

Database Processing, 13e (Kroenke/Auer)

Chapter 2: Introduction to Structured Query Language (SQL)

1) SQL stands for *Standard Query Language*.

Answer: FALSE

Diff: 1 Page Ref: 34

2) SQL includes a data definition language, a data manipulation language, and SQL/Persistent stored modules.

Answer: TRUE

Diff: 2 Page Ref: 39

3) SQL is only a data manipulation language (DML).

Answer: FALSE

Diff: 3 Page Ref: 39-40

4) The American National Standards Institute (ANSI) maintains the standards for SQL.

Answer: TRUE

Diff: 3 Page Ref: 39

5) SQL was developed by IBM in the late 1970s.

Answer: TRUE

Diff: 1 Page Ref: 39

6) SQL is not a complete programming language. Rather it is a data sublanguage.

Answer: TRUE

Diff: 2 Page Ref: 39

7) In addition to being a data sublanguage, SQL is also a programming language, like Java or C#.

Answer: FALSE

Diff: 2 Page Ref: 39

8) SQL commands can be embedded in application programs.

Answer: TRUE

Diff: 3 Page Ref: 39

9) SQL, although very popular, has never become a national standard.

Answer: FALSE

Diff: 2 Page Ref: 39

10) The SQL keyword SELECT is used to specify the columns to be listed in the query results.

Answer: TRUE

Diff: 2 Page Ref: 40

11) The SQL keyword WHERE is used to specify the table(s) that contain(s) the data to be retrieved.

Answer: FALSE

Diff: 1 Page Ref: 40

12) The SQL keyword FROM is used to specify the table to be used.

Answer: TRUE

Diff: 1 Page Ref: 40

13) SQL can only query a single table.

Answer: FALSE

Diff: 2 Page Ref: 77

14) SQL statements end with a colon.

Answer: FALSE

Diff: 1 Page Ref: 41

15) The columns to be obtained by an SQL command are listed after the FROM keyword.

Answer: FALSE

Diff: 2 Page Ref: 39

16) To remove duplicate rows from the result of a query, specify the SQL DISTINCT keyword.

Answer: TRUE

Diff: 3 Page Ref: 42

17) To obtain all columns, use an asterisk (*) wildcard character instead of listing all the column names.

Answer: TRUE

Diff: 1 Page Ref: 40

18) The SQL WHERE clause contains the condition that specifies which rows are to be selected.

Answer: TRUE

Diff: 1 Page Ref: 39, 43

19) The result of an SQL SELECT operation can contain duplicate rows.

Answer: TRUE

Diff: 2 Page Ref: 42

20) To have SQL automatically eliminate duplicate rows from a result, use the keyword DISTINCT with the FROM keyword.

Answer: FALSE

Diff: 3 Page Ref: 42

21) An asterisk (*) following the SELECT verb means that all columns are to be displayed.

Answer: TRUE

Diff: 2 Page Ref: 42

22) The WHERE clause contains the condition that specifies which columns are to be selected.

Answer: FALSE

Diff: 2 Page Ref: 39, 43

23) The rows of the result table can be sorted by the values in one or more columns.

Answer: TRUE

Diff: 1 Page Ref: 58

24) Sorting is specified by the use of the SORT BY phrase.

Answer: FALSE

Diff: 2 Page Ref: 58

25) To sort the rows of the result table, the ORDER BY clause is specified.

Answer: FALSE

Diff: 2 Page Ref: 58

26) Columns can be sorted in descending sequence by using the SQL DESC keyword.

Answer: TRUE

Diff: 2 Page Ref: 59-60

27) A WHERE clause can contain only one condition.

Answer: FALSE

Diff: 1 Page Ref: 60-62

28) When two conditions must both be true for the rows to be selected, the conditions are separated by the SQL AND keyword.

Answer: TRUE

Diff: 1 Page Ref: 60

29) To refer to a set of values needed for a condition, use the SQL IN operator.

