**Hospital Management System (HMS) Database Requirement Document**

**1. Project Overview**

The Hospital Management System (HMS) database is designed to manage the various aspects of hospital operations, including patient management, appointments, medical records, pharmacy inventory, and user roles. The system is intended to streamline hospital workflows, ensure accurate record-keeping, and provide efficient access to critical information.

**2. Objectives**

* To create a centralized database for managing patient information, medical records, appointments, and other hospital operations.
* To ensure data integrity, consistency, and security.
* To support multiple user roles with appropriate access controls.
* To facilitate reporting and analytics for hospital operations.

**3. Database Entities**

The HMS database includes the following entities:

1. **Patient**
   * **Attributes**: PatientID, PatAddress, SSN
   * **Constraints**:
     + PatientID: Primary Key
     + SSN: Foreign Key referencing HMS\_User
   * **Description**: Stores basic information about patients.
2. **MedicalRecord**
   * **Attributes**: RecordID, Diagnosis, CreatedDate, LabResults, PatientID, DoctorID
   * **Constraints**:
     + RecordID: Primary Key
     + PatientID: Foreign Key referencing Patient
     + DoctorID: Foreign Key referencing Doctor
   * **Description**: Contains records of diagnoses and lab results for patients.
3. **ActiveSubstances**
   * **Attributes**: ActiveSubstancesID, ActiveSubstancesName
   * **Constraints**:
     + ActiveSubstancesID: Primary Key
   * **Description**: Stores information about active substances in medications.
4. **HMS\_User**
   * **Attributes**: FirstName, LastName, DateOfBirth, Phone, Email, SSN, User\_Password, User\_type, gender
   * **Constraints**:
     + SSN: Primary Key
     + Unique Constraint on Email
   * **Description**: Stores user information for doctors, nurses, pharmacists, and other hospital staff.
5. **Pharmacy**
   * **Attributes**: PharmacyId, Name, Phone
   * **Constraints**:
     + PharmacyId: Primary Key
   * **Description**: Stores information about hospital pharmacies.
6. **Clinic**
   * **Attributes**: ClinicID, ClinicName, Phone, Specialization, price
   * **Constraints**:
     + ClinicID: Primary Key
   * **Description**: Stores details of clinics within the hospital.
7. **Nurses**
   * **Attributes**: NurseID, ClinicID, SSN
   * **Constraints**:
     + NurseID: Primary Key
     + ClinicID: Foreign Key referencing Clinic
     + SSN: Foreign Key referencing HMS\_User
   * **Description**: Stores information about nurses working in the hospital.
8. **AvailableAppointment**
   * **Attributes**: AvaAppDate, ShiftNumber
   * **Constraints**:
     + Composite Primary Key (AvaAppDate, ShiftNumber)
   * **Description**: Stores available appointment slots.
9. **Pharmacist**
   * **Attributes**: PharmacistID, PharmacyId, SSN
   * **Constraints**:
     + PharmacistID: Primary Key
     + PharmacyId: Foreign Key referencing Pharmacy
     + SSN: Foreign Key referencing HMS\_User
   * **Description**: Stores information about pharmacists.
10. **Reception**
    * **Attributes**: ReceptionID, phone
    * **Constraints**:
      + ReceptionID: Primary Key
    * **Description**: Stores information about the hospital reception.
11. **Receptionist**
    * **Attributes**: receptionistID, receptionID, SSN
    * **Constraints**:
      + receptionistID: Primary Key
      + receptionID: Foreign Key referencing Reception
      + SSN: Foreign Key referencing HMS\_User
    * **Description**: Stores information about receptionists.
12. **Patient\_ActiveSubstances\_Allergies**
    * **Attributes**: PatientID, ActiveSubstancesID
    * **Constraints**:
      + Composite Primary Key (PatientID, ActiveSubstancesID)
      + PatientID: Foreign Key referencing Patient
      + ActiveSubstancesID: Foreign Key referencing ActiveSubstances
    * **Description**: Tracks allergies patients have to active substances.
13. **Clinics\_AvailableAppointments**
