DB Module

NgeeAnn

School of Information and Communications Technology

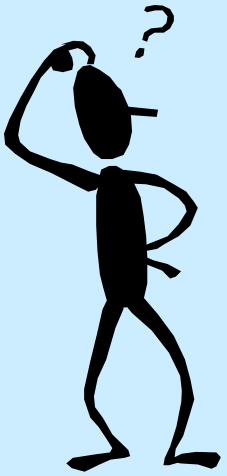
Activity

Part II

Databases

Day 2

Prepared by Staff of School of ICT



Relationship

Degree of a Relationship

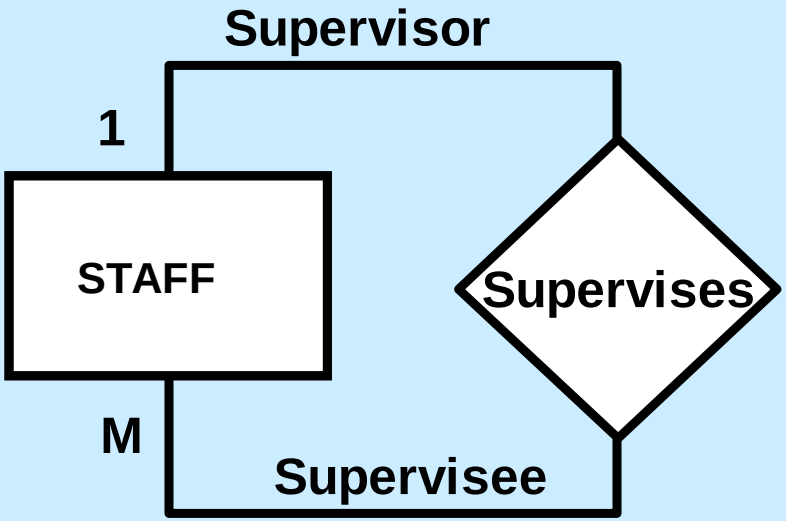
- Degree of a relationship refers to the number of entities that participate in that relationship.
- Three most common relationships in E-R Model are:

1. Unary (Degree One)
2. Binary (Degree Two)
3. Ternary (Degree Three)

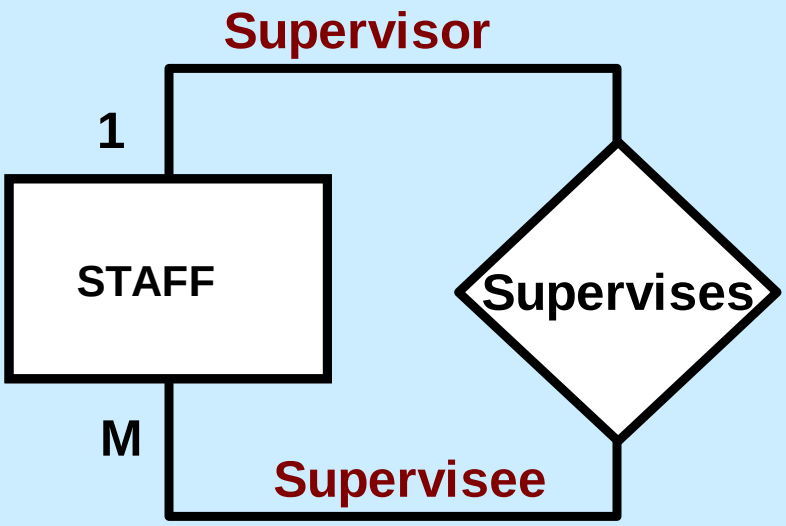
Higher degrees are possible, but they are rarely encountered in practice.

Degree of a Relationship: Unary Relationship

- Represents the relationship between instances of ONE entity.
- Also known as the Recursive relationship.



