Exercise 1

HEALTH HISTORY REPORT						

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

UNF:

Pet [pet_id, pet_name, pet_type, pet_age, owner, (visitdate, procedure_no,
procedure_name)]

1NF:

Pet [pet_id, pet_name, pet_type, pet_age, owner]
Pet_Visit [pet_id, visitdate, procedure_no,   procedure_name]

note: a procedure may occur on multiple dates, therefore visitdate is included as part of the key

2NF:

Pet [pet_id, pet_name, pet_type, pet_age, owner]
Pet_Visit [pet_id, visitdate, procedure_no]
Procedure [procedure_no,   procedure_name]

3NF:

same as 2NF

Exercise 2

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│ INVOICE                                                                       │
│                                                                               │
│                                                                               │
│ HILLTOP ANIMAL HOSPITAL              DATE: JAN 13/2002                         │
│ INVOICE # 987                                                                 │
│                                                                               │
│ MR. RICHARD COOK                                                              │
│ 123 THIS STREET                                                               │
│ MY CITY, ONTARIO                                                              │
│ Z5Z 6G6                                                                       │
│                                                                               │
│ PET              PROCEDURE                  AMOUNT                             │
│                                                                               │
│ ROVER            RABIES VACCINATION         30.00                             │
│ MORRIS           RABIES VACCINATION         24.00                             │
│                                                                               │
│                                                                               │
│                  TOTAL                      54.00                             │
│                  TAX (8%)                    4.32                             │
│                                                                               │
│                  AMOUNT OWING               58.32                             │
│                                                                               │
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UNF:

invoice [invoice_no, invoice_date, cust_name, cust_addr, (pet_name,
procedure, amount)]

1NF:

invoice [invoice_no, invoice_date, cust_name, cust_addr]
invoice_pet [invoice_no, pet_id, pet_name, procedure, amount]

note: pet_id was chose as a key because pet_name is a character string and not a good key candidate.

2NF:

invoice [invoice_no, invoice_date, cust_name, cust_addr]
invoice_pet [invoice_no, pet_id, procedure, amount]
pet [pet_id, pet_name]

3NF:

invoice [invoice_no, invoice_date, cust_no (FK)]
invoice_pet [invoice_no (FK), pet_id (FK), procedure, amount]
pet [pet_id, pet_name]
customer [cust_no, cust_name, cust_street, cust_city, cust_pstlcd]

note: cust_no was chose as a key because cust_name is a character string and not a good key candidate. The customer address was broken apart in 3NF. All foreign keys are identified.

Exercise 3

Gallery Customer History Form

Customer Name

Jackson, Elizabeth   Phone (206) 284-6783
123 – 4th Avenue
Fonthill, ON
L3J 4S4

Purchases Made

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)]

1NF:
>   customer [custno, cust_name, cust_addr, cust_phone]
>   cust_art [custno, art_code, pur_date, artist_id, artist_name, art_title, price]

>   **note:** the key chosen for the repeating group is the piece of art itself (a code was assigned), however because a piece of art may be bought by a customer more than once, the purchase date was added as part of the key to make the rows unique.

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]

3NF:
>   customer [custno, cust_name, cust_street, cust_city, cust_prov, cust_pstlcd, 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]