Answer: TRUE

Diff: 3 Page Ref: 61-62

30) To exclude one or more values using a condition, the SQL OUT keyword must be used.

Answer: FALSE

Diff: 3 Page Ref: 61-62

31) To refer to a set of values in a condition, the values are placed inside parentheses () and separated by commas.

Answer: TRUE

Diff: 3 Page Ref: 61-62

32) The condition in WHERE clauses can refer to a set of values by using the IN operator.

Answer: TRUE

Diff: 2 Page Ref: 61

- 33) The SQL keyword LIKE is used in SQL expressions to select on partial values.
Answer: TRUE
Diff: 2 Page Ref: 62
- 34) The SQL wildcard character "%" represents a series of one or more unspecified characters.
Answer: TRUE
Diff: 3 Page Ref: 62
- 35) The SQL wildcard character "#" indicates a single, unspecified character in a specific location in an SQL query.
Answer: FALSE
Diff: 3 Page Ref: 62-64
- 36) The Microsoft Access wildcard character "*" (asterisk) indicates a sequence of one or more unspecified characters in a Microsoft Access SQL query.
Answer: TRUE
Diff: 3 Page Ref: 62-64
- 37) The Microsoft Access wildcard character "_" (underscore) indicates a single, unspecified character in a specific location in a Microsoft Access SQL query.
Answer: FALSE
Diff: 3 Page Ref: 62-64
- 38) The SQL built-in function ADDUP totals values in numeric columns.
Answer: FALSE
Diff: 1 Page Ref: 65-68
- 39) The SQL built-in function AVG computes the average of values in numeric columns.
Answer: TRUE
Diff: 1 Page Ref: 65-68
- 40) The SQL built-in function MOST obtains the largest value in a numeric column.
Answer: TRUE
Diff: 1 Page Ref: 65-68
- 41) The SQL built-in function MIN obtains the smallest value in a numeric column.
Answer: TRUE
Diff: 1 Page Ref: 65-68
- 42) The SQL built-in function COUNT computes the number of rows in a query.
Answer: TRUE
Diff: 1 Page Ref: 65-68
- 43) The built-in function SUM can be used with any column.
Answer: FALSE
Diff: 3 Page Ref: 65-68

44) The clause `SELECT COUNT (*)` results in a table with a single row and a single column.

Answer: TRUE

Diff: 2 Page Ref: 65-68

45) Arithmetic in SQL statements is limited to the operations provided by the built-in functions.

Answer: FALSE

Diff: 1 Page Ref: 65-66

46) The SQL keyword *GROUP BY* instructs the DBMS to group together those rows that have the same value in a column.

Answer: TRUE

Diff: 1 Page Ref: 70

47) A `WHERE` clause can contain another `SELECT` statement enclosed in parentheses.

Answer: TRUE

Diff: 1 Page Ref: 77-80

48) A `SELECT` statement used in a `WHERE` clause is called a subquery.

Answer: TRUE

Diff: 1 Page Ref: 77-80

49) A nested `SELECT` statement (one that appears within the `WHERE` clause of another SQL statement) is called a subquery and must be enclosed in parentheses.

Answer: TRUE

Diff: 2 Page Ref: 77-80

50) Only two tables can be queried by using a subquery.

Answer: FALSE

Diff: 2 Page Ref: 77-80

51) An alternative to combining tables by a subquery is to use a join.

Answer: TRUE

Diff: 1 Page Ref: 80

52) When people use the term "join" they normally mean an "equijoin."

Answer: TRUE

Diff: 2 Page Ref: 83

53) Two or more tables are joined by giving the table names in the `WHERE` clause and specifying the equality of the respective column names as a condition in the `GROUP BY` clause.

Answer: FALSE

Diff: 3 Page Ref: 81

54) The names of tables to be joined in an SQL query are listed in the `FROM` clause.

Answer: TRUE

Diff: 1 Page Ref: 81-85

55) In an SQL query, a join operation is achieved by specifying the equality of the respective column names as a condition in the WHERE clause.

