GAIN PRACTICE ON SQL USING THE TABLES AND QUESTIONS GIVEN BELOW.

Salespeople

SNUM	SNAME	CITY	COMM
1001	Peel	London	.12
1002	Serres	San Jose	.13
1004	Motika	London	.11
1007	Rifkin	Barcelona	.15
1003	AxelRod	New York	.10
1005	Fran	London	.26

Customers

CNUM	CNAME	CITY	RATING	SNUM
2001	Hoffman	London	100	1001
2002	Giovanni	Rome	200	1003
2003	Liu	San Jose	200	1002
2004	Grass	Berlin	300	1002
2006	Clemens	London	100	1001
2008	Cisneros	San Jose	300	1007
2007	Pereira	Rome	100	1004

Orders

ONUM	AMT	ODATE	CNUM	SNUM
3001	18.69	10/03/96	2008	1007
3003	767.19	10/03/96	2001	1001
3002	1900.10	10/03/96	2007	1004
3005	5160.45	10/03/96	2003	1002
3006	1098.16	10/03/96	2008	1007
3009	1713.23	10/04/96	2002	1003
3007	75.75	10/04/96	2002	1003
3008	4723 .00	10/05/96	2006	1001
3010	1309.95	10/06/96	2004	1002
3011	9891.88	10/06/96	2006	1001

Queries

1. List all the columns of the Salespeople table.
2. List all customers with a rating of 100.
3. Find all records in the Customer table with NULL values in the city column.
4. Find the largest order taken by each salesperson on each date.
5. Arrange the Orders table by descending customer number.
6. Find which salespeople currently have orders in the Orders table.
7. List names of all customers matched with the salespeople serving them.
8. Find the names and numbers of all salespeople who had more than one customer.
9. Count the orders of each of the salespeople and output the results in descending order.
10. List the Customer table if and only if one or more of the customers in the Customer table are located in San Jose.
11. Match salespeople to customers according to what city they lived in.
12. Find the largest order taken by each salesperson.
13. Find customers in San Jose who have a rating above 200.
14. List the names and commissions of all salespeople in London.
15. List all the orders of salesperson Motika from the Orders table.
16. Find all customers with orders on October 3.
17. Give the sums of the amounts from the Orders table, grouped by date, eliminating all those dates where the SUM was not at least 2000.00 above the MAX amount.
18. Select all orders that had amounts that were greater than at least one of the orders from October 6.
19. Write a query that uses the EXISTS operator to extract all salespeople who have customers with a rating of 300.
20. Find all pairs of customers having the same rating.
21. Find all customers whose CNUM is 1000 above the SNUM of Serres.
22. Give the salespeople's commissions as percentages instead of decimal numbers.
23. Find the largest order taken by each salesperson on each date, eliminating those MAX orders which are less than $3000.00 in value.
24. List the largest orders for October 3, for each salesperson.
25. Find all customers located in cities where Serres (SNUM 1002) has customers.
26. Select all customers with a rating above 200.00.
27. Count the number of salespeople currently listing orders in the Orders table.
28. Write a query that produces all customers serviced by salespeople with a commission above 12%. Output the customer's name and the salesperson's rate of commission.
29. Find salespeople who have multiple customers.
30. Find salespeople with customers located in their city.
31. Find all salespeople whose name starts with 'P' and the fourth character is 'l'.

