Data and Applications
Project Phase-III
Team 4

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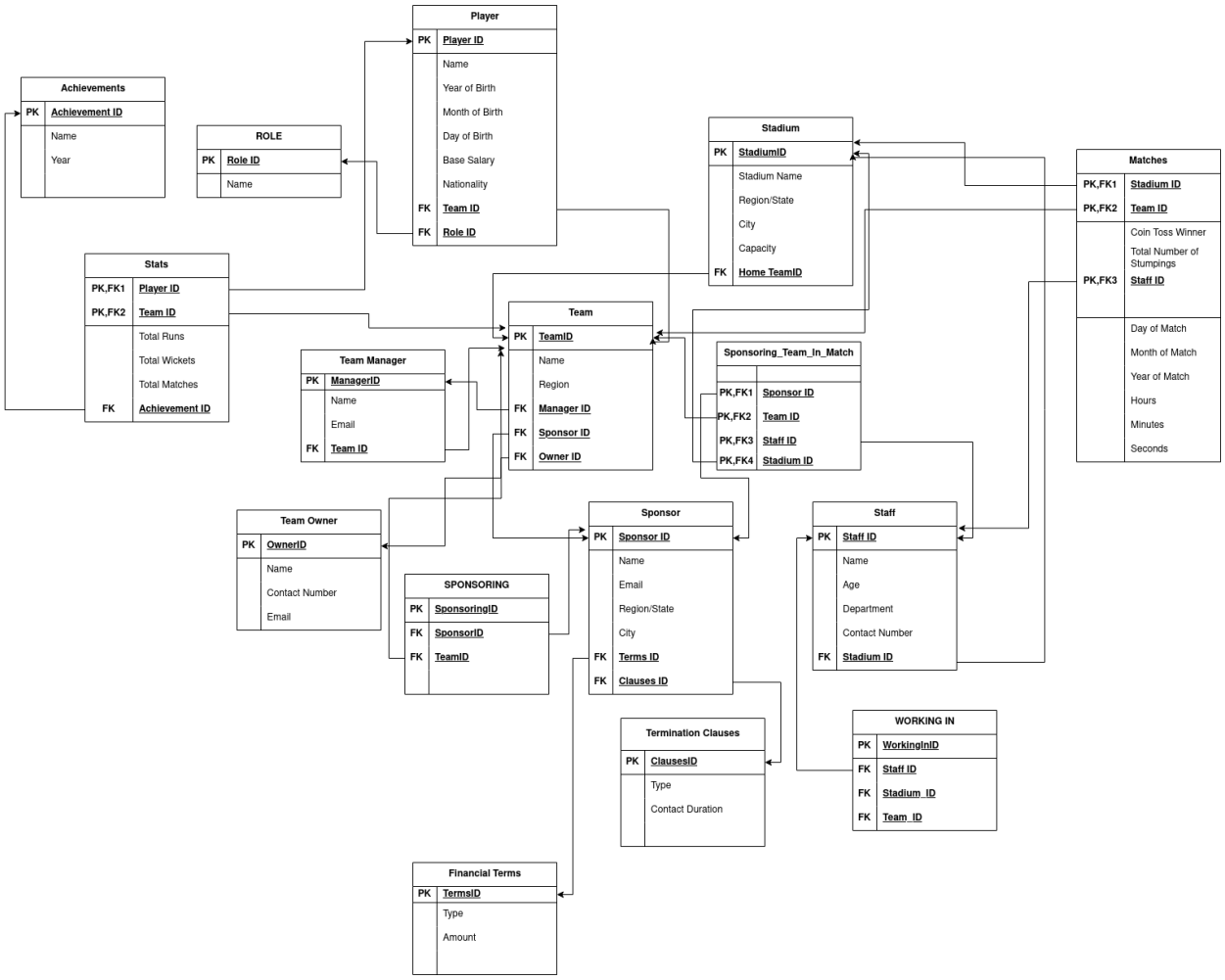
Procedure for Converting from ER Model to Relational Model:

1) For each Strong Entity type in the ER schema, we have created a relation that includes all the attributes of that Entity.
2) For each weak entity type in the ER schema a relation has been created which includes all attributes of the weak entity as attributes of relation. Each Relation includes the primary key of the deciding entity as a foreign key.
3) The composite attributes were broken down in multiple attributes(e.g. Date of Match to Day,Month and Year of Match).
4) Multivalued attributes were converted in separated relations and their primary key used as foreign key in original relation (e.g. Termination Clauses table for Termination Clause attribute).
5) We mapped Primary keys of all Binary Relations of type 1:1 and 1:N as Foreign Keys in the respective relations.
6) A separate relation for the relationship of Sponsors SPONSORING Team PLAYING a Match IN Stadium(N-ary relationship).

Conversion to 1NF:

The relational model is already in 1NF as new relations for multivalued attributes were created and composite attributes were converted to atomic attributes in the steps of conversion to Relational Model.