Answer: TRUE

Diff: 2 Page Ref: 81-85

56) Every subquery can be alternatively expressed by a join.

Answer: FALSE

Diff: 2 Page Ref: 85

57) While many subqueries can be alternatively written as joins, correlated subqueries do work that cannot be duplicated as a join.

Answer: TRUE

Diff: 3 Page Ref: 85

58) The SQL syntax JOIN . . . ON can be used as alternate way of writing an SQL join statement.

Answer: TRUE

Diff: 1 Page Ref: 85-90

59) Joins that show only matching rows from the joined tables in their results are called inner joins.

Answer: TRUE

Diff: 3 Page Ref: 85-90

60) Joins that show the matching rows from the joined tables plus unmatched rows from one other table in their results are called outer joins.

Answer: TRUE

Diff: 2 Page Ref: 85-90

61) Outer joins can be either up joins or down joins.

Answer: FALSE

Diff: 2 Page Ref: 85-90

62) SQL is a _____.

A) data sublanguage

B) product of IBM research

C) national standard

D) combination that includes a data definition language and a data manipulation language

E) All of the above

Answer: E

Diff: 2 Page Ref: 39-40

63) When making an SQL query, we are using SQL as a(n) _____.

- A) DDL
- B) DML
- C) embedded language
- D) SET
- E) WHERE

Answer: B

Diff: 2 Page Ref: 38

64) In an SQL query, which SQL keyword actually creates the query?

- A) EXISTS
- B) FROM
- C) SELECT
- D) SET
- E) WHERE

Answer: C

Diff: 1 Page Ref: 40-41

65) In an SQL query, which SQL keyword is used to specify the table(s) to be used?

- A) EXISTS
- B) FROM
- C) SELECT
- D) SET
- E) WHERE

Answer: B

Diff: 1 Page Ref: 40-41

66) In an SQL query, which SQL keyword must be used to remove duplicate rows from the result table?

- A) DELETE
- B) DISTINCT
- C) NOT EXISTS
- D) UNIQUE
- E) KEY

Answer: B

Diff: 3 Page Ref: 42

67) In an SQL query, which of the following symbols is used by ANSI SQL to represent all the columns in a single table?

- A) _ (underscore)
- B) ? (question mark)
- C) * (asterisk)
- D) % (percent)
- E) # (pound)

Answer: C

Diff: 2 Page Ref: 42

68) In an SQL query, which SQL keyword is used to state the condition that specifies which rows are to be selected?

- A) EXISTS
- B) FROM
- C) SELECT
- D) SET
- E) WHERE

Answer: E

Diff: 1 Page Ref: 40, 43

69) In an SQL query, which SQL keyword is used to join two conditions that both must be true for the rows to be selected?

- A) AND
- B) EXISTS
- C) HAVING
- D) IN
- E) OR

Answer: A

Diff: 1 Page Ref: 60-61

70) In an SQL query, which SQL keyword is used to determine if a column value is equal to any one of a set of values?

- A) AND
- B) EXISTS
- C) HAVING
- D) IN
- E) OR

Answer: D

Diff: 1 Page Ref: 60-61

71) In an SQL query, which of the following symbols is used by ANSI SQL to represent a single unspecified character?

- A) _ (underscore)
- B) ? (question mark)
- C) * (asterisk)
- D) % (percent)
- E) # (pound)

Answer: A

Diff: 3 Page Ref: 62-65

72) In an SQL query, which of the following symbols is used by Microsoft Access to represent a single unspecified character?

- A) _ (underscore)
- B) ? (question mark)
- C) * (asterisk)
- D) % (percent)
- E) # (pound)

Answer: B

Diff: 3 Page Ref: 62-65

73) In an SQL query, which SQL keyword is used to sort the result table by the values in one or more columns?

- A) GROUP BY
- B) ORDER BY
- C) SELECT
- D) SORT BY
- E) WHERE

Answer: B

Diff: 2 Page Ref: 58-60

74) Given a table with the structure: EMPLOYEE (EmpNo, Name, Salary, HireDate), which of the following would find all employees whose name begins with the letter "S" using standard SQL?

