Review Answers

1. List the five basic search conditions to restrict retrieved rows with the WHERE clause, and explain how they are used.

   The five basic search conditions and how they are used are:

   1. Comparison – compares the values of one expression to the value of another expression
   2. Range – tests whether the value of an expression falls within a specified range of values
   3. Set membership – tests whether the value of an expression equals one of a set of values
   4. Pattern match – tests whether a string matches a specified pattern
   5. Null – test whether a column has a NULL value

2. Explain the DATEADD and DATEDIFF commands.

   The DATEADD command returns a new datetime value based on adding an interval to the specified date. The result is a datetime value equal to the date plus the number of date parts. The DATEDIFF command returns the number of date and time boundaries crossed between two specified dates.

3. Explain the aggregate operators COUNT, SUM, and AVG.

   The aggregate operator COUNT returns the number of rows which contain non-null values, SUM returns the sum of the values in a specified column, and AVG returns the average of the values in a specified column.

   EMP_1 Table

EMP_NUM	EMP_LNAME	EMP_FNAME	EMP_INITIAL	EMP_HIREDATE	JOB_CODE
101	News	John	G	08-Nov-00	502
102	Senior	David	H	12-Jul-89	501
103	Arbough	June	E	01-Dec-96	500
104	Ramoras	Anne	K	15-Nov-87	501
105	Johnson	Alice	K	01-Feb-93	502
106	Smithfield	William		22-Jun-04	500
107	Alonzo	Maria	D	10-Oct-93	500
108	Washington	Ralph	B	22-Aug-91	501
109	Smith	Larry	W	18-Jul-97	501

   Use the EMP_1 table shown above, to answer questions 4 through 7.

4. Write the SQL code that will list all the attributes for a job code of 502.

```
SELECT    *
FROM      EMP_1
WHERE     JOB_CODE = '502'
```

5. Write the SQL code required to list all employees whose last names start with Smith.

```
SELECT *
FROM      EMP_1
WHERE     EMP_LNAME LIKE 'Smith%'
```

6. Write the SQL code that will produce a listing for the data in descending order by the last name.

```
SELECT      *
FROM        EMP_1
ORDER BY    EMP_LNAME DESC
```

7. Write the SQL code that will list only the different job codes found in the table.

```
SELECT    DISTINCT JOB_CODE
FROM      EMP_1
```

Table name: CUSTOMER

CUS_CODE	CUS_LNAME	CUS_FNAME	CUS_INITIAL	CUS_AREACODE	CUS_PHONE	CUS_BALANCE
10010	Ramas	Alfred	A	615	844-2573	0.00
10011	Dunne	Leona	K	713	894-1238	0.00
10012	Smith	Kathy	W	615	894-2285	896.54
10013	Olowski	Paul	F	615	894-2180	1285.19
10014	Orlando	Myron		615	222-1672	673.21
10015	O'Brian	Amy	B	713	442-3381	1014.56
10016	Brown	James	G	615	297-1228	0.00
10017	Williams	George		615	290-2556	0.00
10018	Farriss	Anne	G	713	382-7185	0.00
10019	Smith	Olette	K	615	297-3809	453.98

Use the CUSTOMER table shown above, to answer questions 8 through 10.

8. Create the SQL query that will produce a list of customers who have an unpaid balance, listing the balances in descending order by customer balances. The query should produce the result set listing below.

CUS_LNAME	CUS_FNAME	CUS_INITIAL	CUS_BALANCE
Olowski	Paul	F	1285.19
O'Brian	Amy	B	1014.56
Smith	Kathy	W	896.54
Orlando	Myron		673.21
Smith	Olette	K	453.98

```
SELECT      CUS_LNAME, CUS_FNAME, CUS_INITIAL, CUS_BALANCE
FROM        CUSTOMER
WHERE       CUS_BALANCE > 0
ORDER BY    CUS_BALANCE DESC
```

9. Create the SQL query that will find the average unpaid customer balance, the minimum balance, the maximum balance, and the total of the unpaid balances. The query should produce the result set listing below.

