

7/11/2024

Thursday, July 11, 2024

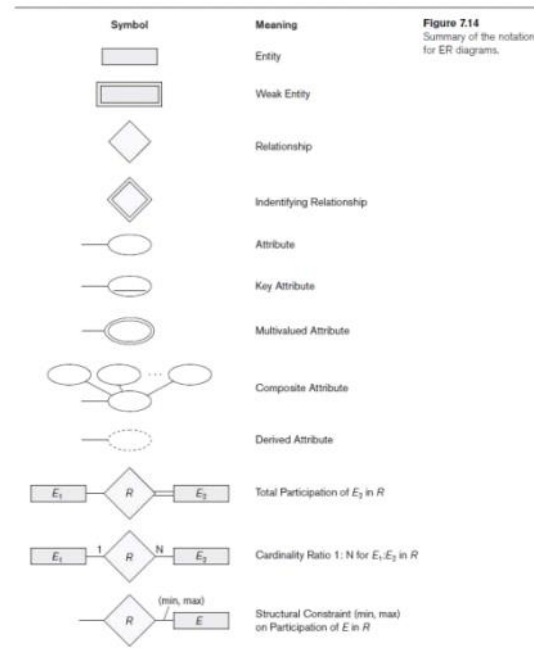
3:17 PM

Attribute Types

- Composite Key \Rightarrow Primary Key composed of more than one attribute
- Composite Attribute \Rightarrow Attribute that can be subdivided to yield additional attributes
- Simple Attributes \Rightarrow Attribute that cannot be subdivided
- Single-valued Attribute \Rightarrow Attribute that has only a single value (Simple Attribute)
- Multivalued Attributes \Rightarrow Attributes that have many values for a given object record. (A tuple)

Design of E-R Model

- Identify all Entities
- Identify a common set of Attributes for each entity
- Identify all Relationships between any 2 entities.



Steps to Identify Cardinality of Relationship

How to Identify 1-1, 1-N, or M-N for a Relationship between Two Entities

1. Pick an object in the left Entity, check whether, for a given object in the left side Entity, it is allowed to have a relationship with one or more objects from the right-side Entity
2. Pick an object in the right-side Entity, check whether for a given object in right Entity, it is allowed to have a relationship with one or more objects from the left side of Entity

If Both Step 1 and Step 2 is NO \Rightarrow 1-1

If Yes in Step 1 but No in Step2 \Rightarrow 1-N

Or

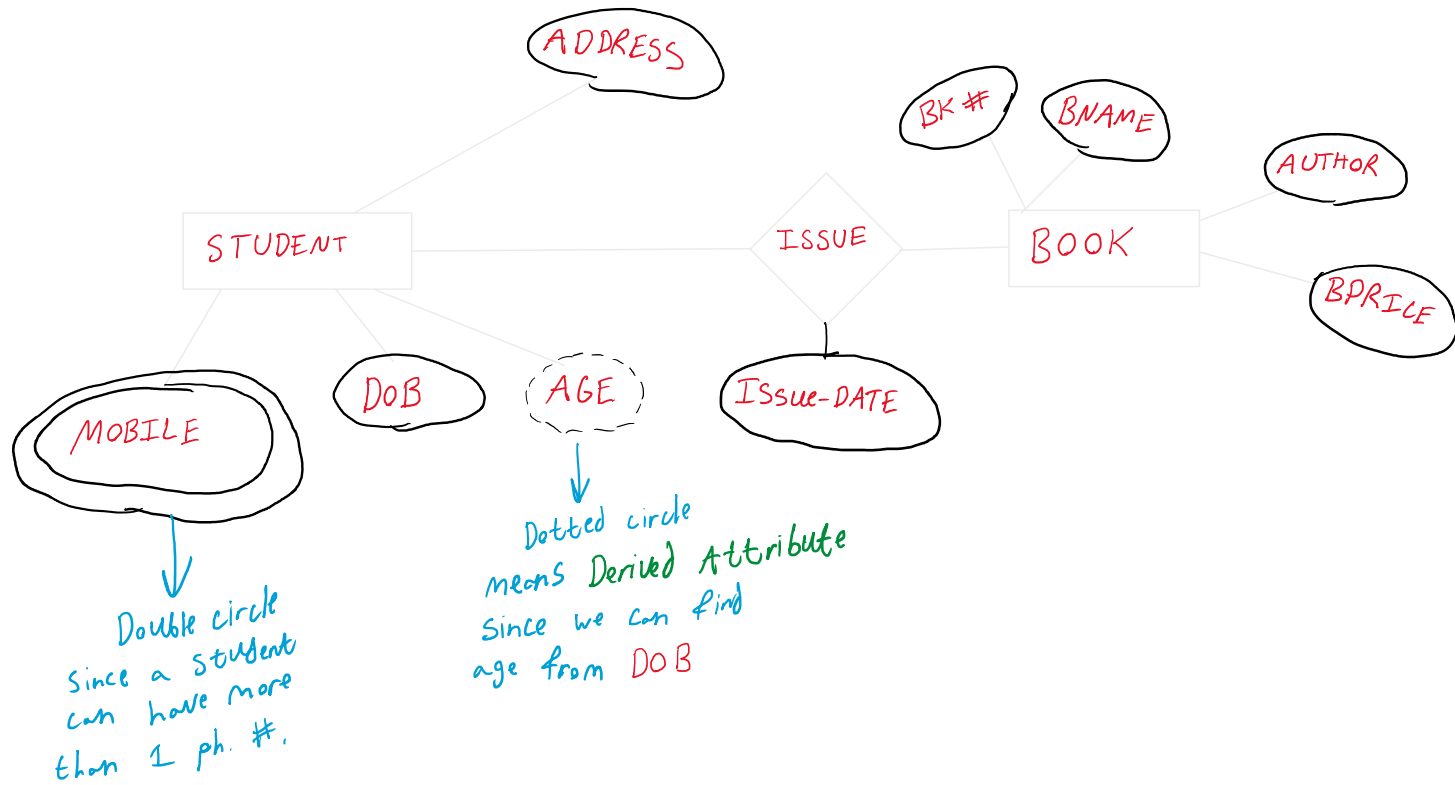
If No in Step 1 but Yes in Step2 \Rightarrow N-1

