Lab 2-2

Connection values:

Server Type = Database Engine
Server Name = is-swang01.ischool.uw.edu
Authentication = SQL Server Authentication
Login = INFO6210
Password = NEUHusky!

Note:
Two ways to specify comments in SQL commands:
Use -- for a line of comments
or use /* */ for a block of comments.

```sql
-- Set the database context
USE AdventureWorks2008R2;

-- SQL JOINs are used to retrieve data from multiple tables.
-- INNER is the default when JOIN is the only keyword used.
-- INNER JOIN returns only matching rows from left and right tables.
-- c is the alias for the Sales.Customer table in the example.
-- oh is the alias for the Sales.SalesOrderHeader table.
-- ON lists the matching columns to JOIN on.

/*
   If two tables have the same column name in a query, we must
   designate where the column is from by using the format
   TableName.ColumnName.
   If a column name is unique between the JOINed tables,
   The TableName.ColumnName format is not required.
*/

SELECT c.CustomerID, c.AccountNumber, SalesOrderID, OrderDate
FROM Sales.Customer c
INNER JOIN Sales.SalesOrderHeader oh
ON c.CustomerID = oh.CustomerID;

/*
   LEFT OUTER JOIN returns all rows from the left table,
   but only the matching rows from the right table.
*/

SELECT c.CustomerID, c.AccountNumber, SalesOrderID, OrderDate
FROM Sales.Customer c
LEFT OUTER JOIN Sales.SalesOrderHeader oh
ON c.CustomerID = oh.CustomerID;

/*
   RIGHT OUTER JOIN returns all rows from the right table,
   but only the matching rows from the left table.
*/

SELECT c.CustomerID, c.AccountNumber, SalesOrderID, OrderDate
FROM Sales.Customer c
RIGHT OUTER JOIN Sales.SalesOrderHeader oh
ON c.CustomerID = oh.CustomerID;
```

```sql
-- Set the database context
USE AdventureWorks2008R2;

-- COUNT, GROUP BY, ORDER
-- GROUP BY aggregates on the column(s) we specify
-- ORDER BY does sorting


SELECT c.CustomerID,
       PersonID,
       COUNT(SalesOrderID) AS "Total Order"
FROM Sales.Customer c
INNER JOIN Sales.SalesOrderHeader oh
ON c.CustomerID = oh.CustomerID
GROUP BY c.CustomerID, PersonID
ORDER BY "Total Order" DESC;
```

```sql
--JOIN, COUNT, GROUP BY, HAVING, ORDER

--SELECT the order count for each customer
--WHERE the count > 20
--ORDER the counts in the descending order

/*
For regular filtering in a query, we use WHERE.
If we use GROUP BY in a query, then we use HAVING to do
the filtering for groups.
*/

SELECT c.CustomerID,
       PersonID,
       COUNT(SalesOrderID) AS "Total Order"
FROM Sales.Customer c INNER JOIN Sales.SalesOrderHeader oh
ON c.CustomerID = oh.CustomerID
GROUP BY c.CustomerID, PersonID
HAVING COUNT(SalesOrderID) > 20
ORDER BY "Total Order" DESC;
```

	CustomerID	PersonID	Total Order
1	11091	4515	28
2	11176	15994	28
3	11185	12569	27
4	11200	5409	27
5	11223	3197	27
6	11262	20532	27
7	11276	15449	27
8	11277	4855	27
9	11287	15978	27
10	11300	13098	27

```sql
-- Set the database context
USE AdventureWorks2008R2;

-- IN OPERATOR

-- Can be used with any data type

SELECT ProductID, Name, Color, ListPrice, SellStartDate
FROM Production.Product
WHERE Color IN ('Red', 'Blue', 'White') -- character comparison
ORDER BY Color, Name;

SELECT ProductID, Name, Color, ListPrice, SellStartDate
FROM Production.Product
WHERE ListPrice IN (337.22, 594.83, 63.50, 8.99) -- numeric comparison
ORDER BY ListPrice;


-- LIKE operator
-- Select any person whose last name begins with a
-- % is the wildcard symbol representing 0 to many characters
-- - is the wildcard symbol representing exactly one character

SELECT FirstName, MiddleName, LastName
FROM Person.Person
WHERE LastName LIKE 'a%'
ORDER BY LastName;

-- Select any person whose last name begins with a or c or e

SELECT FirstName, MiddleName, LastName
FROM Person.Person
WHERE LastName LIKE '[ace]%'
ORDER BY LastName;
```

```sql
-- Set the database context
USE AdventureWorks2008R2;


--Subqueries are queries that are embedded in another query.

SELECT Name [Product],
   ListPrice,
   (SELECT MAX(ListPrice) FROM Production.Product)
           AS [Max Price],
   (ListPrice / (SELECT MAX(ListPrice) FROM Production.Product)) * 100
           AS [Percent of MAX]
FROM Production.Product
WHERE ListPrice > 0
ORDER BY ListPrice DESC;
```

```
-- Lab 2 Questions


Note: 1 point for each question

/* Use the content of the AdventureWorks sample database for each of
   the following questions. Submit the SQL queries to Blackboard in
   a single .sql file. */


2-1
/* Select product id, name and selling start date for all products
   that started selling after 02/01/2006 and had a yellow color.
   Use the CAST function to display the date only. Sort the returned
   data by the selling start date.

   Hint: a: You need to work with the Production.Product table.
         b: The syntax for CAST is CAST(expression AS data_type),
            where expression is the column name we want to format and
            we can use DATE as data_type for this question to display
            just the date. */


2-2
/* List the latest order date and total number of orders for each
   customer. Include only the customer ID, account number, latest
   order date and the total number of orders in the report.
   Use column aliases to make the report more presentable.
   Sort the returned data by the customer id.

   Hint: You need to work with the Sales.SalesOrderHeader table. */


2-3
/* Write a query to select the product id, name, and list price
   for the products that have a list price greater than the average
   list price. Sort the returned data by the product id.

   Hint: You'll need to use a simple subquery to get the average
         list price and use it in a WHERE clause. */
```

2-4

```
/* Write a query to retrieve the number of times that a product has
   been sold for each product. Include only the products that have
   been sold more than 5 times. Use a column alias to make the report
   more presentable. Sort the returned data by the number of times a
   product has been sold in the descending order. Include the product
   ID, product name and number of times a product has been sold
   columns in the report.

   Hint: Use the Sales.SalesOrderDetail and Production.Product tables.
*/
```

2-5

```
/* Write a SQL query to generate a list of customer ID's and
   account numbers that have never placed an order before.
   Sort the list by CustomerID in the ascending order. */
```

2-6

```
/* Provide a unique list of product ids and product names that
   were not ordered during 2007 and sort the list by product id. */
```

Useful Links

USE SQL Server Management Studio

http://msdn.microsoft.com/en-us/library/ms174173.aspx

Writing SQL Queries

http://technet.microsoft.com/en-us/library/bb264565(v=sql.90).aspx

SQL Aggregate Functions

http://msdn.microsoft.com/en-us/library/ms173454.aspx

Types of JOIN in SQL Server

http://www.codeproject.com/Tips/712941/Types-of-Join-in-SQL-Server

GROUP BY and HAVING
http://technet.microsoft.com/en-us/library/ms180199.aspx

Subquery Fundamentals

http://technet.microsoft.com/en-us/library/ms189575(v=sql.105).aspx

CAST and CONVERT

https://msdn.microsoft.com/en-us/library/ms187928.aspx