Database Systems Assignment 2

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   To compile and run the program,
   - Create a db "orcl" with user name "test2" and password as "oracle".
   - Run the createdb.sql using sql developer with the above connection.
   - Just type the following commands in a cmd prompt.
     - $ javac Assignment2.java
     - $ java Assignment2

2. Normalized Version of the Input Schema.

   {Members: EMAIL,FNAME,LNAME,BIRTHDATE,PASSWORD,AID.}
   EMAIL : Primary Key
   AID : Foreign key references Address table.
   we normalize the members table to 3NF and decompose to get Address and Members table.

   {Address: AID,STREET_NO,CITY,STATE,COUNTRY,ZIP,STREET_ADDRESS,COORDINATE}
   AID: Primary Key.

   {Friendship: USER1,USER2,TYPE}
   {USER1,USER2} Primary Key.
   User1: foreign key references members
   User2: foreign key references members

   {Friend_Request: USER1,USER2,RTYPE,STATUS}
   {USER1,USER2} Primary Key.
   User1: foreign key references members
   User2: foreign key references members

   {Post: ID, NOTE, SENDER, PRIVACY, DATETIME, Privacy}
   ID Primary Key.
   Sender foreign key references members table.

   {Post_Comment: PID, TEXT, MID, DATETIME }
   Weak Entity.
   Pid, Mid Foreign keys reference Post and members respectively.

{Event: TITLE, DESCRIPTION, ADDRESS_ID, STARTINGTIME, DURATION}
Title Primary Key, Address_id foreign key references Address.

3. A spatial index "INDEX_ADDRESS" on Coordinate column of Address table:
   This spatial index is created to limit the search space based on spatial criteria like intersection and containment to perform spatial queries like finding an object within a certain window, or spatial joins.

   A Hash Index "INDMEM" on Email, Fname and Lname columns of Members table as we keep accessing the same information in many queries by specifying values to the columns(direct Queries) and we rarely use range queries over these columns.

4. For Normalization, the assumption made is in address table, there can be cities with same name in different states and/or countries, and states with same name in different countries, and also there can be two or more streets with same zip . So No functional dependencies can be visualized on these columns.

   A Stored Fuction "Get_Nearest_Neighbor" is being used as we are using the index for making a spatial query in the database rather than parsing the result using an API in Java.