IT-650 2-1 Scenario Activity:

Westlake Research Hospital: Gather Data

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April 14, 2020

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# 2-1 Scenario Activity: Chapter 2

## Form Data Questions

There are two (2) forms presented for the Westlake Research Hospital double-blind study of the new depression drug. Each of these forms has several questions in them, and some of the data associated with the answers require clarification. The following list identifies the form in question and specific questions relating to the data that will be stored for the answers to the questions on the form.

* Initial Medical History Form
  + For the medication currently being taken, are you collecting just the name of the medications, or is the database also going to store the dosages?
  + The question regarding previous medical conditions, should there be an explanation field for each of the entities, or a single explanation field to cover all of them?
  + Should the question regarding the when the patient was first diagnosed with depression, be a date field or a string?
* Patient Visit Form
  + Will the patient’s weight be stored in pounds or kilograms?
  + For the additional symptoms and side effects, will the answer be stored as a single long string or as individual entities?
  + Will the doctor's notes be stored as a long string or as individual entities?

## Drug Study Stakeholders

A stakeholder is defined as "either an individual, group, or organization who is impacted by the outcome of a project" (Landau, 2017). The double-blind test of the new depression drug includes many stakeholders. The following is a list of the stakeholders for the double-blind test of the new depression drug:

* Competing Drug Companies
* Medical Community
* Insurance Companies
* Patient Families
* Westlake Hospital
* Test supervisors
* Patients
* Doctors
* Test Drug Company
* Existing Drug Company

## Interview Questions

Due to HIPPA laws and the sensitivity associated with medical information, conducting interviews with all of the aforementioned stakeholders would not be ethical or feasible. This includes asking the patients, the patent' families, competing drug companies, and the medical community questions about the new drug. As such, the only stakeholders that could be questioned in an interview are the doctors and the test supervisors. The following are the questions I would ask the doctors and test supervisors:

### Doctors

* Is it important to know the dosages of current medications, or will the names of current medications suffice?
* How do you plan to enter data into the database?
* Is there any specific view you would want the database to be capable of generating?

### Test Supervisors

* How do you plan to use the data after the study?
* Are there any specific tools that will use the data for analysis or any other purpose?
* Is there any specific view you would want the database to be capable of generating?

## Doctor Questions

* When building the database for the double-blind study, it is important that the end-users understand the process and that the process meets expectations. To help improve the process, I would ask the doctors the following questions:
* What type of data do you feel is most important to the study?
* What data do you feel you will need access to in order to perform your duties relating to the study efficiently?
* When entering the data, what flow would be most efficient, i.e., What data would you prefer entering before the meeting, what data would you prefer entering during the meeting and what data would you prefer entering after the visit?
* Will you be the only one entering the data, or will you have an assistant entering the data into the system?

## Job Shadow Report

After reviewing the provided shadow report for the Westlake Research Hospital Double-Blind Study for the new drug, I discovered several key aspects. The following are the exceptions, business rules, and questions identified based on the review:

### Exceptions

* The doctor will need the ability to print the patient’s information from the database to be stored in a file cabinet.
* The doctor’s notes will be transcribed from a notebook where the doctor writes the notes during the visit.
* A nurse will be responsible for entering the patients' blood pressure, heart rate, and weight.
* The database needs to be able to enter and identify dramatic changes associated with vitals taken by a nurse.
* The doctor does not ask the question directly from the form.
* The doctor does not follow the form questions in order; however, he covers every question on the form.

### Business Rules

* The first thing the doctor will enter in the system is any complaints or signs of deepening depression.
* Need the ability to enter information into the system in any order.
* The visit summary and decision to drop a patient from the study are the final task and occur after the visit.
* Reasons for dropping a patient include lack of or inconsistency in participation, the imminent danger of harming himself or herself, and signs of significant side effects.

### Additional Questions

* Is the process you follow for your patients, such as writing the notes on paper and transcribing to the system, or reviewing the notes from before the visit from paper copies of the records, similar to other doctors?
* Will you be transcribing the patient's vitals taken by the nurse into the system, or will the nurse be entering them directly into the system?

# 2-1 Scenario Activity: Chapter 3 To-Do

## Issues with Current System

While no current system is clearly identified for the study, there are some glaring issues associated with the current process Identified during the job shadow. The following is a list of the issues identified regarding the current process:

* It is difficult to secure paper documents from prying eyes; currently, the doctor stores patient information in a file cabinet.
* The current system requires multiple people associated with the doctor to have access to the patient's information, such as the secretary and the nurse.
* The doctor does not follow the questions in order, which could lead to inadvertently missing a question on one of the forms.
* The doctor does not ask the questions on the form as they are written. This means that the doctor's interpretation of the question is what is presented to the patient. If the interpretation is flawed, this could lead to skewed results.