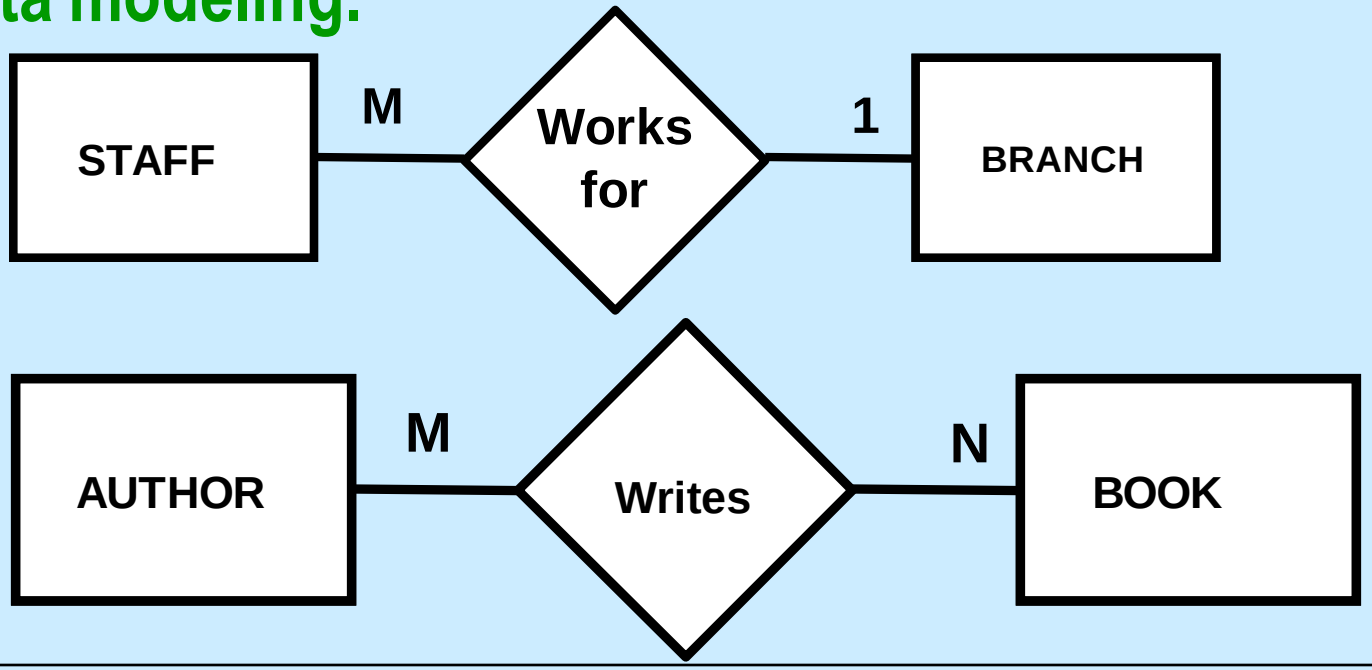
Degree of a Relationship: Unary Relationship



ROLE NAME is used to signify the role or function that a participating entity plays in each relationship. It is essential for distinguishing the meaning of each participation.

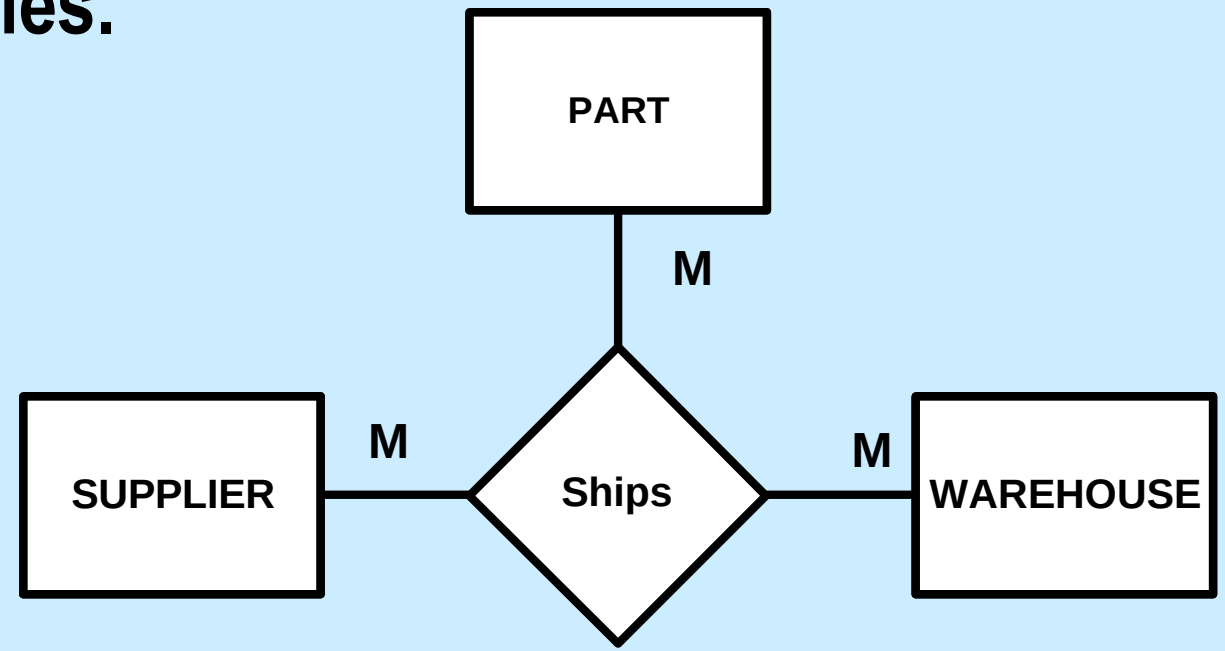
Degree of a Relationship: Binary Relationship

- Binary relationship **refers to relationship between instances of TWO entities.**
  - **Most common type of relationship encountered in data modeling.**



Degree of a Relationship: Ternary Relationship

- Ternary Relationship refers to a simultaneous relationship among instances of THREE entities.