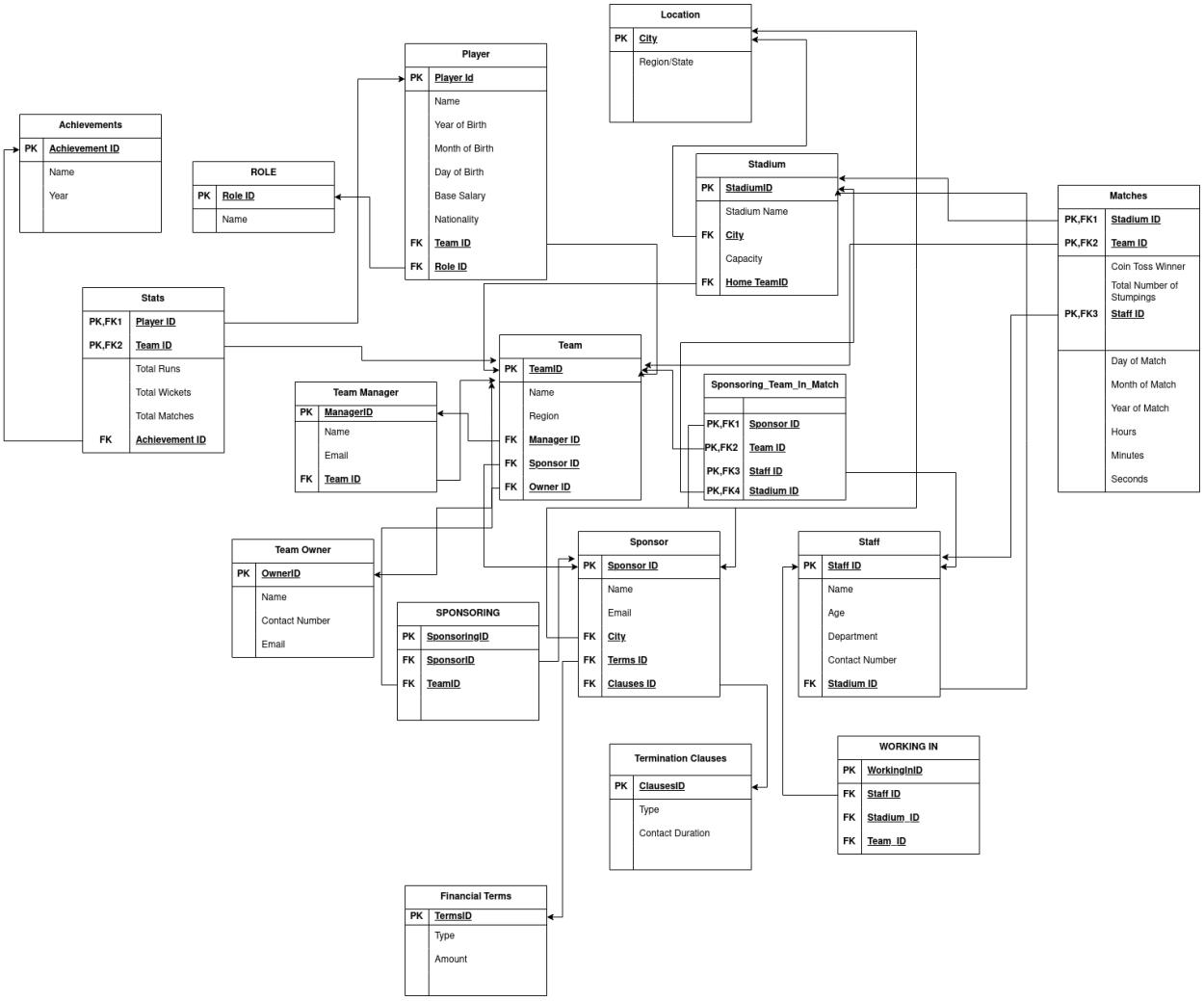


Conversion to 2NF:

The relational model is already in 2NF as all of its primary keys have exactly one attribute(i.e. either a single attribute as a primary key or a set of attributes as primary key). Also it does not have any non-prime attribute that is functionally dependent on any proper subset of any candidate key of the relation(No other candidate keys are present in the model except the Primary Key).

