Lab 3 Practice Exercise on Integrity constraints

Consider the following relations and explain how to implement the given constraints.

1. Captain(playerid, teamid):
    - one team has one captain.
    - same player cannot be the captain for more than one team.
    - a team cannot exist without a captain.
    - a playerid is invalid if it does not exist in the Players table.

Multiple options can be correct.

Option1:

	playerid	teamid
Foreign key	✓	-
Unique	-	-
NOT NULL	-	-
Primary key	Together as composite primary key	

Option2:

	playerid	teamid
Primary key	-	✓
Foreign key	✓	-
Unique	✓	-
NOT NULL	✓	-

Option3:

	playerid	teamid
Primary key	✓	-
Foreign key	✓	-
Unique	-	✓
NOT NULL	-	✓

Option4:

	playerid	teamid
Primary key	-	-
Foreign key	✓	-
Unique	-	✓
NOT NULL	✓	✓

Option5:

	playerid	teamid
Primary key	-	-
Foreign key	✓	-
Unique	✓	✓
NOT NULL	-	✓

Option6:

	playerid	teamid
Primary key	-	-
Foreign key	-	-
Unique	✓	✓
NOT NULL	-	✓

Option7:

	playerid	teamid
Primary key	-	-
Foreign key	✓	-
Unique	✓	✓
NOT NULL	✓	✓

2. Manages (manager_id, employee_id)
   - one manager manages one to many employees
   - an employee reports to only one manager (if exists).
   - Manager is one of the employees (thus manager_id has employee_id as information. Both are invalid if it does not exist in Employee table).
   - An employee cannot be the manager of self (thus both the columns cannot have same employee id as information. The topmost employees don't have manager).

Option 1: By declaring both manager_id and employee_id as foreign key referring to employee_id of Employee table and by applying UNIQUE constraint on employee_id.

Option 2: By declaring both manager_id and employee_id as foreign key referring to employee_id of Employee table and declaring employee_id as a primary key of Manager table.

Option 3: By declaring both manager_id and employee_id as foreign key referring to employee_id of Employee table and by applying UNIQUE and NOT NULL constraint on employee_id.

Option 4: By declaring both manager_id and employee_id as foreign key referring to employee_id of Employee table and by applying UNIQUE constraint on both the columns.

Option 5: By declaring both manager_id and employee_id as foreign key referring to employee_id of Employee table and declaring both as composite primary key of Manager table.

Option 6: By declaring both manager_id and employee_id as foreign key referring to employee_id of Employee table and by applying NOT NULL constraint on manager_id.

3. Manages (manager_id, employee_id)

manager_id: refers to the employee_id of Employee table

employee_id: refers to the employee_id of Employee table

- one manager manages one to many employees
- an employee reports to only one manager (if exists).

Q. If the manager employee's record is deleted from the employee table, then

Option 1: corresponding records from Manager table also must be deleted using ON DELETE CASCADE constraint.

Option 2: corresponding manager_id column from Manager table must be set to NULL using ON DELETE SET NULL constraint.

Option 3: corresponding manager_id column from Manager table must be set to topmost employee_id by using ON DELETE SET DEFAULT constraint.

Option 4: Do nothing (NO cascading operation required)

Option 5: Only one record corresponding to the manager is to be deleted. This can be done using DELETE DML query. So cascading is not needed.

Q. If the employee's record is deleted from the employee table, then _____

Option 1: corresponding records from Manager table also must be deleted using ON DELETE CASCADE constraint on Employee table.

Option 2: corresponding employee_id column from Manager table must be set to NULL using ON DELETE SET NULL constraint.

Option 3: If the employee is a manager, corresponding manager_id column from Manager table must be set to topmost employee_id by using ON DELETE SET DEFAULT constraint. If the employee is not a manager then only one record corresponding to the employee is to be deleted. This can be done using DELETE DML query. So cascading is not needed.

Option 4: Do nothing (NO cascading operation required)

Option 5: Do nothing. As employee_id is a foreign key in Manager table, as soon as its record is deleted from the Employee table, it becomes invalid employee_id in Manager table and thus gets automatically deleted.

Q. If the manager of an employee is changed, then _____

Option 1: manager_id information need to be updated in just one record which can be done using UPDATE DML query. Thus cascading is not required.

Option 2: By applying on Update cascade on Manager table.

Option 3: By applying on Update cascade on Employee table.