

# **RELLANT RETAIL LIMITED**



## **SQL - BUSINESS REPORT**



## Contents

Project Problem Statement .....	2
ER DIAGRAM .....	3
Problem 1 .....	4
Problem 2 .....	6
Problem 3 .....	8
Problem 4 .....	10
Problem 5 .....	11
Problem 6 .....	13
Problem 7 .....	15
Problem 8 .....	16
Problem 9 .....	19
Problem 10 .....	21

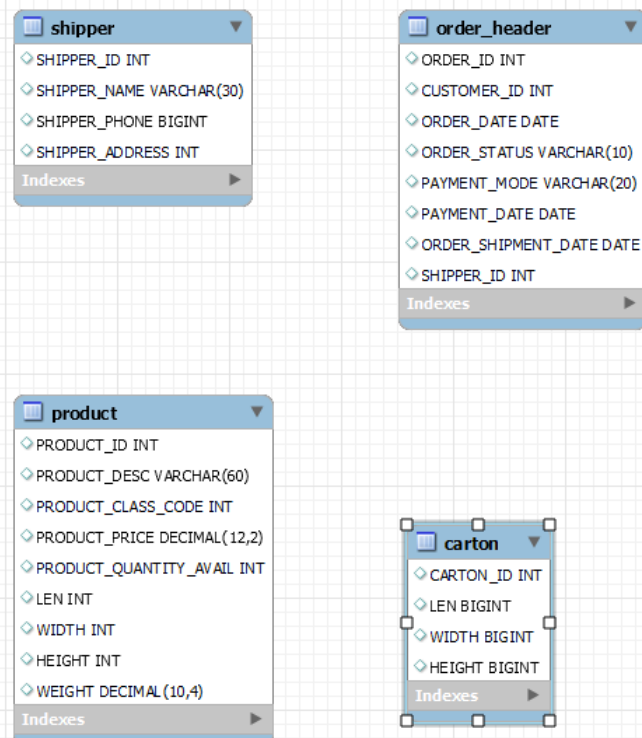
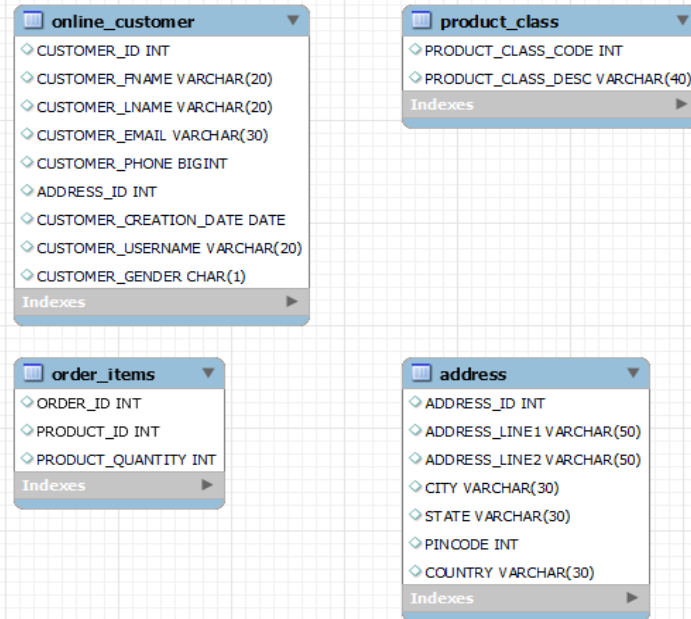
## Project Problem Statement

I have been hired by a chain of online retail stores “Reliant retail limited”. They provide you with “orders” database and seek answers to the following queries as the results from these queries will help the company in making data-driven decisions that will impact the overall growth of the online retail store.

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I will start the presentation by displaying the ER Diagram of the database given to us at first and then let's move ahead with the questions.

