29/9/25 Task-10: Normalization database using functional dependencies upto third normal form

Aim- To normalization the below relation and create the simplified table board suitable constraints

Cricket board (board ID, name, address, contact no, team ID, tname, coach, captain, player ID, PF name, Pl name, age, playing role, email, ground no, a name, location, capacity, umpire ID, U/ Name, UL Name, U Age, U date of birth, country, email, U contact. no).

Procedure:

normalize the given relation and create simplified table with suitable constraint we need to identify functional depecion and seperate them into different tables.

functional dependency:

Board ID - Name, address, contact no.
Team ID - TName, coach, captain.
player ID - PFName, PL Name, Age, Date of Birth, playing role, email, Contact No, batting, bowling
match ID - match-date, time, , result, ground ID.
ground - gname, Location, capacity.

Now, we can create simplified tables:

Cricket board (team (RP), tname, coach, captain)
Cricket player (player ID (PK), team ID (PK), PFName, PL Name, age PDOB.
cricket table all non-prime attributes using cf.

Board table: Board ID (PK), name, address, contact no.
Team table: team ID (PK), TName, coach, captain.
match Table: ground ID (PK), team ID (PK), match-date, time, result.
ground table: ground ID (PK), a name, Location, capacity
Umpire table: umpire ID (PK), ufname, UL Name, U Age, U date of birth, country, email, contact-no.

First normal form:

The given relationship into the first normal form (1NF), do need to ensure that each attribute contain atomic values and there are no repeating group of arrays, based on the provide relation, it appear that each attribute already contain atomic value, so we are no repeat group to eleminate.

Second normal form:-

To determine whether the given relation in second normal (2NF), we need to check two conditions,

The relation must already be in 1NF (first normal form) it appears that potential candidate key could be.

1. Board ID
2. Team ID
3. Player ID
4. match ID
5. umpire ID.

Next, we need to check if all non-prime attribute are fully. Function dependent on their respective candidate key (2)

Third normal Form:

To determine whether the given relation is in Third normal form (3NF), need to check two conditions,

1. The relation must already be in second normal form.
2. There should be no transitive dependencies blw non prime attribute and candidate keys.

The given relation satisfies the conditions of second normal form (2NF), now, lets check for transitive dependency

Board -> Name, address, contact-no.

Team ID -> Tname, coach, captain.

player ID -> pfname, pl name, age, p date of birth.

playing role, email, contact-no ID, batting, bowling.

Match ID -> match-date, time, result ground ID.

ground ID -> gname, location, capacity.

umpire ID -> ufname, ulname, uage, udate of birth, country -email, ucontact-no.

VEL TECH - CSE	
EX NO.	16
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	5
TOTAL (20)	20
SIGN WITH DATE	

Result:- Thus the normalization of given relation is created. The simplified tables with suitable constraint successfully.