Laboratory Manual

Database Management System

S.Y. B. Tech. Computer Engineering **Semester-III**

Experiment No.: 1

Aim: Identify the case study and detailed statement of problem and design ER /EER model.

Software requirement: - Microsoft Word or Paint

Theory:

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how "entities" such as people, objects or concepts relate to each other within a system. ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education and research. Also known as ERDs or ER Models, they use a defined set of symbols such as rectangles, diamonds, ovals and connecting lines to depict the interconnectedness of entities, relationships and their attributes. They mirror grammatical structure, with entities as nouns and relationships as verbs.

ER Diagrams are composed of entities, relationships and attributes. They also depict cardinality, which defines relationships in terms of numbers.

Entity : A definable thing—such as a person, object, concept or event—that can have data stored about it.

Relationship : How entities act upon each other or are associated with each other. Think of relationships as verbs. Relationships are typically shown as diamonds or labels directly on the connecting lines.

Attribute : A property or characteristic of an entity. Often shown as an oval or circle.

Simple Attribute: Means the attribute value is atomic and can't be further divided, such as a phone number.

Multivalued Attribute: More than one attribute value is denoted, such as multiple phone numbers for a person.

Derived Attribute: Attributed is calculated or otherwise derived from another attribute, such as age from a birthdate.

Composite Attribute: Sub-attributes spring from an attribute.

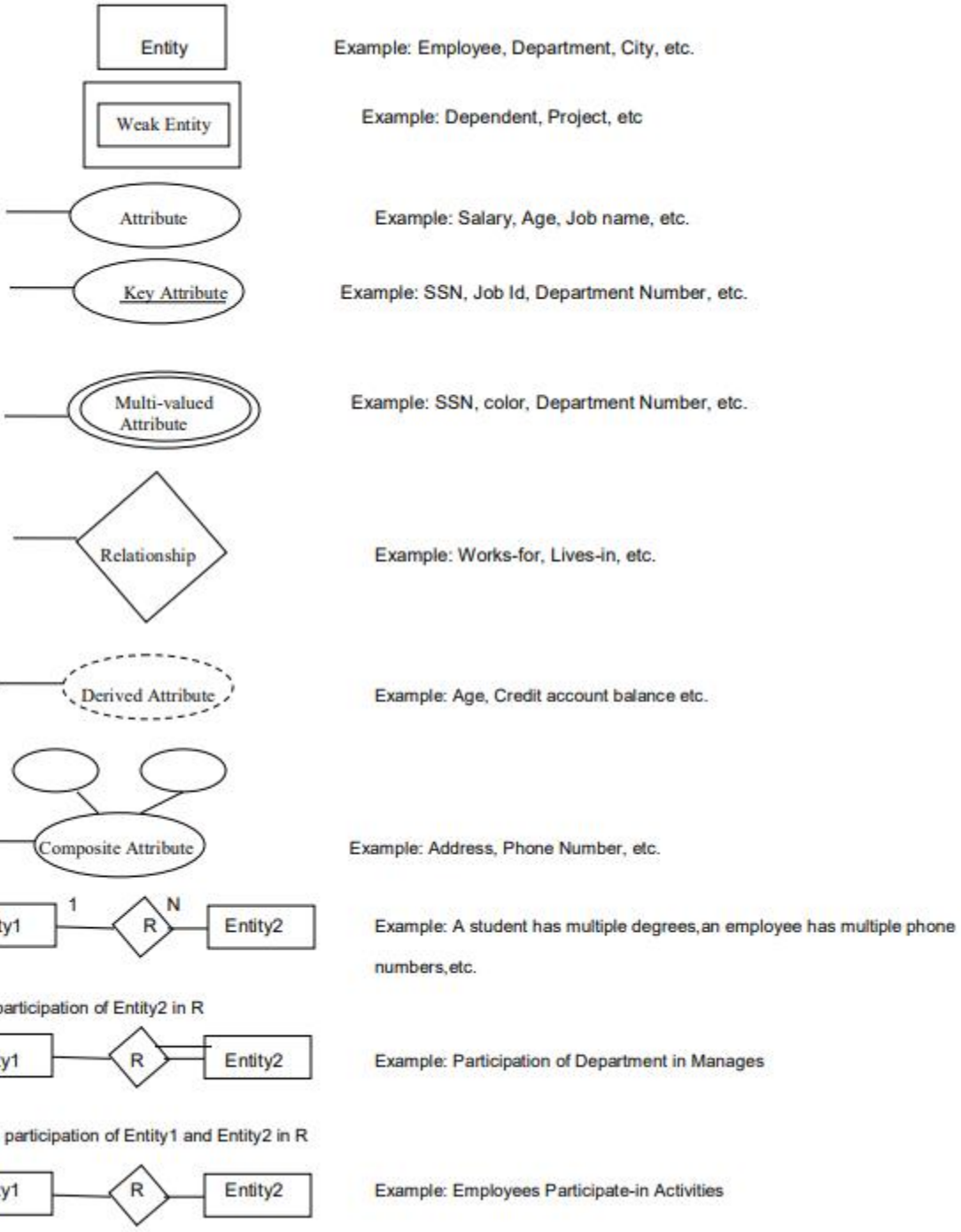
Cardinality : Defines the numerical attributes of the relationship between two entities or entity sets. The three main cardinal relationships are one-to-one, one-to-many, and many-many.

A one-to-one example would be one student associated with one mailing address.