Constraints on Relationship

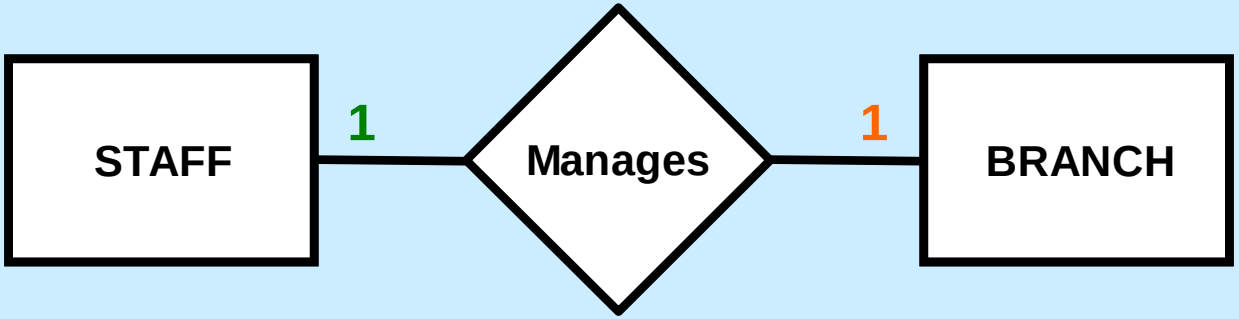
- Relationships usually have certain constraints that limit possible combinations of entities that may participate in relationship instances.
- There are 2 main types of relationship constraints:-

1. Cardinality Ratio
2. Participation Constraint

Constraints on Relationship: Cardinality Ratio

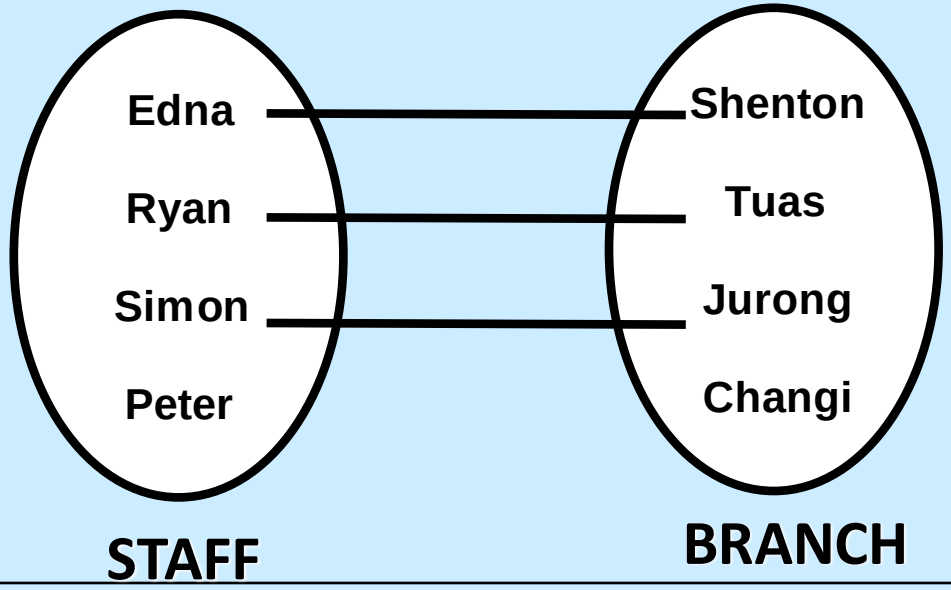
- **Cardinality ratio refers to the number of instances of entity B that can be associated with each instance of entity A.**
  - Determines the number of possible relationships for each participating entity.
  - Most common cardinality ratios for binary relationships are one-to-one (1:1), one-to-many(1:M), and many-to-many(M:N).