## ER DIAGRAM



## Problem 1

Write a query to display customer full name with their title (mr/ms), both first name and last name are in upper case with customer email id, customer creation date and display customer's category after applying below categorization rules:

- i. If customer creation date year <2005 then category a
- ii. If customer creation date year >=2005 and <2011 then category b
- iii. If customer creation date year >= 2011 then category c

Hint: Use case statement, no permanent change in table required. [note: tables to be used -online\_customer table]

### SOLUTION

The goal of this query is to display the full name of customers, including their title (Mr./Ms.), along with their email ID, creation date, and customer category based on the year of their creation date.

### SAMPLE OUTPUT

	TITTLE	CUSTOMER_FULL_NAME	CUSTOMER_EMAIL	CUSTOMER_CREATION_DATE	category
►	MS.	JENNIFER WILSON	jen_w@gmail.com	1991-06-01	Category A
	MR.	JACKSON DAVIS	dave_jack@gmail.com	2001-06-12	Category A
	MS.	KOMAL CHOUDHARY	ch_komal@yahoo.co.IN	2002-06-26	Category A
	MR.	WILFRED JEAN	w_jean@gmail.com	2006-01-12	Category B
	MS.	ANITA GOSWAMI	agoswami@gmail.com	2006-03-13	Category B
	MS.	ASHWATHI BHATT	ash_bhat@yahoo.co.IN	2007-04-15	Category B
	MS.	NEETHA CASTELINA	neetha20@gmail.com	2011-08-16	Category C
	MS.	DEVIKA SATISH	devika_sa@gmail.com	2011-09-01	Category C
	MS.	BIDHAN C.ROY	bidhanroy@yahoo.co.in	2011-10-23	Category C
	MR.	VIKAS JHA	vikas.jha@gmail.com	2011-11-15	Category C



## BUSINESS INSIGHTS

- This categorization helps identify long-term customers (Category A) versus newer customers (Category C). Understanding customer tenure can inform marketing strategies, loyalty programs, and targeted promotions.

## RECOMMENDATIONS

- **Targeted Marketing:** Use the customer categories to develop tailored marketing campaigns that cater to the specific needs and preferences of each group.
- **Customer Retention Programs:** Focus on engaging long-term customers (Category A) with loyalty programs or special offers to retain their business.
- **Feedback Collection:** Gather feedback from different categories to understand their satisfaction and improve service offerings.

## Problem 2

Write a query to display the following information for the products, which have not been sold: product\_id, product\_desc, product\_quantity\_avail, product\_price, inventory values(product\_quantity\_avail\*product\_price), new\_price after applying discount as per the below criteria. Sort the output concerning the decreasing value of inventory\_value.

- i. If product price > 20,000 then apply 20% discount
- ii. If product price > 10,000 then apply 15% discount
- iii. If product price =< 10,000 then apply 10% discount

Hint: use case statement, no permanent change in table required. [note: tables to be used -product, order\_items table]

### SOLUTION

The goal of this query is to retrieve details of products that have not been sold, including product ID, description, quantity available, price, inventory value, and the new price after applying discounts based on specific criteria.

### SAMPLE OUTPUT

PRODUCT_ID	PRODUCT_DESC	PRODUCT_QUANTITY_AVAIL	PRODUCT_PRICE	INVENTORY_VALUE	NEW_PRICE
99999	Samsung Galaxy Tab 2 P3100	50	19300.00	965000.00	16405.0000
99997	Sony Xperia U (Black White)	50	16499.00	824950.00	14024.1500
99998	Nikon Coolpix L810 Bridge	50	14987.00	749350.00	12738.9500
99995	LG MS-2049UW Solo Microwave	100	4800.00	480000.00	4320.0000
99996	Nokia Asha 200 (Graphite)	100	4070.00	407000.00	3663.0000
99994	HP Deskjet 2050 All-in-One - J510a Printer	100	3749.00	374900.00	3374.1000
99991	Dell Targus Synergy 2.0 Backpack	250	999.00	249750.00	899.1000
99992	Tom Clancy's Ghost Recon: Future Soldier (PC G...	250	999.00	249750.00	899.1000
99993	Nokia 1280 (Black)	250	999.00	249750.00	899.1000
99990	Quanta 4 Port USB Hub	50	500.00	25000.00	450.0000

## BUSINESS INSIGHTS

- Identifying unsold products is crucial for inventory management and sales strategies. By analyzing unsold products, the company can determine if certain products need promotional efforts or if their pricing strategies need adjustments.
- Understanding the inventory value can help in making informed decisions about stock clearance, discounts, and potential markdowns.

