

AIM: Draw the *Entity Relationship Diagram* for Transactions from ATM

Theory :-

Entity relationship modeling (ERM) is a pictorial method of data representation.

ERM is represented by the *E-R diagram that represents data and organizes them in such a graphical manner that helps to design the final database.*

Entity:-

An entity or entity class is analogous to the class in object orientation, which represents a collection of similar objects.

An entity may represent a group of people, places, things, events, or concepts.

For example, student, course, university, fees, etc., represent entities.

Entities are classified as independent or dependent entities.

An independent entity or strong entity is one that does not rely on another for identification.

A dependent entity or weak entity is one that relies on another for identification.

Attributes:-

Attributes are the properties or descriptors of an entity.

The logically-grouped attributes are called *compound attributes*.

An attribute can be *single valued or multi-valued*.

A multi-valued attribute is represented by a *double ellipse*.

The attribute which is used to uniquely identify an entity is called a *key attribute or an identifier* and it is indicated by an underline.

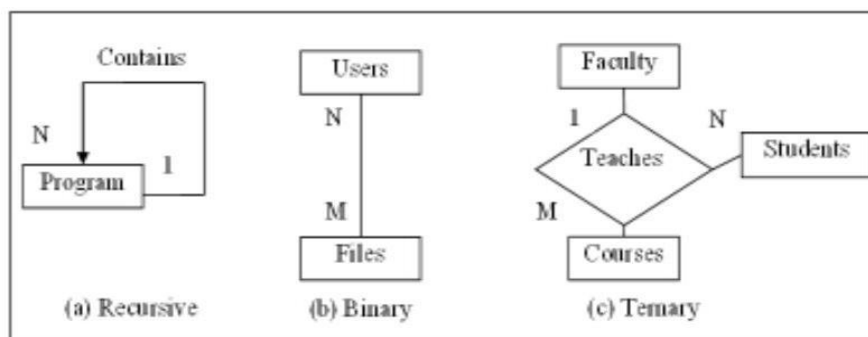
Cardinality :-

Cardinality defines the number of occurrences of entities which are related to each other.

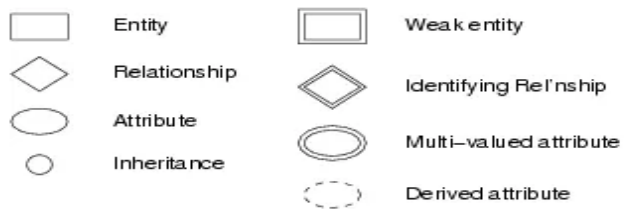
- one-to-one (1:1),
- one-to-many (1: M), or
- many-to-many (N: M).

Direction of a relationship indicates the originating entity of a binary relationship.

The entity from which a relationship originates is called the parent entity and the entity where the relationship terminates is called the child entity



Symbols used for E-R diagram :-



SYMBOLS USED

E-R diagram for TRANSACTIONS FROM ATM

Result:-

E-R Diagram for ATM

- In any **ATM machine** is under the control of any bank which has certain attributes such as **unique identifier** and remaining **necessary properties**.
- And every **bank** has its own branch which has a **specific ID** and **location of the bank**.
- ATM is operated by **the customers** with the help of accounts and specifying of type of **bank account** and **how much balance and unique ID for the account**.
- **Customer** has an **identity and location of him**.
- Customer does the **transactions which is of by transaction id and type of transaction**.

From the above requirements we understand that there must be 6 entities namely as

- i) ATM,
- ii) BANK,
- iii) BRANCH,
- iv) CUSTOMER,
- v) ACCOUNT, and
- vi) TRANSACTION.

ATTRIBUTES of ENTITIES

- a. **ATM has** ATM-id, cash-limit, location as attributes,
- b. **BANK has** bank-id, bank-name, Bank-address as attributes,
- c. **BRANCH has** branch-id, branch-name, branch-address as attributes,
- d. **CUSTOMER has** customer-id, customer-name, customer-address, customer-phone-number as attributes,
- e. **TRANSACTION has** transaction-id, transaction-type as attributes, **ACCOUNT** has account-no, balance, account-type as attributes.

RELATIONSHIPS:

- ATM belongs to BANK and BANK has BRANCHES
- ATM operates by CUSTOMER and CUSTOMERS holds ACCOUNTS and CUSTOMER performs TRANSACTIONS.
- Each ATM has at-most one BANK,
Each BRANCH has at- most one BANK,
Each TRANSACTION has at-most one CUSTOMER,

TOTAL PARTICIPATION OF ACCOUNT BY A CUSTOMER.