Cardinality Ratio: One-to-One (1 : 1)



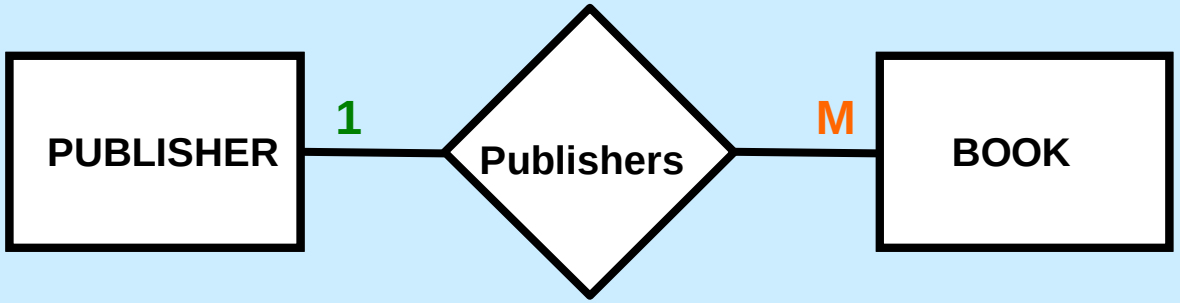
A staff manages 0 or 1 branch.

A branch is managed by 0 or 1 staff.



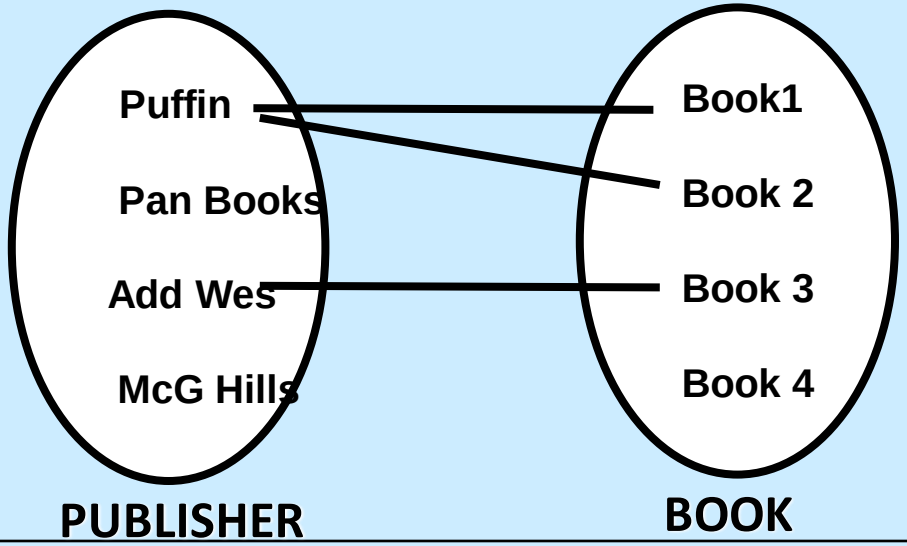
Each line represents a 'Manages' relationship

Cardinality Ratio: One-to-Many (1 : M)



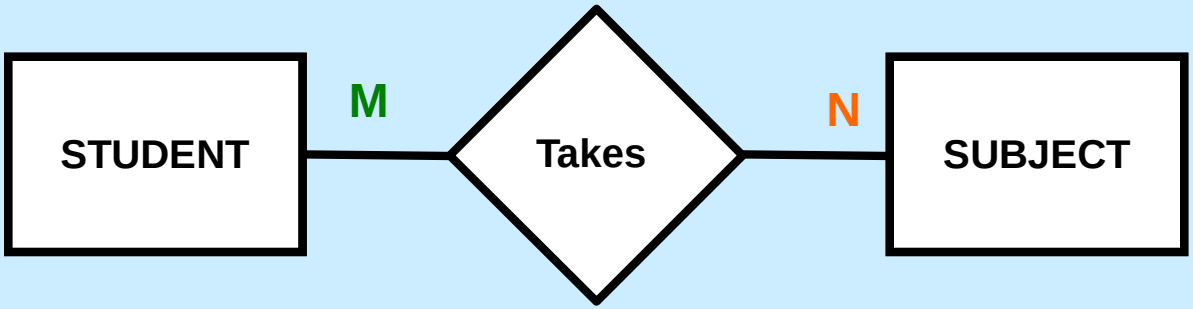
A publisher publishes 0, 1 or more books.

A book is published by 1 publisher.