32. Write a query that uses a subquery to obtain all orders for the customer named Cisneros. Assume you do not know his customer number.
33. Find the largest orders for Serres and Rifkin.
34. Extract the Salespeople table in the following order : SNUM, SNAME, COMMISSION, CITY.
35. Select all customers whose names fall in between 'A' and 'G' alphabetical range.
36. Select all the possible combinations of customers that you can assign.
37. Select all orders that are greater than the average for October 4.
38. Write a select command using a corelated subquery that selects the names and numbers of all customers with ratings equal to the maximum for their city.
39. Write a query that totals the orders for each day and places the results in descending order.
40. Write a select command that produces the rating followed by the name of each customer in San Jose.
41. Find all orders with amounts smaller than any amount for a customer in San Jose.
42. Find all orders with above average amounts for their customers.
43. Write a query that selects the highest rating in each city.
44. Write a query that calculates the amount of the salesperson's commission on each order by a customer with a rating above 100.00.
45. Count the customers with ratings above San Jose's average.
46. Write a query that produces all pairs of salespeople with themselves as well as duplicate rows with the order reversed.
47. Find all salespeople that are located in either Barcelona or London.
48. Find all salespeople with only one customer.
49. Write a query that joins the Customer table to itself to find all pairs of customers served by a single salesperson.
50. Write a query that will give you all orders for more than $1000.00
51. Write a query that lists each order number followed by the name of the customer who made that order.
52. Write 2 queries that select all salespeople (by name and number) who have customers in their cities who they do not service, one using a join and one a corelated subquery. Which solution is more elegant?
53. Write a query that selects all customers whose ratings are equal to or greater than ANY (in the SQL sense) of Serres'?
54. Write 2 queries that will produce all orders taken on October 3 or October 4.
55. Write a query that produces all pairs of orders by a given customer. Name that customer and eliminate duplicates.
56. Find only those customers whose ratings are higher than every customer in Rome.
57. Write a query on the Customers table whose output will exclude all customers with a rating <= 100.00, unless they are located in Rome.
58. Find all rows from the Customers table for which the salesperson number is 1001.
59. Find the total amount in Orders for each salesperson for whom this total is greater than the amount of the largest order in the table.

60. Write a query that selects all orders save those with zeroes or NULLs in the amount field.
61. Produce all combinations of salespeople and customer names such that the former precedes the latter alphabetically, and the latter has a rating of less than 200.
62. List all Salespeople's names and the Commission they have earned.
63. Write a query that produces the names and cities of all customers with the same rating as Hoffman. Write the query using Hoffman's CNUM rather than his rating, so that it would still be usable if his rating changed.
64. Find all salespeople for whom there are customers that follow them in alphabetical order.
65. Write a query that produces the names and ratings of all customers of all who have above average orders.
66. Find the SUM of all purchases from the Orders table.
67. Write a SELECT command that produces the order number, amount and date for all rows in the order table.
68. Count the number of nonNULL rating fields in the Customers table (including repeats).
69. Write a query that gives the names of both the salesperson and the customer for each order after the order number.
70. List the commissions of all salespeople servicing customers in London.
71. Write a query using ANY or ALL that will find all salespeople who have no customers located in their city.
72. Write a query using the EXISTS operator that selects all salespeople with customers located in their cities who are not assigned to them.
73. Write a query that selects all customers serviced by Peel or Motika. (Hint : The SNUM field relates the two tables to one another.)
74. Count the number of salespeople registering orders for each day. (If a salesperson has more than one order on a given day, he or she should be counted only once.)
75. Find all orders attributed to salespeople in London.
76. Find all orders by customers not located in the same cities as their salespeople.
77. Find all salespeople who have customers with more than one current order.
78. Write a query that extracts from the Customers table every customer assigned to a salesperson who currently has at least one other customer (besides the customer being selected) with orders in the Orders table.
79. Write a query that selects all customers whose names begin with 'C'.
80. Write a query on the Customers table that will find the highest rating in each city. Put the output in this form : for the city (*city*) the highest rating is : (*rating*).
81. Write a query that will produce the SNUM values of all salespeople with orders currently in the Orders table (without any repeats).
82. Write a query that lists customers in descending order of rating. Output the rating field first, followed by the customer's names and numbers.
83. Find the average commission for salespeople in London.
84. Find all orders credited to the same salesperson who services Hoffman (CNUM 2001).
85. Find all salespeople whose commission is in between 0.10 and 0.12 (both inclusive).

86. Write a query that will give you the names and cities of all salespeople in London with a commission above 0.10.
87. What will be the output from the following query?

```
SELECT * FROM ORDERS
        where (amt < 1000 OR NOT (odate = 10/03/1996 AND cnum > 2003));
```

88. Write a query that selects each customer's smallest order.
89. Write a query that selects the first customer in alphabetical order whose name begins with G.
90. Write a query that counts the number of different nonNULL city values in the Customers table.
91. Find the average amount from the Orders table.
92. What would be the output from the following query?

```
SELECT * FROM ORDERS
        WHERE NOT (odate = 10/03/96 OR snum > 1006) AND amt >= 1500);
```

93. Find all customers who are not located in San Jose and whose rating is above 200.
94. Give a simpler way to write this query :

```
SELECT snum, sname city, comm FROM salespeople
    WHERE (comm > + 0.12 OR comm < 0.14);
```

