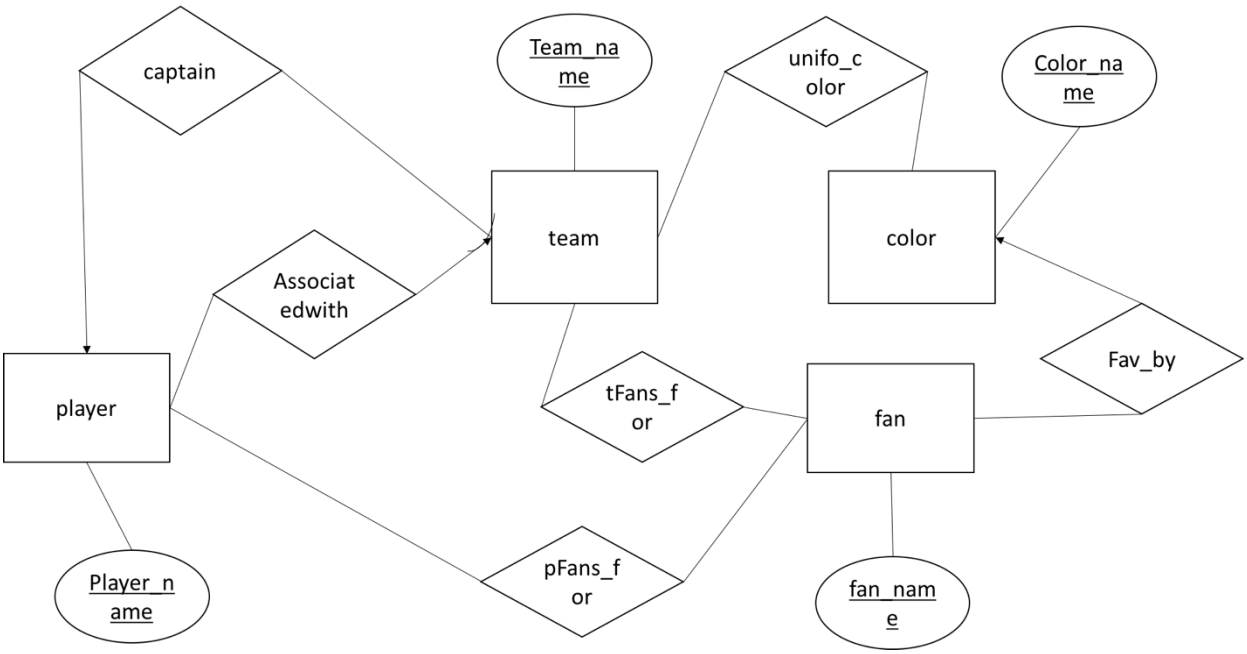
Hw6

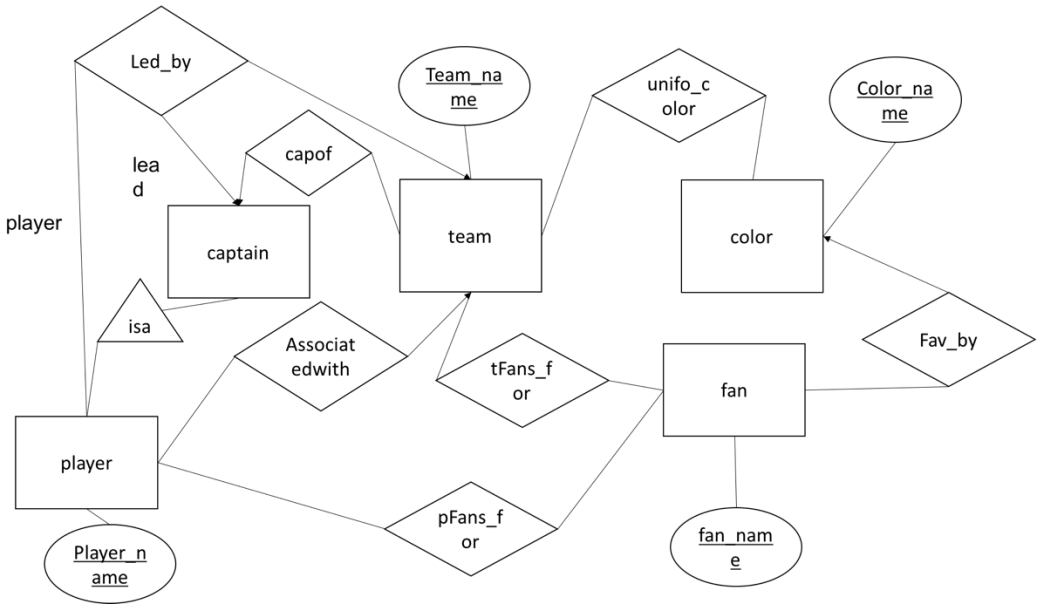
1)



