CS4350Database Systems Quiz#1

Consider the following relational schema, DDL statements and tables. Show the status of the above tables after each of the following operations:

a. Changing the employee whose ID=7 to 11 in the table EMPLOYEE. If it is rejected, explain.

EMPLOYEE( EmployeeID, EmployeeName, SupervisorID, DepartmentID)

PROJECT (ProjectID, EmployeeID)

DEPARTMENT( Department ID, DepartmentName)

CREATE TABLE EMPLOYEE

( EmployeeID INT PRIMARY KEY,

EmployeeName VARCHAR(50) NOT NULL,

SupervisorID INT DEFAULT 9,

DepartmentID INT. DEFAULT 6,

FOREIGN KEY (SupervisorID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET DEFAULT ,

FOREIGN KEY (DepartmentID) REFERENCES DEPARTMENT(DepartmentID)

ON DELETE SET DEFAULT ON UPDATE SET NULL );

CREATE TABLE PROJECT (

ProjectID INT PRIMARY KEY,

EmployeeID INT DEFAULT 9,

FOREIGN KEY (EmployeeID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET NULL

ON UPDATE CASCADE );

CREATE TABLE DEPARTMENT(

DepartmentID INT PRIMARY KEY,

DepartmentName VARCHAR(50)

);

**Solution: Accepted. SupervisorID is set to default in the Employee Table. Cascade for Project table. Tables updated below**

EMPLOYEE

|  |  |  |  |
| --- | --- | --- | --- |
| EmployeeID | EmployeeName | SupervisorID | DepartmentID |
| 6 | A | ~~7~~ 9 | 6 |
| ~~7~~ 11 | B | 8 | 6 |
| 1 | C | ~~7~~ 9 | 7 |
| 8 | D | 9 | 3 |
| 9 | E | NULL | 6 |

PROJECT

|  |  |
| --- | --- |
| ProjectID | EmployeeID |
| 1 | 6 |
| 2 | ~~7~~ 11 |
| 3 | 1 |
| 4 | 8 |
| 5 | ~~7~~ 11 |
| 6 | 1 |

DEPARTMENT

|  |  |
| --- | --- |
| DepartmentID | DepartmentName |
| 3 | X |
| 6 | Y |
| 7 | Z |

b. Inserting a new employee: 30, F, NULL, 9 into the Table Employee. If it is rejected, explain

EMPLOYEE( EmployeeID, EmployeeName, SupervisorID, DepartmentID)

PROJECT (ProjectID, EmployeeID)

DEPARTMENT( Department ID, DepartmentName)

CREATE TABLE EMPLOYEE

( EmployeeID INT PRIMARY KEY,

EmployeeName VARCHAR(50) NOT NULL,

SupervisorID INT DEFAULT 9,

DepartmentID INT. DEFAULT 6,

FOREIGN KEY (SupervisorID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET DEFAULT ,

FOREIGN KEY (DepartmentID) REFERENCES DEPARTMENT(DepartmentID)

ON DELETE SET DEFAULT ON UPDATE SET NULL );

CREATE TABLE PROJECT (

ProjectID INT PRIMARY KEY,

EmployeeID INT DEFAULT 9,

FOREIGN KEY (EmployeeID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET NULL

ON UPDATE CASCADE );

CREATE TABLE DEPARTMENT(

DepartmentID INT PRIMARY KEY,

DepartmentName VARCHAR(50)

);

**Solution: Rejected. There’s no DepartmentID = 9 in the Department table.**

EMPLOYEE

|  |  |  |  |
| --- | --- | --- | --- |
| EmployeeID | EmployeeName | SupervisorID | DepartmentID |
| 6 | A | 7 | 6 |
| 7 | B | 8 | 6 |
| 1 | C | 7 | 7 |
| 8 | D | 9 | 3 |
| 9 | E | NULL | 6 |

PROJECT

|  |  |
| --- | --- |
| ProjectID | EmployeeID |
| 1 | 6 |
| 2 | 7 |
| 3 | 1 |
| 4 | 8 |
| 5 | 7 |
| 6 | 1 |

DEPARTMENT

|  |  |
| --- | --- |
| DepartmentID | DepartmentName |
| 3 | X |
| 6 | Y |
| 7 | Z |

c. Delete the employee whose ID = 7 If it is rejected, explain.