95. Evaluate the following query :

```
SELECT * FROM orders

WHERE NOT ((odate = 10/03/96 AND snum > 1002) OR amt > 2000.00);
```

96. Which salespersons attend to customers not in the city they have been assigned to?
97. Which salespeople get commission greater than 0.11 are serving customers rated less than 250?
98. Which salespeople have been assigned to the same city but get different commission percentages?
99. Which salesperson has earned the most by way of commission?
100. Does the customer who has placed the maximum number of orders have the maximum rating?
101. Has the customer who has spent the largest amount of money been given the highest rating?
102. List all customers in descending order of customer rating.
103. On which days has Hoffman placed orders?
104. Do all salespeople have different commissions?
105. Which salespeople have no orders between 10/03/1996 and 10/05/1996?
106. How many salespersons have succeeded in getting orders?
107. How many customers have placed orders?
108. On which date has each salesperson booked an order of maximum value?
109. Who is the most successful salesperson?
110. Who is the worst customer with respect to the company?
111. Are all customers not having placed orders greater than 200 totally been serviced by salespersons Peel or Serres?
112. Which customers have the same rating?

113. Find all orders greater than the average for October 4th.

114. Which customers have above average orders?

115. List all customers with ratings above San Jose's average.

116. Select the total amount in orders for each salesperson for whom the total is greater than the amount of the largest order in the table.

117. Give names and numbers of all salespersons who have more than one customer.

118. Select all salespersons by name and number who have customers in their city whom they don't service.

119. Which customers' rating should be lowered?

120. Is there a case for assigning a salesperson to Berlin?

121. Is there any evidence linking the performance of a salesperson to the commission that he or she is being paid?

122. Does the total amount in orders by customer in Rome and London exceed the commission paid to salespersons in London and New York by more than 5 times?

123. Which is the date, order number, amt and city for each salesperson (by name) for the maximum order he has obtained?

124. Which salesperson(s) should be fired?

125. What is the total income for the company?

CASE STUDY I

M/s. ABC wants to computerise its accounts payable and receivables process, as its activities are growing quite rapidly. It has over 300 suppliers and 500 customer spread over the country. They want to store the following information :

Customer Information / Supplier Information
Customer Code / Supplier Code
Name, City, State
Contact Person
Phone, Fax
Credit days

Sales Invoices / Purchase Bills :
Invoice No. / Bill No. & Date
Customer / Supplier
Total Amount
Discount %
Excise & Sales Tax Amount
Gross amount
Part No. and Name
Quantity, Rate and Part Value

One Invoice or bill can have many parts on it. The discount are agreed upon with the supplier / customer. The excise is charged at 10% on (Total Amount - Discount). The Sales Tax is charged at 10% on (Total Amount - Discount + Excise).
Gross Amount = Total Amount - Discount + Excise + Sales Tax

The payments to supplier is made by cheques. One cheque can be drawn against many bills. The company accepts either cash or cheque against the sales invoice. The receipt can be against many be against many invoices. The payments / receipts can be partial in nature.

Payment to Supplier / Receipt from customers
Voucher No.
Data
Amount
Cheque No., Bank Name
Customer / Supplier
Bill Nos. / Invoice Nos. and Amount
bill Invoice Settled amount

The company prepares a ledger (Customer & Supplier) wherein the invoices / bills and receipts / payments are grouped as per the invoice / bill nos.

The Company wants to use this information for sales and purpose analysis, and also to monitor the cash flows.
Note : The above are the minimum requirements of the system, which must be fulfilled. Students may expand the scope of the system, if feasible.
Originality, added complexity of features, and aesthetic appeal will carry weightage.

CASE STUDY II

A large University with several affiliated colleges conducts examinations in a wide variety of subjects. Scheduling and conduct of examinations and declaration of results is a complex operation which takes a great deal of planning and a large infrastructure to execute. In order to help streamline the operation, the University wishes to implement a system which will assist it in the above mentioned activities. For this, the University wishes to maintain a database of all the students under it, including the following information :

- Exam seat no
- Candidate's Name
- Name of the College
- Name of the degree
- The subjects selected and the marks for each of them
- Data regarding exam fees etc.

There may be several subjects, each of which may have upto two sections. The University would like to store information about where each subject is available, how many students have opted for it and what their performance in each subject is.

