ER Diagram for Messaging System
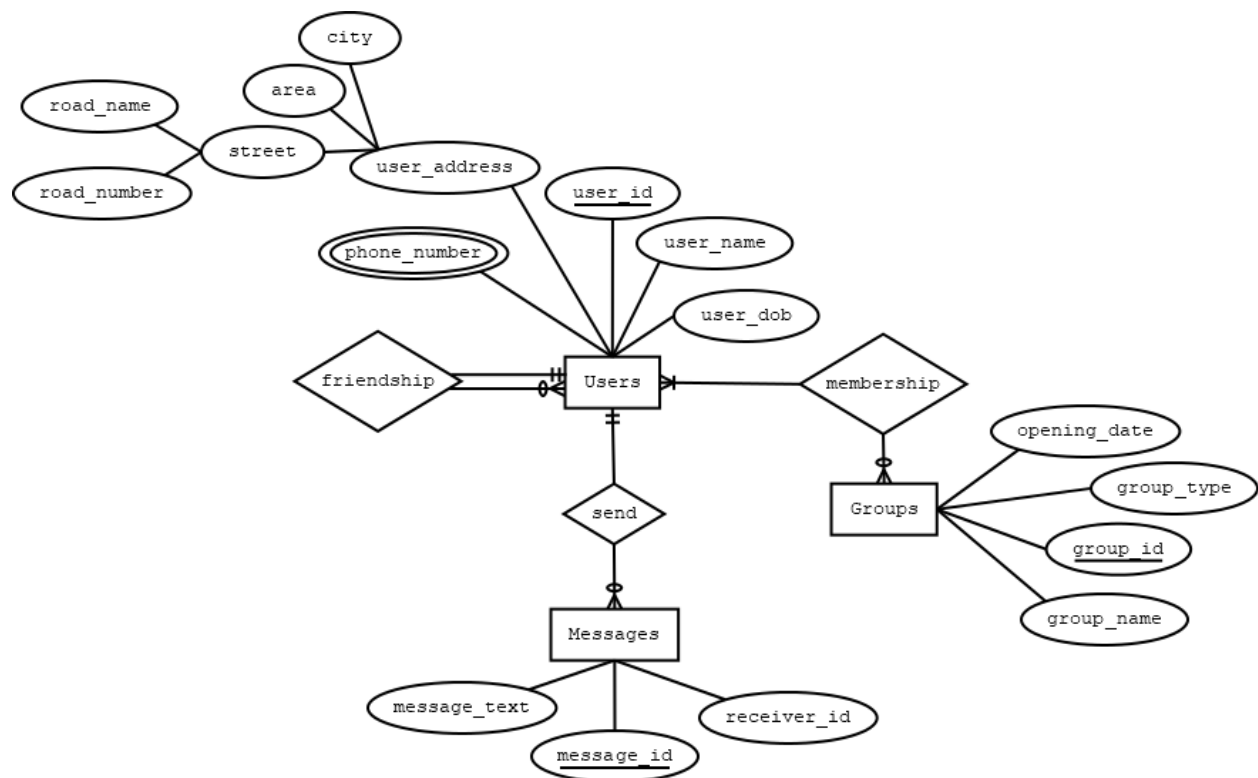
Group Name: **Super Five**

Group Members:

1. Rahman, Sheikh Talha Jubayer (19-41468-3)
2. Shifat, Mahabub Hasan (19-41460-3)
3. Khanom, Afrida (19-41444-3)
4. Asha, Nahida Akther (19-41190-2)
5. Mim, Syeda Maherunnasha (19-41446-3)

Case:

In a Messaging System, a user may or may not have friendship with other users. One user can have zero to many friendships. User is identified by user id. System also stores user name, user date of birth, phone number and address. User can have multiple phone number. Users' address is composed of city, area and street. Street is also composed of road number and road name. One user can be member of zero to many groups. One group is identified by group id. One group can be created by one or more members. Group has name and group type like entertainments, study and work. System also store group opening date. User can send zero to many messages. One message can be sent by exactly one user. One message is identified by message id. Message has the text and receiver id which is the user id who received this message.

ER Diagram:

Normalization:

Friendship:

UNF: 1st: <u>user_id</u>, user_name, user_dob, road_name, road_number, area, city, phone_number, <u>friend_id</u>

1NF: 1st: <u>user_id</u>, <u>phone_number</u>, <u>friend_id</u>, user_name, user_dob, road_name, road_number, area, city

2NF: 1st: <u>user_id</u>, <u>phone_number</u>

2nd: <u>user_id</u>, user_name, user_dob, road_name, road_number, area, city

3rd: <u>user_id</u>, <u>friend_id</u>

3NF: 1st: <u>user_id</u>, <u>phone_number</u>

2nd: <u>user_id</u>, user_name, user_dob, road_number

3rd: <u>road_number</u>, road_name, area, city

4th: <u>user_id</u>, <u>friend_id</u>

Send:

UNF: 1st: <u>user_id</u>, user_name, user_dob, road_name, road_number, area, city, phone_number, <u>message_id</u>, message_text, receiver_id

1NF: 1st: <u>user_id</u>, <u>phone_number</u>, <u>message_id</u>, user_name, user_dob, road_name, road_number, area, city, message_text, receiver_id

2NF: 1st: <u>user_id</u>, <u>phone_number</u>

2nd: <u>user_id</u>, user_name, user_dob, road_name, road_number, area, city

3rd: <u>user_id</u>, <u>message_id</u>

4th: <u>message_id,</u> message_text, receiver_id

3NF: 1st: <u>user_id</u>, <u>phone_number</u>

2nd: <u>user_id</u>, user_name, user_dob, road_number

3rd: <u>road_number</u>, road_name, area, city

4th: <u>user_id</u>, <u>message_id</u>

5th: <u>message_id,</u> message_text, receiver_id

Membership:

UNF: 1st: <u>user_id</u>, user_name, user_dob, road_name, road_number, area, city, phone_number, <u>group_id,</u> group_name, group_type, opening_date

1NF: 1st: <u>user_id</u>, <u>phone_number</u>, <u>group_id,</u> user_name, user_dob, road_name, road_number, area, city, group_name, group_type, opening_date

2NF: 1st: <u>user_id</u>, <u>phone_number</u>

2nd: <u>user_id</u>, user_name, user_dob, road_name, road_number, area, city

3rd: <u>user_id</u>, <u>group_id</u>

4th: <u>group_id,</u> group_name, group_type, opening_date

3NF: 1st: <u>user_id</u>, <u>phone_number</u>

2nd: <u>user_id</u>, user_name, user_dob, road_number

3rd: <u>road_number</u>, road_name, area, city

4th: <u>user_id</u>, <u>group_id</u>

5th: <u>group_id,</u> group_name, group_type, opening_date

Final Table:

1st: <u>user_id</u>, <u>phone_number</u>

2nd: <u>user_id</u>, user_name, user_dob, road_number

3rd: <u>road_number</u>, road_name, area, city

4th: <u>user_id</u>, <u>friend_id</u>

5th: <u>user_id</u>, <u>message_id</u>

6th: <u>message_id,</u> message_text, receiver_id

7th: <u>user_id</u>, <u>group_id</u>

8th: <u>group_id,</u> group_name, group_type, opening_date