( EmployeeID INT PRIMARY KEY,

EmployeeName VARCHAR(50) NOT NULL,

SupervisorID INT DEFAULT 9,

DepartmentID INT. DEFAULT 6,

FOREIGN KEY (SupervisorID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET DEFAULT ,

FOREIGN KEY (DepartmentID) REFERENCES DEPARTMENT(DepartmentID)

ON DELETE SET DEFAULT ON UPDATE SET NULL );

CREATE TABLE PROJECT (

ProjectID INT PRIMARY KEY,

EmployeeID INT DEFAULT 9,

FOREIGN KEY (EmployeeID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET NULL

ON UPDATE CASCADE );

CREATE TABLE DEPARTMENT(

DepartmentID INT PRIMARY KEY,

DepartmentName VARCHAR(50)

);

**Solution: Accepted. EmployeeID = 7 row is deleted, supervisorID is set to default in the Employee table. In the Project table, EmployeeID = 7 is set to NULL.**

EMPLOYEE

|  |  |  |  |
| --- | --- | --- | --- |
| EmployeeID | EmployeeName | SupervisorID | DepartmentID |
| 6 | A | ~~7~~ 9 | 6 |
| ~~7~~ | ~~B~~ | ~~8~~ | ~~6~~ |
| 1 | C | ~~7~~ 9 | 7 |
| 8 | D | 9 | 3 |
| 9 | E | NULL | 6 |

PROJECT

|  |  |
| --- | --- |
| ProjectID | EmployeeID |
| 1 | 6 |
| 2 | ~~7~~ NULL |
| 3 | 1 |
| 4 | 8 |
| 5 | ~~7~~ NULL |
| 6 | 1 |

DEPARTMENT

|  |  |
| --- | --- |
| DepartmentID | DepartmentName |
| 3 | X |
| 6 | Y |
| 7 | Z |

d. Changing DepartmentID from 3 to 20 in the table DEPARTMENT. If it is rejected, explain

( EmployeeID INT PRIMARY KEY,

EmployeeName VARCHAR(50) NOT NULL,

SupervisorID INT DEFAULT 9,

DepartmentID INT. DEFAULT 6,

FOREIGN KEY (SupervisorID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET DEFAULT ,

FOREIGN KEY (DepartmentID) REFERENCES DEPARTMENT(DepartmentID)

ON DELETE SET DEFAULT ON UPDATE SET NULL );

CREATE TABLE PROJECT (

ProjectID INT PRIMARY KEY,

EmployeeID INT DEFAULT 9,

FOREIGN KEY (EmployeeID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET NULL

ON UPDATE CASCADE );

CREATE TABLE DEPARTMENT(

DepartmentID INT PRIMARY KEY,

DepartmentName VARCHAR(50)

);

**Solution: Accepted. DepartmentID = 3 is changed to 20 in the Department table. In the Employee table, DepartmentID = 3 is set to NULL on update.**

EMPLOYEE

|  |  |  |  |
| --- | --- | --- | --- |
| EmployeeID | EmployeeName | SupervisorID | DepartmentID |
| 6 | A | 7 | 6 |
| 7 | B | 8 | 6 |
| 1 | C | 7 | 7 |
| 8 | D | 9 | ~~3~~ NULL |
| 9 | E | NULL | 6 |

PROJECT

|  |  |
| --- | --- |
| ProjectID | EmployeeID |
| 1 | 6 |
| 2 | 7 |
| 3 | 1 |
| 4 | 8 |
| 5 | 7 |
| 6 | 1 |

