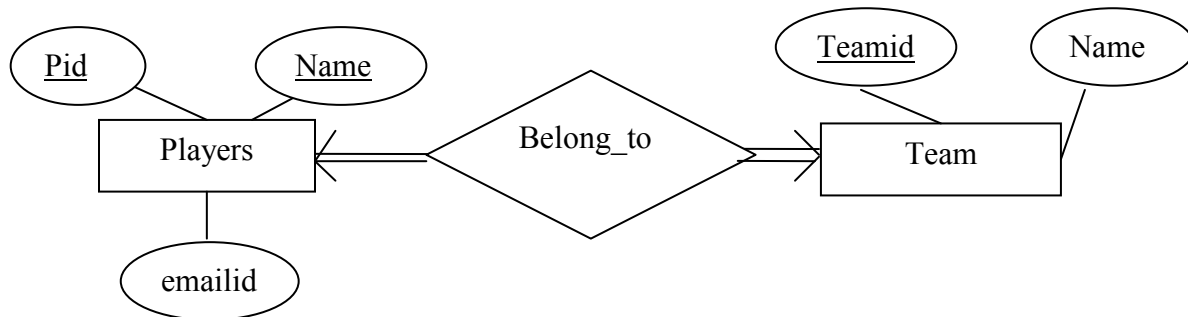


**Birla Institute of Technology & Science, Pilani, K. K. BIRLA Goa campus**  
**Database Systems (CS F212)**  
**Second Semester 2020-2021**  
**Lab-3 Quiz : To test integrity constraints concepts**

**PART A**



Consider the relational schema corresponding to above ER without referential integrity and mapping constraints. Thus Players table has columns Pid as a primary key, Name of the player and emailed. The Teams table has columns Teamid as a primary key, Name of the team.

1. How to implement the following constraints?

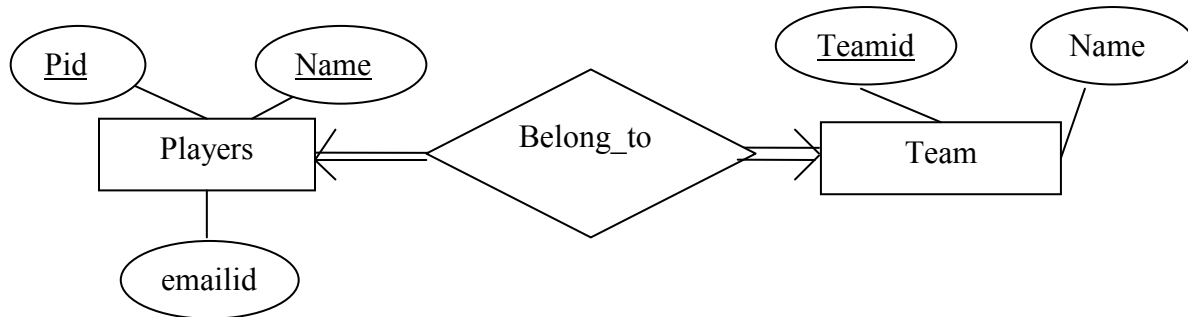
All players must belong to some team and one player belongs to one team only.

**Mark all correct options: [2M]**

1. By creating a separate Belong\_to table with columns Pid and Teamid as foreign keys.
2. By creating a separate Belong\_to table with columns Pid and Teamid as foreign keys and together as composite primary key.
3. By adding a column Teamid in Players table as a foreign key.
4. By adding a column Teamid in Players table as a foreign key and putting 'unique' constraint on Teamid.
5. By adding a column Teamid in Players table as a foreign key and putting 'NOTNULL' constraint on Teamid.

**Correct answer: option 5**

**Feedback:** As there is total participation, there is no need to create a separate table for Belongs\_to. By putting not null constraint, the player must belong to some team condition can be satisfied.



2. Consider the relational schema corresponding to above ER without referential integrity and mapping constraints. Thus Players table has columns Pid as a primary key, Name of the player and emailed. The Teams table has columns Teamid as a primary key, Name of the team.

How to implement the following constraints?

A team can be without a captain but if it has, it can have only one captain which is one of the players (Pid) from Players table. Multiple teams cannot have same player as their captain i.e. a player cannot be a captain for more than one team.

**Mark all correct options: [3M]**

Option 1: Alter Teams table by adding a column Captain\_id with same datatype as Pid of Players.

Option 2: Alter Teams table by adding a column Captain\_id with same datatype as Pid of Players and set default value as NULL.

Option 3: Alter Teams table by adding a column Captain\_id with same datatype as Pid of Players and set default value as NULL with unique constraint.

Option 4: Alter Teams table by adding a column Captain\_id as foreign key referring to Pid of Players table.

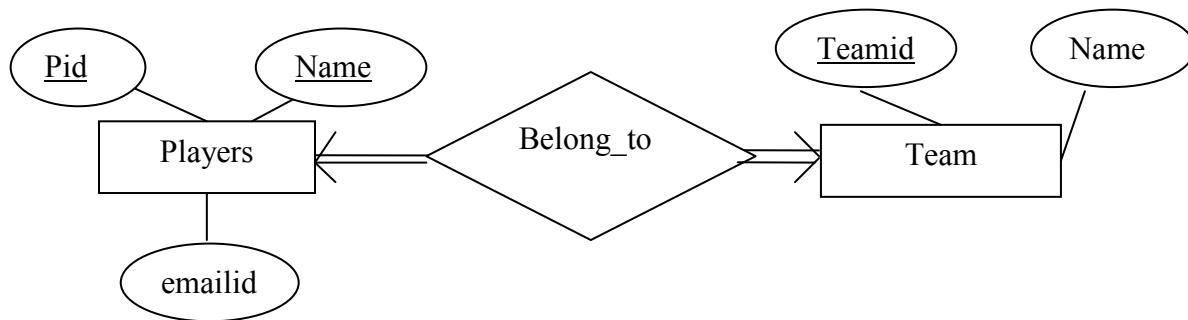
Option 5: Alter Teams table by adding a column Captain\_id as foreign key referring to Pid of Players table with 'Unique' constraint.

