CS 2310 - Exercise 4
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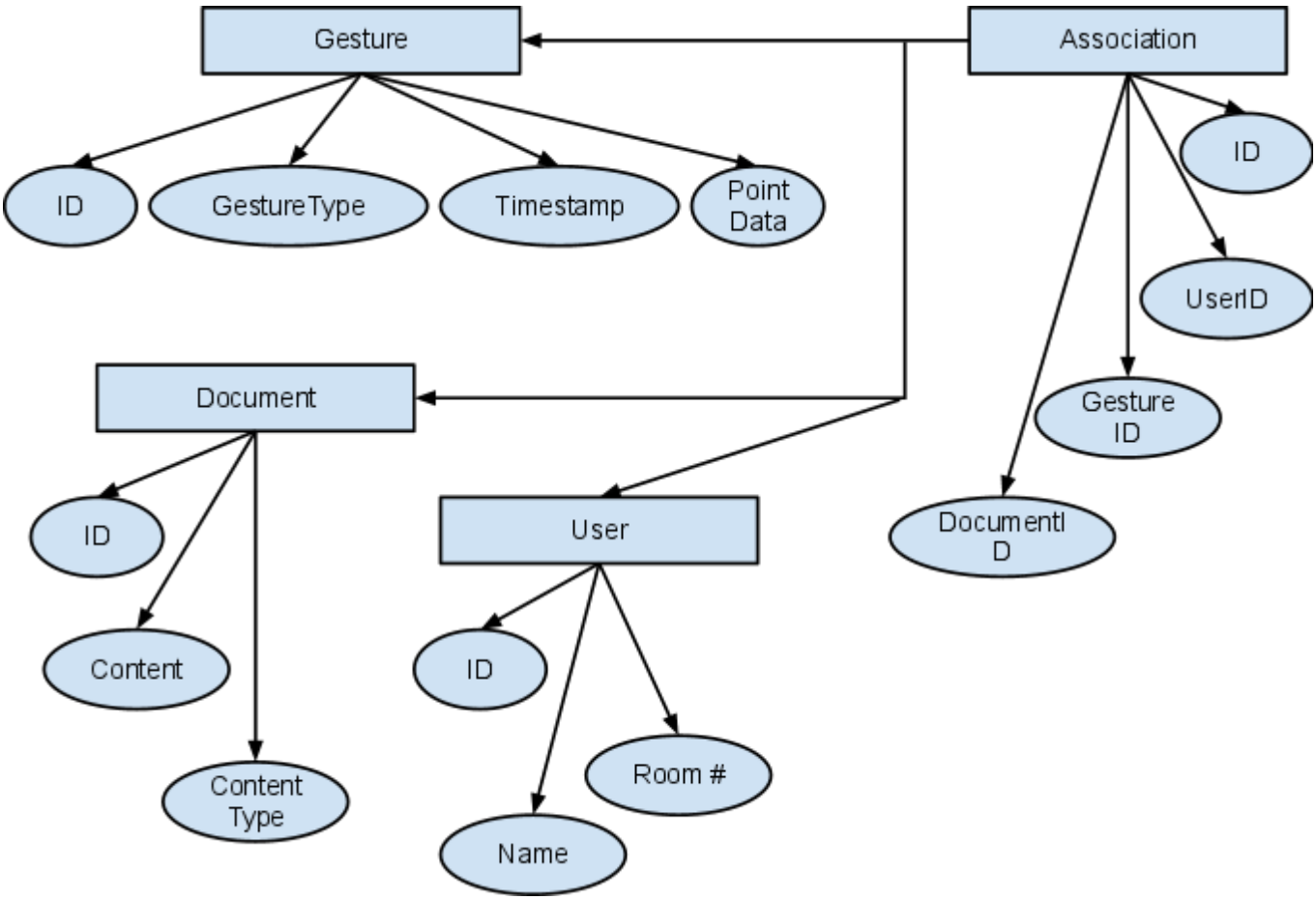
Exercise Description:

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 titles 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)

Multimedia Database - Multimedia Functional Dependency



As you can see through this simple diagram, the relationships are fairly simple. Users have many Documents through Associations, and Users provide many Gestures through Associations. The Association describes a mapping between a Gesture and a Document, and such associations can be different from one individual and the next.

IC Cards

IC Card IC Name: Document Retriever

Description: Retrieves a document
Interaction Pattern:

By Myself no Interacton

My Task: Get a document that matches the document ID
Time Critical Condition: None
Name of Other IC: None
Message to Other IC: None
Other IC's Task: None
Card 1of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: Add User

Description: Adds a user to the database
Interaction Pattern:

By Myself no Interacton

My Task: Create and fill out a new User table with trained gestures
Time Critical Condition: None
Name of Other IC: None
Message to Other IC: None
Other IC's Task: None
Card 1of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: Gesture Updater

Description: Updates or removes a gesture
Interaction Pattern:

By Myself no Interacton

My Task: Create a new gesture, update a gesture, or remove a gesture from the DB
Time Critical Condition: None
Name of Other IC: None
Message to Other IC: None
Other IC's Task: None
Card 1of 1 (If necessary please use several IC cards to describe an IC)

IC Card IC Name: Gesture Recognizer

Description: Gets the association for a particular user and gesture
Interaction Pattern:

By Myself with Interaction

My Task: Gets a document given user ID and gesture ID
Time Critical Condition: None
Name of Other IC: Document Retriever
Message to Other IC: Get Document for this Document ID
Other IC's Task: Retrieve Document
Card 1of 1 (If necessary please use several IC cards to describe an IC)

Description: These IC cards are concerned with manipulating the entries of the DB. The dependencies are really only from respect of the Association table, therefore, most of the IC cards have no external interactions. Just the main IC task that retrieves a document via a gesture must interact with other IC tasks through foreign key relations in the DB.

Interestingly, and *fortunately*, the IC task relationship matches the DB relationship. With particular IC tasks depending on tasks the same way the associated tables depend on each other. Therefore, these IC tasks along with the functional dependency diagram should be sufficient for an easy guide toward an IC index and implementation.