There may be several Examination centres, and not all degrees or subjects may be examined at each centre. The University wishes to maintain a record of this information, including the following :

- Examination centre
- Subject
- Date of the exam
- Time of the exam
- No. of students appearing

Different departments of the University would require different reports. E.g. Academic departments would like to know the performance of students, administration would like to know the division of students across centres and subjects, finance department would like to know the income and expenditure for the exams etc.

Design a system which will meet all the above needs of the University administration. The system should be flexible and should provide for growth in the University activities.

Note : The above are the minimum requirements of the system, which must be fulfilled. Students may expand the scope of the system, if feasible.
Originality, added complexity of features, and aesthetic appeal will carry weightage.

CASE STUDY III

A very large industrial organization has several manufacturing activities. In order to streamline the procurement and supply of material for it's various products, it has decided to computerise the procurement, storage and supply of material.

The company requires about 200 raw material items and 75 finished parts. They want to maintain the following information about each of these :

- Part Category
- Part No
- Description
- Unit of measure
- Unit Rate
- Opening stock for the year
- Minimum stock etc
- Suppliers
- Order quantity

The raw material and the finished parts are procured from several vendors. The company wants to maintain information about each vendor, including :

- Vendor Code
- Vendor Name and Address
- Parts Supplied
- Rate for each part etc.
- Payment terms for various types of supply

One vendor may supply several items while one item may be supplied by several vendors. In order to avoid confusion about the supply, material supplied by vendors comes into the company on a challan. A GRR (Goods Received Report) is prepared for each challan. The GRR No. is generated automatically. The GRR should contain the following details :

- Challan Date
- Transporter's Name
- Compay Purchase Order reference
- Part No.
- Description
- Challan Qty. and
- Transporter's Name
- Remarks etc.

The company has five transporters, and records need to be maintained about supplies made by each.

After inspection of material, only those parts which pass the quality test are accepted by company and other parts are rejected. A record of these tests needs to be maintained.
For production, material is issued to production department on MIR(Material Issue Requisition) which should contain at least the following :

- MIR No
- Date
- Part No
- Qty Issued.

- To whom issued etc

The Management would like to derive several reports from this data which would help them to streamline the procurement and issue of material to enable optimal utilisation of space and financial resources. Different departments would require differnt types of reports, i.e. accounts would like to know the payments position re. suppliers, manufacturing would like to know the supply time for various parts to help them schedule their manufacturing etc., while stores would like to know the balance quantity of each item to allow planning of future procurement, the opening stock, closing stock and details of documents affecting the stock of given part, date of transaction, quantity etc., as well as ledgers for each item, supplier, transporter, user department etc.

Design a system which will enable the management to get all the information it requires. The system should be flexible and allow for change in items, vendors, transportes etc.

Note : The above are the minimum requirements of the system, which must be fulfilled. Students may expand the scope of the system, if feasible.
Originality, added complexity of features, and aesthetic appeal will carry weightage.

CASE STUDY IV

A major sports channel has bagged the rights to telecast a one-day tournament featuring several cricketing nations. In order to provide its viewers with timely and comprehensive statistical data about the teams, the organization wishes to computerise it's statistics system.

They wish to maintain the following information :

Personal Information about each player :
- Player Name
- Team Name
- Personal data such as height, weight and age
- Debut Date, location and against which team
- No of One Day matches played
- No of Test matches played
- Total runs, highest, average etc.

The company want separate batting and bowling analysis details :

Batting Analysis Details
- Player Name
- No of innings, not outs
- Total runs, highest score, average
- No of hundreds and fifties
- Highest against Team
- No. of catches taken
- No. of stampings etc.

Bowling Analysis details :
- Player Name
- Total deliveries, no. of wickets, runs conceded, average
- Average runs per over
- Five and more wickets in a inning
- Best figures etc.

Similar information regarding team statistics and records for each venue will also be maintained.

The organization wishes to generate several reports from the information it will gather and enter into the system. Summary Reports which include personal data of each player, batting and bowling statistics, performance records of teams against each other etc.

Design a system which will enable the organization to achieve all its objectives. The system should be flexible and allow for new players, teams and venues to be added to it.

Note : The above are the minimum requirements of the system, which must be fulfilled. Students may expand the scope of the system, if feasible.
Originality, added complexity of features, and aesthetic appeal will carry weightage.

