Group 3

Personal Health Management

Database Specification: Purpose, Business Problems Addressed & Business Rules

Database Purpose:

The purpose of this application is to organize the data to assist people in tracking health information. The application lets two types of users – Patients and Health supporters to track observations regarding the patient's health indicators and generate alerts when something is not usual. This system is to facilitate the health supporters of the patients to retrieve, update, and report the patient information efficiently, in turn helping the doctors make timely, effective diagnoses. At the same time, the users can utilize this system to monitor their medical conditions. With this system, there is a proper coordination, assimilation and representation of data.

Several functionalities are provided for registered patients and health supporters such as adding new diseases for patients, adding new health supporters, adding health indicators to be tracked for each disease, manually over riding the range of health indicators, generating alerts when the observations are found to be in violation, booking appointment and tracking your lab reports. Maintaining all this information manually is a tedious task and difficult to track for patients and health supporters.

Hence this application is useful to automatically notify patients and health supporters of the current health indicators of the patient and take action appropriately. While patients have access only to their information, health supporters can view patient information only after authorization is provided.

Business Problems Addressed:

- Significant advances in automation and standardization of business and clinical processes can be attributed to this health care management system. Data can therefore become more standardized and accurate.
- With healthcare databases, data can also be stored externally and backed up in a secure place to prevent data loss
- Allow health supporters also to review descriptive reports of patient in order to keep a track of their condition and take precautions.
- Track daily activity of patient which is mandatory to estimate the health condition.

- Enforcing data integrity
- Lastly, because the data is electronic, it can allow for quicker processing of typical transactions such as lab results

Business Rules:

- A user may have up to two health supporters (primary and secondary).
- After authorization health supporter would be able to access health patient records
- A user may have one or more health provider to select from.
- A user may/may not be associated with one or more disease IDs.
- Health indicator name and type is mandatory.
- In the Patient specific tables for health indicators, each patient will have the range and enum values of the health indicator reference tables depending on the disease.
- Gender of a person should be Male (M) or Female (F).
- A health indicator can have range values or enum values depending on which their respective values will be stored in the range table or enum table.
- For a health indicator whose values are of range type the maximum value of the indicator must be greater than or equal to the minimum value.
- Alerts that are generated can be of two types: OUTSIDE_LIMIT_ALERT when the observed values for the patient are outside the range that is recommended and SEVERITY_ALERT when the observed values are not present in PatientSpecificHIEnum table or not None/Happy.
- For a patient to add a health indicator, he should already be present in the system as a person.
- Disease name is mandatory for a disease.
- Authorization date is mandatory for a health indicator as it indicates the date from which the patient's data can viewed.
- For a sick patient to be registered he needs to be in the system and the disease he has should be present in the system.
- Health indicator name and type is mandatory.
- In the patient specific tables for health indicators, each patient may have the range and enum values of the health indicator reference tables depending on the disease.
- Specialization name is mandatory for a Specialization

DESIGN DECISIONS

S No:	ENTITY NAME	ENTITY DESCRIPTION
1	**PERSON**	Persons have a unique id. Persons can be Sick Patients, Health Providers and Health Supporters. Although most of their common details are stored in Persons; Sick Patients, Patients Health Providers and Health Supporters have different privileges hence are divided into different relations for Users
2	**DISEASE**	Diseases are uniquely identified by a disease id. This entity is related to Users and health indicators and can be used to get the disease name to show patients or health supporters.
3	**HEALTHINDICATOR**	Health indicators are uniquely identified by id. Health indicators are common attributes for all patients including well patients. But they are also specific to the type of disease a patient has. Some health indicators have range values while others have enumeration values
4	**HEALTHINDICATORRANGE**	Health indicators which have range values. These are uniquely identified by health indicator id. They have minimum and maximum recommended values.
5	**HEALTHINDICATORENUM**	Health indicators which have enumeration values. These are uniquely identified by health indicator id.
6	**PATIENTSPECIFICHIRANGE**	If a patient overrides a health indicator with range values the corresponding changes are done in this table. Otherwise, this table contains default recommended values.
7	**PATIENTSPECIFICHIENUM**	If a patient overrides a health indicator with enumeration values the corresponding changes are done in this table. Otherwise, this table contains default recommended values.
8	**OBSERVATION**	Patients are required or recommended to take checkup and note down the observation values depending on the disease they have. For a well patient, the observation values are general recommendations. Each observation is uniquely identified by an id and references person id and health indicator id for which the observation is done.
9	**ALERT**	This table is used for generating alerts. Alert are generated if the observations are not done by the recommend frequency. Each alert has an alert id by which it is identified and the patient id for which the alert is generated. Alerts can be cleared by patients by taking the observations or by health supporters after viewing them.
10	**DISEASEHEALTHINDICATOR**	This table is used for maintaining relationship between disease and health indicator.
11	**SPECIALIZATION**	This table provides specialization details of health provider.
12	**ACTIVITYTRACKER**	Activity Tracker Table is used to monitor the activity of the users (it can be seen by patient and his supporter).

S No:	ENTITY NAME	ENTITY DESCRIPTION
13	**HEALTHPROVIDER**	This table is used for saving doctors details like Specialization, Shifts
14	**APPOINTMENT**	This table is used for booking an appointment with doctor. In case of any emergency health supporter can book an appointment for his dependent with any doctor or health provider.
15	**SICKPATIENT**	This table is used for maintaining relationship between user and disease
16	**HEALTHSUPPORTER**	This table is used for identifying health supporters.
17	**LABREPORT**	This table is used for saving patients reports. It can be seen by health supporters and health providers
18	**TESTRANGES**	This table is used for determining the normal range for tests

ENTITY RELATIONSHIP DIAGRAM