CS 2310 Exercise 4

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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.

Gesture Database Ges Ges Type Multimedia Database User Database Photo Database info Photo Photo Type Multimedia Documents Audio Database Audio ID Type Doc Doc Content

Figure 1.1 Design of Multimedia Database:

Description of the multimedia database:

In this Database, which is a multimedia database, contains three special databases, which store different information, one is Gesture database, which stores the Gesture type and what this kind of information represented by this type of gesture. And now, based on the new classification scheme, audio (Voice) or other way can be searched as a key in the database. And use those keys, the database can find an ID, which can be used as key to search information in the multimedia documents.

There are three databases which stores gesture, audio, and photo respectively. When the gesture sensor gets a signal from the senior citizen, the sensor will distinguished which type of this signal, and search this signal from the database, find which kind of information should be sent to multimedia Documents, and the multimedia document content will decide what should do, such as send message to doctor.

Multimedia Functional Dependencies:

MFD1: {Gesture ID, Gesture Type} g1(t1) -> {Doc ID, Doc Content} g2(t2)

MFD2: {Gesture ID, Gesture Type} g1(t1) -> {User ID, User name, User Info} g3(t3)

MFD3: {Photo ID, Photo Type} g4(t4) -> {Doc ID, Doc Content} g2(t2)

MFD4: {Photo ID, Photo Type} g4(t4) -> {User ID, User name, User Info} g3(t3)

MFD5: {Audio ID, Audio Type} g5(t5) -> {Doc ID, Doc Content} g2(t2)

MFD6: {Audio ID, Audio Type} g6(t6) -> {User ID, User name, User Info} g3(t3)

IC cards for the multimedia database system:

IC Card		IC Name: Multimedia Database			
Description	: Connect each o	databases with pr	oper protocol ar	ıd updatel	
Interaction	Pattern:				
		·••	0	•	•
O Quiet State	O By Myself no Interaction	O By Myself with Interaction	O By Others no Interaction	100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Mixed
My Task: C	connect each data	abase with each	other		
Time Critica	al Condition: Non	ie		 	
Name of Ot	ther IC: User Dat	abase, Multimedi	a Database, etc		
Message to	Other IC: mess	age from where t	o where	300	
Other IC's 7	Task: send mess	ge to Multimedial	Database		
Card 1	of 1 (If	necessary pleas	e use several IC	cards to describe	an IC)

IC Card		IC Name: Gesture Database			
Description	: search gesture	id and find corre	sponding Docum	nents	
Interaction	Pattern:				
		·••	0		•
O Quiet State	O By Myself no Interaction	10	O By Others no Interaction	O By Others with Interaction	O Mixed
My Task: R	lead gesture type	e and search for II	D and send mes	sage	
Time Critica	al Condition: non	е		102 03E 460	
Name of Of	ther IC: Multimed	lia database			
Message to	Other IC: Here	is the gesture ID		- 100	
Other IC's	Fask: transfer it t	o find correspond	ing documents	83	
Card 1	of 1 (If	necessary pleas	e use several IC	cards to describe	e an IC)

IC Card			IC Name: Photo	Database	29
Description	: search photo a	nd send message			
Interaction	Pattern:				
0		·••	0		•
O Quiet State	O By Myself no Interaction	By Myself with Interaction	O By Others no Interaction	O By Others with Interaction	O Mixed
My Task: S	earch the photo	type and send ID	for getting docu	ment	
Time Critica	al Condition: non	е			
Name of Ot	her IC: Multimed	ia			
Message to	Other IC: Here	s the photo ID			
Other IC's 7	Fask: transfer it to	get document			
Card 1	of 1 (If	necessary pleas	e use several IC	cards to describe	an IC)

IC Card		IC Name: Audio Database			
Description Interaction	: Search Audio II Pattern:	and send the m	nessage	<u>a</u> 8	
\odot°		•••		•	•
O Quiet State	O By Myself no Interaction	By Myself with Interaction	O By Others no Interaction	O By Others with Interaction	O Mixed
My Task: S	earch audio type	and send the co	rresponding id		
Time Critica	al Condition: non	е			
Name of Ot	ther IC: Multimed	ia database		191	
Message to	Other IC: here i	s the audio ID			
Other IC's	Fask: transfer it to	get the corresp	onding documer	it	
Card 1	of 1 (If	necessary pleas	e use several IC	cards to describe	an IC)

ic card					
Description	return user info	and update user	profile		
Interaction I	Pattern:			3	
		∵ ©	0	•	•
O Quiet State	O By Myself no Interaction	By Myself with Interaction	O By Others no Interaction	O By Others with Interaction	O Mixed
My Task: up	date the databa	se when there is	a new user or us	er leaves	
Time Critica	al Condition: non	е			
Name of Ot	her IC: multimed	ia database			
	Other IC: none				
Other IC's 7	Task: none				
Card 1	of 1 (If	necessary please	O use several IC	cardo to deceribe	an IC)
IC Card	(necessary pieas		media Document	unio
IC Card Description Interaction	: Based on the I	D and return the	IC Name: Multi	media Document	unio
Description	: Based on the I		IC Name: Multi	media Document	
Description	Based on the I	D and return the By Myself	IC Name: Multing documents of the corresponding documents of t	media Document	O Mixed
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