.

- a college member is identified by a college ID number, and is described by a name, phone number, email address, affiliated department.... specific members have extra attributes. For example, students have a major field of study while staff and instructors do not have such an attribute. Staff and instructors have an office location and start date of employment. Staff has the attribute position title while professors do not have this attribute.
- Advertisements are defined by a unique adID number, type (ad for private tutorship, rent a room, selling something, looking for a roommate, event advertisement…), postdate, duration, size dimension (width, height)
- all advertisements must be approved by a responsible person (we store information of this person)
- Board location on campus identified by a board ID, and described by building, floor, and location on the floor.

- Advertisements are posted by college members. One college member may post multiple advertisements. It is the members' choice if they want to make the advertisement post.
- All Advertisements are posted on boards installed in various locations around the campus. Advertisements can be posted on many boards. Similarly, one board can have many posts of ads.
- Non-college members must register to become a college member in order to post advertisements.
- Members may send messages to the members who post advertisements, as well as the posters may send messages back to the inquiring members.

Assumptions about Cardinality and Participations:

Relationships

- Non-College Members can register to become College Members [1 to 1]
- College Members post Advertisements [1 to M]
- Advertisements are posted on Boards [M to M]
- Responsible people must approve all Advertisements [1 to M]
- Members send Messages (Communication) [1 to M]

