



List at least three (3) types of keys and the purpose of each.

Primary Key:is a attribute that uniquely identifies each data in a table. I can't be null. For example our Turkish Republic ID number. Foreign key:is a attribute that refers to the primary key of another table. Candidate Key:is a potential primary keys for table. Can be one or more. Uniquely identity and suitable for searching the data.



Functional Dependency, Exists when the value of attribute or set of attribute determines the value of another (or anothers)in a table.A->B: A is determinant for B.

Turkey Republic ID-> name.surname Full Functional Dependency:Exists when a functional dependency between two attributes A and B but no other attributes.A->B: A is ONLY inant for B.





Similarities:
Both Relations and relationships gave us how data is organized.
Both are important for efficiency.
Both Are represented in a database schema.
Differences:
Relationship is a connection between two or more tables when they have common attribute. We have several types of relationships (one to one, one to many, many to many)
Relation is a table in a database. Is a database modelling. It's similar to Table.



List at least three (3) types of keys and the purpose of each.





List at least three (3) types of dependencies and the meaning of each.

Functional Dependency:Exists when the value of attribute or set of attribute determines the value of another (or anothers)in a table.A->B: A is determinant for B.

Turkey Republic ID-- name.surname
Full Functional Dependency:Exists when a functional dependency Exists when a functional dependency between two attributes A and B but no other attributes.A->B: A is ONLY determinant for B.

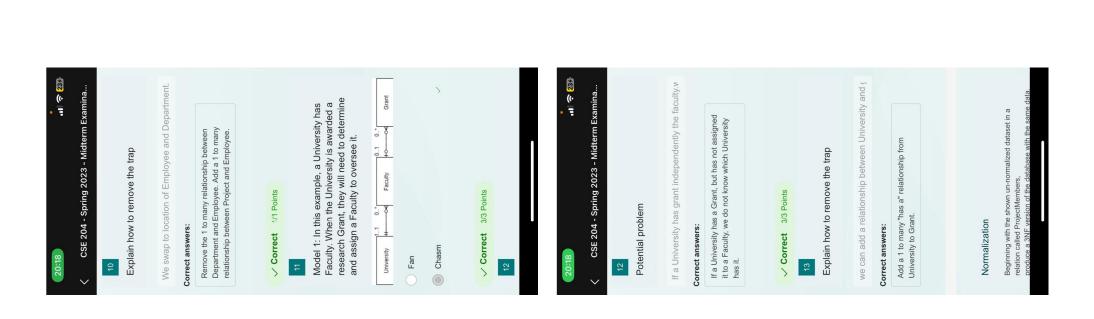
Transitive Dependency:A->B,B->C A determines

Transitive Dependency:A->B,B->C A determines B. Bdetermines C.T his can lead to data redundancy, can potentially cause update anomalies.Often we eliminated making normalization.

### E-R Model

The following E-R diagrams each have traps (1 Fan, 1 Chasm). Note the trap and what a potential problem would be. Explain how you would remove the trap.









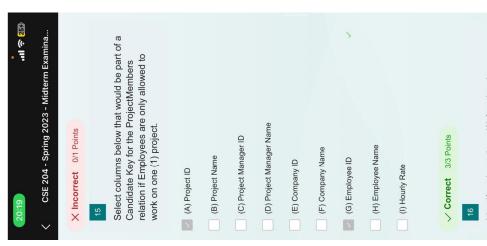


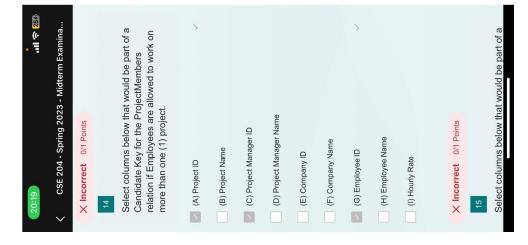
Assume that a Project can belong to only one company.
Assume that a Project has only one manager who works for
the Company that owns the Project.

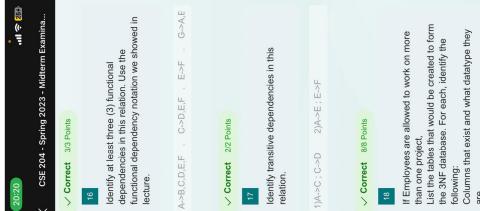


Select columns below that would be part of a Candidate Key for the ProjectMembers relation if Employees are allowed to work on more than one (1) project.











