Hospital ERD and EERD Database Design Document

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Purpose

The purpose of this Database Design Documentation (DBDD) is to manage and organize information about nurses, their ward assignments, and interactions with patients. The database will also track treatments and items administered to patients by their doctors. Due to the nature of hospital operations, the system will closely monitor patient admission and discharge dates, along with the doctors responsible for authorizing each discharge.

Narrative

The hospital administrator wants to create a database to track nurse assignments to their wards and nurse interactions with their patients, patient admissions by their doctors and treatments administered by doctors to their patients, bed assignments for each patient and items charged to patients during their stay. Administrator wants to record each nurse's name and address, phone and alternate phone, email and the medical specialties he or she is certified in. Some nurses supervise one or more other nurses. No nurse is supervised by more than one nurse, and some nurses are unsupervised.

Each ward at the hospital has a designated number, descriptive name, physical location and phone number. Each ward has at least one nurse assigned to it. A nurse is assigned to at least one ward and rotates assignments among other wards. The assignment is tracked by the specific date and the hours worked in the assigned ward by each nurse on that date.

In addition to nurse assignments, each ward also has a charge nurse. The charge nurse is the custodian of the medical records for the ward. Not all nurses act in this capacity, but those that do are in charge of only one ward, and a ward only has one charge nurse.

A ward consists of hospital beds. The beds are inventoried to a specific ward. Information on beds including their size (small, large, extra-large) and their type (elevated electrically or manually). Most of the beds are large and manual (this is the default setting).

When a patient is admitted to the hospital they are assigned to a specific bed. Not all beds are available for use all the time, and a bed may not be assigned to more than one patient.

Information on patients is recorded: name, gender, dob, address, phone, alternate phone, email.

The date the patient is admitted to the hospital, the admitting doctor, the date the patient is discharged, and discharging doctor are also tracked.

Some doctors admit patients while others do not. Doctor information tracked: name, address, phone, alternate phone, email and their medical specialties.

The hospital tracks the treatments administered to patients and the treating doctor. Treatments are tracked by name, description, and charge. The hospital also tracks the date and time of each treatment administered and the results. Some doctors treat patients while others do not.

A given patient may receive no treatments or may receive many, and some patients may receive their treatments from more than one doctor. Some treatments have yet to be used while others have been used often.

In addition to treatments, patients incur other charges for items used during their stay. The hospital tracks these charges as “items” and stores information on what items have been charged to which patients, based on date and quantity. Information that is to be stored for each item includes the item name and charge. All patients incur at least one charge for consumable items used during their stay. Some items are used often while items may be new or unusual in nature and might rarely or never be charged to any patients.

Lastly, the hospital tracks nurse patient care. Each nurse patient care interaction is an event. There are several types of events: wellness check, medication, food service, assistance, treatment admin, and “other.” Given the number of shifts and ward rotations, a patient will typically be seen by more than one nurse during their stay, and a nurse most likely will interact with the same patient over several events during a single shift.

Requirement: Actors and Roles

Nurse: Provide care to patients, and manage medical records.
Ward: Collective of hospital beds, and house patient medical records
Patient: Receive care from nurse and doctors
Doctor: Administer and discharge patients, and provide treatment to patients.
Bed: Location that a patient is assigned to
Treatment: Service provided to patient
Items: Consumable used to treat patients.

Entities

- Nurse
- Ward
- Patient
- Doctor
- Bed
- Treatment
- Item

Entities with Nested Attributes

- Nurse
  - Nurse ID
  - Name
  - Phone
  - Address
  - Alt Phone
  - Email
  - Medical Specialties

- Ward
  - Ward ID
  - Location Name
  - Phone Number

- Patient
  - Patient ID
  - Name
  - Gender
  - Dob
  - Address
  - Phone
  - Alt phone
  - Date of Admission
  - Date of DIscharge

