MA 518: DATABASE MANAGEMENT SYSTEMS
MONSOON 2020

LAB #5: SQL Basics

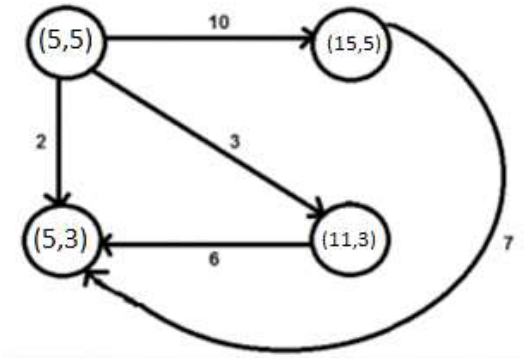
In this lab, we will create a database called "graph" to store the nodes and edges of a directed weighted graph as described below.

1. Design a suitable relational schema Node to store the vertices of the graph. Your design should indicate the primary key by underlying the corresponding attributes. Subsequently create the table Node.
   a. Write SQL statement to insert tuples.
   b. Write a SQL query that returns all the nodes.
   c. Write a SQL statement that returns all nodes whose x and y coordinates are same.

2. Design a suitable relational schema to store edges between the nodes. Remember you should store the weight of the edges. Identify the key of the table. The default edge weight is 1.
   a. Write SQL statement to insert tuples.
   b. Write SQL statement to update an edge.
   c. Write SQL statement to show all edges of the graph.

3. The database should enforce the following integrity constraints
   - An edge cannot be inserted if the corresponding nodes are not present in the Node table.
   - Whenever a node is deleted all its corresponding edges should also be deleted.

   Test your database by inserting the following graph



Deliverable: Submit the relation schemas and all the SQL statements to create table, insert/update tuple, etc. as a pdf.

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