**PSG COLLEGE OF TECHNOLOGY-COIMBATORE**

**DEPARTMENT OF APPLIED MATHEMATICS AND COMPUTATIONAL SCIENCES**

**III Sem MSc Software Systems - 18XW38 - RDBMS LAB**

**Problem Sheet – VIII**

* Create a **purchase order system** using the following tables.



In this system, the customers place orders and each order contains one or more items. The data related to this application will be stored in the following tables.

|  |  |
| --- | --- |
| **Table** | **Meaning** |
| **Items** | Stores information about products that are offered by company |
| **Customers** | Contains information about customer who place orders |
| **orders** | Stores information about all orders placed by customers |
| **lineitems** | Contains information about items in each order |

**ITEMS table**

This table stores information about all the items that are offered by a company. The structure of the ITEMS table is as follows.

|  |  |  |
| --- | --- | --- |
| **Column** | **Datatype** | **Meaning** |
| Itemno | Number(5) | A unique number assigned to each item |
| ItemName | Varchar2(20) | Name of the item |
| Rate | Number(8,2) | Rate of the item |
| taxrate | Number(4,2) | Sales tax rate for this item |

**The following are the constraints related to ITEMS table:**

* ITEMNO is primary key
* RATE and TAXRATE must be >= 0
* Default value for TAXRATE is 0

**Insert the following data into the ITEMS table.**

insert into items values(1,'Samsung 14" monitor',7000,10.5);

insert into items values(2,'TVS Gold Keyboard',1000,10);

insert into items values(3,'Segate HDD 20GB',6500,12.5);

insert into items values(4,'PIII processor',8000,8);

insert into items values(5,'Logitech Mouse',500,5);

insert into items values(6,'Creative MMK',4500,11.5);

**CUSTOMERS Table**

This table contains information about customers who have placed one or more orders. The following is the structure of the CUSTOMERS table.

|  |  |  |
| --- | --- | --- |
| **Column** | **Datatype** | **Meaning** |
| Custno | Number(5) | A unique number assigned to each customer |
| CustName | Varchar2(20) | Complete name of the customer |
| Address1 | varchar2(50) | First line of address |
| Address2 | varchar2(50) | Second line of address |
| City | varchar2(30) | Name of the city where customer lives |
| state | varchar2(30) | Name of the state where customer lives |
| PinCode | varchar2(10) | Pin code of the city |
| Phone | varchar2(30) | One or more phone numbers separated using comma (,) |

**The following are the constraints related to CUSTOMERS table.**

* CUSTNO is primary key
* CUSTNAME is not null column

**Insert the following data into the CUSTOMERS table.**

insert into customers values(101,'Raul','12-22-29','Dwarakanagar',

'Vizag','AP','530016','453343,634333');

insert into customers values(102,'Denilson','43-22-22','CBM Compound',

'Vizag','AP','530012','744545');

insert into customers values(103,'Mendiator','45-45-52','Abid Nagar',

'Vizag','AP','530016','567434');

insert into customers values(104,'Figo','33-34-56','Muralinagar',

'Vizag','AP','530021','875655,876563,872222');

insert into customers values(105,'Zidane','23-22-56','LB Colony',

'Vizag','AP','530013','765533');

**ORDERS Table**

This table contains information about all orders placed by customers (one row for each order). The details of the items ordered in an order will be found in LINEITEMS table. The following is the structure of the ORDERS table.

|  |  |  |
| --- | --- | --- |
| **Column** | **Datatype** | **Meaning** |
| OrdNo | Number(5) | A unique number assigned to each order |
| OrdDate | Date | Date on which order is placed |
| ShipDate | Date | Date on which goods are to be shipped to customer |
| Address1 | varchar2(50) | First line of shipping address |
| Address2 | varchar2(50) | Second line of shipping address |
| City | varchar2(30) | City name in shipping address |
| state | varchar2(30) | State name in shipping address |
| PinCode | varchar2(10) | Pincode of the city in shipping address |
| Phone | varchar2(30) | One or more phone numbers separated using comma(,) of shipping place |

**The following are the constraints related to ORDERS table.**

* ORDNO is primary key.
* CUSTNO is foreign key referencing CUSTNO of CUSTOMERS table.
* SHIPDATE must be >= ORDDATE.