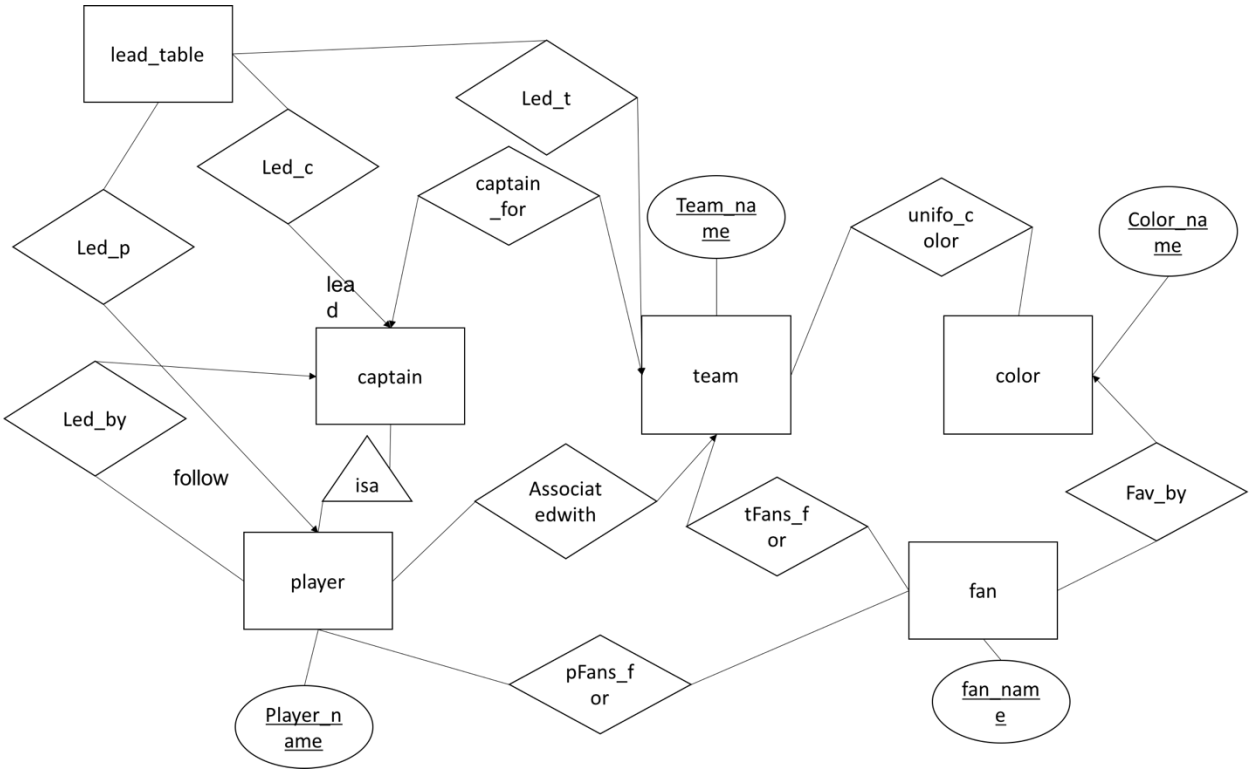
Since that a set of colors is not a suitable attribute type for teams, we can create an entity (color) and two relations (color-team&color-fan).

2)

a)



b)