## RECOMMENDATIONS

- **Inventory Review:** Regularly review unsold products to assess their sales performance and consider strategies for moving excess inventory.
- **Targeted Promotions:** Implement targeted promotions for high-value unsold products to stimulate sales, particularly for items with a high inventory value.
- **Pricing Strategy Evaluation:** Re-evaluate pricing strategies for unsold products, especially those that have not sold due to perceived high price points. Consider temporary discounts or bundling strategies to enhance attractiveness.



## Problem 3

write a query to display product\_class\_code, product\_class\_description, count of product type in each product class, and inventory value (p.product\_quantity\_avail\*p.product\_price). Information should be displayed for only those product\_class\_code that have more than 1,00,000 inventory value. sort the output concerning the decreasing value of inventory\_value.

[note: tables to be used -product, product\_class]

### SOLUTION

The goal of this query is to provide insights into product classes that hold significant inventory value and the count of products within each class.

### SAMPLE OUTPUT

PRODUCT_CLASS_CODE	PRODUCT_CLASS_DESC	PRODUCT_COUNT	INVENTORY_VALUE
3000	Promotion-High Value	4	2564300.00
2050	Electronics	4	1665600.00
3001	Promotion-Medium Value	3	1261900.00
2055	Mobiles	2	1092500.00
3002	Promotion-Low Value	3	749250.00
2052	Clothes	4	410000.00
2051	Toys	5	194100.00
2057	Watches	4	178820.00
2059	Bags	5	115170.00

## BUSINESS INSIGHTS

- Analyzing product classes with high inventory values can help in strategic decision-making regarding stock management and marketing efforts.
- Understanding product counts within classes can aid in identifying potential overstock issues or trends in consumer preferences.

## RECOMMENDATIONS

- **Inventory Management:** Focus on optimizing inventory for classes with high values to minimize holding costs and avoid stockouts.
- **Marketing Strategy:** Develop targeted marketing campaigns for high-value product classes to boost sales.
- **Sales Analysis:** Regularly assess the performance of product classes to adapt to changing market demands and improve inventory turnover rates.

## Problem 4

Write a query to display customer\_id, full name, customer\_email, customer\_phone and country of customers who have cancelled all the orders placed by them(use sub-query)

[note: tables to be used - online\_customer, addresss, order\_header]

### SOLUTION

The goal of this query is to identify customers who have completely canceled their orders and retrieve their details for potential follow-up or analysis.

### SAMPLE OUTPUT

CUSTOMER_ID	FULL_NAME	CUSTOMER_EMAIL	CUSTOMER_PHONE	COUNTRY
41	Tharman Shanmugaratnam	tharshan@yahoo.co.sg	8572898929	Singapore

### BUSINESS INSIGHTS

- Understanding why these customers have canceled their orders can help improve customer retention strategies. It can also highlight potential issues in service or product quality.

### RECOMMENDATIONS

- **Customer Follow-Up:** Consider reaching out to these customers to understand their reasons for canceling and see if they can be persuaded to continue ordering.
- **Quality Analysis:** Analyze the common reasons for order cancellations and address them to improve overall customer satisfaction.
- **Marketing Strategy:** Target these customers with specific campaigns to win them back, perhaps offering incentives for their next order.



## Problem 5

Write a query to display shipper name, city to which it is catering, number of customer catered by the shipper in the city and number of consignments delivered to that city for shipper dhl

[note: tables to be used -shipper, online\_customer, addresss, order\_header]

### SOLUTION

The goal of this query is to gather information about the shipper "DHL" to analyze its customer base and delivery performance in various cities.