## Database Requirements for Stakeholders

It is imperative to clearly define the requirements of each of the stakeholders involved with the database. It is important to note that not all of the stakeholders associated with the double-blind study will be involved in the database. There are three (3) different kinds of database requirements, which include data requirements, report requirements, and access/security requirements (Conger, 2014, p. 49). The following are the requirements associated with each of the stakeholders.

### Data Requirements

The data requirements section identifies the attributes the “database must contain in order to store all the information an organization needs for its activities” (Conger, 2014, p. 49). Keeping with the parent section requirements, the list below identifies the requirements based on the specific stakeholders. For the data requirements section, there are five (5) stakeholders which include Patients, Doctors, Test Supervisors, Test Drug Company, and Existing Drug Company.

|  |  |  |
| --- | --- | --- |
| Patients  * Name * Visitation Date * Initial Start Date * Birth Date * Address * Phone Number * Email * Current Prescriptions * Medication Allergies * Prior Conditions * Depression State * Date first diagnosed * Symptoms Experienced * Depression History * Prior Depression Treatments * Family History of Depression * Vitals * Symptom Rating * Doctors Notes * Doctor Recommendation * Drug Type Prescribed * Medication Compliance * Visit Compliance | Doctors  * Name * Degree * Phone * Email * Address * Assigned Patients  Test Supervisors  * Name * Phone * Email * Address * Is a Pharmacist  Test Drug Company  * Company Name * Drug Name * Dosage * Drug Cost * Drug Ingredients * Drug Symptoms | Existing Drug Company  * Company Name * Drug Name * Dosage * Drug Cost * Drug Ingredients * Drug Symptoms |

### Report Requirements

The database for the double-blind study, like most databases, will need to generate several different kinds of reports (Conger, 2014, p. 49). The list below identifies the stakeholder who needs the report and the entities that will be included in the report.

|  |  |
| --- | --- |
| Patients and Doctors  * Medical Report   + Name   + Initial Start Date   + Birth Date   + Address   + Phone Number   + Email   + Current Prescriptions   + Medication Allergies   + Date first diagnosed   + Prior Depression Treatments   + Family History of Depression   + Medication Compliance   + Visit Compliance * Visitation Report   + Visitation Date   + Prior Conditions   + Depression State   + Symptoms Experienced   + Depression History   + Vitals   + Symptom Rating   + Doctors Notes | Insurance Companies  * Cost Report   + Drug Cost   + Date Prescribed   + Visitation Date   + Visitation Cost   + Services Provided Summary  Test supervisors  * Patient Report   + All Patient Data   + All Doctor Data * Test Drug Report   + All Test Drug Data * Existing Drug Report   + All Existing Drug Data |

### Access and Security Requirements

Databases typically "contain core business information that could be of great value to a competitor" this is especially true for the double-blind database (Conger, 2014, p. 49). The database for the double-blind study will contain confidential information, and as such, the data must be secured. In the following list, "Full access" indicates the ability to read and write to the database, "Read-only" indicates the ability to view the data without being able to modify it. The following list identifies which stakeholders will have access to the database and what data they will be able to view.

#### Test supervisors

* Read-only access to all patient information.
* Read-only access to doctors notes
* Full access to the drug type prescribed.

#### Doctors

* No access to the drug type
* Full access to patient vitals (Only Assigned Patients)
* Full access to patient-doctor notes (Only Assigned Patients)
* Full access to visit specific data (Only Assigned Patients)

#### Patients

* No access to the drug type.
* Read-only access to individual medical profiles
* Read-only access to individual doctor notes.

#### Patient Families

* If the patient is under the age of 18, then the family/guardian will have the same permissions as the patient.

## Business Rules List

The business rules are used to “describe the rules that govern the way data are acquired, stored, and used by the business” (Conger, 2014, p. 52). Business rules are statements that “impose some form of a constraint on a specific aspect of the database” (E-Tutorials, 2010). The following list contains the business rules associated with the Double-Blind Study Database.