- A) SELECT *
FROM EMPLOYEE
WHERE Name IN ['S'];
- B) SELECT EmpNo
FROM EMPLOYEE
WHERE Name LIKE 'S';
- C) SELECT *
FROM Name
WHERE EMPLOYEE LIKE 'S*';
- D) SELECT *
FROM EMPLOYEE
WHERE Name LIKE 'S%';
- E) None of the above.

Answer: D

Diff: 3 Page Ref: 60-65

75) Given a table with the structure: EMPLOYEE (EmpNo, Name, Salary, HireDate), which of the following would find all employees whose name begins with the letter "S" using Microsoft Access?

- A) SELECT *
FROM EMPLOYEE
WHERE Name IN ['S'];
- B) SELECT EmpNo
FROM EMPLOYEE
WHERE Name LIKE 'S';
- C) SELECT *
FROM Name
WHERE EMPLOYEE LIKE 'S*';
- D) SELECT *
FROM EMPLOYEE
WHERE Name LIKE 'S%';
- E) None of the above.

Answer: C

Diff: 3 Page Ref: 60-65

76) In an SQL query, which built-in function is used to total numeric columns?

- A) AVG
- B) COUNT
- C) MAX
- D) MEAN
- E) SUM

Answer: E

Diff: 1 Page Ref: 65-68

77) In an SQL query, which built-in function is used to compute the average value of numeric columns?

- A) AVG
- B) MEAN
- C) MAX
- D) MIN
- E) SUM

Answer: A

Diff: 2 Page Ref: 65-68

78) In an SQL query, which built-in function is used to obtain the largest value of numeric columns?

- A) AVG
- B) COUNT
- C) MAX
- D) MIN
- E) SUM

Answer: C

Diff: 2 Page Ref: 65-68

79) In an SQL query, which built-in function is used to obtain the smallest value of numeric columns?

- A) AVG
- B) COUNT
- C) MAX
- D) MIN
- E) SUM

Answer: D

Diff: 2 Page Ref: 65-68

80) In an SQL query, the built-in functions SUM and AVG work with columns containing data of which of the following data types?

- A) Integer
- B) Numeric
- C) Char
- D) A and B
- E) A, B, and C

Answer: D

Diff: 3 Page Ref: 65-68

81) In an SQL query, which built-in function is used to compute the number of rows in a table?

- A) AVG
- B) COUNT
- C) MAX
- D) MIN
- E) MEAN

Answer: B

Diff: 1 Page Ref: 65-68

82) In an SQL query, the built-in function COUNT works with columns containing data of which of the following data types?

- A) Integer
- B) Numeric
- C) Char
- D) A and B
- E) A, B, and C

Answer: E

Diff: 3 Page Ref: 65-68

83) In an SQL query, which SQL keyword is used with built-in functions to group together rows that have the same value in a specified column?

- A) GROUP BY
- B) ORDER BY
- C) SELECT
- D) SORT BY
- E) DISTINCT SET

Answer: A

Diff: 1 Page Ref: 70

84) In an SQL query, which SQL keyword is used with GROUP BY to select groups meeting specified criteria?

- A) AND
- B) EXISTS
- C) HAVING
- D) IN
- E) WHERE

Answer: C

Diff: 2 Page Ref: 70-74

85) Given a table with the structure: EMPLOYEE (EmpNo, Name, Salary, HireDate), which of the following is not a valid ANSI SQL command?

- A) SELECT *
FROM EMPLOYEE
WHERE Name LIKE 'Ja%';
- B) SELECT COUNT(*)
FROM EMPLOYEE
WHERE Salary < 30000;
- C) SELECT COUNT(EmpNo)
FROM EMPLOYEE;
- D) SELECT HireDate, COUNT(*)
FROM EMPLOYEE
WHERE Salary < 30000;
- E) SELECT HireDate, COUNT(*)
FROM EMPLOYEE
GROUP BY HireDate;

Answer: D

Diff: 3 Page Ref: 62-74

86) Based on the tables below, which of the following ANSI SQL commands would return the average customer balance grouped by SalesRepNo?

