**Hospital Database Management System**

**Introduction**

Hospitals play a crucial role in our lives, providing essential medical care to individuals suffering from various illnesses. These illnesses may be caused by changes in climate conditions, increased workloads, emotional trauma, stress, and other factors. Managing the daily operations and maintaining records manually is highly challenging for hospitals. Therefore, a comprehensive database system is necessary to efficiently keep track of all activities and records within a hospital.

**List of Tables in the Hospital Database**

The hospital database comprises the following tables, each designed to store and manage specific types of information:

* **physician**: Details about physicians, including their positions and identification.
* **department**: Information about hospital departments and their respective heads.
* **affiliated\_with**: Mapping of physicians to their affiliated departments.
* **procedure**: Information about various medical procedures and their costs.
* **trained\_in**: Details of physicians trained in specific treatments and procedures.
* **patient**: Information about patients, including their primary care physicians.
* **nurse**: Details about nurses, including their registration status.
* **appointment**: Records of patient appointments with physicians.
* **medication**: Information about available medications.
* **prescribes**: Information about prescriptions given to patients.
* **block**: Information about different blocks in the hospital.
* **room**: Details about hospital rooms and their availability.
* **on\_call**: Details of nurses on call.
* **stay**: Records of patient stays in the hospital.
* **undergoes**: Records of procedures undergone by patients.

Each table is designed to store specific data efficiently and facilitate easy retrieval and management of hospital information. This structured approach ensures that the hospital can maintain accurate and up-to-date records, ultimately leading to better patient care and operational efficiency.

**Table Descriptions**

**Physician**

* **employeeid** – This is a unique ID of a physician.
* **name** – This is the name of a physician.
* **position** – This is the designation of a physician.
* **ssn** – This is a security number of a physician.

**Department**

* **departmentid** – This is a unique ID for a department.
* **name** – This is the name of a department.
* **head** – This is the ID of the physician who is the head of a department, referencing the column employeeid of the table physician.

**Affiliated\_With**

* **physician** – This is the ID of the physicians which references the column employeeid of the physician table.
* **department** – This is the ID of the department which references the column departmentid of the department table.
* **primaryaffiliation** – This is a logical column indicating whether the physicians are yet to be affiliated or not.
* **Note:** The combination of physician and department will occur once in this table.

**Procedure**

* **code** – This is the unique ID of a medical procedure.
* **name** – The name of the medical procedure.
* **cost** – The cost for the procedure.

**Trained\_In**

* **physician** – This is the ID of the physicians which references the column employeeid of the physician table.
* **treatment** – This is the ID of the medical procedure which references the column code of the procedure table.
* **certificationdate** – This is the starting date of certification.
* **certificationexpires** – This is the expiry date of certification.
* **Note:** The combination of physician and treatment will occur once in this table.

**Patient**

* **ssn** – This is a unique ID for each patient.
* **name** – This is the name of the patient.
* **address** – This is the address of the patient.
* **phone** – This is the phone number of the patient.
* **insuranceid** – This is the insurance ID of the patient.
* **pcp** – This is the ID of the physician who primarily checked up the patient, referencing the column employeeid of the physician table.

**Nurse**

* **employeeid** – This is the unique ID for a nurse.
* **name** – Name of the nurse.
* **position** – The designation of the nurse.
* **registered** – This is a logical column indicating whether the nurses are registered for nursing or not.
* **ssn** – This is the security number of a nurse.

**Appointment**

* **appointmentid** – This is the unique ID for an appointment.
* **patient** – This is the ID of each patient, referencing the ssn column of the patient table.
* **prepnurse** – The ID of the nurse who may attend the patient with the physician, referencing the column employeeid of the nurse table.
* **physician** – This is the ID of the physician, referencing the employeeid column of the physician table.
* **start\_dt\_time** – This is the scheduled date and approximate time to meet the physician.
* **end\_dt\_time** – This is the scheduled date and approximate time to end the meeting.
* **examinationroom** – This is the room where the patient meets the physician.