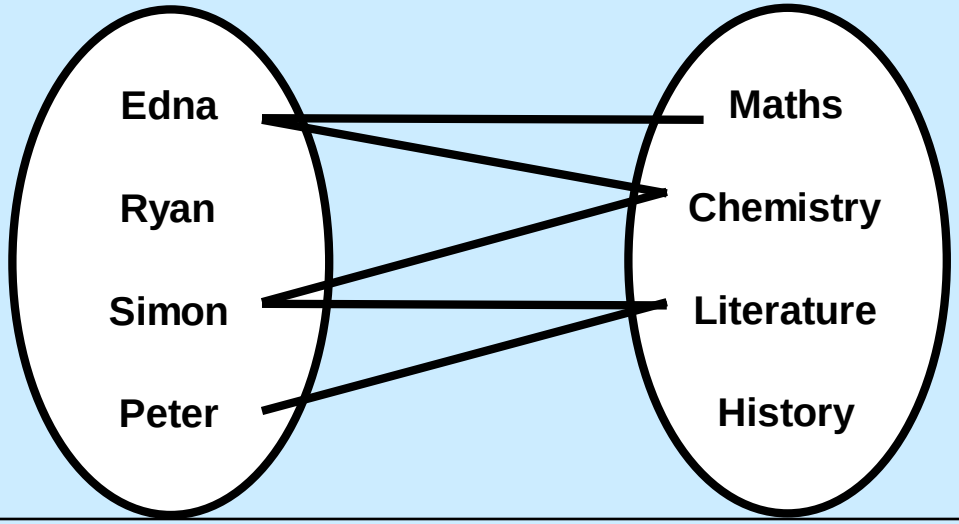
Each line represents a 'Publishes' relationship

Cardinality Ratio: Many-to-Many (M : N)



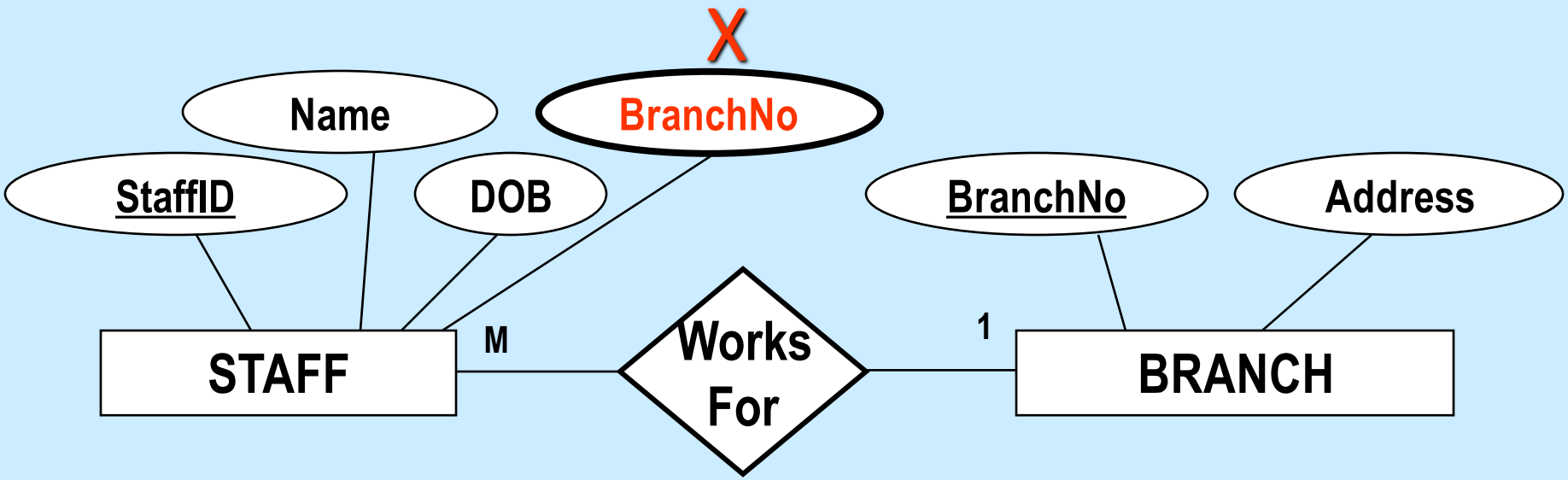
A student takes 0 or more subjects.

A subject is taken by 0 or more students.



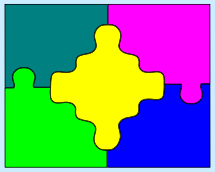
Each line represents a 'Takes' relationship

Common Mistakes



Attribute BranchNo in STAFF entity is redundant as it can be obtained through the Works For relationship.

Summary



- 3 most common relationships in E-R model are: Unary, Binary, Ternary.
- Constraints on relationship include Cardinality Ratio (1:1, 1:M, M:N).