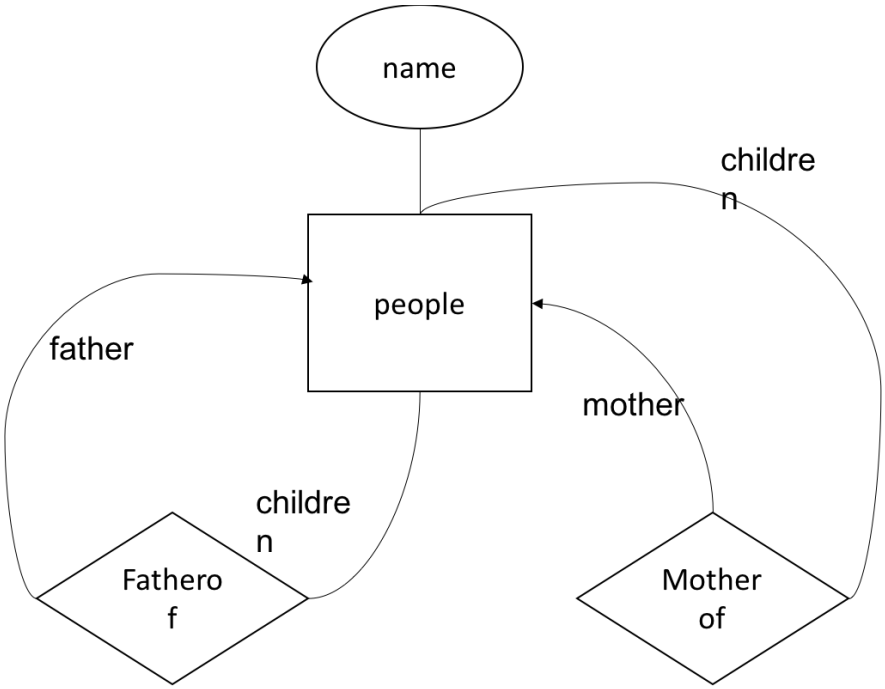


c)

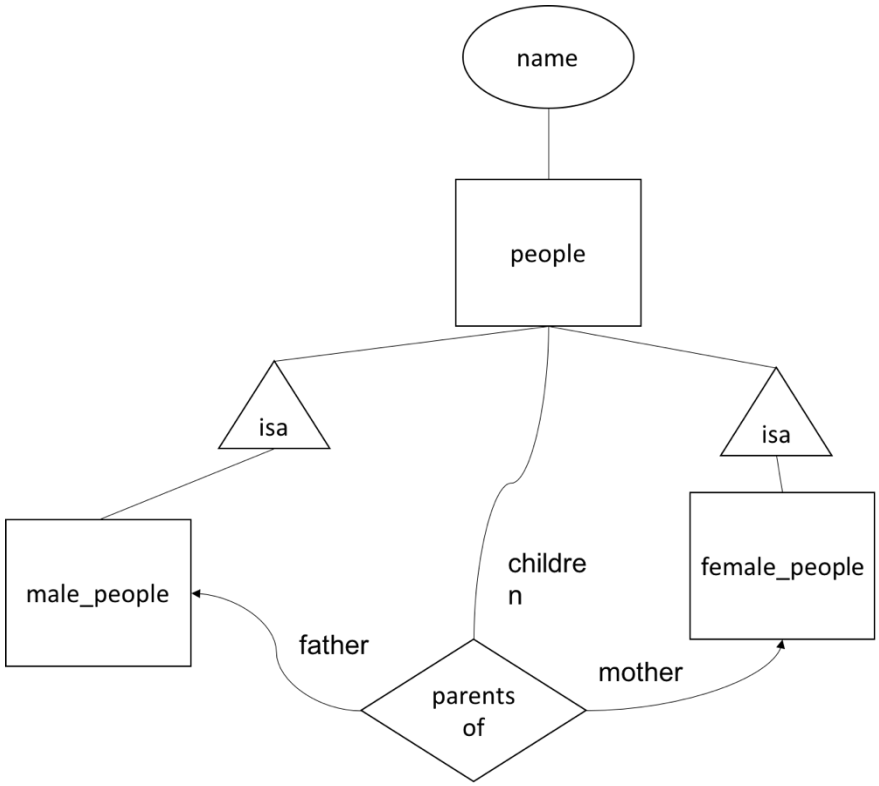
We create a new entity for the binary relationships. I think here my new binary relationships is the same as some of the previously existing relationships. Because here we assume that the two players are different and captain is a subclass of player. Here we can not have player A lead player B but in another team at the same time.

3)

Since every child is either in relation fatherof or motherof, we can simplify the whole ER to a two-relation diagram.


name
childre
n
people
father
mother
childre
n
Fathero
f
Mother
of

4)


name
people
isa
isa
male_people
childre
n
female_people
father
mother
parents
of

5)

a)

