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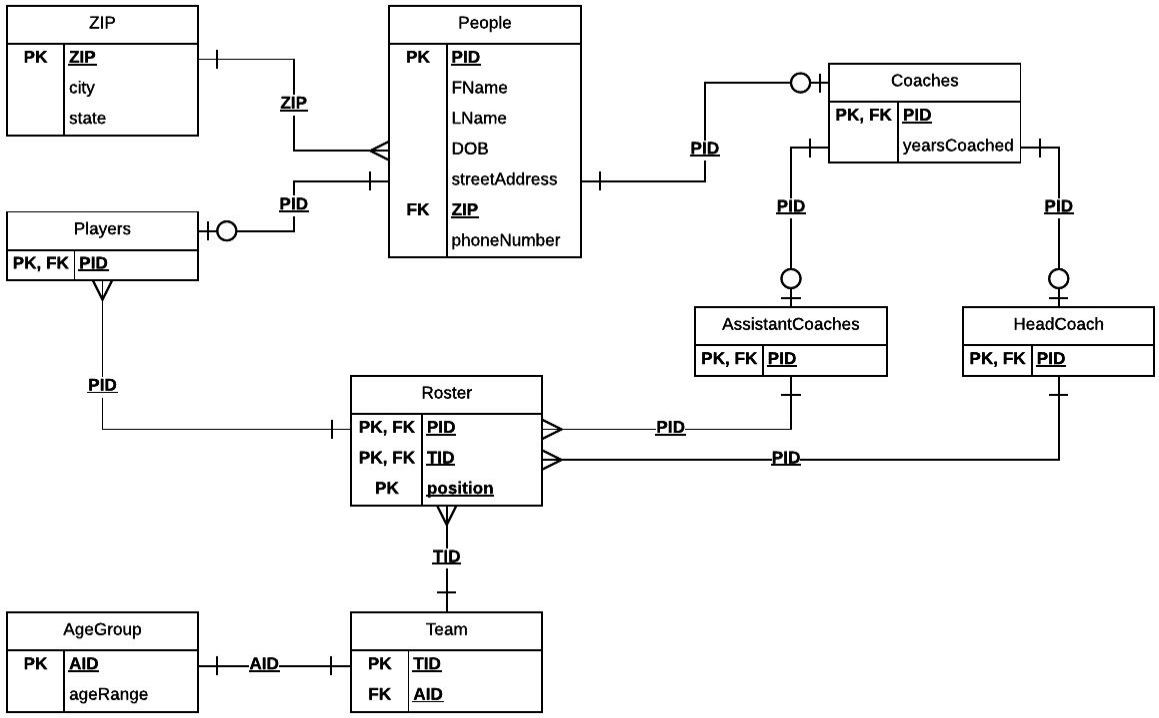
Lab 9

Functional Dependencies

People → FName, LName, DOB, streetAddress, phoneNumber
ZIP → city, state
Coaches → yearsCoached
AssistantCoaches → [no dependencies]
HeadCoach → [no dependencies]
Players → [no dependencies]
Roster → [no dependencies]
Team → [no dependencies]
AgeGroup → ageRange

Diagram



BCNF

This database design is in first normal form. There can be no atomic values inserted at the intersection of ant column and row. The database is also in second normal form it is in first normal form and because there are no partial key dependencies as seen in the functional dependencies. It is also in third normal form as it is in second normal form and there are no multi-key dependencies; all non-primary keys only have one dependency. Finally, the database is in Boyce Codd normal form because it is in third normal form and there are no candidate keys involved with multiple dependencies.

When designing this database, a few key decisions were made. A separate zip table was made in order to avoid having an address attribute in the People's table that would not be atomic. Coaches and Players are derived from People, and AssistantCoaches along with HeadCoach are derived from Coaches. Linking together the players and all of the coaches, a Roster table was used with only primary keys consisting of PID, TID, and position. This allows coaches to be the head coach of one team and be an assistant on another team. The Team table has a foreign key connected AgeGroup which allows for flexibility on AgeGroup if changes need to be made.