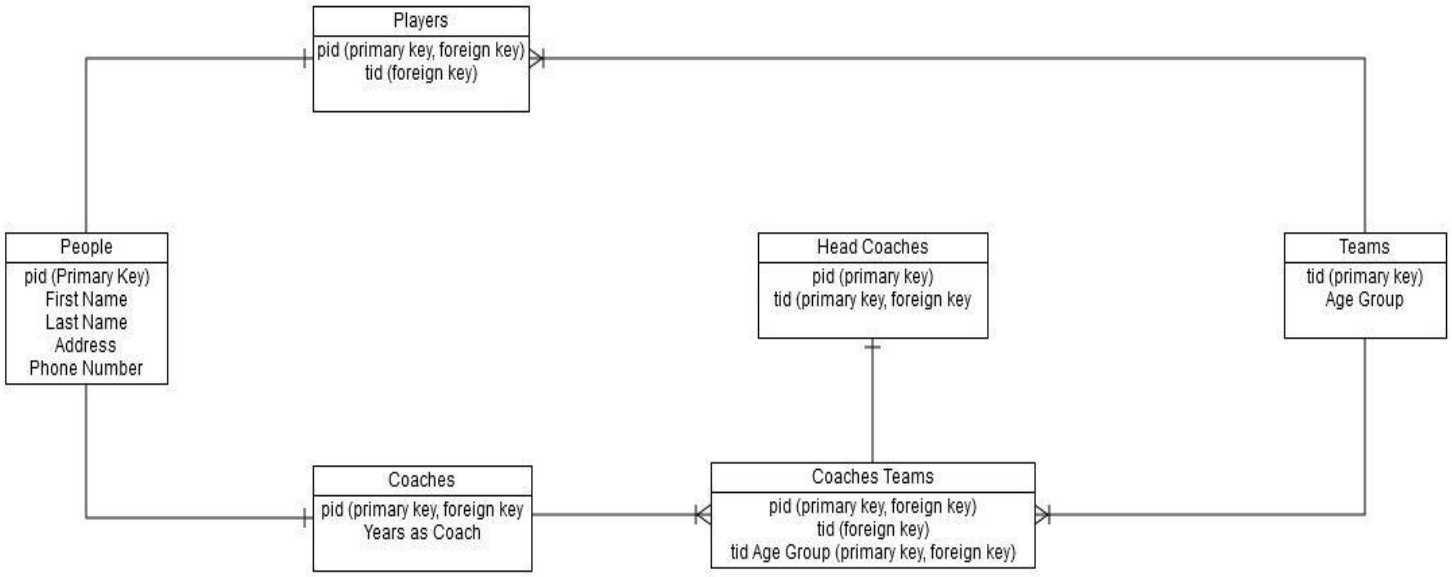

Functional Dependencies

First Name → pid
Last Name → pid
Address → pid
Phone Number → pid
Years as Coach → pid
Age Group → pid

BCNF Proof

A database is in Boyce-Codd Normal Form (BCNF) if each of its tables is in BCNF. A table is in BCNF if the domain of each attribute contains only atomic values and the value of each attribute contains only a single value from that domain (1NF). Additionally, no non-prime attributes can be dependent on any proper subset of any candidate key of the table (2NF), every non-prime attribute of the table is non-transitively dependent on every primary key of the table (3NF), and no part of the key is transitively dependent on another part of the key or a non-key attribute.

In the People table, each non-prime attribute (First Name, Last Name, Address, and Phone Number) contain only a single atomic value of the key (1NF), the whole key (2NF), and nothing but they key (3NF). Additionally, no part of the key is transitively dependent on another part of the key or any non-key attributes, so the People table is in BCNF.

The Teams table is in BCNF because the only non-prime attribute from that table (Age Group) is atomic, dependent on the key, the whole key, and nothing but the key. Additionally, no part of the key is transitively dependent on another part of the key or a non-key attribute. The Coaches table is in BCNF for the same reason – its only non-prime attribute is dependent on the key, the whole key, and nothing but they key, with no transitive dependencies.

The reaming tables – Players, Head Coaches, and Coaches – are associative entities in BCNF because all non-prime attributes represent one value of the key, the whole key, and nothing but the key and no non-key attribute is transitively dependent on another part of the key or a non-key attribute.

View to display all the teams in the 10-14 age group

```
CREATE VIEW teams10to14 AS
        SELECT *
        FROM Teams
        WHERE Age Group = ’10-14’;
```

View to display first and last names of all assistant coaches

```
CREATE VIEW assistantCoaches AS
        SELECT First Name, Last Name
        FROM people
        WHERE pid in (
                SELECT pid FROM Coaches Teams
                WHERE pid NOT IN (
                        SELECT pid FROM Head Coaches
                                        )
                )
```

View to display first and last names all head coaches

```
CREATE VIEW headCoaches AS
        SELECT First Name, Last Name
        FROM People
        WHERE pid IN (
                        SELECT pid
                        FROM Head Coaches
                        )
```