for ER:

```
create table Person(name char PRIMARY KEY,
        address char PRIMARY KEY);
create table Child(name char REFERENCES Person (name),
        address char REFERENCES Person (address));
create table Father(name char REFERENCES Person (name),
        address char REFERENCES Person (address));
create table Mother (name char REFERENCES Person (name),
        address char REFERENCES Person (address));

create table Childof(parentsname char REFERENCES Person (name),
                        childname char REFERENCES Child (name),
                        parentsaddress char REFERENCES Person (address),
                        childaddress char REFERENCES Person (address),
                        PRIMARY KEY (parentsname, childname, parentsaddress,
                childaddress)
);
create table FatherOf(fathername char REFERENCES Father (name),
                        childname char REFERENCES Child (name),
                        fathersaddress char REFERENCES Person (address),
                        childaddress char REFERENCES Person (address),
                        PRIMARY KEY (childname, childaddress)

);
create table MotherOf(Mothername char REFERENCES Mother (name),
                        childname char REFERENCES Child (name),
                        motheraddress char REFERENCES Person (address),
                        childaddress char REFERENCES Person (address),
                        PRIMARY KEY (childname, childaddress)

);
create table Married(wifename char REFERENCES Person (name),
                        husbandname char REFERENCES Person (name),
                        wifeaddress char REFERENCES Person (address),
                        husbandaddress char REFERENCES Person (address),
                        PRIMARY KEY (wifename, husbandname, wifeaddress,
                husbandaddress)

);
```

b)
for oo:

```
create table Person(name char PRIMARY KEY,
        address char PRIMARY KEY);
create table Child(name char PRIMARY KEY,
        address char PRIMARY KEY);
create table Father(name char PRIMARY KEY,
        address char PRIMARY KEY);
create table Mother(name char PRIMARY KEY,
        address char PRIMARY KEY);

create table Childof(parentsname char REFERENCES Person (name),
                        childname char REFERENCES Child (name),
                        parentsaddress char REFERENCES Person (address),
                        childaddress char REFERENCES Person (address),
                        PRIMARY KEY (parentsname, childname, parentsaddress,
                childaddress)

);
create table FatherOf(fathername char REFERENCES Father (name),
                        childname char REFERENCES Child (name),
                        fathersaddress char REFERENCES Person (address),
                        childaddress char REFERENCES Person (address),
                        PRIMARY KEY (childname, childaddress)

);
create table MotherOf(Mothername char REFERENCES Mother (name),
                        childname char REFERENCES Child (name),
                        motheraddress char REFERENCES Person (address),
                        childaddress char REFERENCES Person (address),
                        PRIMARY KEY (childname, childaddress)

);
create table Married(wifename char REFERENCES Person (name),
                        husbandname char REFERENCES Person (name),
                        wifeaddress char REFERENCES Person (address),
                        husbandaddress char REFERENCES Person (address),
```

```
                    PRIMARY KEY (wifename, husbandname, wifeaddress,
                husbandaddress)

);


c)
For Null:
create table Person(name char PRIMARY KEY,
        address char PRIMARY KEY);

create table Childof(parentsname char REFERENCES Person (name),
                    childname char REFERENCES Person (name),
                    parentsaddress char REFERENCES Person (address),
                    childaddress char REFERENCES Person (address),
                    PRIMARY KEY (parentsname, childname, parentsaddress,
                childaddress)

);
create table FatherOf(fathername char REFERENCES Person (name),
                    childname char REFERENCES Person (name),
                    fathersaddress char REFERENCES Person (address),
                    childaddress char REFERENCES Person (address),
                    PRIMARY KEY (childname, childaddress)


);
create table MotherOf(Mothername char REFERENCES Person (name),
                    childname char REFERENCES Person (name),
                    motheraddress char REFERENCES Person (address),
                    childaddress char REFERENCES Person (address),
                    PRIMARY KEY (childname, childaddress)

);
create table Married(wifename char REFERENCES Person (name),
                    husbandname char REFERENCES Person (name),
                    wifeaddress char REFERENCES Person (address),
                    husbandaddress char REFERENCES Person (address),
```

```
                    PRIMARY KEY (wifename, husbandname, wifeaddress,
                husbandaddress)

);


6)
a)
for ER:
create table Depts(name char PRIMARY KEY,
                    chair char);
create table Courses(number char,
                dptname REFERENCES Depts (name),
                room int
                PRIMARY KEY (number, dptname));

create table Lab_courses(cnumber REFERENCES Courses (number),
                Dptname REFERENCES Depts (name),
                computer allocation char
                PRIMARY KEY (cnumber, Dptname));
create table Givenby(cnumber REFERENCES Courses (number)
                    Dptname REFERENCES Depts (name)
                    PRIMARY KEY(cnumber);

b)
for oo:
create table Depts(name char PRIMARY KEY,
                    chair char);
create table Courses(number char,
                    dptname REFERENCES Depts (name),
                    room int,
                    PRIMARY KEY (number, dptname));
create table Lab_courses(cnumber char PRIMARY KEY,
                        room int,
                        dptname char PRIMARY KEY,
                        computer allocation char);
create table Givenby(cnumber REFERENCES Courses (number)
                    Dptname REFERENCES Depts (name)
                    PRIMARY KEY(cnumber));
```