ERD Mapping to Tables

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ER-to-Relational Mapping

Step 1: Mapping of Regular Entity Types

Step 2: Mapping of Weak Entity Types

Step 3: Mapping of Binary 1:1 Relation Types

Step 4: Mapping of Binary 1:N Relationship Types.

Step 5: Mapping of Binary M:N Relationship Types.

Step 6: Mapping of Multi-valued attributes.

Step 7: Mapping of N-ary Relationship Types.

Step 1: Mapping of Regular Entity Types

- Create table for each entity type

- Choose one of key attributes to be the primary key

Step 2: Mapping of Weak Entity Types

- Create table for each weak entity.
- Add foreign key that correspond to the owner entity type.
- Choose the primary key : (FK + weak entity Partial PK if any)

Step 3: Mapping of Binary 1:1 Relation Types

- Merged two tables if both sides are Mandatory.
- Add FK into table with the total participation relationship to represent optional side.
- Create third table if both sides are optional.

Step 4: Mapping of Binary 1:N Relationship Types.

- Add FK to N-side table

- Add any simple attributes of relationship as column to N-side table.

Step 5: Mapping of Binary M:N Relationship Types.

- Create a new third table
- Add FKs to the new table for both parent tables
- Add simple attributes of relationship to the new table if any .

Step 6: Mapping of Multi-valued attributes.

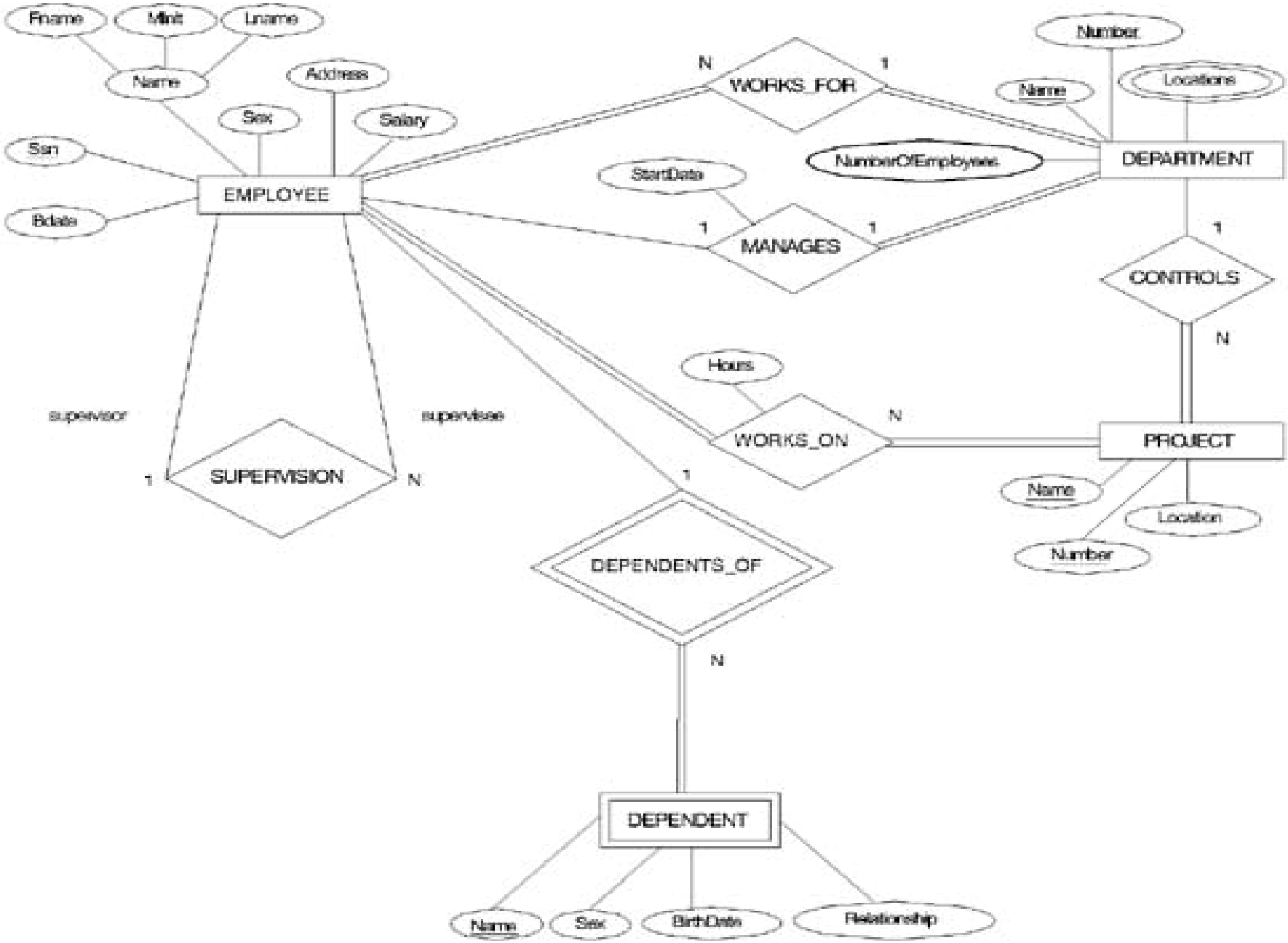
- Create new table for each multi-valued attribute

- Table will include two columns.

  one for multi-valued attribute + FK column.

