Database Fundamentals II - COMS2002
Assignment

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1 Assignment submission details

- Each student will have to submit a report at the end of the assignment.
- Deadline for assignment submission : Tuesday, 25 March 17:00.
- Counts 20% towards final mark.
- Please indicate student number and name on your report.
- For each question, clearly explain how your SQL query works.
- Screen shots of generated tables and query outputs must be shown in your reports.

2 Problem

LargeCo. database stores data for a company that resells paints. The company tracks the sale of products to customers. The database keeps data on customers (LGCUSTOMERS), sales (LGINVOICE), products(LGPRODUCT), which products are on which invoices(LGLINE), employees (LGEMPLOYEE), the salary history of each employee (LGSALARY_HISTORY), departments(LGDEPARTMENT), product brands (LGBRAND), vendors (LGVENDOR), and which vendors supply each product (LGSUPPLIES), as shown in the entity relation diagram (ERD) in Fig. 1.

3 Queries

Question 1. Undestand the use of different tables and their relationship with other tables in the LargeCo. database. Identify the business rules depicted in the ERD.

Question 2. Create the tables and feed in appropriate data. Make suitable assumptions on the type (Eg. INT, CHAR, VARCHAR etc.) you would use for each attribute. Each query to this database (Question 3. to Question. 35) should result in some output.

Question 3. Write a query to display the departments in the LGDEPARTMENT table.

Question 4. Write a query to display the SKU(stock keeping unit), description, type,base, category, and price for all products that have a PROD_BASE of water and a PROD_CATEGORY of sealer.

Question 5. Write a query to display the first name,last name, and e-mail address of employees hired from January 1, 2010, to December 31, 2013. Sort the output by last name and then by first name.

Question 6. Write a query to display the first name, last name, phone number, title, and department number of employees who work in department 300 or have the title 'CLERK1'. Sort

the output by last name and then by first name.

Question 7. Write a query to display the employee number, last name, first name , salary 'from' date, salary end date, and salary amount for employees 83731, 83745, and 84039. Sort the output by employee number and salary 'from' date.

Question 8. Write a query to display the first name, last name, street, city, state, and zip code of any customer who purchased a 'XYZ' brand top coat between july 15, 2011 and July 31, 2013. If a customer purchased more than one such product, display the customer's information only once in the output. Sort the output by state, last name, and then first name.(Replace 'XYZ' with a brand name based on your data.)

Question 9. Write a query to display the employee number, last name, e-mail address, title, and department name of each employee whose job title end in the word 'ASSOCIATE'. Sort the output by department name and employee title.

Question 10. Write a query to display a brand name and the number of products of that brand that are in the database. Sort the output by the brand name.

Question 11. Write a query to display the number of products in each category that have a water base.eg. Cleaner, Filler, Primer, Sealer etc.

Question 12. Write a query to display the number of products within each base and type combination.

Question 13. Write a query to display the total inventory - that is , the sum of all products on hand for each brand ID. Sort the output by brand ID in descending order.

Question 14. Write a query to display the brand ID, brand name, and average price of products of each brand. Sort the output by brand name. (Results should be shown with the average price rounded to two decimal places.)

Question 15. Write a query to display the department number and most recent employee hire date for each department. Sort the output by department number.

Question 16. Write a query to display the employee number, first name, last name, and largest salary amount for each employee in department 200. Sort the output by largest salary in descending order.

Question 17. Write a query to display the brand ID, brand name, and average price of products of each brand. Sort the output by brand name. (Results are shown with the average price rounded to two decimal places.)

Question 18. Write a query to display the department number and most recent employees hire date for each department. Sort the output by department number.

Question 19. Write a query to display the employee number, first name, last name, and largest salary amount for each employee in department 200. Sort the output by largest salary in descending order.

Question 20.. Write a query to display the customer code, first name, last name, and sum of all invoice totals for customers with cumulative invoice totals greater than R1,500. Sort the

output by the sum of invoice totals in descending order.

Question 21. Write a query to display the department number, department name, department phone number, employee number, and last name of each department manager. Sort the output by dependent name.

Question 22. Write a query to display the vendor ID, vendor name, brand name, and number of products of each brand supplied by each vendor. Sort the output by vendor name and then by brand name.