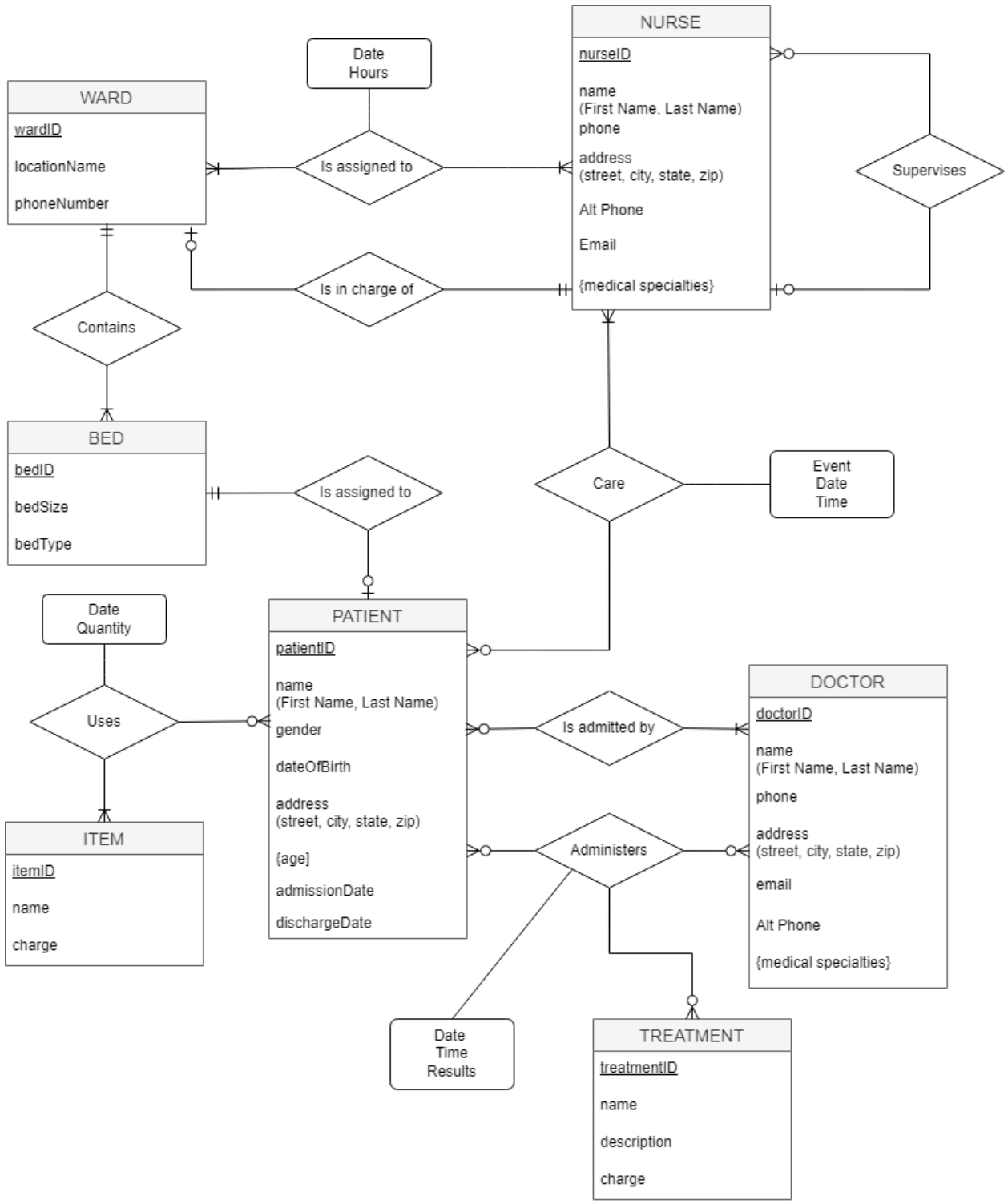
- Doctor
  - Doctor ID
  - Name
  - Address
  - Phone
  - Alt Phone
  - Email
  - Medical Specialties

- Bed
  - Bed ID
  - bedSize
  - bedType
- Treatment
  - Treatment ID
  - Name
  - Description
  - Charge
- Item
  - Item ID
  - Name
  - Charge

Business Rules

Nurse: Some nurses might be assigned to supervise one or more nurses. Nurses are assigned to one ward and rotates between others wards, nurses provide care to patients
Ward: Every ward has at least one nurse assigned to it, every wards will only one nurse in charge of it and its medical records, wards receive patents
Bed: Bed get assigned to wards and patents, a bed can have none or only one patient
Patient: Patient are assigned to beds, patients may receive zero or many treatments,
Doctor: Some doctor might admit and/or discharge patients, some doctor might treat patients
Treatment: Treatments are administered to patients, some treatment are use while other are not used
Item: Items are consumables might used to help patients