Step 7: Mapping of N-ary Relationship Types.

- If n > 2 then :
- Create a new third table
- Add FKs to the new table for all parent tables
- Add simple attributes of relationship to the new table if any .


Fname
Minit
Lname
Name
Address
Sex
Salary
Ssn
Bdate
EMPLOYEE
N
WORKS_FOR
1
Number
Name
Locations
DEPARTMENT
NumberOfEmployees
StartDate
1
MANAGES
1
1
CONTROLS
N
Hours
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WORKS_ON
PROJECT
Name
Location
Number
supervisor
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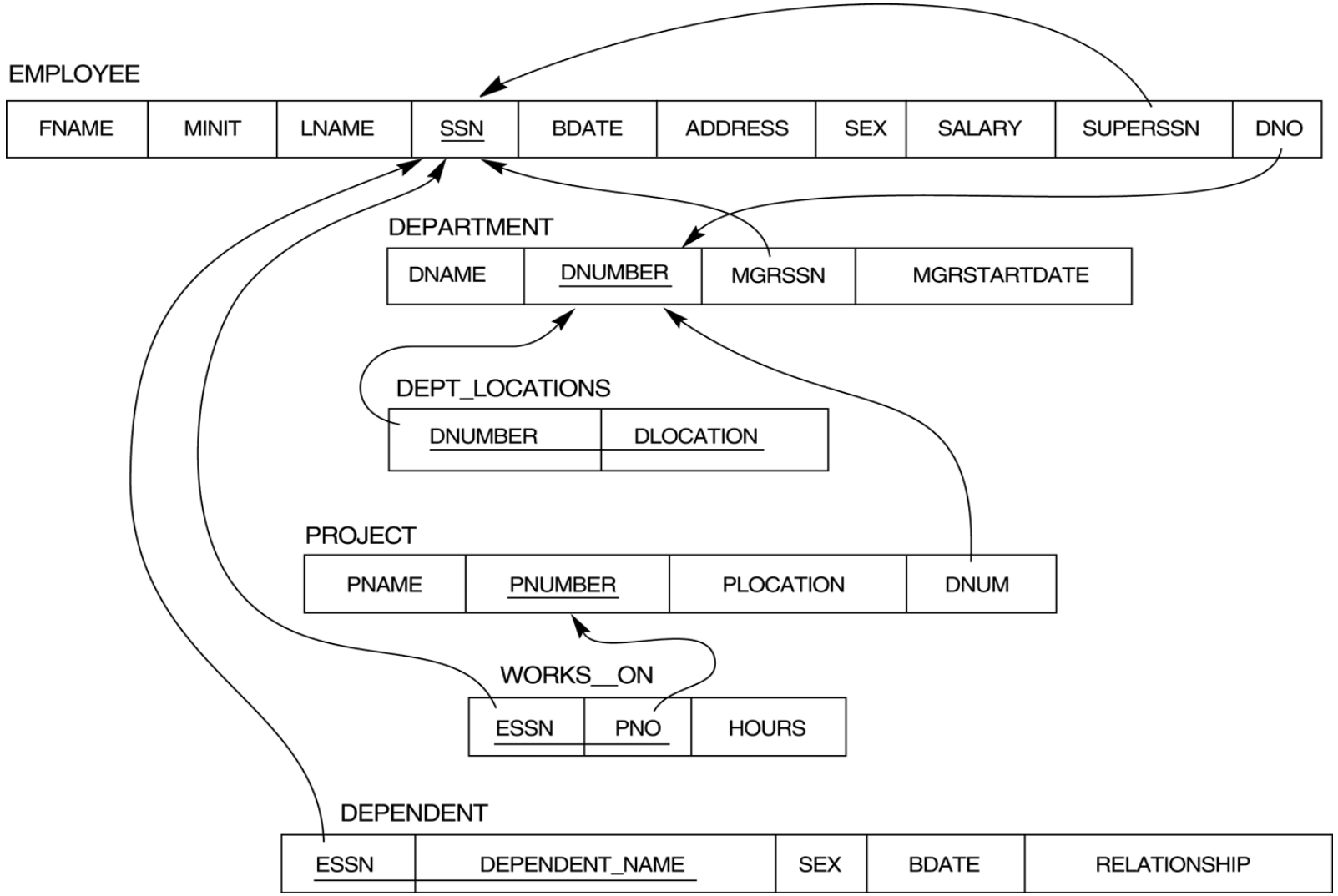
1
SUPERVISION
N
1
DEPENDENTS_OF
N
DEPENDENT
Name
Sex
BirthDate
Relationship

