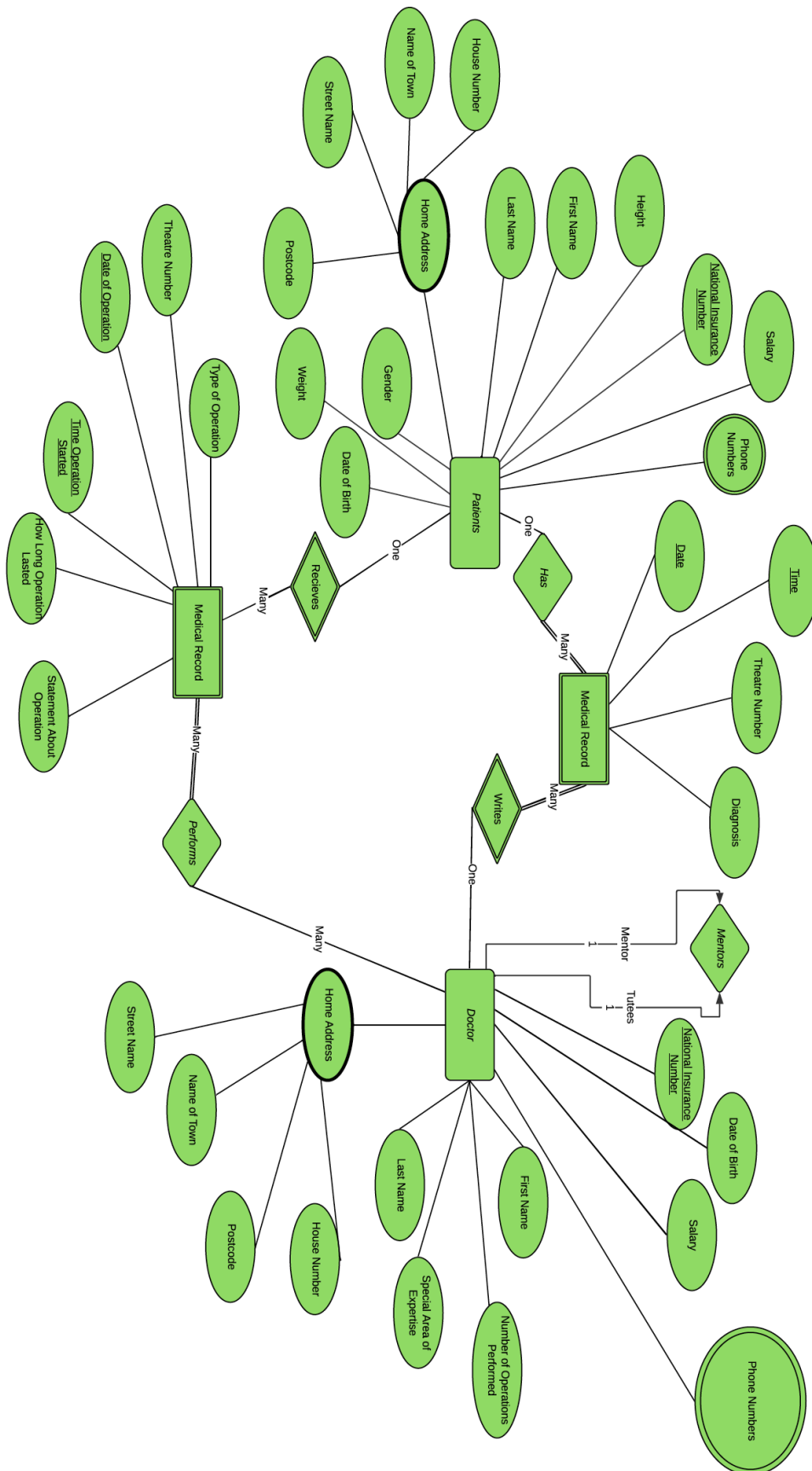


# Databases Coursework 1

1. a)



## Hospital ER Diagram

b)

