Data and Applications

Project Phase 1

MiniWorld: Hospital Management System
Team Name: Deoxyribonucleic Acid
Team Members:

a. Chandan Shrivastava - 2020101015
b. Nachiket Patil - 2020101018
c. Yash Bhatia - 2020101007

Introduction

Daily around hundreds of patients visit a particular hospital. So, Maintaining the data of patients is difficult. This mini world is dedicated towards storing the records related to a particular hospital. These records include - information about patients, doctors, nurses, medicines, etc.

Purpose

The purpose of this database is to store and maintain the data about various Patients, Doctors, Medicines given, Tests done etc.

Applications

The main application of this database would be to computerise all details about the patient, doctors, employee of the Hospital. It will also be helpful to keep track of the data that is required for better functioning. The Database also contains the data of past patients, doctors and other staff in case for future use.

Users

The database can be accessed by the Administration only because it consists of sensitive data about the patients. The Administration can insert or modify or delete a patient's data, insert or modify or delete doctor's data or modify and delete any other data if present in the database and insert if not present in the database.

Database Requirements

Entity Type	Attribute	Data Type	Constraints
Patient	Patient ID	Int	1. Primary Key 2. Greater than 0
	Name	Varchar	1. Not Null
	Phone Number	Int	1. Not Null 2. 13 digits at max
	Gender	Varchar	1. Not Null 2. Check {Male, Female, Others}
	Date of Birth	Date	1. Not Null
	Age	Int	1. Not Null 2. Greater than 0
	Blood Group	Varchar	1. Not Null 2. Check {A,B,AB,O,A+,A-,B+,B-,AB+,AB-,O+,O-}
	Address	Varchar	1. Not Null
	Disease	Varchar	1. Not Null
	Date of Admission	Date	1. Not Null
	Date of Discharge	Date	1. Default: None
	No. of days admitted	Int	1. Default: 0
Attendant	Name	Varchar	1. Not Null
	Phone number	Int	1. Not Null 2. 13 digits at max
	Relation	Varchar	1. Not Null

Bill	Medicine Cost	Int	1. Not Null
	Room and Service Charge	Int	1. Not Null
	Treatment/Doctor Charges	Int	1. Not Null
	Bill Date	Date	1. Not Null
Employee	Employee ID	Int	1. Primary Key
	Name	Varchar	1. Not Null
	Date of Birth	Date	1. Not Null
	Phone Number	Int	1. Not Null 2. 13 digits at max
	Type	Varchar	1. Not Null 2. Check {Doctor, Nurse}
	Joining Date	Date	1. Not Null
	Salary	Int	1. Not Null
	Email	Varchar	1. Primary Key
	Leaving Date	Date	1. Default: None
	Address	Varchar	1. Not Null
Doctor	Doctor ID	Int	1. Primary Key
	Qualification	Varchar	1. Not Null
Nurse	Nurse ID	Int	1. Primary Key
	Qualification	Varchar	1. Not Null
Medicine	Medicine ID	Int	1. Primary Key
	Name	Varchar	1. Not Null
	Cost	Float	1. Not Null
	Expiry Date	Date	1. Not Null

Room	Room ID	Int	1. Primary Key
	Room Type	Varchar	1. Not Null 2. Check {Deluxe, non-Deluxe}
	Room Charges	Int	1. Not Null

Weak Entity:

1. Bill
2. Attendant

Subclass:

1. Employee - Doctor, Nurse

Composite Attribute:

1. Name (First Name, Middle Name, Last name)
2. Address (House no., Street, Locality, City, State)

Multi-Valued Attribute:

1. Disease
2. Phone Number

Derived Attribute:

1. Age (Derived from Date of Birth)
2. No. of Days Admitted ()

Relationships:

1. Employee, Doctor, Nurse
    a. n=3 relationship
    b. Employee can be a Doctor or Nurse

2. Doctor, Medicine, Room, Bill
    a. n=4 relationship
    b. Doctor, Medicine, Room generates Bill
    c. Attributes: Patient ID

3. Patient, Bill
    a. n=2 relationship
    b. Patient pays Bill
    c. Attributes: Patient ID and Bill Date

4. Patient, Employee
    a. n=2 relationship
    b. Patient assigned to Employees
    c. Attributes: Employee ID, Employee type

5. Patient, Medicine
    a. n=2 relationship
    b. Patient takes Medicine
    c. Attributes: Patient ID, Medicine ID, Quantity

6. Patient, Room
    a. n=2 relationship
    b. Patient is allocated a room
    c. Attributes: Patient ID, Room ID

7. Patient, Attendant
    a. n=2 relationship
    b. Patient has Attendants
    c. Attributes: Patient ID, Attendant Name

n>3 Relationship:

1. Doctor, Medicine, Room, Bill

Functional Requirements

Modifications

1. Insert:
    a. New Patient
    b. New Employee
    c. New Medicine
2. Delete:
    a. Delete record of Patient
    b. Delete record of Employee
3. Update:
    a. Salary of Employee
    b. Date of leaving of Employee
    c. Date of Discharge of Patient
4. Changing Data Requirement:
    a. Add/Update/Delete Email-ID of Patient.

Retrievals

1. Selection: Retrieve complete data of a Patient like Name, ID, Phone Number etc.
2. Projection: Fetch No. of medicines above a particular amount.
3. Aggregate: Get Sum of all the bills generated for a patient.
4. Search: Search a medicine by partial name.
5. Analysis:
    a. Patient Report including Treating Doctor, Admission Date, Discharge Date etc.
    b. Report of Diseases, Patients treated by a Doctor.