DEPARTMENT

|  |  |
| --- | --- |
| DepartmentID | DepartmentName |
| ~~3~~ 20 | X |
| 6 | Y |
| 7 | Z |

e.. Delete the employee whose ID= 7. If it is rejected, explain

( EmployeeID INT PRIMARY KEY,

EmployeeName VARCHAR(50) NOT NULL,

SupervisorID INT DEFAULT 9,

DepartmentID INT. DEFAULT 6,

FOREIGN KEY (SupervisorID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET DEFAULT ,

FOREIGN KEY (DepartmentID) REFERENCES DEPARTMENT(DepartmentID)

ON DELETE SET DEFAULT ON UPDATE SET NULL );

CREATE TABLE PROJECT (

ProjectID INT PRIMARY KEY,

EmployeeID INT DEFAULT 9,

FOREIGN KEY (EmployeeID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET NULL

ON UPDATE CASCADE );

CREATE TABLE DEPARTMENT(

DepartmentID INT PRIMARY KEY,

DepartmentName VARCHAR(50)

);

**Solution: Accepted. EmployeeID = 7 row is deleted, supervisorID is set to default in the Employee table. In the Project table, EmployeeID = 7 is set to NULL.**

EMPLOYEE

|  |  |  |  |
| --- | --- | --- | --- |
| EmployeeID | EmployeeName | SupervisorID | DepartmentID |
| 6 | A | ~~7~~ 9 | 6 |
| ~~7~~ | ~~B~~ | ~~8~~ | ~~6~~ |
| 1 | C | ~~7~~ 9 | 7 |
| 8 | D | 9 | 3 |
| 9 | E | NULL | 6 |

PROJECT

|  |  |
| --- | --- |
| ProjectID | EmployeeID |
| 1 | 6 |
| 2 | ~~7~~ NULL |
| 3 | 1 |
| 4 | 8 |
| 5 | ~~7~~ NULL |
| 6 | 1 |

DEPARTMENT

|  |  |
| --- | --- |
| DepartmentID | DepartmentName |
| 3 | X |
| 6 | Y |
| 7 | Z |

f. Changing the. EmployeeID = 6 in the table Employee to 10. If it is rejected, explain

( EmployeeID INT PRIMARY KEY,

EmployeeName VARCHAR(50) NOT NULL,

SupervisorID INT DEFAULT 9,

DepartmentID INT. DEFAULT 6,

FOREIGN KEY (SupervisorID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET DEFAULT ,

FOREIGN KEY (DepartmentID) REFERENCES DEPARTMENT(DepartmentID)

ON DELETE SET DEFAULT ON UPDATE SET NULL );

CREATE TABLE PROJECT (

ProjectID INT PRIMARY KEY,

EmployeeID INT DEFAULT 9,

FOREIGN KEY (EmployeeID) REFERENCES EMPLOYEE (EmployeeID)

ON DELETE SET NULL

ON UPDATE CASCADE );

CREATE TABLE DEPARTMENT(

DepartmentID INT PRIMARY KEY,

DepartmentName VARCHAR(50)

);

**Solution: Accepted. In the Employee table, EmployeeID = 6 is changed to 10. In the Project table, EmployeeID = 6 is cascaded change to 10 on update.**

EMPLOYEE

|  |  |  |  |
| --- | --- | --- | --- |
| EmployeeID | EmployeeName | SupervisorID | DepartmentID |
| ~~6~~ 10 | A | 7 | 6 |
| 7 | B | 8 | 6 |
| 1 | C | 7 | 7 |
| 8 | D | 9 | 3 |
| 9 | E | NULL | 6 |

PROJECT

|  |  |
| --- | --- |
| ProjectID | EmployeeID |
| 1 | ~~6~~ 10 |
| 2 | 7 |
| 3 | 1 |
| 4 | 8 |
| 5 | 7 |
| 6 | 1 |

DEPARTMENT

|  |  |
| --- | --- |
| DepartmentID | DepartmentName |
| 3 | X |
| 6 | Y |
| 7 | Z |