ERD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name
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phone
address
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Alt Phone
Email
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Date
Hours
WARD
wardID
locationName
phoneNumber
Is assigned to
Supervises
Is in charge of
Contains
BED
bedID
bedSize
bedType
Is assigned to
Care
Event
Date
Time
Date
Quantity
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dischargeDate
Uses
Is admitted by
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name
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phone
address
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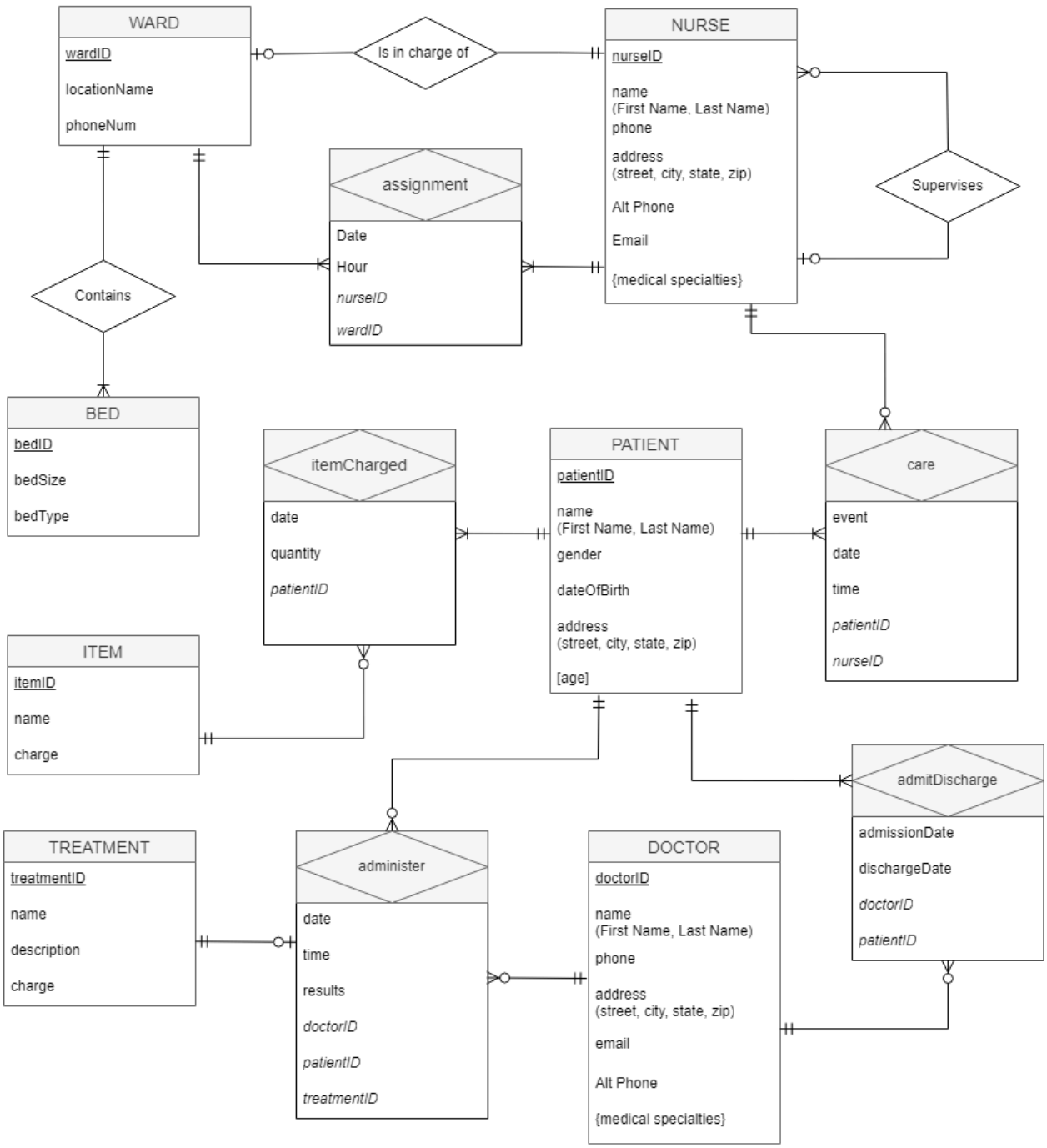
Administers
Date
Time
Results
TREATMENT
treatmentID
name
description
charge

EERD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phoneNum
Is in charge of
NURSE
nurseID
name
(First Name, Last Name)
phone
address
(street, city, state, zip)
Alt Phone
Email
{medical specialties}
Supervises
assignment
Date
Hour
nurseID
wardID
Contains
BED
bedID
bedSize
bedType
itemCharged
date
quantity
patientID
PATIENT
patientID
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gender
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