**Insert the following data into the ORDERS table.**

insert into orders values(1001,'15-May-2001','10-jun-2001',102,

'43-22-22','CBM Compound','Vizag','AP','530012','744545');

insert into orders values(1002,'15-May-2001','5-jun-2001',101,

'12-22-29','Dwarakanagar','Vizag','AP','530016','453343,634333');

insert into orders values(1003,'17-May-2001','7-jun-2001',101,

'12-22-29','Dwarakanagar','Vizag','AP','530016','453343,634333');

insert into orders values(1004,'18-May-2001','17-jun-2001',103,

'45-45-52','Abid Nagar', 'Vizag','AP','530016','567434');

insert into orders values(1005,'20-May-2001','3-jun-2001',104,

'33-34-56','Muralinagar','Vizag','AP','530021','875655,876563,872222');

insert into orders values(1006,'23-May-2001','11-jun-2001',104,

'54-22-12','MVP Colony','Vizag','AP','530024',null);

**LINEITEMS Table**

It contains details of items ordered in each order. For each item in each order this table contains one row. The following is the structure of the LINEITEMS table.

|  |  |  |
| --- | --- | --- |
| **Column** | **Datatype** | **Meaning** |
| OrdNo | Number(5) | Refers to the order number of the order |
| Itemno | Number(5) | Refers to the item number of the item |
| qty | number(3) | How many units of this item are required in this order |
| price | Number(8,2) | Selling price of the item for this order |
| DisRate | Number(4,2) | Discount Rate for this item in this order |

**The following are the constraints related to ORDERS table.**

* Primary key is ORDNO and ITEMNO.
* ORDNO is a foreign key referencing ORDNO of ORDERS table.
* ITEMNO is a foreign key referencing ITEMNO of ITEMS table.
* Default DISRATE is 0
* QTY must be >= 1
* DISRATE must be >= 0

**Insert the following data into the LINEITEMS table.**

insert into lineitems values(1001,2,3,1000,10.0);

insert into lineitems values(1001,1,3,7000,15.0);

insert into lineitems values(1001,4,2,8000,10.0);

insert into lineitems values(1001,6,1,4500,10.0);

insert into lineitems values(1002,6,4,4500,20.0);

insert into lineitems values(1002,4,2,8000,15.0);

insert into lineitems values(1002,5,2,600,10.0);

insert into lineitems values(1003,5,10,500,0.0);

insert into lineitems values(1003,6,2,4750,5.0);

insert into lineitems values(1004,1,1,7000,10.0);

insert into lineitems values(1004,3,2,6500,10.0);

insert into lineitems values(1004,4,1,8000,20.0);

insert into lineitems values(1005,6,1,4600,10.0);

insert into lineitems values(1005,2,2,900,10.0);

insert into lineitems values(1006,2,10,950,20.0);

insert into lineitems values(1006,4,5,7800,10.0);

insert into lineitems values(1006,3,5,6600,15.0);

