Database Design and Development

for

Blood Donor Management System

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Centennial College

Introduction to Database Concepts, COMP 122

Prof. Cam, Ersan

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Table of Contents

Revision History

Name	Date	Reason For Changes	Version
	March 28, 2022	Updated document to reflect Milestone 1 Requirements	1
	07 Apr, 2022	Updated business rules	2

1. Introduction

1.1 Project Outline

Our Project is a management system used to organize and store the donations of blood in their pre-process, intermediate-processes, and post-processes states. The donors will be stored within the system, the transfusion information will be stored within the system, the recipients' blood will be trackable back to who the specific donor is, what the blood type is, and how close to the expiry date the blood is. The system will involve the use of 5 distinct locations and the locations will be identified and traceable.

1.2 Problem Statement

Traceability is of the utmost importance when it comes to a sensitive field such as blood donations/transfusions within a blood bank. A frequent problem that occurs in the field of blood transfusions is the improper documentation of information about a patient, about the blood being used, or where the blood is coming from this can allow the wrong type of blood being administered (or tracing contaminated blood product) to a recipient and may result in serious legal fees, health issues to the recipient, and even further unfathomable issues.

1.3 Solution Statement

To prevent such problems from occurring, this DMS will incorporate industry standard traceability tactics and methods to provide the best possible system that allows for accurate information to be displayed and accessed upon request.

1.4 Use Case Scenario(s)

The database will be accessed through an easy-to-use Graphical User Interface that provides access to the functions that can query information, update information, retrieve information, and delete information (with administrative permissions) through the means of an application that can be locked to only be used on the device. It will be available as a mobile app, as well as a PC application that can be used by employees of all roles and permissions can be updated by an administrator.
An e.g., of a practical use case scenario within the system:
As a blood clinic practitioner, I'd like to access a record of all transfusions from a certain date, so I can tell a customer when they last got a transfusion/last donated, so they do not lose too much blood by donating/receiving a transfusion, too often

2. Business Rules/Requirements

2.1 Rule 1

Each Donor can donate blood many times
Each donation of blood can be made by one and only one donor

2.2 Rule 2

Each blood bank can have many blood products
Many blood products must be within one and one only blood bank

2.3 Rule 3

Many blood products can be transfused through one and only one clinic
Each blood clinic can have many blood products transfused

