Team 19

Design Document

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Database Scope :-
The database's goal is to give hospitals a patient-centered healthcare system that makes service monitoring and improvement easier. We maintain accurate, thorough, and up-to-date information about patients through our database.Make patient appointment records, vital signs captured and prescription details easily accessible for better coordinated, effective care. Assist doctors to maintain symptoms list, diagnoses for patients and associated medicines prescribed to the patient for their betterment, lowering medical errors, and delivering safe care. Help doctor's providers achieve their financial objectives and increase efficiency. Reduce expenses through reducing paperwork, enhancing safety, eliminating redundant testing, and enhancing health.

Business Problems:-

This database would intend to solve following problems:-

- Provide information required for better assistance of the patient(for example :- maintaining emergency contact information, or list of experienced symptoms and derived diagnosis, prescriptions medicines)
- Provide information to doctors to help them improve patient outcomes depending on their demographic (e.g., to target particular market niches like geographic areas that can have some particular disease, populations based on age or gender, or other demographic-based campaigns).
- Streamline the process of assigning diagnoses and medicines to patients to help prevent medical mistakes and deliver safer treatment.
- Keeping track of each appointment session of patients with billing amount and amount of medicines so the doctor, insurance provider and patient can access their medical expenses.

Business Rules:

- There could be one or more patient appointments for every patient.
- Each doctor is present for at least one patient appointment.
- Each doctor would write zero or more prescriptions.
- There is a billing history for every patient appointment.
- Every patient visit results in another recording of vital signs, diagnosis and prescription.
- Only specialized doctors(designated) can diagnose a patient.
- Every patient has only one medical insurance provider with a specific healthcare welfare plan.
- Every patient visit can result in one or more diagnoses.
- Every patient interaction has a record of one or more vital signs.
- Every patient encounters at least one symptom.

Design Rules :

- Utilize the Crow's Foot Notation.
- Place a one next to the field where the line starts to indicate which table is on the one side of the relationship.
- Put a crow's foot next to the field where the line stops to indicate which table is on the many sides of the relationship.
- Where necessary, indicate the primary key fields by placing a PK beside them.
- Wherever necessary have indicated the foreign key fields by placing a FK beside them.
- Associative entities are represented by rounded rectangles and have keys and some related attributes.
- To illustrate the connections between each table, draw a line between its fields.
- The fields in each table that are utilized to create the relationship should be directly referenced in this line.

Entity Description :

Entity Name	Reason for entity	Relationship to others
Patient	The database's major goal is to gather data on factors that are associated with patients. Name, address, and contact information are vital pieces of patient information to gather. The Patient ID enables us to keep track of the patient's demographic information and emergency contact information, insurance provider information and appointment details	The 'Patient' entity has a relationship with patient demographics, point of contact, insurance provider and appointment details.
Patient demographics	This entity maintains patient demographic information, such as age, gender, and ethnicity, which aids in our understanding of the patient's background.	This entity has relationship with the Patient entity
Point of contact	This entity contains information about the point of contact maximum two for each patient who can be approached in the case of emergency.	This entity has relationship with the Patient entity
Insurance provider	This entity has information on the insurance company paying the patient's visit-related medical bills.	This entity has a connection to the patient entity.
Bill	This entity maintains details regarding the invoice created and the payment status.	It maintains a connection with the patient appointment details entity.

Patient appointment details	The database's central entity is this one. It stores information about each time a patient enters the hospital and is used to keep track of the diagnoses given, the prescriptions administered, and the patient's lab tests. We can follow the patient's progress during their hospital stay and gain insight into their health thanks to this entity.	It holds a relationship to the diagnosis, symptoms, and vital signs as the database's basic entity. Additionally, it maintains a connection with the patient, prescription, doctor, and bill.
Symptoms	This entity is in charge of keeping track of the patients' symptoms, if any, and how long they have persisted. The doctor would then be better able to determine how to proceed with the diagnosis.	Given that they are documented each time a patient enters a hospital, the Patient Symptoms entity has a link with Patient appointment details entity.
Symptom details	This entity is in charge of keeping the data acquired for the patient's symptoms. Since it provides a description for symptoms based on their IDs, it helps us learn how to identify symptoms.	To better comprehend the symptoms noted, this entity only has a link with symptoms.
Diagnosis	The diagnostic that a specific patient underwent during a visit is recorded by this entity. Additionally, it keeps records of the healthcare professional the patient consulted.	The diagnosis has connections to the Patient Appointment Details, the Doctor and the Diagnosis Details entities.
Diagnosis details	This entity is in charge of keeping the data acquired for the patient's diagnosis. Since	To better comprehend the condition indicated, this entity only has a link with the

	it provides a diagnosis' description based on its IDs, it helps us understand how diagnoses are identified.	Diagnosis entity.
Vital signs	This entity is where the doctor's vital signs are kept. Vital signs help us quickly diagnose and treat patients by providing a better understanding of their primary health issues.	The vital signs entity is related to the vital sign details as well as the Patient appointment details entities.
Vital sign details	This entity is in charge of keeping records of the vital signs gathered for a patient. Since it provides a description for the vital signs based on their IDs, it helps us comprehend the vital signs better.	This entity holds relation only to the Vital signs entity in order to provide more information about the respective vital sign.
Doctor	This entity is responsible for providing details about the doctors that treat the patients.	Doctor is related with the Diagnosis, Patient appointment details and Prescription entities.
Prescription	The doctor's prescriptions for medications are kept by this entity. Prescription information enables us to comprehend the number of times the particular prescription can be renewed.	This entity has a relation with Patient appointment details and Pescrition_Medicine. Along with this, it is also related to the Doctor entity.
Medicine details	The information about the medications, including which medication id is associated with which medication, is stored in the medication details entity.	In order to provide a better understanding of the prescribed drug, this entity exclusively relates to prescription_Medicine.
Prescription_Medicine	This contains the prescription ID, Medicine ID to indicate which prescription has which	This entity has relations with Prescription and Medicine details

	medicines listed. It also has the dosage and quantity of the medicines prescribed.	

Entity Relationships:-

From	To	Relationship
Patient	Patient Demographics	Mandatory One to Mandatory One
Patient	Point of Contact	Mandatory One to Mandatory Many(maximum 2 records)
Patient	Insurance Provider	Mandatory One to Mandatory One
Patient	Patient Appointment Details	Mandatory One to Mandatory Many
Patient Appointment Details	Bill	Mandatory One to Mandatory One
Patient Appointment Details	Symptoms	Mandatory One to Mandatory Many
Symptom	Symptom Details	Mandatory One to Mandatory Many
Patient Appointment Details	Diagnosis	Mandatory One to Mandatory Many
Diagnosis	Diagnosis Details	Mandatory One to Mandatory Many
Patient Appointment Details	Vital Signs	Mandatory One to Mandatory Many
Vital Signs	Vital Signs Details	Mandatory One to Mandatory Many
Patient Appointment Details	Doctor	Mandatory One to Optional Many
Doctor	Prescription	Mandatory One to Optional Many
Prescription	Prescrition_Medicine	Mandatory One to Mandatory Many
Prescription_Medicine	Medicine Details	Mandatory One to Mandatory Many