    * **Attributes**: Availableslots, ClinicID, AvaAppDate, ShiftNumber
    * **Constraints**:
      + Composite Primary Key (ClinicID, AvaAppDate, ShiftNumber)
      + ClinicID: Foreign Key referencing Clinic
      + AvaAppDate, ShiftNumber: Foreign Keys referencing AvailableAppointment
    * **Description**: Tracks available appointment slots for clinics.
14. **ActiveSubstance\_Interaction**
    * **Attributes**: ActiveSubstanceID1, ActiveSubstanceID2, Interaction
    * **Constraints**:
      + Composite Primary Key (ActiveSubstanceID1, ActiveSubstanceID2)
      + Foreign Keys referencing ActiveSubstances
    * **Description**: Records interactions between active substances.
15. **ActiveSubstances\_SideEffects**
    * **Attributes**: SideEffects, ActiveSubstancesID
    * **Constraints**:
      + Composite Primary Key (SideEffects, ActiveSubstancesID)
      + ActiveSubstancesID: Foreign Key referencing ActiveSubstances
    * **Description**: Lists side effects associated with active substances.
16. **Doctor**
    * **Attributes**: DoctorID, Specializtion, ClinicID, SSN
    * **Constraints**:
      + DoctorID: Primary Key
      + ClinicID: Foreign Key referencing Clinic
      + SSN: Foreign Key referencing HMS\_User
    * **Description**: Stores information about doctors.
17. **Appointment**
    * **Attributes**: AppointmentID, AppointmentDate, AppointmentStatus, PatientID, ClinicID, receptionID
    * **Constraints**:
      + AppointmentID: Primary Key
      + PatientID: Foreign Key referencing Patient
      + ClinicID: Foreign Key referencing Clinic
      + receptionID: Foreign Key referencing Reception
    * **Description**: Stores patient appointments.
18. **Prescription**
    * **Attributes**: PrescriptionID, Dosage, DateIssued, Duration, DoctorID, PharmacyId, PatientID
    * **Constraints**:
      + PrescriptionID: Primary Key
      + Foreign Keys referencing Doctor, Pharmacy, Patient
    * **Description**: Stores prescription information.
19. **Medication**
    * **Attributes**: MedicationCode, MedName, Strength, PharmacyId
    * **Constraints**:
      + MedicationCode: Primary Key
      + PharmacyId: Foreign Key referencing Pharmacy
    * **Description**: Stores information about medications.
20. **Invoice**
    * **Attributes**: InvoiceID, InvoiceDate, TotalAmount, PaymentStatus, paymenttype, PatientID, receptionID
    * **Constraints**:
      + InvoiceID: Primary Key
      + Foreign Keys referencing Patient, Reception
    * **Description**: Stores billing information for services rendered.
21. **Medications\_ActiveSubstance**
    * **Attributes**: ActiveSubstancesID, MedicationCode
    * **Constraints**:
      + Composite Primary Key (ActiveSubstancesID, MedicationCode)
      + Foreign Keys referencing ActiveSubstances, Medication
    * **Description**: Links medications with their active substances.
22. **PrescriptionActiveSubstance**
    * **Attributes**: PrescriptionID, ActiveSubstancesID
    * **Constraints**:
      + Composite Primary Key (PrescriptionID, ActiveSubstancesID)
      + Foreign Keys referencing Prescription, ActiveSubstances
    * **Description**: Links prescriptions with active substances.
23. **Patient\_Medications**
    * **Attributes**: DateIssued, PatientID, MedicationCode
    * **Constraints**:
      + Composite Primary Key (PatientID, MedicationCode)
      + Foreign Keys referencing Patient, Medication
    * **Description**: Tracks medications prescribed to patients.
24. **Doctors\_AvaiIableAppointments**
    * **Attributes**: DoctorID, AvaAppDate, ShiftNumber
    * **Constraints**:
      + Composite Primary Key (DoctorID, AvaAppDate, ShiftNumber)
      + Foreign Keys referencing Doctor, AvailableAppointment
    * **Description**: Tracks available appointments for doctors.

**Conclusion**

This document outlines the requirements for the Hospital Management System database, providing a clear framework for its design, implementation, and maintenance. It ensures that the system meets the needs of the hospital while maintaining data integrity, security, and performance.