### SAMPLE OUTPUT

SHIPPER_NAME	CITY	NUM_CUSTOMERS_CATERED	NUM_CONSIGNMENTS_DELIVERED
DHL	Abington	1	1
DHL	Amherst	1	1
DHL	Bangalore	3	5
DHL	Birmingham	1	1
DHL	Brooklyn	1	1
DHL	Dharmapuri	1	1
DHL	Hosur	1	1
DHL	Hyderabad	2	2
DHL	W. Alibio	1	1

### BUSINESS INSIGHTS

- Understanding customer reach and the volume of consignments delivered can help DHL identify successful regions and areas needing improvement.

### RECOMMENDATIONS

- **Market Expansion:** If certain cities have low customer counts, consider marketing efforts to attract more customers in those areas.
- **Performance Review:** Analyzing the delivery performance can help improve logistics and customer satisfaction.
- **Customer Feedback:** Gather feedback from customers in various cities to enhance service quality and adapt offerings to local preferences.

## Problem 6

Write a query to display customer id, customer full name, total quantity and total value (quantity\*price) shipped where mode of payment is cash and customer last name starts with 'g'

[note: tables to be used -online\_customer, order\_items, product, order\_header]

### SOLUTION

The goal of this query is to analyze customer orders that were paid for in cash, specifically focusing on customers whose last names start with the letter 'G'.

### SAMPLE OUTPUT

CUSTOMER_ID	FULL_NAME	TOTAL_PRODUCT_QUANTITY	TOTAL_VALUE
6	Anita Goswami	25	93237.00
24	Brian Grazer	4	4010.00



## BUSINESS INSIGHTS

- Understanding customer purchasing behavior in this segment can help tailor marketing strategies or payment options.

## RECOMMENDATIONS

- **Promotions:** Consider offering promotions or discounts to customers who pay in cash to encourage more purchases.
- **Customer Engagement:** Engage with customers who have a pattern of cash purchases to understand their preferences better.
- **Monitoring Sales:** Keep an eye on the sales performance of cash-paying customers for potential trends in buying behavior.

## Problem 7

Write a query to display order\_id and volume of biggest order (in terms of volume) that can fit in carton id 10

-- [note: tables to be used -carton, order\_items, product]

### SOLUTION

The purpose of this query is to determine the order ID and the volume of the largest order that can fit within a specific carton (ID 10).

### SAMPLE OUTPUT

ORDER_ID	ORDER_VOLUME	CARTON_VOLUME
10064	14988000	18000000

### BUSINESS INSIGHTS

- Understanding the volume of orders can assist in logistics and inventory management, ensuring efficient packing and shipping.

### RECOMMENDATIONS

- **Optimizing Packing:** Use the results to optimize the packing process for large orders.
- **Inventory Planning:** Consider how many large orders can be fulfilled with the available carton sizes and adjust inventory levels accordingly.
- **Analyzing Volume Trends:** Monitor order volume trends to enhance forecasting and manage storage space effectively.

## Problem 8

Write a query to display product\_id, product\_desc, product\_quantity\_avail, quantity sold, and show inventory status of products as below as per below condition:

a. For electronics and computer categories,

- i. If sales till date is zero then show 'no sales in past, give discount to reduce inventory',
- ii. If inventory quantity is less than 10% of quantity sold, show 'low inventory, need to add inventory',
- iii. If inventory quantity is less than 50% of quantity sold, show 'medium inventory, need to add some inventory',
- iv. If inventory quantity is more or equal to 50% of quantity sold, show 'sufficient inventory'

b. For mobiles and watches categories,

- i. If sales till date is zero then show 'no sales in past, give discount to reduce inventory',
- ii. If inventory quantity is less than 20% of quantity sold, show 'low inventory, need to add inventory',
- iii. If inventory quantity is less than 60% of quantity sold, show 'medium inventory, need to add some inventory',
- iv. If inventory quantity is more or equal to 60% of quantity sold, show 'sufficient inventory'

c. Rest of the categories,

- i. If sales till date is zero then show 'no sales in past, give discount to reduce inventory',
- ii. If inventory quantity is less than 30% of quantity sold, show 'low inventory, need to add inventory',
- iii. If inventory quantity is less than 70% of quantity sold, show 'medium inventory, need to add some inventory',
- iv. If inventory quantity is more or equal to 70% of quantity sold, show 'sufficient inventory'

