Normalization Sample

Convert the following table to an equivalent collection of tables that are in third normal form. List all functional dependencies. This table contains information about patients of a dentist. Each patient belongs to a household. Several patients from the same family can belong to the same household.

Patient (PatientNum, PatientName, HouseholdNum, HouseholdName, Street, City, State, Zip, Balance, (ServiceCode, Description, Fee, Date))

Funcional Dependencies:

PatientNum → HouseholdName, Street, City, State, Zip, Balance, PatientName
HouseholdNum → HouseholdName, Street, City, State, Zip, Balance
ServiceCode → Description, Fee
PatientNum, ServiceCode → Date

1NF Table (relation) is in first normal form (1NF) if it does not contain repeating groups

Patient (PatientNum, PatientName, HouseholdNum, HouseholdName, Street, City, State, Zip, Balance, ServiceCode, Description, Fee, Date)

2NF Table (relation) in second normal form if no nonkey column is dependent on only a portion of primary key

Patient (PatientNum, PatientName, HouseholdNum, HouseholdName, Street, City, State, Zip, Balance)
Service (ServiceCode, Description, Fee)
PatientNum, ServiceCode (Date)

3NF Table (relation) in third normal form if its only determinants are candidate keys

Patient (PatientNum, PatientName, HouseholdNum)
Service (ServiceCode, Description, Fee)
Date (PatientNum, ServiceCode , Date)
Household (HouseholdNum, HouseholdName, Street, City, State, Zip, Balance)