This document outlines the business requirements for a **Hospital Management System (HMS)** designed to automate and streamline various hospital operations. The HMS will cater to the needs of **Patients**, **Employees** , **Departments** ,**Doctors**, **Nurses**, **Workers** , **Absesne** for all employees in Hospitals **Patient_Rooms** ,**Beds** ,**Operation** their have ,**Patient_Appointments** ,**Visits** , **Billings**, **Hospital** Machines

here are the business requirements for the **Hospital Management System** queries modeled above:

1. Patients

* A hospital manages one or more patients.

* A patient is assigned a unique identifier, has a first name, a middle name , last name ,a date of birth, a gender (either 'male' or 'female'), an patient entry date, and a phone number (must follow the Egyptian mobile phone number format).

* A patient can be assigned a room and a bed (both optional).

* A patient has a patient status (text).

2. Employees

* A hospital employs one or more employees.

* An employee is assigned a unique identifier generated automatically upon creation (starting from 100 with an increment of 1).

* An employee has a first name a middle name, a last name, a date of birth ,a gender (either 'male' or 'female'), a salary (decimal), a hire date ,weekly working hours (must be greater than 0 and less than or equal to 168), an address, a phone number ,an manager ID (references Employees table), and a performance rating int

3. Departments

* A hospital has one or more departments.

* A department is assigned a unique identifier generated automatically upon creation (starting from 1 with an increment of 1).

* A department has a name , an optional description (text), and an optional head of Deparetments

4. Doctors

* A doctor is an employee (references Employees table) who specializes in a particular medical field.

* A doctor has a unique identifier that references the employee ID (primary key).

* A doctor is associated with a department (references Departments table). Deleting a department sets the department ID of the doctor to null (no action on delete).

* A doctor has an experience level (number of years, must be non-negative).

* A doctor has a specialization (text, maximum 50 characters).

* A doctor has an appointment room assigned (references Rooms table). Deleting a room sets the appointment room ID of the doctor to null (trigger needed to update related rooms).

* A doctor has a medical license number (text, maximum 50 characters).

* A doctor has an email address (must follow the format '%@gmail.com' or '%@yahoo.com').

* A doctor keeps track of the number of operations performed (must be non-negative).

5. Nurses

* A nurse is an employee (references Employees table) who provides care to patients.

* A nurse has a unique identifier that references the employee ID (primary key).

* A nurse is associated with a department (references Departments table). Deleting a department sets the department ID of the nurse to null (on delete set null).

* A nurse has an experience level (number of years, must be greater than 0).

* A nurse has an optional supervisor (references Employees table). Deleting an employee sets the supervisor ID of the nurse to null (trigger needed to update related employees). * A nurse has a shift schedule (text, maximum 20 characters).

6. Workers

* A hospital employs one or more workers who perform various tasks.

* A worker is an employee (references Employees table).

* A worker has a unique identifier that references the employee ID (primary key).

* A worker has a worker role (text, not null, maximum 100

7. Absences

* An absence record is created when an employee is absent from work.

* An absence record has a unique identifier.

* An absence record is associated with an employee (references Employees table). Deleting an employee also deletes the associated absence records.

* An absence record includes the absence date (not null), the reason for absence (not null), the absence status (pending, approved, or rejected), and the ID of the employee who approved the absence (references Employees table).

8. Rooms

* A hospital has one or more rooms.

* A room is assigned a unique identifier generated automatically upon creation (starting from 100 with an increment of 1).

* A room has a room number (not null, text, maximum 10 characters).

* A room has dimensions: length and width (both decimal with two decimal places).

* A room can be associated with a department (references Departments table). Deleting a department sets the department ID of the room to null (on delete set null).

* A room has a flag indicating whether it is available (boolean, default value is True).

9. Beds

* A hospital has one or more beds.

* A bed is assigned a unique identifier generated automatically upon creation (starting from 100 with an increment of 1).

* A bed has a unique bed number (text, maximum 20 characters).

* A bed is associated with a room (references Rooms table). Deleting a room sets the room ID of the bed to null (on delete set null).

* A bed has a flag indicating whether it is available (boolean, default value is True).

10. Operations

* A surgical procedure performed on a patient.

* An operation has a unique identifier.

* An operation is associated with a patient (references Patients table). Deleting a patient sets the patient ID of the operation to null (on delete set null).

* An operation includes information about the procedure (text, maximum 100 characters), the patient's ID, the patient's name, the patient's phone number, the department where the operation took place (references Departments table), the room where the operation took place (references Rooms table), the operation date and time (both not null), the operation end time (not null), and a flag indicating whether the operation was successful (boolean, default value is True).

11. Patient Appointments

* A scheduled visit of a patient with a doctor.

* An appointment has a unique identifier.

* An appointment is associated with a patient (references Patients table). Deleting a patient also deletes the associated appointments.

* An appointment includes the patient's ID, the patient's name, the patient's phone number, the department (references Departments table), the doctor's ID (references Employees table), the

doctor's name, the doctor's phone number, the room where the appointment will take place (references Rooms table), the appointment date and time (both not null), and optional notes.

12. Visits

* A visit of a patient to the hospital.

* A visit has a unique identifier.

* A visit is associated with a patient (references Patients table). Deleting a patient also deletes the associated visits.

* A visit includes the patient's ID, the visit date, and the number of visitors (must be greater than or equal to 1).

13. Billings

* A record of charges incurred by a patient.

* A billing record has a unique identifier.

* A billing record is associated with a patient (references Patients table). Deleting a patient also deletes the associated billing records.

* A billing record includes the patient's ID, a description of the charges (text, maximum 100 characters), the billing amount (decimal with two decimal places, must be greater than 0), the payment status (paid, pending, or overdue), the billing date (not null), and the payment method (cash, credit, insurance, or other).

14. Hospital Machines

* Medical equipment used in the hospital.

* A machine is assigned a unique identifier generated automatically upon creation (starting from 100 with an increment of 1).

* A machine has a name (text, maximum 50 characters), the date of purchase (not null), an optional department (references Departments table), an optional room (references Rooms table), the purchase price (integer, not null), a description (text, maximum 255 characters), and a flag indicating whether the machine is currently working (boolean).