Option 6: Alter Teams table by adding a column Captain\_id as foreign key referring to Pid of Players table and making columns Teamid and Captain\_id as composite primary key.

Option 7: Maintain a separate table with only Teamid and Captain\_id as foreign keys and making together as composite primary key.

**Correct answer: option 5**

3.



Consider the relational schema corresponding to above ER without referential integrity and mapping constraints. Thus Players table has columns Pid as a primary key, Name of the player and emailed. The Teams table has columns Teamid as a primary key, Name of the team. A team can be without a captain but if it has, it can have only one captain which is one of the players (Pid) from Players table.

How to implement the following constraints?

If a captain player record is removed from the Players table, corresponding information must be correctly managed from other tables.

**Mark all correct options: [2M]**

Option 1: By putting 'ON DELETE CASCADE' constraint on Players table.

Option 2: By putting 'ON DELETE CASCADE' constraint on Teams table.

Option 3: By putting 'ON DELETE SET NULL' constraint on Players table.

Option 4: First update the value of Captain\_id in Teams table as NULL and then delete the corresponding entry from Players table.

Option 5: By putting 'ON DELETE SET NULL' constraint on Teams table.

Option 6: Do nothing. As Pid is a foreign key in Team table, as soon as its record is deleted from the Players table, it becomes invalid Pid in Team table and thus gets automatically deleted.

**Correct answer: Option 3**

4. Consider the relation Manages (manager\_id, employee\_id). How to implement following constraints?

- 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).

**Mark all correct options: [3M]**

**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 declaring both as composite primary key of Manager table.

**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 by applying UNIQUE and NOT NULL constraint on employee\_id.

**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.

**Correct answers: 2 and 5**

## **PART B**

1. Based on the internet book store database system implemented in Lab 3, execute the following insert query and select the correct justification.

insert into Orderbook values('A1236','c5',6,'2012-04-30'); **[1M]**

**options:**

- a. No error
- b. Error because oisbn is a primary key and so should be unique (The book 'A1236' is already ordered by some customer).
- c. Error because same book cannot be ordered by same customer multiple times (c5 has already ordered this book).
- d. Error because same book cannot be ordered by multiple customers (c1 has already ordered same book).

**Correct ans : a**

**Feedback: same book can be ordered by same customer but on different date.**

2. Based on the internet book store database system implemented in Lab 3, execute the following insert query and select the correct justification.

insert into Orderbook values('A1234','c1',4,'2013-10-01'); **[2M]**

**options:**

No error

Error because same book is ordered by another customer on same date.

Error because oisbn and ocid is a composite primary key. Thus same book is already ordered by 'c1'.

Error because same book cannot be ordered by multiple customers (The book 'A1236' is already ordered by 'c2').

**Correct ans: b**

**Feedback: oisbn and orderdate is a composite primary key so that same book cannot be ordered by another customer on same date.**

3. Based on the internet book store database system implemented in Lab 3, assume that customer 'c5' has cancelled the order. Thus the corresponding record from Orderbook table is deleted. Does this also delete the corresponding entry from Customer table? Answer YES or NO. **[2M]**

**Correct answer: NO**

**Feedback:** NO, the entry from the customer table does not get deleted because it is a parent table whereas cascading only deletes from child table

4. Based on the internet book store database system implemented in Lab 3, on deleting a record from the Book table having isbn='A1234', does this also delete the corresponding entry from Orderbook table? Answer YES or NO. **[1M]**

**Correct answer: YES**

**Feedback:** altering parent table record deletes the child record due to cascading.

5. Based on the internet book store database system implemented in Lab 3, on updating the isbn of book A1238 to A1239 in BOOK table, does this also update the corresponding information in ORDERBOOK table? Answer YES or NO. **[1M]**

**Correct answer: YES**

**Feedback:** updating parent table record updates the child record due to cascading.

6. Based on the internet book store database system implemented in Lab 3, select all the correct statement(s) for following query. **[3M]**

```
SELECT c.cname, c.address, o.qty  
FROM customer AS c LEFT JOIN orderbook AS o  
ON c.cid = o.ocid;
```

Option 1: It displays the name of the customer, address and number of books ordered by all the customers.

Option 2: It displays the name of the customer, address and number of books ordered by those customers who have ordered some book.

Option 3: It displays the name of the customer, address and number of books ordered by those customers who have ordered some or no book.

Option 4: It displays the name of the customer, address and number of books ordered by those customers who have ordered some and those who haven't ordered any.

Option 5: The same information can be fetched by using equi join between orderbook and customer table.

Option 6: The same information can be fetched by using RIGHT JOIN as follows:

```
SELECT c.cname, c.address, c.age, o.qty, o.order_date  
FROM orderbook AS o RIGHT JOIN customer AS c  
ON c.cid = o.ocid;
```

**Correct answers: 3, 4, 6**