IT2040 DMS

ER and EER to Relational Model Mapping

Other Constraints

Table constraints- constraints within tables

Assertions- constraints between multiple tables

Convert the below ER model to Relational Schema

Diagram

Description automatically generated

Car(VehicleID, Model, Year, Province, Number)

Q2) Diagram

Description automatically generated

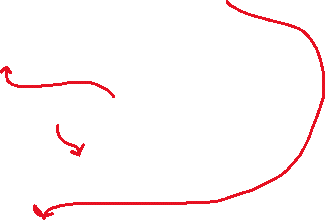


Section (Section No, Name, Librarian ID)



Copy (ISBN, Publisher, title, Section No)

Rented by (mem No, ISBN)



Member (name, mem No, address,)

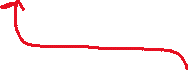
Librarian (Id, phone, name)

Lecture Note 2 Activity

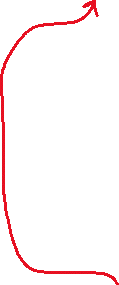
Diagram

Description automatically generated

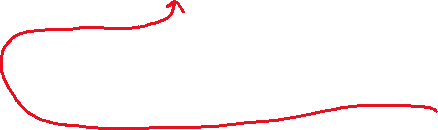
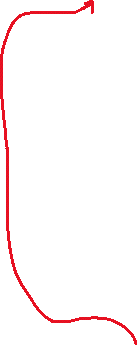
Employee (SSN, Lname, Salary, Sex, Bdate, Fname, Address, SupervisorSSN, dname, dnumber)



Department( dname, dnumber, mgrSSN, startDate)



Department location (dname, dnum, loc) \*Because of Multivalued attribute in department



Project (Proj. Name, Project Number, location, dnum, dname) \*Many side absorb the foreign



Works on(SSN, ProjectName, ProjectNumber, Hours) \*Many to many creates the relationship

Dependent(SSN, Name, Sex, Bdate, Relationship)

Mapping ISA Relationships

Two methods,

1. Multi relation options – Opt 1 & Opt 2
2. Single relation options – Opt 3 & Opt 4

Option 1 works for all constraints Diagram

Description automatically generated

Disadvantage: Suppose there’s 5000 students, and you need their info, you need to join both Student and Person table to get all the info.

Option 2

You do not create a parent relation in this anymore

Diagram

Description automatically generated

Disadvantages:

* You cannot use this for total participation (Covering constraint)

Option 3

* This creates the parent relationship with all the child entity attributes.
* Must be Disjoint.
* Good if subclasses have few attributes

Disadvantages:

* If only one subclass is having a relationship with another entity, you cannot represent that relationship with the parent class relation being made.

Diagram

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Option 4

Diagram

Description automatically generatedThis has additional attributes under the name of each subclass which are Boolean

* This successfully tackles the overlapping constraint with no redundancy

Disadvantages:

Having less attributes is good for 4th option as well because its only using parent entity relation

* Suppose entering information of 8000 students and 100 faculty members, this will create a lot of null values to the attributes.
* If only one subclass is having a relationship with another entity, you cannot represent that relationship with the parent class relation being made.

Mapping Aggregation

When Mapping aggregation,

1. Step 1 – First map the aggregation relationship within the dotted boundary

Player (pId, name)

Match (matchID, venue)

Play(pId,matchID)

1. Diagram

   Description automatically generatedmap the relationship set involving aggregation of R, treat the aggregation like an entity set whose primary key is primary key of the table for R

Award (award, pId,matchID)

Match the following EER diagram to relational Model

Diagram

Description automatically generated

Department(did, dname)

Project(pid, budget, did)

Employee(eid,ename,did) \*\* in this table, when considering the mapping between Employee and Sponsor aggregation, we take project since project has a foreign key of department, which covers the entirety of the aggregated relationship. \*\* WE DON’T TAKE DEPARTMENT HERE.

In class Exercise 3

Diagram

Description automatically generated

Student(sid, name, address, phone, batch)

Module(mCode, name, credits)

Follow(sid,mcode,year)

\*\*For the ISA we are using Option 3 because it is the most convenient, WE ARE NOT USING 4th Option because this question does not have overlapping to worry about. And we do not use 1st option because there are no relationships to worry about as well

Assessment(AssessmentID, weighttag,LastAttempt,type) \*\*TYPE IS USED IN OPTION 3

Take.Assessment(AssessmentID,sid,mcode,grad)

Lecturer(id, name, experience, join)

Lecturer.qualifications(id, qualifications)

Teach(mcode, id)

In class exercise 4

Diagram, engineering drawing

Description automatically generated

This question is ideal for Option 1 ISAs

Person(SSN, Bdate, Address, Mname, Lname, Fname)



Faculty(SSN, Rank, Foffice, Phone, Salary)



Instructor\_researcher(SSN)



Lecturer(SSN)



Department(Dname, Dphone, Dno, SSN)



Student(SSN, Class)



Grad\_Student(SSN, LecSSN)



Grad\_Student\_Degree(SSN, Degree, Year)

Under\_grad(SSN, GPA,CN, batchNo)



Course(CN, Cname, Dno)



Teach(CN, SSN)



Batch(BatchNo, NoOfStudents)