* **Write SQL queries for the following requirements.**

1. Display the details of items where item name contains letter 'o' twice.
2. Display itemno, name, price and selling price (price+tax) round selling price to 100.
3. Display the details of items by padding itemname to 20 characters with '.' and in uppercase.
4. Display orderdate, approximate shipdate, which will be coming Monday after 7 days from orderdate.
5. Display all the orders that are placed in the current month.
6. Display the orders that were placed in the last week of previous month.
7. Display orderno, orderdate in dd-mm hh24: mi format, shipdate if not available take it as 15 days from the day of order.
8. Display the total number of orders.
9. Display orderno, number of items in an order and average rate of orders.
10. Display orderno for orders where at least one product is having rate more than 5000 and total number of units is more than 10.
11. Display the month name and the number of orders received in the month.
12. Display the custno who have placed more than 2 orders in the last 3 months.
13. Display custno, number of orders, and date of most recent order.
14. Display custno, date on which first order was placed and the gap between first order and last order in days.
15. Display orderno, max price in the order for the orders where the amount of items is more than 10000.
16. Display itemno, total number of units sold, maxprice and minprice.
17. Display custno, date, number of orders placed.
18. Display orderno, custname, orderdate, number of dates between shipdate and orderdate for orders that have been shipped.
19. Display orderno, orderdate, custno, and name for all the orders where the order contains order for itemno 5.
20. Display itemno, name, orderno, custname and amount.
21. Display the details of orders in which orderdate is as Monday and customer resides in ‘AP’.
22. Display the details of customers who placed any orders worth more than 30000.
23. Display the details of items for which there is an order in the current month.
24. Display the details of order in which we sold item 3 for max price.
25. Display the details of items for which there is an order in the last 7 days or total number of units ordered is more than 10.
26. Display all the lineitems in which the rate of the item is more than average rate of the items.
27. Display the details of customer who has placed max number of orders.
28. Display the details of orders in which at least one item is sold for higher rate than actual rate.
29. Display the details of customers who have not placed any order for the last 15 days.
30. Display the details of items for which there was no order in the previous month.
31. Display the orders where orddate is in the current month or after order 1004.
32. Display the details of items that are purchased by customer 102.
33. Change shipdate of order 1004 to the order date of most recent order.
34. Display the details of items where itemname contains letter ‘o’ or ‘m’.
35. Display the details of orders that were placed in the month of June 2000.
36. Display orderno, orderdate and approximate shipdate (15 days from orddate) for all orders that are not shipped.
37. Display itemno, orderno and total amount after rounding the value to 100’s for all the items where the quantity is more than 5 units or price is less than 5000.
38. Display itemno, itemname, price and tax for items that are taxable.
39. Display orderno, custmerno, orderdate,number of days between days orderdate and system date and date on which the amount should be collected, which is 5th of next month of the month in which items are delivered.
40. Display the details of orders that are placed in the last 20 days and delivered.
41. Change the rate of items in order 1003 so that 10% discount is given to all items.
42. Display the items where itemname contains more than 10 characters.
43. Display the items where itemname contains letter ‘o’ after 5th position.
44. Display the first name of the customer.
45. Display itemno, itemname in upper case for all items where the letter ‘m’ is existing in any case.
46. Display the orders that are placed in the current month.
47. Insert into a new order with the following: orderno-1010, customerno-105, orderdate-13-july-2001 at 4:45 pm,shipdate-null, shipaddress-null.
48. Display orderno, customerno,the number of days between shipdate and orderdate. If shipdate is-not available, take it as system date.
49. Display itemno, price, quantity, discount rate for items where the discount rate is non-zero. Discount-rate is calculated as 10% for item 1, 7% for item 6 and 8% for the remaining.
50. Display the total amount of orders received so far.
51. Display customerno, month-name, and number of orders of the current year.
52. Display the difference between highest price and lowest price at which the item was sold.
53. Display how many orders are still pending.
54. Display orderno, average of price by taking into orders that were placed in the last 15 days.
55. Display year, number of orders in which the difference between shipdate and orderdate is less than 10 days.
56. Display state, number of customers in the state where the customer name contains the word ‘nike’.
57. Display the customer who has placed more than 2 orders in a single month.
58. Display the highest number of orders placed by a single customer.
59. Display customerno, number of completed orders and number of incomplete orders.
60. Display orderno, itemno, itemname, price at which item is sold and current price of the item.
61. Display orderno, itemno, amount for items where the price of the item is more than the current price of the item.
62. Display itemno, itemname, orderno, and the difference between current price and selling price for the items where there is a difference between current price and selling price.
63. Display customerno, cutomer name, orderno, orderdate for orders where the shipaddress and customer address are same.
64. Display itemno, itemname, orderno, quantity required for all items (that are not even ordered for).
65. Display the number of orders placed by customers residing in vizag.
66. Display orderno, customer name, difference between system date and orderdate for orders that have not been shipped and older than 10 days.
67. Display the customer name and total amount of items purchased by customer.
68. Display the details of item that has highest price.
69. Display the details of customers who placed more than 5 orders.
70. Display the details of customers who have not placed any order.
71. Display the details of customers who have placed an order in the last 6 months.
72. Display the items for which we have sold more than 50 units by taking into orders where the price is more than 5000.
73. Display the details of orders that were placed by a customer with phone number starting with 541 or the orders in which we have more than 5 items.
74. Change the rate of itemno 1 in items table to the highest rate of lineitems table of that item.
75. Delete customers who have not placed any order.
76. Rename column rate in items to price.
77. Display the details of customers who have placed maximum number of orders.
78. Display the details of customers who haven’t placed any order in that current month.
79. Display the details of items for which there was no order in the current month but there was an order in the previous month.
80. Display the details of items that were purchased by customer who has placed more than 3 orders.
81. Display the orders in which the gap between shipdate and orderdate is more than the average gap for individual customers.
82. Display the details of items in which the current price is more than the maximum price at which it was sold.
83. Display the items that have top 3 highest prices.
84. Display the details of the item that has second lowest price.
85. Create a new table ‘comporders’ with ordno, customer-name, orderdate, shipdate, difference between shipdate and orderdate.