GENERAL SALES DATABASE:

SALESREP

SalesRepNo	RepName	HireDate
654	Jones	01/02/2005
734	Smith	02/03/2007
345	Chen	01/25/2004
434	Johnson	11/23/2004

CUSTOMER

CustNo	CustName	Balance	SalesRepNo
9870	Winston	500	345
8590	Gonzales	350	434
7840	Harris	800	654
4870	Miles	100	345

- A) SELECT AVG (Balance)
FROM CUSTOMER
WHERE SalesRepNo;
- B) SELECT AVG (Balance)
FROM CUSTOMER
GROUP BY SalesRepNo;
- C) SELECT AVG (Balance)
FROM CUSTOMER, SALESREP
WHERE SALESREP.SalesRepNo = CUSTOMER.SalesRepNo;
- D) SELECT AVG (Balance)
FROM CUSTOMER
ORDER BY SalesRepNo;
- E) SELECT AVG (Balance)
FROM CUSTOMER, SALESREP
WHERE CUSTOMER.SalesRepNo = CUSTOMER.SalesRepNo
HAVING SalesRepNo;

Answer: B

Diff: 3 Page Ref: 62-74

87) Based on the tables below, which of the following commands in ANSI SQL would return only the name of the sales representative and the name of the customer for each customer that has a balance greater than 400?

GENERAL SALES DATABASE:

SALESREP

SalesRepNo	RepName	HireDate
654	Jones	01/02/2005
734	Smith	02/03/2007
345	Chen	01/25/2004
434	Johnson	11/23/2004

CUSTOMER

CustNo	CustName	Balance	SalesRepNo
9870	Winston	500	345
8590	Gonzales	350	434
7840	Harris	800	654
4870	Miles	100	345

- A) SELECT *
FROM SALESREP, CUSTOMER
WHERE Balance > 400;
- B) SELECT DISTINCT RepName, CustName
FROM SALESREP, CUSTOMER
WHERE Balance > 400;
- C) SELECT *
FROM SALESREP, CUSTOMER
WHERE SALESREP.SalesRepNo = CUSTOMER.SalesRepNo
AND Balance > 400;
- D) SELECT RepName, CustName
FROM SALESREP, CUSTOMER
WHERE SALESREP.SalesRepNo = CUSTOMER.SalesRepNo
AND Balance > 400;
- E) SELECT RepName, CustName
FROM SALESREP, CUSTOMER
WHERE Balance > 400
GROUP BY SalesRepNo;

Answer: D

Diff: 3 Page Ref: 62-74

88) In an SQL query, which SQL keyword is used to implement a subquery?

- A) GROUP BY
- B) HAVING
- C) ORDER BY
- D) SELECT
- E) SORT BY

Answer: D

Diff: 3 Page Ref: 77-80

89) When one SQL query is embedded in another SQL query, this is referred to as a _____.

- A) subset
- B) join
- C) WHERE Query
- D) subquery
- E) set query

Answer: D

Diff: 2 Page Ref: 77-80

90) When one SQL query is embedded in another SQL query, the second SQL query is embedded in the _____ of the first query.

- A) SELECT
- B) FROM
- C) WHERE
- D) GROUP BY
- E) HAVING

Answer: C

Diff: 2 Page Ref: 77-80

91) When one SQL query is embedded in another SQL query, the first SQL query can still contain an SQL _____ clause.

- A) FROM THE
- B) WHERE THE
- C) ORDER BY
- D) GROUP BY
- E) C and D

Answer: E

Diff: 2 Page Ref: 77-80

92) In an SQL query, which SQL keyword is used to specify the names of tables to be joined?

- A) FROM
- B) HAVING
- C) JOIN
- D) SELECT
- E) WHERE

Answer: A

Diff: 1 Page Ref: 77-80

93) In an SQL query, which SQL keyword is used to specify the column names to be used in a join?