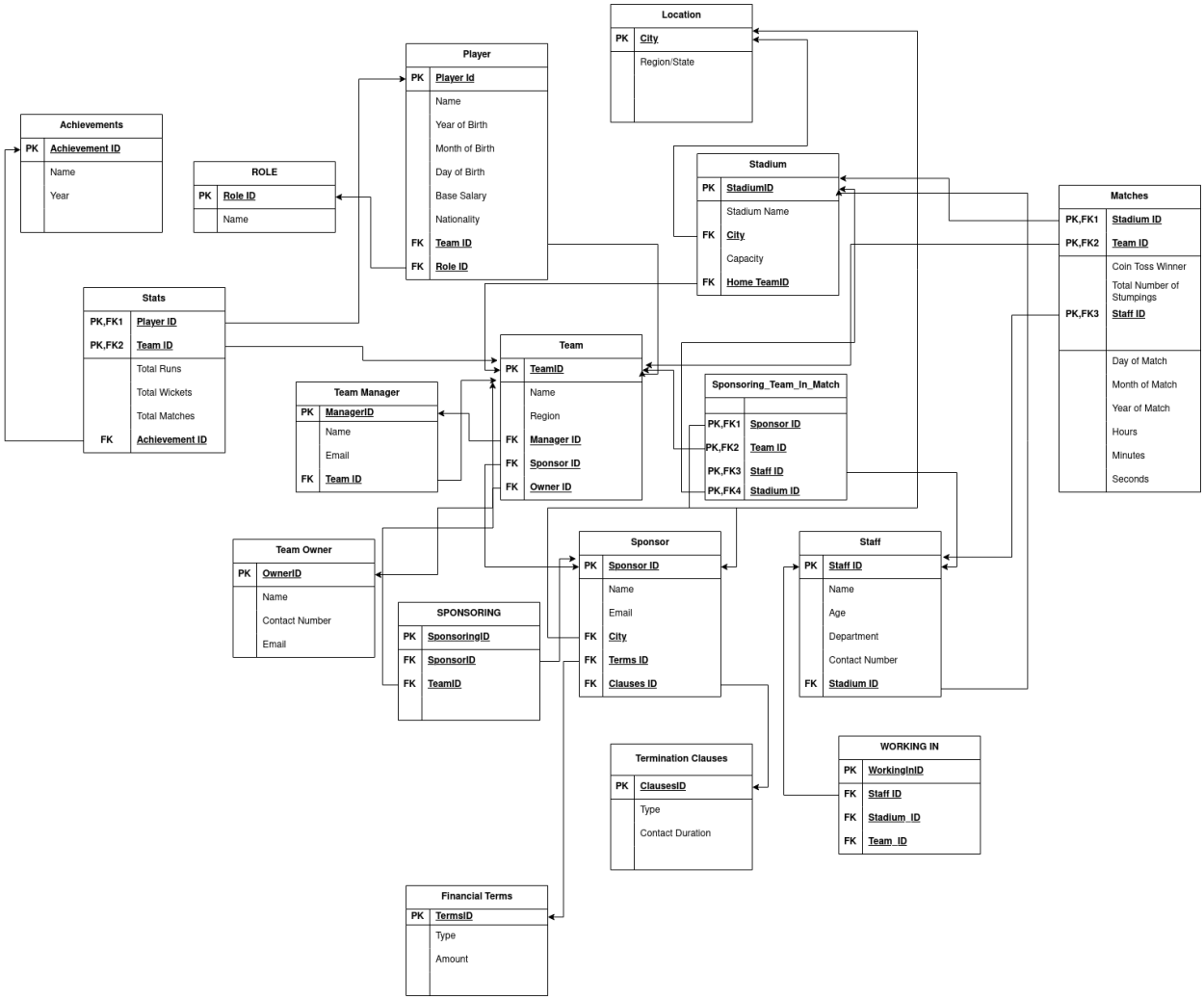
Conversion to 3NF:

In the Sponsor and Stadium attributes, the city can determine the region/state which is in violation of the 3NF rule.



To rectify this, we create a new relation Location with the primary key attribute City and attribute Region/State.

Final Relational Model:


Location
PK City
Region/State
Player
PK Player Id
Name
Year of Birth
Month of Birth
Day of Birth
Base Salary
Nationality
FK Team ID
FK Role ID
Achievements
PK Achievement ID
Name
Year
ROLE
PK Role ID
Name
Stadium
PK StadiumID
Stadium Name
FK City
Capacity
FK Home TeamID
Matches
PK,FK1 Stadium ID
PK,FK2 Team ID
Coin Toss Winner
Total Number of Stumpings
PK,FK3 Staff ID
Day of Match
Month of Match
Year of Match
Hours
Minutes
Seconds
Stats
PK,FK1 Player ID
PK,FK2 Team ID
Total Runs
Total Wickets
Total Matches
FK Achievement ID
Team
PK TeamID
Name
Region
FK Manager ID
FK Sponsor ID
FK Owner ID
Team Manager
PK ManagerID
Name
Email
FK Team ID
Sponsoring_Team_In_Match
PK,FK1 Sponsor ID
PK,FK2 Team ID
PK,FK3 Staff ID
PK,FK4 Stadium ID
Team Owner
PK OwnerID
Name
Contact Number
Email
Sponsor
PK Sponsor ID
Name
Email
FK City
FK Terms ID
FK Clauses ID
Staff
PK Staff ID
Name
Age
Department
Contact Number
FK Stadium ID
SPONSORING
PK SponsoringID
FK SponsorID
FK TeamID
Termination Clauses
PK ClausesID
Type
Contact Duration
WORKING IN
PK WorkingInID
FK Staff ID
FK Stadium_ID
FK Team_ID
Financial Terms
PK TermsID
Type
Amount