National Institute of Technology Calicut
Department of Computer Science and Engineering

CS3095D DATABASE MANAGEMENT SYSTEMS LABORATORY

S5/S7 B Tech - Monsoon Semester 2022

Mid-Term Exam 1	Part A (10 Marks)	Date: 7/10/2022

Evaluation- I- Set A

Problem Description:

You are tasked with the development of an ATM system for a bank. An ATM belongs to a single bank, but a bank can have many ATMs. An ATM has its location address, a unique ATM_ID, and its cash limit. A bank has the following details associated with it: bank name and a unique Bank_id. Note that a bank has many branches and each branch has a unique id associated with it. In addition to this, a branch has, a branch_name, and branch address. The branch address contains the state, country, and Pincode information of the branch location.

An ATM can be visited by many users to perform money transactions denoting a unique transaction ID and the type of transaction. Note that a user can perform any number of transactions. The bank has also given the provision that a user can visit any ATM of their choice and an ATM caters to many users. Note that there is a unique id called "visitNo" denoting each visit made by a user to an ATM irrespective of whether or not they perform a transaction. User has the details like unique user_id, user_name, phone number (a user can have more than one phone number), and user_address. The user's address contains the state, country, and pin code information. Note that a user can hold any number of accounts and an account can be held by more than one user as a joint account. A User's account must have information like account balance, unique account number, and the type of account that the user holds. Note that a particular user account must be in one of the branches, even though many accounts can be in the same branch.

Considering the above details,

a. Design an ER diagram for the above database. Indicate clearly the cardinality and participation constraints of various relations. Also identify the multivalued, composite, and derived attributes. (5 M)
b. Construct an ER-to-Relation mapping for the same. (5 M)

All the Best