Mapping Result



ERD Case Study

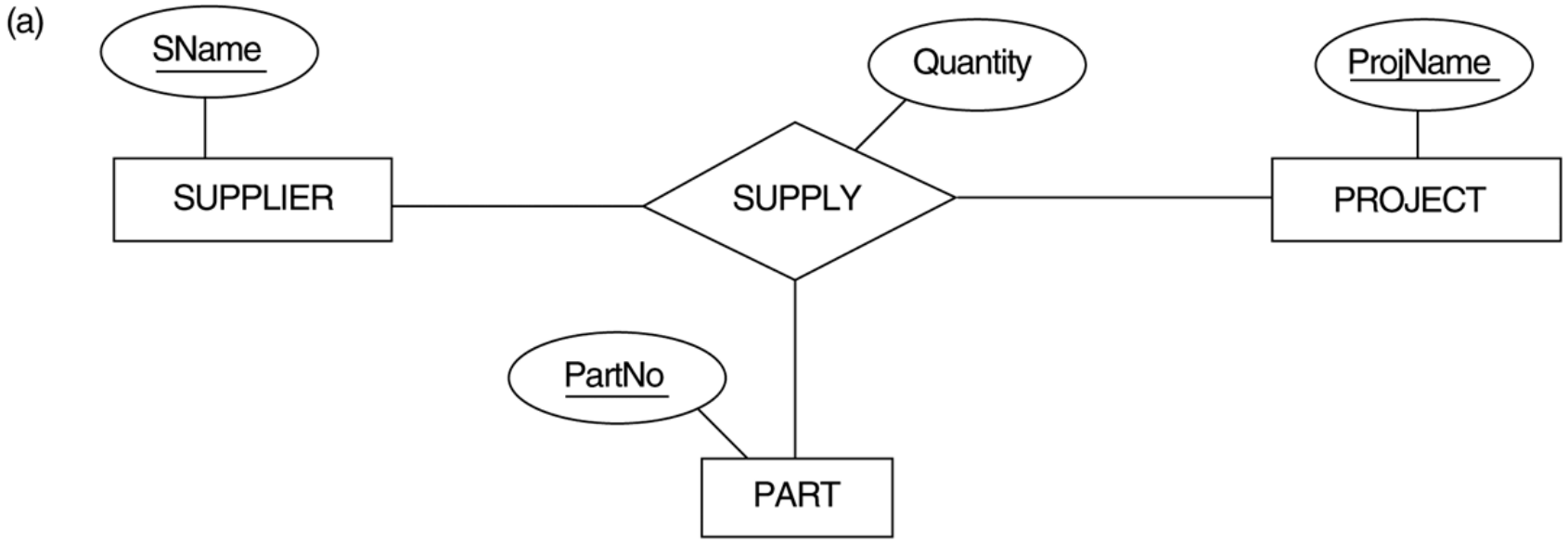
- An organization makes many models of cars, where a model is characterized by a unique name and a suffix (such as GL or XL) and an engine size.
- Each model is made up from many parts and Each part has a description , an id code, production year, and many images.
- each part may be used in the manufacturing of more than one model

ERD Case Study

- Each model must be produced at just one of the firm's factories, which are located in London, Birmingham, Bristol, Wolverhampton and Manchester - one in each city. Each factory has number of machines, capacity, and computer system used (OS , DBMS, Internet).

- A factory produces many models of cars and many types of parts. Although **the parts and model produced in the same factory.**

Ternary Relationship



ERD Case Study 2

- A country bus company owns a number of buses. A bus is characterized by number, No. of Chairs, Options (AC , Automatic, PS) , and brand-name
- Each bus is allocated to a particular route, although some routes may have several buses . Each route is described by KM, start point, end point and the duration.

ERD Case Study 2

- Each route can pass through a number of towns.
- A town may be situated along several routes. We keep track of unique name and station name in each town.
- One or more drivers are allocated to one route during a period of time. The system keep information about the driver name , mobile number , hire date, basic salary , job grade.
- The system keep information about any changes in the allocations of the drivers to the routes and the last route assigned to each driver.

ERD Narrative

- A database for a banking system is used to control withdrawal, deposit and loan transactions with customers.
- Banks which use this system have many branches; each branch has a unique name, unique address and phone.
- The system stores information about customers as unique customer ID, name, address, and phones.

ERD Narrative (Cont'd)

- Each customer has one Account identified by unique Account number, amount, last transaction date (Day, Month and Year).
- The system records Transaction number, Transaction type, Transaction date, Transaction amount and time. The system records the branch name where the transaction occurred.
- A Customer can make any type of transactions (Withdrawal or Deposit) from any branch of the bank.