**Hospital Administrator Database Design Document**

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Purpose

The purpose of this comprehensive database is to streamline hospital operations by efficiently tracking and managing critical aspects of patient care and administrative functions. It enables the assignment and supervision of nurses across various wards, records nurse-patient interactions, and tracks patient admissions by doctors. Additionally, the system facilitates bed management to ensure proper allocation and availability. It also maintains essential patient and doctor information, aiding in personalized care and efficient doctor-patient allocations. With this database, healthcare providers can enhance patient care, optimize resource utilization, and maintain a structured workflow in the hospital setting.

# 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. The administrator wants to record each nurse’s name and address, phone and alternate phone, email, and the medical specialties he or she is certified. 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 invented to a specific ward. Information on beds including their size (small, large, extra-large) and their type (elevated electrically or manually) and if they are available to be assigned to a patient. Most of the beds are large and manual (this is the default setting). The data entry (checks) for beds is limited to S, L, XL for size; E or M for type; O for occupied and A for available. Availability defaults to occupied to avoid double booking by mistake. All these value formats are set by rule or check.

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. In this database we are only tracking bed assignment history and not bed occupancy or availability.

Workflow: The admitting official conducts a review of all beds to determine which beds are

available to assign to a patient.

Information on patients is recorded: name, gender, dob, address, phone, alternate phone, email. The patient’s calculated age is also tracked.

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.

# Requirements (Actors and Roles)

Nurse: Some nurses supervise one or more other nurses.  No nurse is supervised by more than one nurse, and some nurses are unsupervised. A nurse is assigned to at least one ward.

Ward: Ward contains one or many beds. Each ward has a charge nurse.

Bed: Bed belongs to only one ward. A bed may not be assigned to more than one patient.

Patient: A patient is assigned one bed. A patient will typically be seen by more than one nurse during their stay.

Doctor: Some doctors admit and treat patients while others do not. The admitting doctor and discharge doctor for the patients may differ.

Treatment: 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.

# Entities

* Nurse
* Ward
* Patient
* Doctor
* Treatment
* Bed
* Item

# Entities w/ Nested Attributes

* Nurse
  + Nurse Id
  + Name
  + Address
  + Phone
  + Alternate Phone
  + Email
  + Medical Specialist

* Ward
  + Ward Id
  + Name
  + Location
  + Phone Number

* Patient
  + Patient Id
  + Name
  + Gender
  + Date of Birth
  + Address
  + Phone Number
  + Alternate Phone Number
  + Email
  + Age
* Doctor
  + Doctor Id
  + Name
  + Address
  + Phone Number
  + Alternate Phone Number
  + Email
  + Medical Specialist
* Treatment
  + Treatment Id
  + Name
  + Description
  + Charge
* Bed
  + Bed Id
  + Size
  + Type
  + Availability
* Item
  + Item Id
  + Name
  + Charge

# Business Rules

Nurse: Nurses are supervised by one or more other nurses. A nurse is assigned to at least one ward and rotates assignments among other wards.

Ward: Each ward has at least one nurse assigned to it and every ward has beds.

Bed: When a patient is admitted to the hospital specific beds are assigned to it. More than one bed cannot be assigned to the patient.

Doctor: Only a few doctors admit patients. The admitted and discharge doctor for a particular patient may differ.

Treatment: Treatment may or may not be given to patients. Some treatments are traditional ones which are used frequently, and some may be experimental.

Item: All patients incur at least one charge for consumable items used during their stay. Some items which are used, or new ones might be charged or never be charged to the patient.

Patient: When patient is admitted and discharge from the hospital, the admitted and discharge date are recorded in the administrator. A patient will typically be seen by more than one nurse during their stay in the hospital.

# ERD

# 

# EERD



# Relational Schema



**Data Dictionary**