

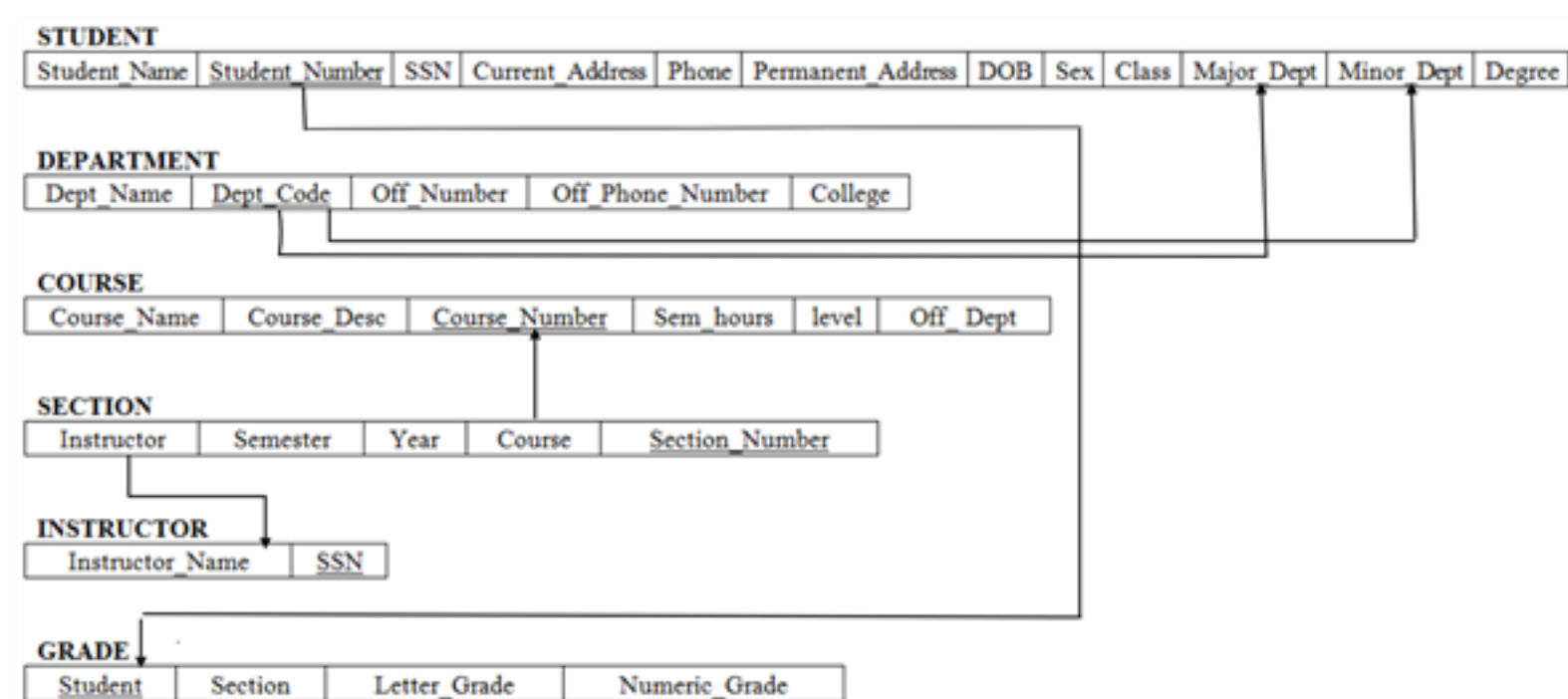
Fundamentals of Database Systems | (5th Edition)

Step-by-step solution

Step 1 of 5

The E-R schema for the UNIVERSITY database is as shown below:

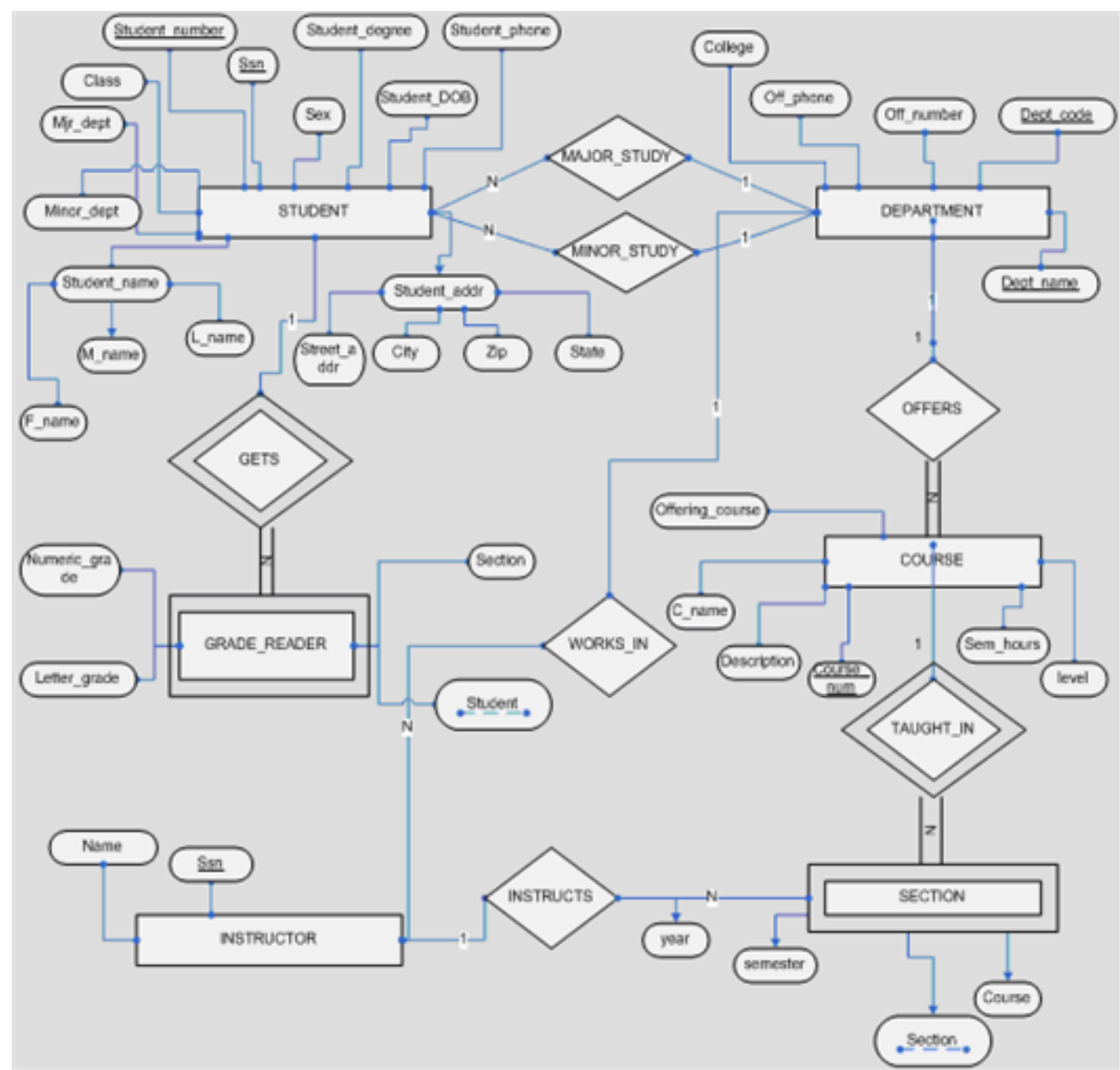
STUDENT(Student_Name, Student_Number,SSN, Current_Address, Phone, Permanent_Address,DOB,Sex, Class, Major_Dept, Minor_Dept, Degree)
DEPARTMENT(Dept_Name, Dept_Code, Off_Number, Off_Phone_Number, College)
OFF_Phone_Number, College)
COURSE(Course_Name, Course_Desc, Course_Number, Sem_hours, level, Off_Dept)
SECTION(Instructor, Semester, Year, Course, Section_Number)
INSTRUCTOR(Instructor_Name, SSN)
GRADE(Student, Section, Letter_Grade, Numeric_Grade)



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Step 2 of 5

The following is the E-R diagram for a UNIVERSITY database:



[Comment](#)

Step 3 of 5

A primary key is an attribute that uniquely identifies each row in the database table.