2.4 Rule 4

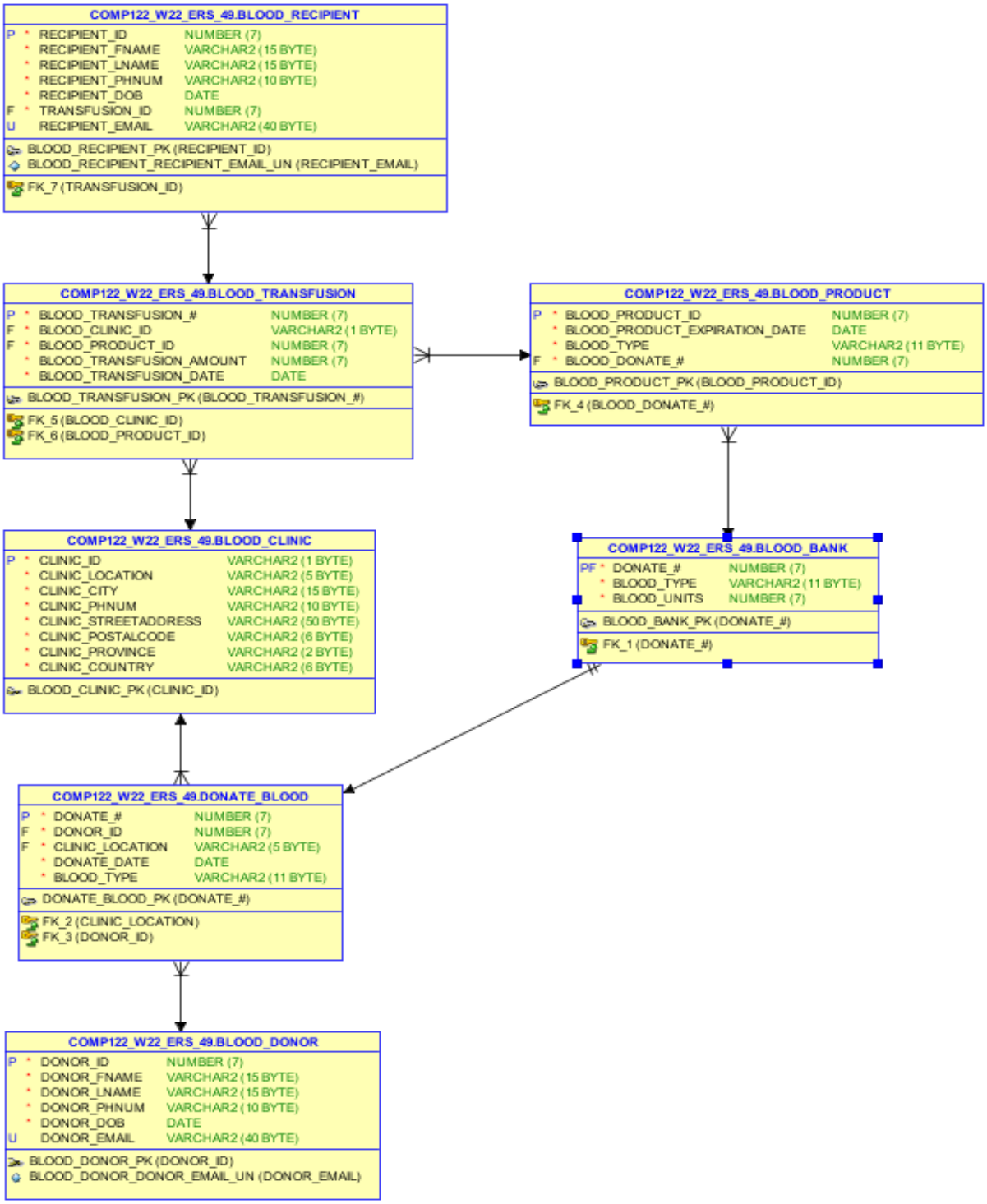
Many transfusions can be administered by one clinic
Each clinic can administer many transfusions

2.5 Rule 5

Each Recipient can receive many blood transfusions
Each blood transfusion can be received by one and only one recipient

3. Database Models

3.1 ERD/Schema Diagram



4. Scripts

4.1 SQL Table Creation Script


Assignment4_SIG_S
QL_Table_Creation_S


Assignment4_SIG_S
QL_Table_Delete_Scr

4.2 Data Insertion Script


Assignment4_SIG_S
QL_Table_Insert_Scri

4.3 Select Reporting Script


Assignment4_SIG_S
QL_Table_Select_Scri

1. *Show the amount of O Negative Blood available within the blood_bank*
2. *Show all the transfusions that occurred at the South Clinic with respective details*
3. *Show all blood and blood expiration dates in descending order*

Appendix A: Revisions made to Milestone 1

— Removed Donor_id from blood_bank since that information can be accessed from donate_#

— Removed Clinic_ID from blood_donor as this information isn't relevant to the donor themselves but is required in the donate_blood table to assess where the blood was donated to

— changed blood_product_id to blood_donate_# because the previously used blood_donor_id is accessible through the donate_#

— Changed the blood_donate_# in blood_product to be related to the blood_bank version of the donate_# rather than the donate_blood table donate_#

*— Adjusted all alter table commands to include "on delete cascade" to allow for easier debugging **alternative in the work field would be to have a separate script alter the foreign keys if need be for protection against accidental removal of database tables***

— Recreated ERD to match database structure

— Adjusted Business rules to match ERD and tables