

Q1b.

In my diagram for part a I have 8 main constraints which form 4 relationships being the following;

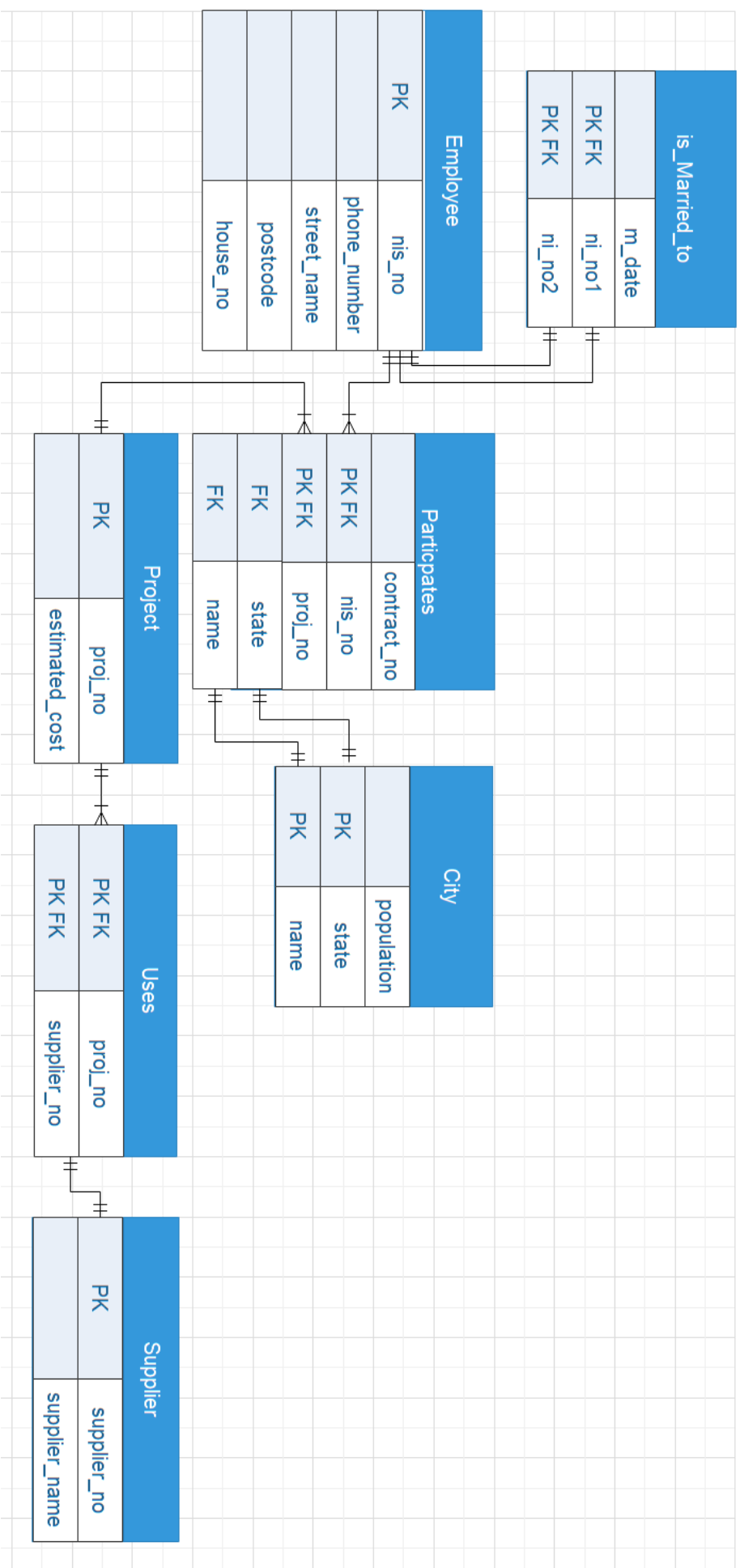
1. 1 patient owns many records
2. 1 patient is operated on by many doctors
3. 1 senior doctor tutors many tutees
4. 1 trained doctor writes many records

The reason for the constraints in the first relationship is because it is stated in the specification that one patient has their medical records ordered sequentially. This means that each patient can have multiple records, as for records to patients it is stated that "The medical records for a patient do not have to come all from the same doctor." By stating a patient this means that each medical record can only have a single patient. This quote also exposes the reason for my constraints in the fourth relationship, here we have 1 trained doctor writing many medical records, the reason it is stated that he is trained is that the specification says doctors can't diagnose patients unless they are trained. Using this information as well as my previous quote it is easy to see why the fourth relationship is set up the way it is with 1 trained doctor writing many medical records.

My second relationship talks about the relationship of doctors operating on a single patient which is created by the quote "An operation is carried out by one or several doctors on a single patient". This leads to there being a 1 : N, 1 to many, relationship which is shown by the given cardinality in the diagram above. With 1 patient being operated on by N, many, doctors.

The third relationship is another 1 to many but this time it goes from the doctors entity to the doctors entity rather than a different entity or relationship. This is a this relationship is about senior doctors tutoring other doctors, their tutees, in order to train them in a specific subject. This relationship exists due to the statement "Some doctors may have one mentor who is also a doctor. Only a few senior doctors are mentors and each usually has four or five tutees". This statement proves that the cardinality for this statement must be from one senior doctor to 4-5 tutees e.g. many.

For relationship one and four the relationships are displayed as weak as they do not have any attributes that would make them an entity unlike operate and tutor. These other two relationships have at least two attributes that allow it establish a primary key and therefore act like an entity. Relationships one and four however do not have any attributes so a primary key can not be constructed for them making them a weak relationship.



Q2.

Q3.

One constraint for is_Married_To is that an employee can not marry someone who is of a higher role that can influence their work in the work place such as the companies CEO or manager of an employee's department. This is as it would be highly unethical and would lead to favouritism in the work place.

Another constraint would be that an employee can not marry themselves as this would be impossible in real life and would lead to composite key that is made of the same Ni number duplicated. This would therefore not work from a unique key stand point or in a real life situation and therefore should be a constraint for the relationship is_Married_To.