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If Employees are allowed to work on more

than one project, List the tables that would be created to form the 3NF database. For each, identify the

Columns that exist and what datatype they

Which columns make up the Primary Key Which columns are Foreign Keys and which tables they reference

NOTE: You may write SQL CREATE statements to answer this question

CREATE TABLE EmployeeProject(
EmployeeID INT NOT NULL,
ProjectID INT NOT NULL,
PRIMARY KEY(PROJECTID),
FOREIGN KEY(EmployeeID) REFERENCES
Employee(EmployeeID) CREATE TABLE Employee( EmployeeID INT NOT NULL, EmployeeName varchar(50), HourlyRate INT, PRIMARY KEY(EmployeeID)

CREATE TABLE Manager( ManagerID INT NOT NULL





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X Incorrect 4/8 Points



If Employees are only allowed to work on one

project, List the tables that would be created to form the 3NF database. For each, identify the following:

Columns that exist and what datatype they

Which columns make up the Primary Key Which columns are Foreign Keys and which tables they reference

NOTE: You may write SQL CREATE statements to answer this question NOTE: You only need to identify the tables that would be different from the previous

CREATE TABLE EmployeeProject(
EmployeeID INT NOT NULL,
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CREATE TABLE EmployeeProject(
EmployeeID INT NOT NULL,
ProjectID INT NOT NULL,
PRIMARY KEY(PROJECTID),
FOREIGN KEY(EmployeeID) REFERENCES
Employee(EmployeeID) CREATE TABLE PROJECT (
ProjectlD INT,
ProjectManagerID INT,
CompanyID INT,
PRIMARY KEY(ProjectID
,ProjectManagerID,CompanyID )
); CREATE TABLE Employee( EmployeeID INT NOT NULL, EmployeeName varchar(50), HourlyRate INT, PRIMARY KEY(EmployeeID) CREATE TABLE Manager( ManagerID INT NOT NULL, ManagerName varchar(50), PRIMARY KEY(ManagerID)

## X Incorrect 4/8 Points



If Employees are only allowed to work on one

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EmployeeID INT NOT NULL,
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PRIMARY KEY(PROJECTID),
FOREIGN KEY(EmployeeID) REFERENCES
Employee(EmployeeID) CREATE TABLE PROJECT (
ProjectID INT,
ProjectName varchar(50),
CompanyID INT,
PRIMARY KEY(ProjectID ,CompanyID ) CREATE TABLE Employee( EmployeeID INT NOT NULL, EmployeeName varchar(50), HourlyRate INT, PRIMARY KEY(EmployeeID)



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Using the 3NF database you produced in the previous questions, produce SQL queries to do the following: If the query to do so would be different based on if employees are allowed to work on only one project than one project, show both queries.

## X Incorrect 1/2 Points



Identify how many employees work on Project PCS204 SELECT COUNT(\*) AS numberOfEmployees FROM EmployeeProject WHERE projectID = 'PCS204'

### ✓ Correct 2/2 Points



Identify how many employees work for Auburn and have an hourly rate more than 20.

SELECT COUNT(\*) AS numberOfEmployees FROM Employee e, EmployeeProject ep, Project





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X Incorrect 1/2 Points

Remove Tim Wylie from the Company Akdeniz and his current project.

DELETE FROM employeeProject WHERE employeeID=333

### 2/2 Points Correct



Add Kate Tucker to the User Interface Project (do not remove her from the Database System Project)

INSERT INTO employeeProject VALUES(332,"PCS101")

### X Incorrect 1/2 Points



Give privilege to select from one of your tables to a role called "Supervisor". Allow Supervisors to give this privilege to others.



✓ Correct 2/2 Points



Identify how many employees work for Auburn and have an hourly rate more than

SELECT COUNT(\*) AS numberOfEmployees FROM Employee e, EmployeeProject ep, Project p.Company c WHERE e.ID=ep.EmployeeID AND ep.ProjectID=P.ID AND P.CompanyID=c.ID AND c.Name='Auburn' AND e.hour>20

# X Incorrect 1/2 Points



Move John Smith from his current project to the "Tax System" project.

Update employeeProject set ProjectID='PCS201' WHERE employeeID=331

X Incorrect 1/2 Points



Remove Tim Wylie from the Company

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X Incorrect 1/2 Points

Give privilege to select from one of your tables to a role called "Supervisor". Allow Supervisors to give this privilege to others.

GRANT DELETE on COMPANY to SUPERVISOR WITH GRANT OPTION

X Incorrect 2/5 Points

Create a view that gives the Project ID, Project Name, and Manager Name for the project with the greatest average hourly rate (average hourly rate for a project is the average of the hourly rates of all the employees on the project).

SELECT p.ID,p.Name,m.Name FROM Project p,Manager m WHERE p.ManagerID=m.ID AND p.ID=(SELECT averageRates.ID FROM (SELECT

ourlyRate) averageHour FROM Employee e ep.ProjectID,AVG(e.hor

,EmployeeProject ep WHERE e

=ep.EmployeeID



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X Incorrect 2/5 Points



Create a view that gives the Project ID, Project Name, and Manager Name for the project with the greatest average hourly rate (average hourly rate for a project is the average of the hourly rates of all the employees on the project).

SELECT p.ID.p.Name,m.Name
FROM Project p,Manager m
WHERE p,ManagerID=m.ID AND
p.ID=(SELECT averageRates.ID
FROM (SELECT
ep.ProjectID,AVG(e.hourlyRate) averageHour
FROM Employee e

, EmployeeProject ep WHERE e.ID=ep.EmployeeID GROUP BY ep.ProjectID ) averageRates WHERE averageRates.averageHour=(SELECT MAX(averageHour) FROM (SELECT ep.ProjectID ID ,AVG(e.hourlyRate) averageHour

FROM Employee e , Employee Projecect
ep
WHERE e.ID=ep.employeeID GROUP BY
ep.ProjectID)

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