(Note that N-1 is equivalent to 1-N if you switch the left entity with the right entity)

If Yes in Both Step 1 And Step 2 \Rightarrow M-N

Entity Relationship Diagram

Friday, July 12, 2024 11:46 PM



Lab 2

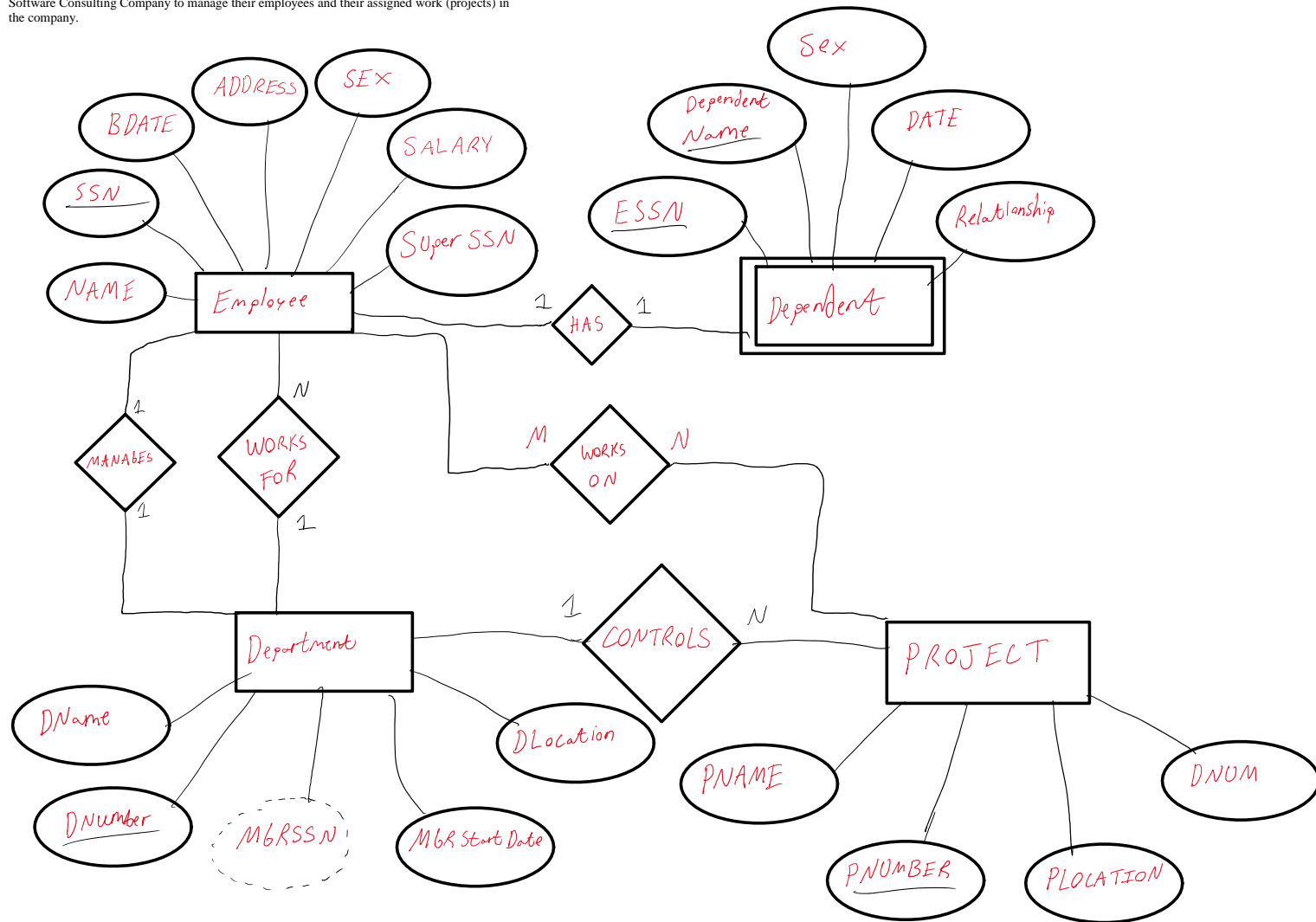
Friday, July 12, 2024 6:11 PM

CIS 430: Lab Assignment 2

Name: Yuvaraj Vagula

ID: 2862494

Object: Creating a database named COMPANY for an HR (Human Resource) Dept of a Software Consulting Company to manage their employees and their assigned work (projects) in the company.



7/16/2024

Tuesday, July 16, 2024 4:20 PM

Domains, Attributes, Tuples, Relations

- Relation
 - Set of n -tuples

Integrity, Referential Integrity & Foreign Key

- Entity Integrity Constraint
 - No primary key value can be NULL
- Referential Integrity Constraint
 - Specified between 2 relations
 - Maintains consistency among tuples in 2 relations

Foreign Key Rules

Relational Databases

- Relational DB Schema
 - Set of relation schemas $S = \{R_1, R_2, R_3, \dots, R_n\}$
 - Set of integrity constraints (IC)
- Relational DB State
 - Set of relation states $DB = \{r_1, r_2, \dots, r_n\}$
- Invalid State
 - Does not obey all the integrity of constraints
- Valid State
 - Satisfies all the constraints in the defined set of Integrity Constraints

Constraints

- Domain on Column
 - Set of atomic values in same domain type
- Atomic Constraint
 - Each value should be single and Indivisible
- Specifying a domain
 - Data type specified for each domain for each column