Average Balance	Minimum Balance	Maximum Balance	Total Unpaid Bills
432.35	0.00	1285.19	4323.48

```
SELECT      AVG( CUS_BALANCE ) AS AverageBalance,
            MIN( CUS_BALANCE ) AS MinimumBalance,
            MAX( CUS_BALANCE ) AS MaximumBalance,
            SUM( CUS_BALANCE ) AS TotalUnpaidBills
FROM        CUSTOMER
```

10. Write the query to count the number of customers with a customer balance over $500.

```
SELECT    COUNT(*)
FROM      CUSTOMER
WHERE     CUS_BALANCE > 500
```

Table name: CHARTER

CHAR_TRIP	CHAR_DATE	AC_NUMBER	CHAR_DESTINATION	CHAR_DISTANCE	CHAR_HOURS_FLOWN	CHAR_HOURS_WAIT	CHAR_FUEL_GALLONS
10001	05-Feb-06	2289L	ATL	936.0	5.1	2.2	354.1
10002	05-Feb-06	2778V	BNA	320.0	1.6	0	72.6
10003	05-Feb-06	4278Y	GNV	1,574.0	7.8	0	339.8
10004	06-Feb-06	1484P	STL	472.0	2.9	4.9	97.2
10005	06-Feb-06	2289L	ATL	1,023.0	5.7	3.5	397.7
10006	06-Feb-06	4278Y	STL	472.0	2.6	5.2	117.1
10007	06-Feb-06	2778V	GNV	1,574.0	7.9	0	348.4
10008	07-Feb-06	1484P	TYS	644.0	4.1	0	140.6
10009	07-Feb-06	2289L	GNV	1,574.0	6.6	23.4	459.9
10010	07-Feb-06	4278Y	ATL	998.0	6.2	3.2	279.7
10011	07-Feb-06	1484P	BNA	352.0	1.9	5.3	66.4
10012	08-Feb-06	2778V	MOB	884.0	4.8	4.2	215.1
10013	08-Feb-06	4278Y	TYS	644.0	3.9	4.5	174.3
10014	09-Feb-06	4278Y	ATL	936.0	6.1	2.1	302.6
10015	09-Feb-06	2289L	GNV	1,645.0	6.7	0	459.5
10016	09-Feb-06	2778V	MQY	312.0	1.5	0	67.2
10017	10-Feb-06	1484P	STL	508.0	3.1	0	105.5
10018	10-Feb-06	4278Y	TYS	644.0	3.8	4.5	167.4

11. Using the CHARTER table shown above, write the SQL query that will list the date, aircraft number, destination, distance, and hours flown for aircraft number 2778V. The query should produce the result set listing below.

CHAR_DATE	AC_NUMBER	CHAR_DESTINATION	CHAR_DISTANCE	CHAR_HOURS_FLOWN
05-Feb-06	2778V	BNA	320	1.6
06-Feb-06	2778V	GNV	1574	7.9
08-Feb-06	2778V	MOB	884	4.8
09-Feb-06	2778V	MQY	312	1.5

```
SELECT    DISTINCT  CHAR_DATE,
                    AC_NUMBER,
                    CHAR_DESTINATION,
                    CHAR_DISTANCE,
                    CHAR_HOURS_FLOWN
FROM      CHARTER
WHERE  AC_NUMBER = '2778V'
```

12. List the two mandatory clauses in a SELECT command.

```
SELECT and FROM
```

13. Explain the logical operator AND, OR, and NOT.

The logical operator AND combines two search conditions that must both be true, OR combines two search conditions when one or the other must be true, and NOT selects rows where a search condition is false.

14. List the four data manipulation commands, and explain their purpose.

    The four data manipulation commands and their purpose are as follows:

    1. SELECT command is used to retrieve and display data from one or more database tables.
    2. INSERT command is used to add new rows of data in a table.
    3. UPDATE command is used to modify existing data in a table.
    4. DELETE command is used to remove rows of data from a table.

15. In SQL Server, what are literals?

    Literal are constants used in SQL statements. Non-numeric data vales are enclosed in single quotes, and numeric values are not enclosed in single quotes.