- A primary key must contain unique values.
- A primary key cannot contain null values.
- Each table must contain a primary key that uniquely identifies each row/record.
- A table can have only one primary key.
- A primary key can be made up of one or more than one column/attribute.

The primary key for STUDENT is Ssn, Student_Number.

The primary key for DEPARTMENT is Dept_code

The primary key for COURSE is Course_num

The primary key for INSTRUCTOR is Ssn

Entity types SECTION and GRADE_READER are weak entities.

[Comment](#)

Step 4 of 5

Structural Constraints:

- **GETS** : GRADE_READER is weak entity type that depends on STUDENT.
- GRADE_READER:STUDENT cardinality is N:1
- **TAUGHT_IN**: SECTION is weak entity type that depends on COURSE.
- SECTION:COURSE cardinality is N:1
- **OFFERS**: DEPARTMENT:COURSE cardinality 1:N
- **MAJOR_STUDY**: DEPARTMENT:STUDENT cardinality 1:N
- **MINOR_STUDY**: DEPARTMENT:STUDENT cardinality 1:N
- **INSTRUCTS**:INSTRUCTOR:SECTION cardinality 1:N
- **WORKS_FOR**: DEPARTMENT:INSTRUCTOR cardinality 1:N

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Step 5 of 5

Assumptions:

1. Student can do major or minor from one department only.
2. Instructor and students are not related directly but through section and department

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Was this solution helpful?

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Recommended solutions for you in Chapter 3

Chapter 3, Solution 19E

Refer the ER diagram of the AIRLINE database schema given in figure 3:21. The requirements and the constraints that produced from the schema are as follows: AIRPORT • The database represents the information about each AIRPORT. • Each AIRPORT...

[See solution](#)

Chapter 3, Solution 10RQ

Solution: Relationship as attributes: • Whenever the attribute refers to one entity type to another entity type, there a relationship exists. • They can have attributes like entity types. • For those attributes having cardinality...

[See solution](#)

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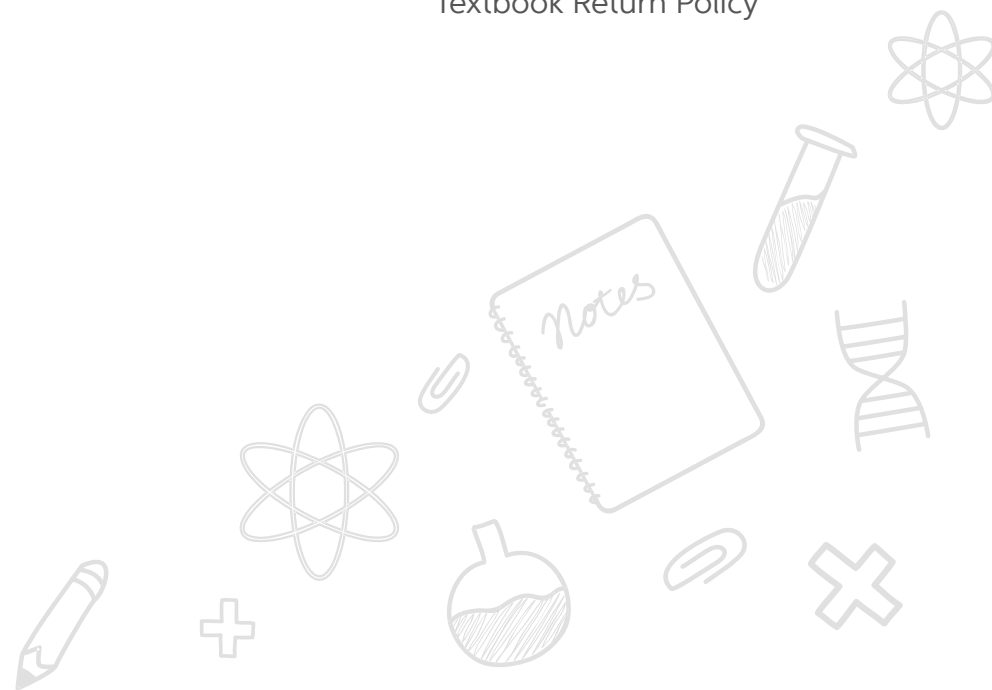
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