A one-to-many example (or many-to-one, depending on the relationship direction): One student registers for multiple courses, but all those courses have a single line back to that one student.

Many-to-many example: Students as a group are associated with multiple faculty members, and faculty members in turn are associated with multiple students.

Symbols of E-R modeling:



PROBLEM STATEMENT:

ER Diagram for Banking Enterprise

We want to build a system for online banking system. In the system the accounts can be opened in a branch. The branch gives loan to the customer. The customer borrows loan. The customer can deposit in his account. The employee serves the customer. An account can be a saving account or a current account. Identify the possible entities and their attribute, the relationships

among the attributes and draw the E-R diagram for the above mentioned activities and associations.

Step 1: Identify the entities and their attributes

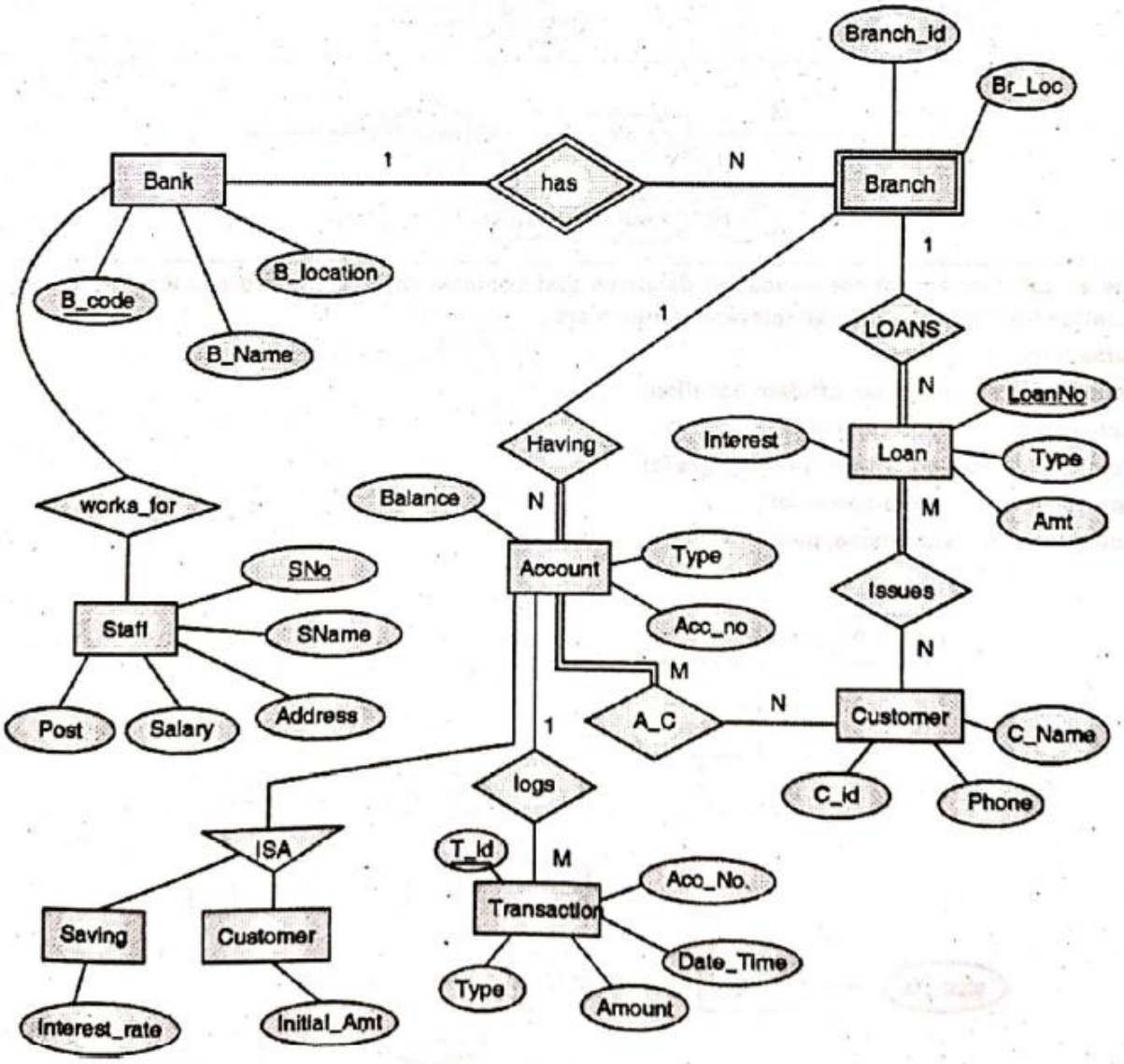
Entity_:_____Attributes_____

1. Bank: Name, Code, Location
2. Branch : branch-name, branch-location, assets
3. Customer : customer-id, name, address, Phone Number
4. Loan : loan-number, amount, type, interest
5. Account: account-number, balance
6. Saving-account :
7. Current-account:
8. Employee (or Staff): employee-ID, employee-name, joining-date, post, salary
9. Transaction: Transaction_ID, Account, Type, Amount, date

Step 2: Identify the relationships among the entities

1. Bank has branch.
2. Branch have Account
3. Branch gives Loan
4. Customer borrows or issues loan
5. Customer deposits account
6. Employee serves Customer
7. Employee works for Bank
8. Account generates transaction log

Step 3: Draw the ER Diagram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