Primary Key Constraint

- Any value of PK should be unique
- No duplicates
- Entity Integrity Constraint
 - No primary key value can be NULL
 - Null value cannot be inserted

Midterm Study Notes

Monday, July 22, 2024 6:28 PM

Primary Key Constraint

- Any value of PK should be unique
- No duplicates

Entity Integrity Constraint

- No primary key value can be NULL
- Null value cannot be inserted

Foreign Key Constraint

- Must exist in the referenced PK column of a table
- Have the ability to be a null value
- Establish relationships between tables

Atomic Constraint

- Each value should be single & indivisible

Referential Integrity Constraint

- Specified between 2 relations
- Maintains consistency among tuples in 2 relations

Third Normal Form DB Constraints

- Every cell should be atomic
- Every cell should have NO partial dependency

Basic SQL Commands

- Primary Key (Entity J Attribute, Entity P Attribute)
 - ↳ Ensures that each "entity-entity" pair is unique
- Foreign Key (New Reference Attribute) Reference Entity J (Attribute)
 - ↳ Creates new key to be used apart of a Primary Key

Department_Location E

DNO INT, NOT NULL,

DLocation VARCHAR(50), NOT NULL}

Foreign KEY (DNO) references Department (DNumber);

PRIMARY KEY (DNUMBER, DLocation);

IMPORTANT POINTS

- If an attribute is multivalued, then the entity is in an invalid state and is not valid as a relational table.

↳ To fix, make the multivalued attribute into an entity and use a key attribute to form a relationship