

Relational Schema

Employee(

Id:int,

Name:varchar(100),

PhoneNumber:varchar(10),

DateOfBirth:date,

)

Employee (Id, PhoneNumber, DateOfBirth, Name)

Id -> PhoneNumber, DateOfBirth, Name

Nurse(

Id:int,

Name: varchar(100),

PhoneNumber:varchar(10),

DateOfBirth:date,

)

Nurse (Id, PhoneNumber, DateOfBirth, Name)

Id -> PhoneNumber, DateOfBirth, Name

Doctor(

Id:int,

Name:varchar(100),

PhoneNumber:varchar(10),

DateOfBirth:date,

SpecialtyId:int

)

Doctor (Id, PhoneNumber, DateOfBirth, Name, SpecialtyId)

Id -> PhoneNumber, DateOfBirth, Name, SpecialtyId

Specialty(

```
    Id:int,  
    Name:varchar(50)  
)  
Specialty (Id, Name)  
Id -> Name  
Hospital(  
    Id:int,  
    Name:varchar(50),  
    PhoneNumber:varchar(10),  
    Address:varchar(50),  
    XCoordinate:varchar(10),  
    YCoordinate:varchar(10),  
    Location:varchar(25),  
    EmergencyServices:bool,  
    EHS:bool,  
    CityId:int,  
    StateId:int,  
    ZipcodeId:int,  
    CountyName:int,  
    HospitalTypeId:int,  
    HospitalOwnershipId:int,  
    HospitalOverallRatingId:int  
)
```

Hospital (Id, Name, PhoneNumber, Address, CityId, StateId, ZipcodeId, CountyNameId, HospitalTypeId, HospitalOwnershipId, HospitalOverallRatingId, X coordinate, Y coordinate, Location, Emergency Services, EHS)

Id -> Name, PhoneNumber, Address, CityId, StateId, ZipcodeId, CountyNameId, HospitalTypeId, HospitalOwnershipId, HospitalOverallRatingId, X coordinate, Y coordinate, Location, Emergency Services, EHS

City(

```
        Id:int,  
        Name:varchar(50)  
    )  
    City (Id, Name)  
    Id -> Name  
    State(  
        Id:int,  
        Name:varchar(25)  
    )  
    State (Id, Name)  
    Id -> Name  
    Zipcode(  
        Id:int,  
        Code:int  
    )  
    Zipcode (Id, Code)  
    Id -> Code  
    County Name(  
        Id:int,  
        Name:varchar(50)  
    )  
    County Name (Id, Name)  
    Id -> Name  
    Hospital Type(  
        Id:int,  
        Name:varchar(50)  
    )  
    Hospital Type (Id, Name)  
    Id -> Name
```

Hospital Ownership(

Id:int,

Name:varchar(50)

)

Hospital Ownership (Id, Name)

Id -> Name

Hospital Overall Rating(

Id:int,

Rating:int

)

Hospital Overall Rating (Id, Rating)

Id -> Rating

National Comparison(

Id:int,

Description:varchar(100),

FootnoteNote:varchar(500)

)

National Comparison (Id, Description, FootnoteNote)

Id -> Description, FootnoteNote

Footnote(

Note:varchar(500)

)

Footnote (Note)

Mortality(

Id:int,

Description:varchar(100),

FootnoteNote:varchar(500)

)

Mortality (Id, Description, FootnoteNote)

Id -> Description, FootnoteNote

Safety of Car(

Id:int,

Description:varchar(100),

FootnoteNote:varchar(500)

)

Safety of Care (Id, Description, FootnoteNote)

Id -> Description, FootnoteNote

Readmission(

Id:int,

Description:varchar(100),

FootnoteNote:varchar(500)

)

Readmission (Id, Description, FootnoteNote)

Id -> Description, FootnoteNote

Patient Experience(

Id:int,

Description:varchar(100),

FootnoteNote:varchar(500)

)

Patient Experience (Id, Description, FootnoteNote)

Id -> Description, FootnoteNote

Effectiveness of care(

Id:int,

Description:varchar(100),

FootnoteNote:varchar(500)

)

Effectiveness of Care (Id, Description, FootnoteNote)

Id -> Description, FootnoteNote

Timeliness of care(

Id:int,

Description:varchar(100),

FootnoteNote:varchar(500)

)

Timeliness of Care (Id, Description, FootnoteNote)

Id -> Description, FootnoteNote

Efficient use of medical imaging(

Id:int,

Description:varchar(100),

FootnoteNote:varchar(500)

)

Efficient use of Medical Imaging (Id, Description, FootnoteNote)

Id -> Description, FootnoteNote

Rating (

HospitalId:int,

MortalityId:int,

SafetyOfCareId:int,

ReadmissionId:int,

PatientExperiencId:int,

EffectivenessOfCareId:int,

TimelinessOfCareId:int,

EfficientUseOfMedicialImagingId:int

)

Rating (HospitalId, MortalityId, SafetyOfCareId, ReadmissionId, PatientExperiencId,
EffectivenessOfCareId, TimelinessOfCareId, EfficientUseOfMedicialImagingId)

Works at(

HospitalId:int,

EmployeeId:int

)

Work At (HospitalId, EmployeeId)

Supervised by(

DoctorId: int,

NurseId: int

)

SupervisedBy (DoctorId, NurseId)

Constraints

1. A hospital must have a hospital ownership, a hospital type, county name, zipcode, state and city.
2. A hospital rating must be comprised of a hospital overall rating, a mortality, safety of care, readmission, patient experience, effectiveness of care, timeliness of care, efficient use of medical imaging.
3. Each national comparison must have a footnote even if its blank.
4. Every doctor must supervise at least 1 nurse.
5. Every doctor must have a specialty.
6. A hospital must have at least 1 doctor and nurse.

Additional Notes

I checked my diagram and made sure that it did comply with the BCNF rules. I had to fix the hospital overall rating table by adding it to the has relationship for hospital. I also had to add the EHS attribute that was missing in the first ER diagram. Yes, there are opportunities to combine relations without introducing redundancy. There are not examples of non-BCNF relation schemas in my database.