**Medication**

* **code** – This is the unique ID for a medicine.
* **name** – This is the name of the medicine.
* **brand** – This is the brand of the medicine.
* **description** – This is the description of the medicine.

**Prescribes**

* **physician** – This is the ID of the physician referencing the employeeid column of the physician table.
* **patient** – This is the ID of the patient referencing the ssn column of the patient table.
* **medication** – The ID of the medicine referencing the code of the medication table.
* **date** – The date and time of the prescribed medication.
* **appointment** – The prescription made by the physician to a patient who may have taken an appointment, referencing the appointmentid column of the appointment table.
* **dose** – The dose prescribed by the physician.
* **Note:** The combination of physician, patient, medication, and date will occur once in this table.

**Block**

* **blockfloor** – ID of the floor.
* **blockcode** – ID of the block.
* **Note:** The combination of blockfloor and blockcode will occur once in this table.

**Room**

* **roomnumber** – This is the unique ID of a room.
* **roomtype** – This is the type of room.
* **blockfloor** – This is the floor ID where the room is located.
* **blockcode** – This is the ID of the block where the room is located.
* **unavailable** – This is a logical column indicating whether the room is available or not.
* **Note:** The blockfloor and blockcode columns reference the combination of blockfloor and blockcode columns of the block table.

**On\_Call**

* **nurse** – This is the ID of the nurse referencing the employeeid column of the nurse table.
* **blockfloor** – This is the ID of the floor.
* **blockcode** – This is the ID of the block.
* **oncallstart** – The starting date and time of the on-call duration.
* **oncallend** – The ending date and time of the on-call duration.
* **Note:** The combination of nurse, blockfloor, blockcode, oncallstart, and oncallend will occur once in this table, and the combination of blockfloor and blockcode columns references the combination of blockfloor and blockcode columns of the block table.

**Stay**

* **stayid** – This is the unique ID for the admission.
* **patient** – This is the ID of the patient referencing the ssn column of the patient table.
* **room** – This is the ID of the room where the patient is admitted, referencing the roomnumber column of the room table.
* **start\_time** – This is the time when a patient is admitted.
* **end\_time** – This is the duration of the patient's stay.

**Undergoes**

* **patient** – This is the ID of the patient referencing the ssn column of the patient table.
* **procedure** – This is the ID of the procedure referencing the code column of the procedure table.
* **stay** – This is the ID admission of a patient, referencing the stayid column of the stay table.
* **date** – This is the date when a patient undergoes a medical procedure.
* **physician** – This is the ID of a physician referencing the employeeid column of the physician table.
* **assistingnurse** – This is the ID of a nurse who assists the physician, referencing the employeeid column of the nurse table.
* **Note:** The combination of patient, procedure, stay, and date will occur once in this table.

**Following are the Questions: -**

1) Write a query in SQL to find all the information of the nurses who are yet to be registered.

2) Write a query in SQL to find the name of the nurse who are the head of their department.

3) Write a query in SQL to obtain the name of the physicians who are the head of each department.

4) Write a query in SQL to count the number of patients who taken appointment with at least one physician.

5) Write a query in SQL to find the floor and block where the room number 212 belongs to.

6) Write a query in SQL to count the number available rooms

7) Write a query in SQL to count the number of unavailable rooms.

8) Write a query in SQL to obtain the name of the physician and the departments they are affiliated with.

9) Write a query in SQL to obtain the name of the physicians who are trained for a special treatment.

10) Write a query in SQL to obtain the name of the physicians with department who are yet to be affiliated.

11) Write a query in SQL to obtain the name of the physicians who are not a specialized physician.

12) Write a query in SQL to obtain the name of the patients with their physicians by whom they got their preliminary treatment.

13) Write a query in SQL to find the name of the patients and the number of physicians they have taken appointment.

14) Write a query in SQL to count number of unique patients who got an appointment for examination room C.