

### Unit 7 Home Work

1. Create the relevant database relations by decomposing the following entity into its constituent tables by applying the database normalization techniques.

Gallery Customer History Form			
<b>Customer Name</b>			
Jackson, Elizabeth		Phone (206) 284-6783	
123 - 4 <sup>th</sup> Avenue			
Fonthill, ON			
L3J 4S4			
<b>Purchases Made</b>			
Artist	Title	Purchase Date	Sales Price
03 - Carol Channing	Laugh with Teeth	09/17/2000	7000.00
15 - Dennis Frings	South toward Emerald Sea	05/11/2000	1800.00
03 - Carol Channing	At the Movies	02/14/2002	5550.00
15 - Dennis Frings	South toward Emerald Sea	07/15/2003	2200.00

The Gill Art Gallery wishes to maintain data on their customers, artists and paintings. They may have several paintings by each artist in the gallery at one time. Paintings may be bought and sold several times. In other words, the gallery may sell a painting, then buy it back at a later date and sell it to another customer.

**UNF:** customer [ custno, cust\_name, cust\_addr, cust\_phone, (artist\_id, artist\_name, art\_title, pur\_date, price) ]

#### Un-Normalized Form (UNF):

Get all the attributes, put them into a list, identify the primary key with underline, and indent the repeating groups.

customer [custno, cust\_name, cust\_addr, cust\_phone,  
(artist\_id, artist\_name, art\_title, pur\_date, price)]

#### First Normal Form (1NF):

Remove the repeating groups to a new entity cust\_art, assign a code to each piece of art (art\_code) as the new primary key, and keep custno and pur\_date since one piece of art may be bought more than one time.

customer [ custno, cust\_name, cust\_addr, cust\_phone]  
cust\_art [art\_code, artist\_id, artist\_name, art\_title, price, custno\*, pur\_date\*]

## Second Normal Form (2NF):

Look at tables with a composite key, review each non-key attribute to identify if the attribute is dependent on part of the key or all the key, and remove any partial key and dependents to a new table. Here, the art\_title is dependent only on artist\_name. There exists partial dependency. Remove that to get the following 2NF.

customer [ custno, cust\_name, cust\_addr, cust\_phone]

cust\_art [ custno, art\_code, pur\_date, price]

art [ art\_code, art\_title, artist\_id, artist\_name]

## Third Normal Form (3NF):

The transitive dependency of artist\_name on art\_title from art relation is removed.

customer [ custno, cust\_name, cust\_street, cust\_city, cust\_state, cust\_postcode, cust\_phone]

cust\_art [ custno, art\_code, pur\_date, price]

art [ art\_code, art\_title, artist\_id (FK)]

artist [ artist\_id, artist\_fname, artist\_lname]

2. Turn in the completed Inclass Exercise #2 from Unit 7 as well as a part of your homework.

### HEALTH HISTORY REPORT

<u>PET ID</u>	<u>PET NAME</u>	<u>PET TYPE</u>	<u>PET AGE</u>	<u>OWNER</u>	<u>VISIT DATE</u>	<u>PROCEDURE</u>
246	ROVER	DOG	12	SAM COOK	JAN 13/2002 MAR 27/2002 APR 02/2002	01 - RABIES VACCINATION 10 - EXAMINE and TREAT WOUND 05 - HEART WORM TEST
298	SPOT	DOG	2	TERRY KIM	JAN 21/2002 MAR 10/2002	08 - TETANUS VACCINATION 05 - HEART WORM TEST
341	MORRIS	CAT	4	SAM COOK	JAN 23/2001 JAN 13/2002	01 - RABIES VACCINATION 01 - RABIES VACCINATION
519	TWEEDY	BIRD	2	TERRY KIM	APR 30/2002 APR 30/2002	20 - ANNUAL CHECK UP 12 - EYE WASH

## Un-Normalized Form (UNF):

Get all the attributes, put them into a list, identify the primary key with underline, and indent the repeating groups.

Pet [ pet\_id, pet\_name, pet\_type, pet\_age, owner, (visitdate, procedure\_no, procedure\_name)]

### **First Normal Form (1NF):**

Remove the repeating groups to a new entity Pet\_visit, include visitdate, procedure\_no as part of the key since a procedure may occur on multiple dates.

Pet [pet\_id, pet\_name, pet\_type, pet\_age, owner]

Pet\_visit [pet\_id, visitdate, procedure\_no, procedure\_name]

### **Second Normal Form (2NF):**

The procedure\_no is dependent only on procedure\_name. There exists partial dependency. Remove that to get the following 2NF.

Pet [pet\_id, pet\_name, pet\_type, pet\_age, owner]

Pet\_visit [pet\_id, visitdate, procedure\_no]

Procedure [procedure\_no, procedure\_name]

### **Third Normal Form (3NF):**

Remove owner to make Owner entity with creating foreign key (owner\_id) to remove the transitive dependency from the relation pet.

Pet [pet\_id, pet\_name, pet\_type, pet\_age, owner\_id (FK)]

Pet\_visit [pet\_id (FK), visitdate, procedure\_no (FK)]

Procedure [procedure\_no, procedure\_name]

Owner [owner\_id, owner]