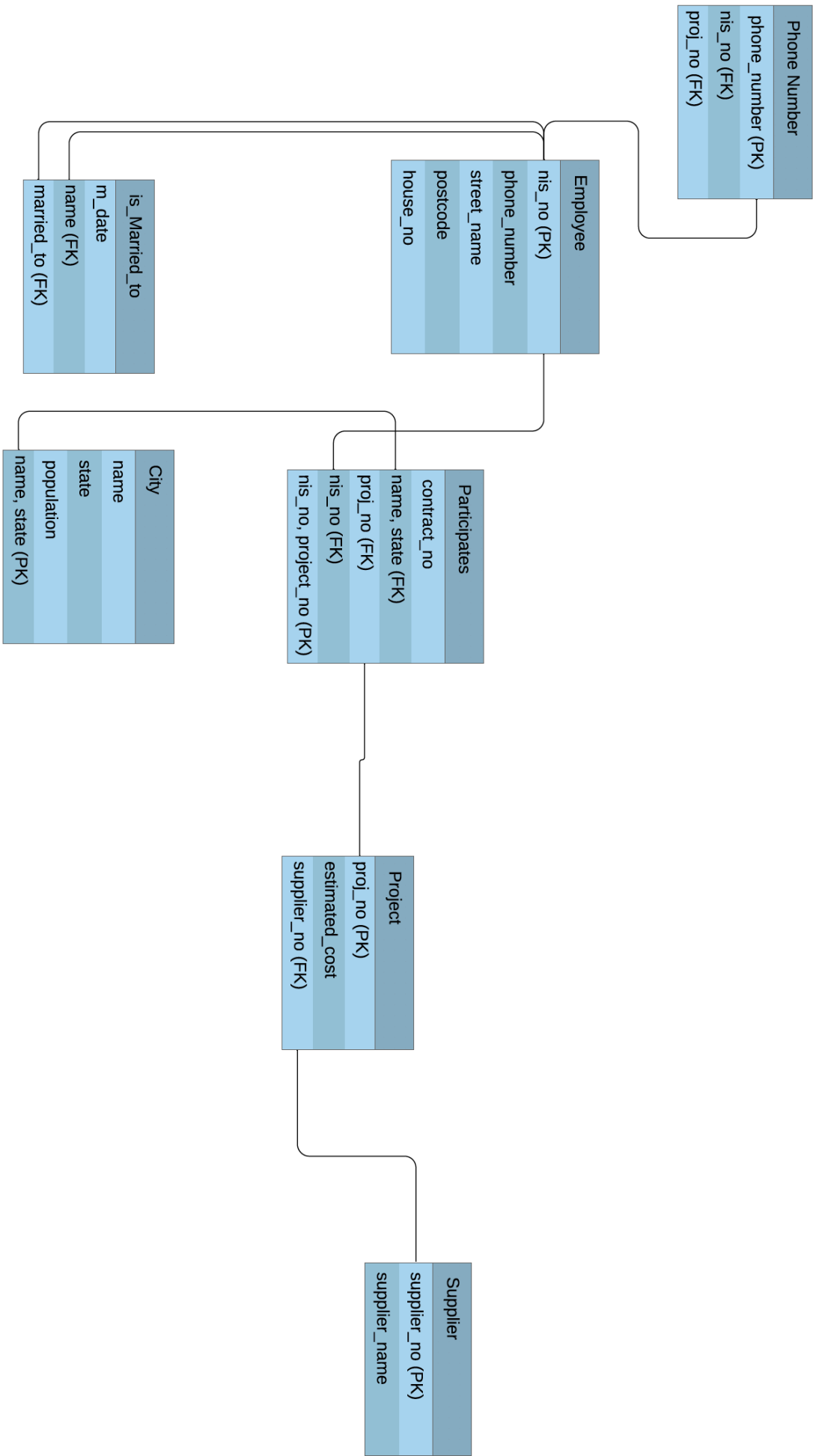
Participation constraints:

- There is a participation constraint between medical records and doctor. The double line to signify the participation constraint is between the relationship diamond and the medical records entity showing that a doctor must write a medical record. However, there is only a single line between the 'writes' relationship and the doctor entity because a doctor does not have to write a medical record. For example, trainee doctors are not permitted to write medical records.
- There is also a participation constraint between the operation entity and the 'performs' relationship. This is because an operation must be performed by a doctor(s). However, there is only a single line between doctor and 'performs' since a doctor does not have to perform an operation because, for example, a trainee doctor may not be permitted to perform an operation.

Cardinality constraints:

- There is a cardinality constraint of many to many between operation and doctor respectively. This is because many doctors can perform one operation and one operation can be performed by many doctors.
- There is a cardinality constraint between medical records and doctors which is many to one respectively. This is because one doctor can write many medical records, but a medical record can only be written by one doctor.
- There is another cardinality constraint between medical records and patients which is many to one respectively. This is because one patient can have many medical records, but a medical record can only have one patient.
- There is another constraint between patients and operations which is one to many respectively. This is because one patient can receive many operations, but an operation can only have one patient.

2.



3. There is nothing to stop an employee that is married to another employee being married to a third employee as this cannot be expressed in an ER diagram. Furthermore, there is nothing to prevent an employee participating in a marriage with him or herself or an employee that is married to someone but the employee he or she is married to not being married back to the original employee.