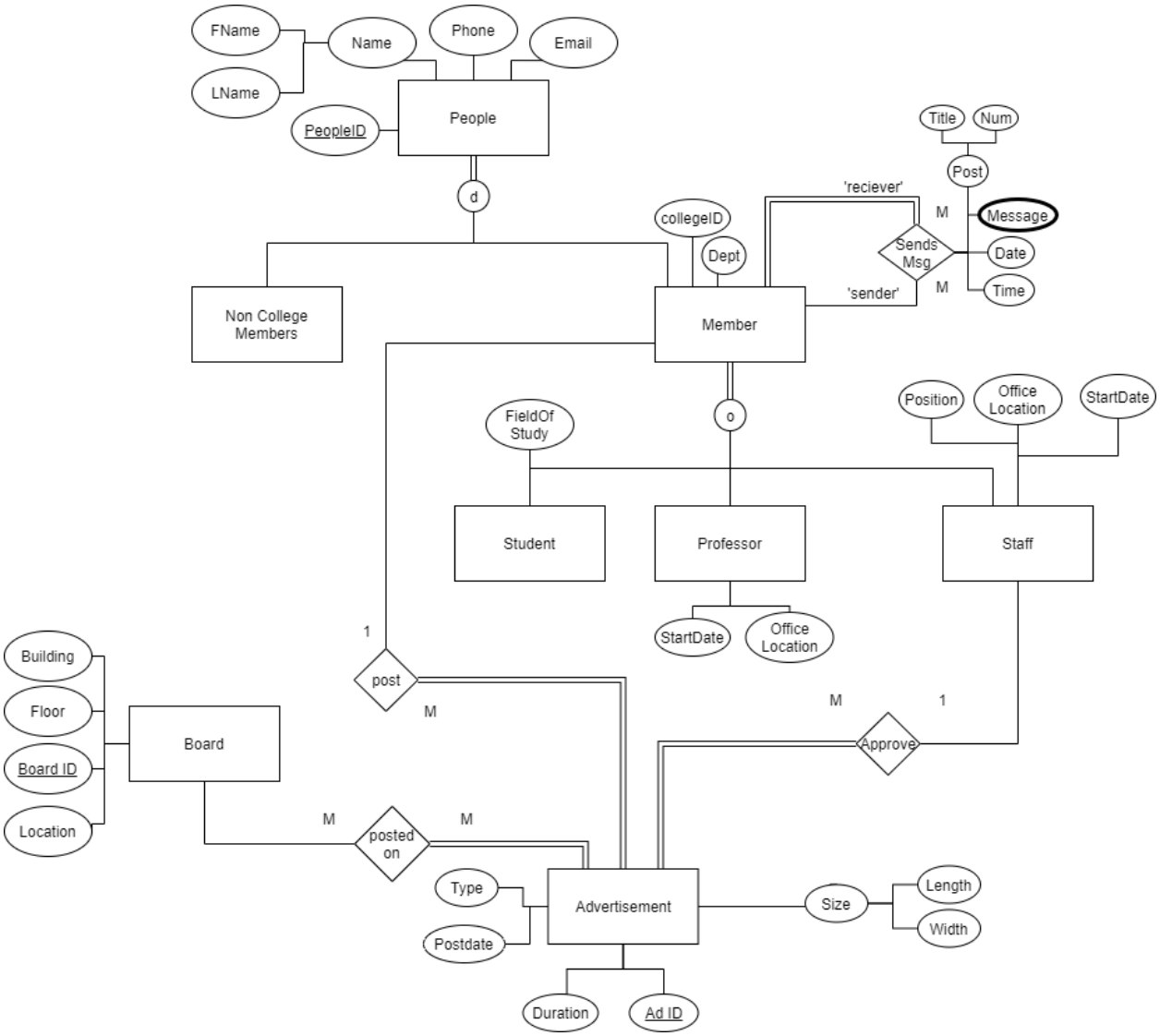
Cardinality

- 1 Non College Member registers as 1 College member
- 1 College Member can post M Advertisements.
- M Advertisement can be posted on M Boards
- 1 Responsible Person approves M Advertisements.
- 1 Member sends M Messages(Communication)

Participation

- Non college Members can choose to register as College Members - Partial
- All college Members must be registered from Non college Members - Total
- Not all College Members post Advertisements - Partial
- All advertisements are posted by College Members – Total
- All advertisements are posted on boards – Total
- Not all boards have Advertisements – Partial
- All responsible person must approve Advertisements – Total
- All advertisements must be approved by a responsible person - Total
- Not all members send Communication - Partial
- All communication is sent from members - Total
- All communication is send to the Post Member - Total
- Not all Post Members receive Communication - Partial

EER Diagram


FName
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Non College Members
collegeID
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o
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Position
Office Location
StartDate
Student
Professor
Staff
StartDate
Office Location
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post
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Board ID
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M
M
1
Approve
Type
Postdate
Advertisement
Size
Length
Width
Duration
Ad ID

Relational Schema

People(PeopleID, FName, LName, Phone, Email)

Member(**PeopleID**, Dept, collegeID)

Non College Members(**PeopleID**)

Student(**PeopleID**, FieldOfStudy)

Professor(**PeopleID**, StartDate, OfficeLocation)

Staff(**PeopleID**, Position, OfficeLocation, StartDate)

Board(BoardID, Building, Floor, Location)

Advertisement(AdID, Type, Postdate, Duration, Length, Width)

AdvertisementApprovedByStaff(**AdID,PeopleID**)

AdvertisementPostedByMember(**AdID,PeopleID**)

AdvertismentPostedOnBoard(**BoardID,AdID**)

Sender_SendsMsgTo_Reciever(PostTitle,PostNum,Date,Time,**Sender_PeopleID, Reciever_PeopleID**)

MemberMessage(**Sender_PeopleID, Reciever_PeopleID, MessageID**)

Messages(MessageID, Message)

Normalization

1. People(PeopleID, FName, LName, Phone, Email)
    a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
    b. 2NF is passed as there is no partial dependency.
    c. 3NF is passed as there is no transitive dependency
    d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
    e. This table is already normalized up to BCNF
2. Member(**PeopleID**, Dept, collegeID)
    a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
    b. 2NF is passed as there is no partial dependency.
    c. 3NF is not passed.