Question 23. Write a query to display the employee number, last name, first name, and sum of invoice totals for all employees who completed an invoice. Sort the output by employees last name and then by first name.

Question 24. Write a query to display the largest average product price of any brand.

Question 25. Write a query to display the brand ID, brand name, brand type, and average price of products for the brand that has the largest average product price.

Question 26. Write a query to display the manager name, department name, department phone number, employee name, customer name, invoice date, and invoice total for the depart-ment manager of the employee who made a sale to a customer whose last name is 'XYZ' on DD-MM-YYYY. For all person names, concatenate the first and last names into a single field. (Pick a name and date based on your tables)

Question 27. Write a query to display products that have a price greater than R50.

Question 28. Write a query to display the current salary for each employee in department 300. Assume that only current employees are kept in the system, and therefore the most current salary for each employee is the entry in the salary history with a NULL end date. Sort the output in descending order by salary amount.

Question 29. Write a query to display the starting salary for each employee. the starting salary would be the entry in the salary history with the oldest salary start date for each employee. Sort the output by employee number.

Question 30. Write a query to display the invoice number, product SKUs, product descrip-tions, and brand ID for sales of sealer and top coat products of the same brand on the same invoice.

Question 31. The 'XYZ' Company wants to recognize the employee who sold the most of their products during a specified period. Write a query to display the employee number, employee first name, employee last name, e-mail address, and total units sold for the employee who sold the most 'XYZ' brand products between November 1, 2011, and December 1, 2013. If there is a tie for most units sold, sort the output by employee last name.

Question 32. Write a query to display the customer code, first name, and last name of all customers who have had at least one invoice completed by employee 83649 and at least one in-voice completed by employee 83677. Sort the output by customer last name and then first name.

Question 33. LargeCo is planning a new promotion in Gauteng and wants to know about the

largest purchases made by customers in that province. Write a query to display the customer code, customer file name, last name, full address, invoice date, and invoice total of the largest purchase made by each customer in Gauteng. Be certain to include any customers in Gauteng who have never made a purchase; their invoice dates should ne NULL and the invoice total should display as 0.

Question 34.. One of the purchasing managers is interested in the impact of product prices on the sale of products of each brand. Write a query to display the brand name, brand type, average price of products of each brand and total units sold of products of each brand. Even if a product has been sold more than once, its price should only be included once in the calculation of the average price. However, you must be careful because multiple products of the same brand can have the same price, and each of those products must be included in the calculation of the brand's average price.

Question 35. The purchasing manager is still concerned about the impact of price on sales. Write a query to display the brand name, brand type, product SKU, product description, and price of any products that are not a premium brand, but that cost more than the most expensive premium brand products.

Fig. 1
LargeCo.
database.

LGCUSTOMER

PK	Cust_Code
	Cust_Fname
	Cust_Lname
	Cust_Street
	Cust_City
	Cust_State — Province
	Cust_ZIP
	Cust_Balance

places

LGINVOICE

PK	Inv_Num
FK1	Cust_Code
	Inv_Date
	Inv_Total
FK2	Employee_ID

contains

LGLINE

PK,FK1	Inv_Num
PK	Line_Num
FK2	Prod_SKU
	Line_Qty
	Line_Price

appears on

LGPRODUCT

PK	Prod_SKU
	Prod_Descript
	Prod_Type
	Prod_Base
	Prod_Category
	Prod_Price
	Prod_QOH
	Prod_Min
FK1	Brand_ID

LGBRAND

PK	Brand_ID
	Brand_Name
	Brand_Type

includes

provided by

completes

LGEMPLOYEE

PK	Emp_Num
	Emp_Fname
	Emp_Lname
	Emp_Email
	Emp_Phone
	Emp_Hiredate
	Emp_Title
	Emp_Comm
FK1	Dept_Num

has

LGSALARY_HISTORY

PK,FK1	Emp_Num
PK	Sal_From
	Sal_End
	Sal_Amount

LGSUPPLIES

PK,FK1	Vend_ID
PK,FK2	Prod_SKU

provides

employs   manages

LGDEPARTMENT

PK	Dept_Num
	Dept_Name
	Dept_Mail_Box
	Dept_Phone
FK1	Emp_Num

LGVENDOR

PK	Vend_ID
	Vend_Name
	Vend_Street
	Vend_City
	Vend_State
	Vend_ZIP