* **Write PL/SQL Procedures/functions and Triggers (if needed) for the following.**

1. Add a new item to the last order placed by customer 106 with the following details- itemno-3, quantity-2, price as the current rate of the item, and discount-8%.
2. Change rate of item 5 to either average rate of item 5 or current rate whichever is higher.
3. Insert a new row into lineitems with the following details. Orderno is the last order placed by customerno 102, itemno is the item of p3 processor, rate is lowest rate of that item, quantity is 2, and discount is 10% if item’s current rate is more than the least rate otherwise no discount.
4. Display the highest of the missing ordernos.
5. Display the customer names of the customers who have placed more than 3 orders where the total amount of the order is more than 10,000.
6. Change the rate of each item as follows: (1) Increase the rate by 10% if the item was sold in more than 5 items. (2) Increase the rate by 2% if average price is greater than current price, otherwise decrease the price by 3%.
7. Create a new table called custsum and store the following data into the table - customerno, customer name, no.of orders placed, date of most recent order and total amount of all the orders.
8. Display the itemnames of items for which the current price is less than the average price or total quantity sold is less than 10 units.
9. Create a procedure that takes orderno, itemno and inserts a row into lineitems, price-rate of the item, qty-1, and discount-10%.
10. Create a function that returns the first missing orderno.
11. Create a function that takes orderno and returns customer name of that order.
12. Create a procedure that inserts a new row into lineitems with given itemno, price, quantity, orderno is the most recent order. Check whether price is more than the current rate of the item, check whether item already exists in the order and check whether the total amount of the order including the new item has exceeded 50,000.
13. Make sure that an order is not containing more than 5 items.
14. Do not allow any changes to items table after 9pm before 9am.
15. Do not allow any change to item rate in such a way difference is more than 25% of the existing rate.
16. Insert a new row into orders and also lineitems with the following data.  
    Orderno is 1 + highest order number  
    Order date is yesterday  
    Custno is 103  
    Shipdate is 15 days from the order.  
    Shipping address is same as customer address.  
    Insert lineitems into this order item 4 with least rate of the orders. Quantity is 2 and discount is 0.
17. Display the itemname and the number of units sold. Ignore the items for which there are no sales.
18. Insert a new item into lineitems using the following information.  
    Orderno 1003  
    Itemno 4  
    Qty 1  
    Rate current rate of the item  
    Discount 5%
19. For the previous insert apply the following conditions.  
    Check that the item does not exist in lineitems table.  
    Check the total amount of order as of now is not crossing the total 30,000.(amount)  
    Check the order is placed in the last 4 days.
20. Display the amount of order placed by first 5 customers.
21. Change the rate of each item according to the following conditions.  
    Increase the rate by 10% if the items have got more than 5 orders or more than 25 units sold.  
    Increase rate by 5% if item was sold for rate that is more than the current rate of the item.
22. Prevent any increase in the price of lineitems.
23. Create trigger to prevent users from making any changes to orders table between 9pm. to 9am.
24. Create a function that returns the next order number.
25. Create a function that returns the first missing order number.