

# INFS 614 – Database Management

## Fall 2013

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### Homework 3 – Due 10/22/13

Consider the following schema for a member-only supermarket inventory and check-out system. Note this is a modified version from the one given in HW1.

Product(UPC, brand, product\_name, product\_description, category, marked\_price, quantity)

Sale(sale\_ID, sale\_start\_date, sale\_end\_date)

Sale\_Product(sale\_ID, UPC, sale\_price)

Foreign Key (sale\_ID) references Sale

Foreign Key (UPC) references Product

Customer(customer\_ID, first\_name, last\_name, age, gender, zip\_code)

Transaction(transaction\_ID, customer\_ID, transaction\_date, payment\_method, total)

Foreign Key (customer\_ID) references Customer

Transaction\_Contains(transaction\_ID, UPC, quantity)

Foreign Key (transaction\_ID) references Transaction

Foreign Key (UPC) references Product

For each relation, the attribute(s) of the primary key is(are) underlined. The foreign key constraints are also specified. Some of the attributes may be irrelevant. For example, some fruits may not have a brand. In such cases, the values of these attributes should be Null. Assume the current sale period is 02/13/13 – 02/19/13 (i.e. these are the sale start/end dates, respectively).

You may consult this website for more information about *Date* data type:

<http://infolab.stanford.edu/~ullman/fcdb/oracle/or-time.html>

Write the following queries in SQL.

1. Find all “Beverages” on sale during this sale period. Print the product UPC, brands, names, marked prices and sale prices.
2. Find the most expensive transaction made in February, 2013.

3. Check to see if there is anyone under 21 who purchased Alcohol. If so, print the transaction ID and the customer information (customer\_ID and name).
4. Find customers (customer\_ID) who did not make any purchase in February, 2013 (It's time for the store to send them some incentives).
5. Find the names of customers who purchased both Pepsi and Coke products in the past. Use intersection for this query.
6. Find the names of customers who purchased both Pepsi and Coke products in the same transaction.
7. Find customers who purchased all products (regardless of quantity) that are more than 50% off during this sale period.
8. Find customers (customer\_ID) who made more than one purchase on 02/15/13.
9. For each large transaction (e.g. transactions containing more than 10 unique products), list the number of unique products (regardless of quantities) in the transaction.
10. For each transaction containing at least 5 unique products, list the number of alcoholic beverages purchased (category = 'Alcohol'; consider the total quantity).

**Database:** A testbed will be provided for you. You may use this testbed to **test** your queries.