CS2310: Exercise 4

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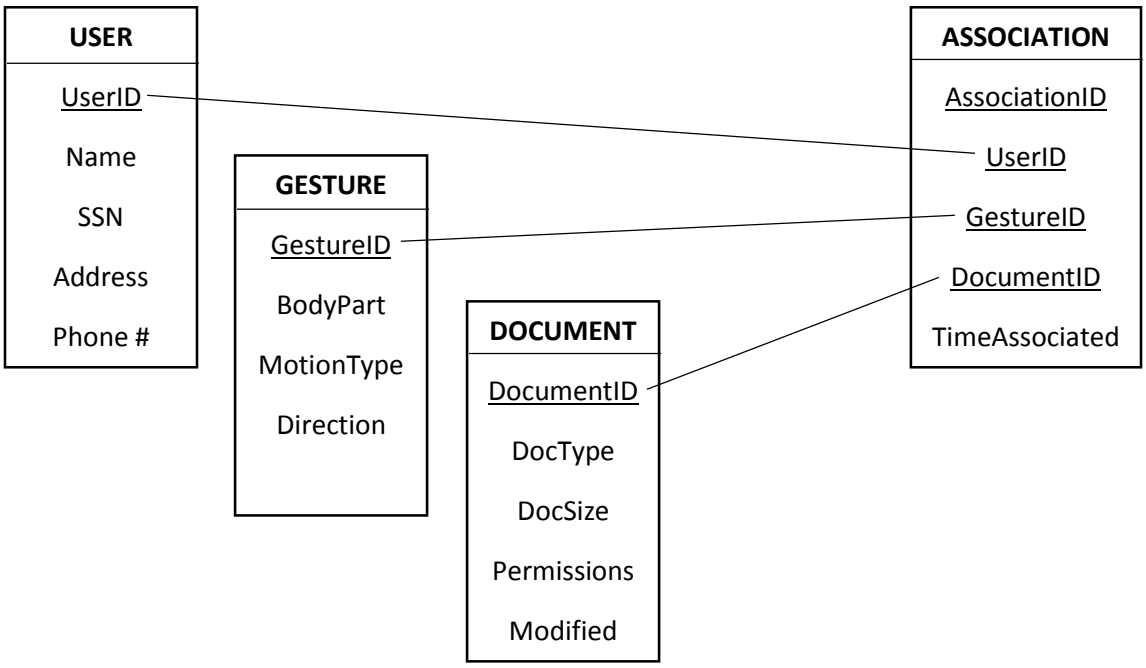
Description:

The purpose of this exercise is to apply multimedia functional dependency to multimedia applications design. Given an application (its requirements), design the multimedia database using multimedia functional dependency theory. Then specify the patterns (IC cards) associated with the multimedia database. The application is the personal health care system that allows the user (a senior citizen) to access related multimedia documents using gestures. A new classification scheme based upon the gestures associated with the multimedia documents is to be introduced. This would allow users to search for multimedia documents similar to a known audio search key (such as the voice of a certain author). Your task is to design the multimedia database and associate patterns (IC cards), which can in turn be transformed into IC index and finally an implementation. (Note: Exercise 4 is similar to previous Exercise 4, except the application was changed from distance learning to personal healthcare in 2011)

a) Multimedia Database Using Multimedia Functional Dependency Theory



From the diagram above you can see the relations between users, gestures, and documents. The database is presented as a diagram of tables User, Gesture, Document, and Association, where primary keys are UserID, GestureID, DocumentID, and AssociationID respectfully. The table Association has foreign keys UserID, GestureID, and DocumentID. This means that users can have associated gestures that will lead them to associated documents. Based on the diagram above we can find a specific multimedia document associated with a specific gesture of a specific user.

b) Patterns Associated with the Multimedia Database (IC Cards)

1) Populating the database

IC Card **IC Name**: Add User

Description: Adding a new user to the DataBase

Interaction Pattern:

☐ Quiet State ☐ By Myself no Interaction ☑ By Myself with Interaction ☐ By Others no Interaction ☐ By Others with Interaction ☐ Mixed

My Task: Add user's Name, SSN, Address, Phone# as a row to the User table

Time Critical Condition: None

Name of Other IC: User

Message to Other IC: Tell me your Name, SSN, Address, and Phone#

Other IC's Task: None

IC Card **IC Name**: Add Gesture

Description: Adding a new gesture to the DataBase

Interaction Pattern:

☐ Quiet State ☐ By Myself no Interaction ☑ By Myself with Interaction ☐ By Others no Interaction ☐ By Others with Interaction ☐ Mixed

My Task: Add gesture's BodyPart, MotionType, Direction to the Gesture table

Time Critical Condition: None

Name of Other IC: Gesture recorder

Message to Other IC: Tell me new gesture's BodyPart, MotionType, and Direction

Other IC's Task: None

IC Card **IC Name**: Add Document

Description: Adding a new document to the DataBase

Interaction Pattern:

☐ Quiet State ☐ By Myself no Interaction ☑ By Myself with Interaction ☐ By Others no Interaction ☐ By Others with Interaction ☐ Mixed

My Task: Add document's DocType, DocSize, Permissions, Modified to the Document table

Time Critical Condition: None

Name of Other IC: File System

Message to Other IC: Tell me new document's DocType, DocSize, Permissions, and Modified

Other IC's Task: None

2) Associating tables

IC Card

IC Name: Associate User-Gesture-Document

Description: Adding a new User-Gesture-Document association to the DB

Interaction Pattern:

☐ Quiet State ☐ By Myself no Interaction ☑ By Myself with Interaction ☐ By Others no Interaction ☐ By Others with Interaction ☐ Mixed

My Task: Add UserID, GestureID, and DocumentID provided by the user to the Association table, and record the TimeAssociated in a newly created row

Time Critical Condition: None

Name of Other IC: User

Message to Other IC: Tell me your UserID and what gesture you would like to associate with what document (GestureID and DocumentID)

Other IC's Task: None

3) Utilizing the associated tables

IC Card

IC Name: Find a document associated with a specific gesture of a specific user

Description: Display a document to a user associated to a specific gesture

Interaction Pattern:

☐ Quiet State ☐ By Myself no Interaction ☑ By Myself with Interaction ☐ By Others no Interaction ☐ By Others with Interaction ☐ Mixed

My Task: Search for a document in Association table with UserID and GestureID provided by a user, and display it for user if found.

Time Critical Condition: None

Name of Other IC: User

Message to Other IC: Tell me your UserID and show the gesture associated to the file that you would like to be displayed (GestureID and DocumentID)

Other IC's Task: None