Assignment 1:

The data's primary keys are partNumber, customerNumber, date and time. The data is in the 1NF, because it doesn't have any repeating fields and there is a PK.

It is not in 2NF because it has a composite PK and there are attributes dependent upon only part of the PK. For example, customerName and customerType only depend on customerNumber; employee only depends on the order rather than the part being ordered; and name, type, cageCode and unitPrice only depend on partNumber. Moving these fields out of the table results in the following 2NF version:

customer

customerNumber PK

customerName customerType

part

partNumber PK

name type cageCode

unitPrice

order

customerNumber PK

date PK

time PK

employee

order detail

customerNumber PK FK

date PK

time PK

partNumber PK FK

quantityOrdered

The data is in 3NF because no transitive dependencies exist, all fields are dependent on the primary key.

Each order is identified by a combination of customerNumber, date, and time. A customer can have multiple orders, but each order has a unique time. And each part is also uniquely identified by partNumber. An employee can handle many orders, but each order is handled by only one employee.

Assignment 2:

The data's primary keys are staffNo and patNo. The data is in the 1NF, because it doesn't have any repeating fields and there is a PK.

This table is not in 2NF, because there is a composite PK and there are attributes dependent upon only part of the PK. For example, therapistName and branchNo only depend on staffNo; patName only depends on the patNo; brachNo only depends on staffNo and appointmentDate and appointmentTime. Moving these fields out of the table results in the following 2NF version:

therapist

staffNo PK

therapistName branchNo

patient

patNo PK

patName

appointment

staffNo PK FK

patNo PK FK

appointmentDate

appointmentTime

The data is in 3NF because the data is in 2NF and no transitive dependencies exist, all fields are dependent on the primary key.

staffNo is used to identify the therapist, because each therapist has only one number; and patNo is also a unique identifier for the patient. Patients can make appointments with multiple therapists on the same day, but they cannot see the same therapist at the same time. Each appointment has only one therapist and one patient, and the date and time are also exact. branchNo depends on where the therapist works, and therapists also follow a fixed schedule. I think this table can make the appointment time and related information more clear, and can prevent scheduling conflicts as much as possible.

Assignment 3:

The data's primary keys are eNo and contractNo. The data is in the 1NF, because it doesn't have any repeating fields and there is a PK.

The data is not in 2NF, because there is a composite PK and there are attributes dependent upon only part of the PK. For instance, eName only depends on the eNo, which does not depend on full keys; eventNo and eventLoc only depend on the contractNo. Therefore, there are partial dependencies, need to move these fields out of the table results in the following 2NF version:

employee

eNo PK

eName

employee_contract

eNo PK

contractNo PK

hours

contract

contractNo PK FK

eventNo

eventLoc

This data is not in 3NF because the transitive dependency exists, eventLoc depends on eventNo. Moving these fields out of the table results in the following 3NF version:

employee

eNo PK

eName

employee_contract

eNo PK

contractNo PK

hours

contract_event

contractNo PK FK

eventNo FK

event

eventNo PK

eventLoc

eNo is used to identify employees, because each person's number is unique; each contract is uniquely assigned to an employee, but an employee can handle multiple contracts, and a contract can be assigned to multiple employees. Each event is held in only one location, that is, there is only one eventLoc; multiple contracts may involve the same event. Each employee has specific hours in each contract, but employees under the same contract may have different working hours.