- A) FROM
- B) HAVING
- C) JOIN
- D) SELECT
- E) WHERE

Answer: E

Diff: 1 Page Ref: 77-80

94) Regarding the interchangeability of subqueries and joins,

- A) a join can always be used as an alternative to a subquery, and a subquery can always be used as an alternative to a join.
- B) a join can sometimes be used as an alternative to a subquery, and a subquery can sometimes be used as an alternative to a join.
- C) a join can always be used as an alternative to a subquery, and a subquery can sometimes be used as an alternative to a join.
- D) a join can sometimes be used as an alternative to a subquery, and a subquery can always be used as an alternative to a join.
- E) a join can never be used as an alternative to a subquery, and a subquery can never be used as an alternative to a join.

Answer: B

Diff: 3 Page Ref: 80, 85

95) In an SQL query of two tables, which SQL keyword indicates that we want data from all the rows of one table to be included in the result, even if the row does not correspond to any data in the other table?

- A) LEFT JOIN
- B) RIGHT JOIN
- C) INCLUDE
- D) A and B
- E) A, B, and C

Answer: D

Diff: 2 Page Ref: 85-90

96) What is SQL?

Answer: Structured Query Language (SQL) is used to create and use databases, tables and relationships. SQL is divided into two categories: SQL statements for database definition and SQL statements for database processing (querying and updating). The database definition commands are referred to as a data definition language (DDL), and the database query and update commands are referred to as a data manipulation language (DML). SQL was developed by IBM, and is endorsed as a national standard by the American National Standards Institute (ANSI). Although a newer standard, SQL3, exists, the most widely implemented version of SQL is the ANSI SQL-92 standard. SQL is not a full-featured programming language, but rather it is considered to be a data sublanguage.

Diff: 1 Page Ref: 34, 39-41

97) Explain why it is important to learn SQL.

Answer: Most modern DBMS products support SQL as a standardized data language. These products usually provide graphical tools to perform the tasks associated with SQL, but there are some tasks that cannot be performed using these graphical tools. SQL is text-oriented, and SQL code must be written in order to embed SQL commands within program applications.

Diff: 1 Page Ref: 34, 39-41

98) Briefly describe subqueries and joins. Explain when each is not an acceptable alternative for the other.

Answer: Subqueries and joins are both methods for retrieving data from multiple tables. Subqueries involve nesting one SELECT statement within another. The nested SELECT is used as part of a condition in the WHERE clause of the first SELECT statement. The nested SELECT statement can return a set of records from one table, which are then used in a logical operator within the parent SELECT query. A join combines records from each table into concatenated records containing the fields of both tables. The records are concatenated based on matching values in similar columns in the two tables. Subqueries cannot be used in situations where the results to be displayed include attributes from more than one table. Joins cannot be used as an alternative to a correlated subquery.

Diff: 3 Page Ref: 77-86

99) The following database will be used in this question:

GENERAL SALES DATABASE:

SALESREP

SalesRepNo	RepName	HireDate
654	Jones	01/02/2005
734	Smith	02/03/2007
345	Chen	01/25/2004
434	Johnson	11/23/2004

CUSTOMER

CustNo	CustName	Balance	SalesRepNo
9870	Winston	500	345
8590	Gonzales	350	434
7840	Harris	800	654
4870	Miles	100	345

Explain the use of the of SQL keyword SELECT. Include an example based on the CUSTOMER table in the General Sales database.

Answer: The SQL keyword SELECT forms the basis for all SQL querying. Although SELECT technically specifies columns to be used in a query, it is always the first SQL keyword or command in an SQL phrase that includes at least the SQL keyword FROM and often the SQL keyword WHERE. The SQL keyword WHERE is used to specify which tables are used in the query, while the SQL keyword WHERE is used to specify conditions or constraints imposed on the query. For example,

```
SELECT *  
FROM CUSTOMER  
WHERE CustNo = 34567;
```

is a query that returns all information in the table CUSTOMER about the customer whose customer number is 34567.