        The collegeID has transitive dependency with Dept. Hence, another table is created for collegeID and Dept, CollegeMember(collegeID, Dept). Member table becomes Member(**PeopleID**, **collegeID**).

    d. 3NF is passed as there is no transitive dependency
    e. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
    f. This table is already normalized up to BCNF with new tables Member(**PeopleID**, **collegeID**) and CollegeMember(collegeID, Dept).
3. Non College Members(**PeopleID**)
    a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
    b. 2NF is passed as there is no partial dependency.
    c. 3NF is passed as there is no transitive dependency
    d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
    e. This table is already normalized up to BCNF
4. Student(**PeopleID**, FieldOfStudy)
    a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
    b. 2NF is passed as there is no partial dependency.
    c. 3NF is passed as there is no transitive dependency
    d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
    e. This table is already normalized up to BCNF
5. Professor(**PeopleID**, StartDate, OfficeLocation)
    a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
    b. 2NF is passed as there is no partial dependency.

c. 3NF is passed as there is no transitive dependency
d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
e. This table is already normalized up to BCNF

6. Staff(**PeopleID**, Position, OfficeLocation, StartDate)
a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
b. 2NF is passed as there is no partial dependency.
c. 3NF is passed as there is no transitive dependency
d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
e. This table is already normalized up to BCNF

7. Board(BoardID, Building, Floor, Location)
a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
b. 2NF is passed as there is no partial dependency.
c. 3NF is passed as there is no transitive dependency
d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
e. This table is already normalized up to BCNF

8. Advertisement(AdID, Type, Postdate, Duration, Length, Width, **PeopleID**)
a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
b. 2NF is passed as there is no partial dependency.
c. 3NF is passed as there is no transitive dependency
d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
e. This table is already normalized up to BCNF

9. AdvertisementApprovedByStaff(**AdID,PeopleID**)
a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
b. 2NF is passed as there is no partial dependency.
c. 3NF is passed as there is no transitive dependency
d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
e. This table is already normalized up to BCNF

10. AdvertisementPostedByMember(**AdID,PeopleID**)
a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
b. 2NF is passed as there is no partial dependency.
c. 3NF is passed as there is no transitive dependency
d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
e. This table is already normalized up to BCNF

11. AdvertismentPostedOnBoard(**BoardID,AdID**)
   a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
   b. 2NF is passed as there is no partial dependency.
   c. 3NF is passed as there is no transitive dependency
   d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
   e. This table is already normalized up to BCNF

12. Sender_SendsMsgTo_Reciever(**Sender_PeopleID, Reciever_PeopleID**,PostTitle,PostNum,Date,Time)
   a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
   b. 2NF is passed as there is no partial dependency.
   c. 3NF is passed as there is no transitive dependency
   d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
   e. This table is already normalized up to BCNF

13. MemberMessage(**Sender_PeopleID, Reciever_PeopleID, MessageID**)
   a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
   b. 2NF is passed as there is no partial dependency.
   c. 3NF is passed as there is no transitive dependency
   d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
   e. This table is already normalized up to BCNF

14. Messages(MessageID, Message)
   a. 1NF is passed as each column contains atomic value, data of the same type, and unique column name.
   b. 2NF is passed as there is no partial dependency.
   c. 3NF is passed as there is no transitive dependency
   d. BCNF is passed as there is no dependency such as non-prime attribute -> prime attribute
   e. This table is already normalized up to BCNF

After normalization:

People(PeopleID, FName, LName, Phone, Email)

Non College Member(**PeopleID**)

Student(**PeopleID**, FieldOfStudy)

Professor(**PeopleID**, StartDate, OfficeLocation)

Staff(**PeopleID**, Position, OfficeLocation, StartDate)

Board(BoardID, Building, Floor, Location)

Advertisement(AdID, Type, Postdate, Duration, Length, Width)

AdvertisementApprovedByStaff(**AdID,PeopleID**)

AdvertisementPostedByMember(**AdID,PeopleID**)

AdvertismentPostedOnBoard(**BoardID,AdID**)

Sender_SendsMsgTo_Reciever(PostTitle,PostNum,Date,Time,**Sender_PeopleID, Reciever_PeopleID**)

MemberMessage(**Sender_PeopleID, Reciever_PeopleID, MessageID**)

Messages(MessageID, Message)

Member(**PeopleID**, **collegeID**)

CollegeMember(collegeID, Dept)