CASE STUDY V

A very large software firm is having about 1000 employee of different departments. Employee are recruited under different groups such as Technical, Marketing, HR Personnel etc. The following information is to be maintained :

1. Employee Personal Information
   Name, City, Home Town,
   Fathers Name, Language Known,
   Date of Birth

2. Appointment Details
   Date Of Joining
   Joining Designation/Group
   Date of retirement

3. Post Details
   Designation
   Date of Sanction
   No. of Permanent/Temporary Post

4. Promotion Details
   Employee Name
   Old/New Designation
   Old/New Group
   Date Of Promotion

Required :
---
1. Proper date validations.
2. No. of employee in a particular designation should not exceed the sanctioned post.

Reports:
---
1. Employee Listing
2. No. of employee working is same post for last 2 years
3. Incumbancy Register
4. Post Details (No. of sanctioned/occupied/vaccant post)

Note:

The above are the minimum requirements of the system, which must be fulfilled. Students may expand the scope of the system, if feasible.
Originality, added complexity of features, and aesthetic appeal will carry weightage.

CASE STUDY VI

M/S Sterling Finance Company wants to computerize its employee payroll system. It has about 300 employees. They are broadly classified as Permanent & Temporary. Employee are farther grouped in two categories i.e. Technical & Non-Technical. The following information is to maintained :

1. Employee Information
   - Employee Code
   - Name, City, Home Town,
   - Date Of Joining
   - Joining Basic
   - Joining Designation
   - Joining Scale
2. Allowances
   - For an employee
   - For a month/year
   - Basic
   - DA/HRA/CCA
   - Arrears (if any)
3. Deductions
   - For an employee
   - For a month/year
   - Employee GPF
   - Professional Tax
4. Increment
   - For an employee
   - Date of increment
   - Number of increments
   - Old/New Basic

Rules:

1. Basic should always fall in a given scale.
2. Scale is lower and upper range of salary. Eg. 3000-150-4500 Where 150 is the increment
3. DA is maintained separately as percentage of basic.
4. HRA/CCA is dependent on Scale.
5. GPF is 12% of the Basic.
6. Professional Tax is dependent on Scale.

Reports :

1. Employee Listing
2. Monthly Pay Slips
3. Scale wise Abstract Report
4. Allowances Report
5. Deduction Report

Note:

The above are the minimum requirements of the system, which must be fulfilled. Students may expand the scope of the system, if feasible.
Originality, added complexity of features, and aesthetic appeal will carry weightage.

CASE STUDY VII

A Material Testing laboratory has the job of conducting various tests related to testing of materials like bricks, bitumen, sand, tiles, mortar, etc.

Once the material is received in the laboratory, the following are carried out :
1. Unique job number is allocated to the materials recd.
2. Details like date of receipt, received from (office name), letter number, reference letter date are entered.
3. Under this job number, the tests(like specific gravity, ductility, extraction, viscosity, soundness, etc) to be carried out on the material are entered
4. Receipt details(like job number, received from, receipt number, amount, paid by and mode of payment) for each job number.

Rules:
1. Make a master list of materials and tests to be carried out on them.....for instance :

Material	Tests	Rate (per test)
Brick	Crushing Strength	Rs. 245/-
	Efflorescence	Rs. 185/-
	Water Absorption	Rs. 300/-
Bitumen	Ductility	Rs. 140/-
	Extraction	Rs. 275/-
	Flash and fire point	Rs. 260/-
	Penetration	Rs. 255/-
	Viscosity	Rs. 245/-
Sand	Bulkage of sand	Rs. 125/-
	Fineness Modulus	Rs. 125/-
	Moisture Content	Rs. 200/-.
	Specific Gravity	Rs. 125/-

Validate for tests under the particular material during data entry.

2. Two similar tests of the same material cannot be added in one job.
3. "Received from" in the Receipt Entry should be same as that entered in the Control Register
4. At the Receipt Entry, if the mode of payment is "cheque", "receipt number" is not to be allocated for this entry.

Reports:
Retrieve details based on :
1. The Office Name
2. Job number
3. Receipt Number

Note :
The above are the minimum requirements of the system, which must be fulfilled. Students may expand the scope of the system, if feasible.
Originality, added complexity of features, and aesthetic appeal will carry weightage.