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Solution1:
Domain:
-number of football teams participate in a competition.
-Each **team** is identified by its **name.**
-The **teams** are **located at** the **cities.**
-**Name** of a city uniquely identifies each **city.**
-The teams play games in round-robin system, i.e. each team plays two games with all other teams.
-**One** game is played **at home** and **one** game is played **away**.
-A **moment in time when a game starts** and a **venue** of a game uniquely identifies each **game**.
-The **referees** enforce the rules during the games.
-To simplify a sample database domain, we assume that one game is refereed by only one referee
-we assume that a pair of attributes: **first name** and **last name** uniquely identifies each **referee**.

-Given the above domain description and conceptual schema the following relational Schema's can be derived:

1) **TEAM(name, cdate, mcoach)**
   primary-key=(name)
   Functional dependencies:
   name→cdate, mcoach
   mcoach→ name //as a coach is only coaching one team at a time
   Minimal keys:
   (mcoach) and (name)
   Current highest normal form:
   2NF because transitive dependency exists making mcoach a minimal key too
   Decomposition to BCNF:
   -decompose into two schemas. ie . make a new schema COACH(tname, mcoach) and TEAM schema now TEAM(name, cdate)
2) **CITY(name, population, country, tname)**
   primary-key=name
   Functional dependencies:
   name→ population, country
   tname→ name
   Minimal keys:
   tname
   Current highest normal form:
   -2NF because transitive dependency exists (tname → population, country) so cannot be 3NF
   Decomposition to BCNF:

tname→ should be removed and instead a (city) foreign key should be added to the TEAM schema as a city can have multiple teams in it. Ie. TEAM(name, cdate, city). This will properly represent the 1 to many relationship.

3) **GAME(datetime, venue, htname, hcity, htscore, atname, acity, atscore, fname, lname)**
   primary-key=(datetime, venue)
   Functional dependencies:
   Datetime, venue → htname, htscore, atname, atscore, fname, lname
   htname→ hcity
   atname→ acity
   Minimal keys:
   (datetime, venue)
   Current highest normal form:
   -2NF because a non-prime (hcity/acity) is transitively dependent on primary/minimal key, and so cannot be in 3NF
   Decomposition to BCNF:
   -(atcity) and (htcity) can be taken out of the schema because this information is already captured by the city TEAM schema anyway
4) **REFEREE(fname, lname, cname)**
   primary-key=(fname, lname)
   Functional dependencies:
   fname, lname→ cname
   Minimal keys:
   (fname, lname)
   Current highest normal form:
   BCNF as LHS is a minimal key in functional dependency

-Therefore after the above analysis resulting relational schemas are:

CITY(name, population, country, tname) tname foreign key to TEAM
REFEREE(fname, lname, cname) cname foreign key to CITY
TEAM(name, cdate, city) city foreign key to CITY
COACH(mcoach, tname) tname foreign key to TEAM
GAME(datetime, venue, htname, htscore, atname, atscore, fname, lname)
htname/atname foreign keys to TEAM and fname, lname foreign keys to REFEREE

This is implemented in dbcreate.sql file.