* The database must track patients’ information from their first screening through each of their visits.
* Every visit must identify the Depression State
* The database must track the patient’s appetite for each visit.
* The database must track the patents sleep habits every visit
* The database must track the patient’s activity engagement each visit.
* The database must track any physical side effects each visit.
* Every patient must have an Initial Start Date, Birth Date, Address, Phone Number, Date first diagnosed, and Email listed.
* Any current medication must be listed.
* The medication allergies field must be set to true or false.
* If the medication allergies field is true, the medications must be listed.
* The initial intake must list the symptoms of depression.
* Each visit must store any symptoms of depression experienced.
* Each Patient visit must store the patient vitals.
* Each patient visit must store the patient’s depression rating on a scale of 1-5.
* Each patient visit must store all symptoms and rate them on a scale of 1-5.
* Must be able to enter symptoms not listed on the form.
* Each visit must store the doctor's notes associated with that visit.
* Each visit must store the doctor's recommendation as one of two values. (Continue with study or Drop from the study)
* If the doctor recommends the patent be dropped from the study, they must provide an explanation.
* The doctors must be able to enter blood pressure, blood test results, depression indicators, and notes for each session.

## Major Security Rules

* The database must allow patients only to view their medical profiles and doctor's notes.
* The database must restrict all full access views that include all patient information, doctor’s notes, and the drug prescribed to only the two (2) researches.
* The database must allow doctors to see only their own patient's information without showing the current drug prescribed to the patent.
* The database must be secured against external intrusion attempts, especially those perpetrated by competitors.

## Identify Nouns

The following is a list of the nouns pulled from the forms, the interview, the questionnaire, and the Job Shadow Report associated with the Westlake Research Hospital's double-blind study.

|  |  |
| --- | --- |
| * Activities * Additional Symptoms * Address * Anxiety in Social Situations Rate * Appetite * Appointments * Arthritis * Blood Pressure * Blood test Results * Cancer * City * Continue Study * Current Medicines * Depression Description * Depression History * Depression Indicators * Depression Rate * Determination * Diabetes * Digestive Tract Disease * Digestive Tract Disorder * Directors * Disease of the blood * Disorder of the blood * Doctor Notes * Doctors * Drop Study * Email * Family depression history * First-diagnosed with depression * Hearing disorder * Heart Rhythms * Heart Trouble * Hepatitis * Inability to Leave House Rate * Interviews * Judgment call * Kidney Disease * Kidney Problems * Life-Threatening Condition | * Loss of Appetite Rate * Loss of Libido Rate * Lung Disorders * Malaria * Medication Allergies * Months * Nervous Disorder * New Drug * Notebook * Patient * Patient Profile * Patients * Pharmacist * Phone * Physical defect * Physical deformity * Prozac * Pulse * Rashes * Recommendation * Researchers * Secretary * Sessions * Side Effects * Sleep Difficulty Rate * State * Study * Suicidal Thought Rate * Symptoms experienced * Test Supervisors * Treatment attempts * Vision Disorder * Visits * Vitals * Weight * Zip Code |

## Preliminary Entities, Attributes and Candidate Key’s

The following list contains preliminary entities and attributes Based on the nouns outlined above and an understanding of the forms provided. The entities and attributes are divided into twelve (12) tables. Each table has an assigned candidate key. Candidate keys are used to “uniquely identify each record in a database and to relate records to each other that are stored in different tables” (Conger, 2014, p. 57). The candidate key for each of the tables is the first entity listed under the table name and ends with "ID." Entities followed by FK indicate the entity is a foreign key, which indicates a relationship to another table.

|  |  |
| --- | --- |
| Patients   * Patient ID * Name * Initial Start Date * Birth Date * Address * Phone Number * Email * Date first diagnosed * Family History of Depression * Drug Type Prescribed (From Lookup Table) * Doctor ID (FK)   Current Prescriptions   * Prescription ID * Patient ID (FK) * Drug Type Prescribed (From Lookup Table) * Dosage   Medication Allergies   * Allergy ID * Patient ID (FK) * Drug Type (From Lookup Table)   Visit   * Visit ID * Patient ID (FK) * Visitation Date * Depression State * Is Initial Visit * Medication Compliance * Visit Compliance * Recommendation * Recommendation Justification * Blood Pressure * Pulse * Weight   Depression History   * Depression History ID * Patient ID (FK) * Description * Is Attempt at Treatment | Doctors   * Doctor ID * Name * Degree * Phone * Email * Address   Test Supervisors   * Supervisor ID * Name * Phone * Email * Address * Is a Pharmacist   Doctor Notes   * Note ID * Visit ID (FK) * Note   Symptoms Experienced   * Symptom ID * Is Prior Symptom * Visit ID (FK) * Symptom Name * Symptom Explanation * Symptom Rating   Lookup Table   * Lookup ID * Lookup Name   Prior Depression Treatments   * Prior Depression Treatment ID * Patient ID (FK) * Date of Prior Treatment * Description of Treatment   Prior Conditions   * Prior Condition ID * Patient ID (FK) * Condition Name * Condition Description |
|  |  |

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