Diff: 1 Page Ref: 40-45

100) The following database will be used in this question:

GENERAL SALES DATABASE:

SALESREP

SalesRepNo	RepName	HireDate
654	Jones	01/02/2005
734	Smith	02/03/2007
345	Chen	01/25/2004
434	Johnson	11/23/2004

CUSTOMER

CustNo	CustName	Balance	SalesRepNo
9870	Winston	500	345
8590	Gonzales	350	434
7840	Harris	800	654
4870	Miles	100	345

Explain the use of the SQL keyword LIKE. Include an example based on the CUSTOMER table from the General Sales database.

Answer: The LIKE keyword is used in the WHERE clause of an SQL query to select rows based on partial values. Through the use of wildcard characters that can represent one or more unspecified characters, the LIKE operator can search for a given string of characters within a column value. The ANSI wildcard "%" represents one or more unspecified characters, and the wildcard "_" (underscore) represents any single unspecified character. For example,

```
SELECT *  
FROM CUSTOMER  
WHERE CustName LIKE 'H%';
```

is a query that returns all information in the table CUSTOMER about customers whose CustName starts with the letter H.

Diff: 2 Page Ref: 60-65

101) The following database will be used in this question:

GENERAL SALES DATABASE:

SALESREP

SalesRepNo	RepName	HireDate
654	Jones	01/02/2005
734	Smith	02/03/2007
345	Chen	01/25/2004
434	Johnson	11/23/2004

CUSTOMER

CustNo	CustName	Balance	SalesRepNo
9870	Winston	500	345
8590	Gonzales	350	434
7840	Harris	800	654
4870	Miles	100	345

Explain the use of the GROUP BY keyword. Include an example based on the CUSTOMER table from the General Sales database.

Answer: The GROUP BY keyword is used in conjunction with the built-in functions of SQL. The GROUP BY keyword is given a column that records are to be grouped on. Records in the result table are then collected into groups based on the value of the grouping column. The built-in function is then performed on the records of each group separately. For example,

```
SELECT AVE(Balance)
FROM CUSTOMER
GROUP BY SalesRepNo;
```

is a query that returns the average balance of all customers associated with a specific sales representative.

Diff: 2 Page Ref: 70-74

102) Given the table **CUSTOMER(CustID, Name, PhoneNumber, AccountBalance)**, write the standard SQL query to retrieve the Name and PhoneNumber of customers with a balance greater than 50.

```
Answer: SELECT Name, PhoneNumber
FROM CUSTOMER
WHERE AccountBalance > 50;
```

Diff: 2 Page Ref: 40-45

103) Given the table **CUSTOMER(CustID, Name, PhoneNumber, AccountBalance)**, write the standard SQL query to retrieve the Name and PhoneNumber of customers whose name begins with 'S'.

Answer: `SELECT Name, PhoneNumber
FROM CUSTOMER
WHERE Name LIKE 'S%';`

Diff: 2 Page Ref: 40-65

104) What are SQL Built-in Functions?

Answer: SQL Built-in Functions are functions that manipulate the results of an SQL SELECT statement. The built-in functions for standard SQL are COUNT, SUM, AVG, MAX, and MIN. The COUNT function counts the number of rows in the result. The SUM function totals the values in a number-oriented field. The AVG function calculates the mean of the values in a number-oriented field. The MAX function determines the highest value, and the MIN function determines the lowest value, in a number-oriented field.

Diff: 2 Page Ref: 65-68

105) Distinguish between the HAVING clause and the WHERE clause.

Answer: The HAVING clause and the WHERE clause differ in that the WHERE clause is used to identify rows that satisfy a stated condition. The HAVING clause is used to identify groups, which have been created by the GROUP BY clause, that satisfy a stated condition. In cases when the WHERE clause and the HAVING clause are both allowed to appear in the same SELECT statement, the WHERE clause is generally implemented to execute before the HAVING clause.

Diff: 3 Page Ref: 36-66