Data and Applications | Project Phase - 3

Team 'Life is a Schema'

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Mapping ER to Relational Model

Derived attributes have been ignored in our relational model (because they can be computed from other attributes). Thus, `Rank` weak entity type and `HasRanking` relationship type have been ignored (since `Rank` entity can be made as a **view** in our design).

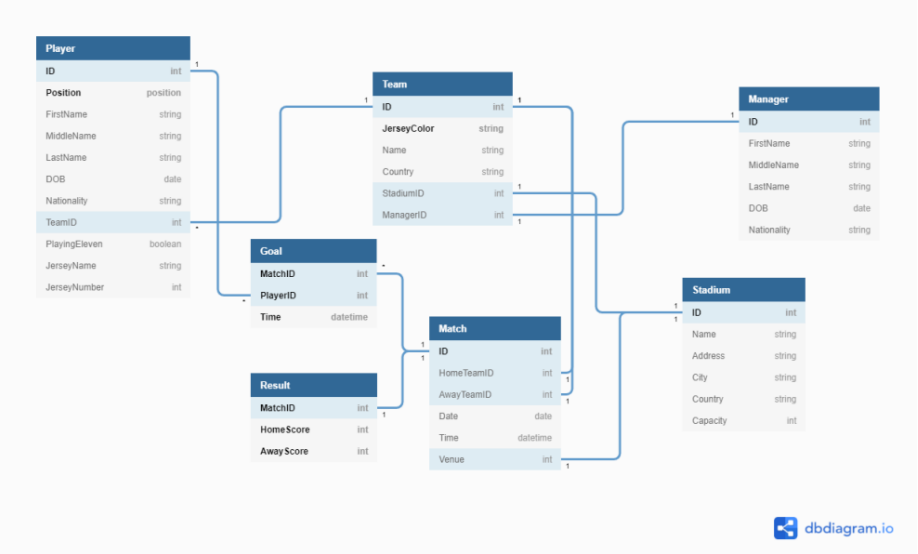
The super-class `TeamMember` has been ignored since our generalization is total participating and disjoint. So this table can be resolved by `Player` and `Manager` table without loss of data.

Rest of the relationships in our design can be mapped to existing Tables using foreign-key approach. Most of these foreign keys were already mentioned in our EER diagram. `TeamID` (foreign key) was moved from `Manager` Table to `Team` Table since `Team` is the total participating entity type.

A change made in our existing design is that in `Result` weak entity type, `Score` composite-attribute is not a derived attribute. Instead, `Result` attribute is the derived attribute (which can be derived from `Score` composite attribute).

The multivalued attributes `Position` and `JerseyColor` in `Player` and `Team` Tables respectively will take in atomic values to satisfy relational constraints. So, the primary key for these two tables will respectively be `(PlayerID, Position)` and `(TeamID, JerseyColor)`.

The snapshot of our relational model is therefore as follows:



Relational Model after conversion to 1NF

Our model is already in 1NF.

Relational Model after conversion to 2NF

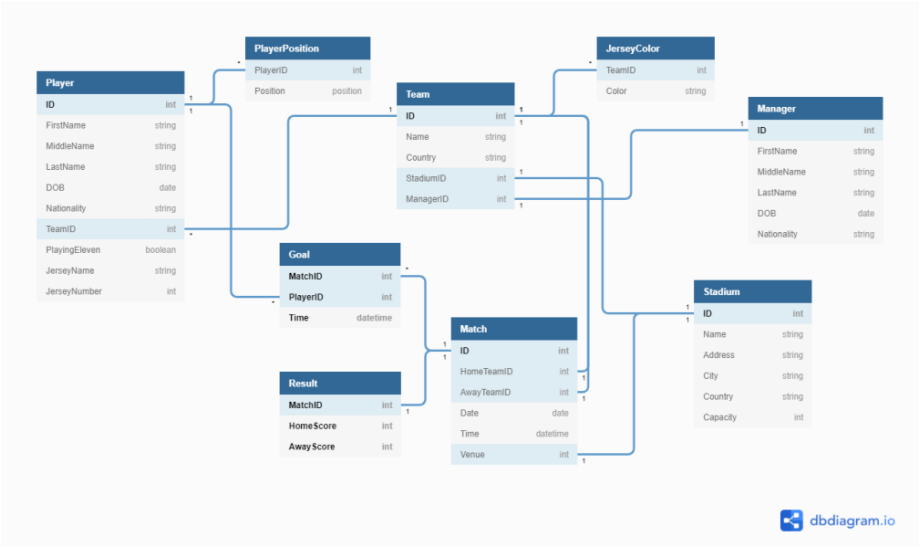
Partial dependencies originate in the Tables `Player` and `Team` due to the prime attributes `Player.ID` and `Team.ID` respectively. These redundancies occur due to the partial keys `Position` and `JerseyColor` (made to resolve multivalued attributes). So we normalize them by making two more relations as follows:

```
Table PlayerPosition {
  PlayerID int [ref: > Player.ID, not null]
  Position position
}

Table JerseyColor {
  TeamID int [ref: > Team.ID, not null]
  Color string
}
```

and we remove attributes `Position` and `JerseyColor` from Tables `Player` and `Team` respectively.

The snapshot of our relational model is therefore as follows:



Relational Model after conversion to 3NF

Our model is already in 3NF.