[note: tables to be used -product, product\_class, order\_items] (use sub-query)



## SOLUTION

The purpose of this report is to analyze the inventory status of various products in our catalog, focusing on sales performance and current inventory levels. By categorizing products based on their sales and inventory data, we aim to identify potential inventory issues and suggest actions for improvement.

## SAMPLE OUTPUT

PRODUCT_ID	PRODUCT_DESC	PRODUCT_QUANTITY_AVAIL	QUANTITY_SOLD	INVENTORY_STATUS
201	Sky LED 102 CM TV	30	6	SUFFICIENT INVENTORY
202	Sams 192 L4 Single-door Refrigerator	15	6	SUFFICIENT INVENTORY
203	Jocky Speaker Music System HT32	19	3	SUFFICIENT INVENTORY
204	Cricket Set for Boys	10	10	SUFFICIENT INVENTORY
205	Infant Sleepwear Blue	50	7	SUFFICIENT INVENTORY
206	Barbie Fab Gown Doll	20	13	SUFFICIENT INVENTORY
207	Remote Control Car	29	11	SUFFICIENT INVENTORY
208	Doll House	12	4	SUFFICIENT INVENTORY
209	Blue Jeans 34	100	12	SUFFICIENT INVENTORY
210	Blossoms Lehenga Choli set	100	10	SUFFICIENT INVENTORY
211	OnePlus 6 Smart Phone	25	5	SUFFICIENT INVENTORY
212	Samsung Galaxy On6	20	9	SUFFICIENT INVENTORY
213	Alchemist	50	21	SUFFICIENT INVENTORY
214	Harry Potter	50	27	SUFFICIENT INVENTORY

PRODUCT_ID	PRODUCT_DESC	PRODUCT_QUANTITY_AVAIL	QUANTITY_SOLD	INVENTORY_STATUS
234	FLUFF Tote Travel Bag 35LTR	8	4	SUFFICIENT INVENTORY
235	Cindy HMPOC Pencil Box (Multicolor)	10	40	LOW INVENTORY, NEED...
236	Solo Exam SB-01 Writing Pad	30	21	SUFFICIENT INVENTORY
237	Zamark Color Pencil Art Set	10	3	SUFFICIENT INVENTORY
238	Kasyo DJ-2100 Desktop Calculator	10	10	SUFFICIENT INVENTORY
239	TRANS 2D A4 Size Box File	6	5	SUFFICIENT INVENTORY
240	4M Post It Pad 3.5	8	29	LOW INVENTORY, NEED...
241	PK Copier A4 75 GSM White Paper R...	2	18	LOW INVENTORY, NEED...
242	GreenWud CT-NO-PR Coffee Table	6	7	SUFFICIENT INVENTORY
243	Supreme Fusion Cupboard 02TB	3	5	MEDIUM INVENTORY, N...
244	Foldable Premium Chair	6	16	MEDIUM INVENTORY, N...
245	GreenWud Nova Pedestal Unit	5	3	SUFFICIENT INVENTORY
246	Exam Warriors	50	3	SUFFICIENT INVENTORY
247	Small Is Beautiful	40	1	SUFFICIENT INVENTORY

## **BUSINESS INSIGHTS**

- **Zero Sales Products:** A significant number of products have not sold, indicating potential issues with product selection, pricing, or marketing.
- **Low Inventory Risks:** Some items are nearing critical inventory levels, which could lead to stockouts and lost sales.
- **Categorical Differences:** Variability in sales and inventory trends across product classes suggests the need for tailored strategies.

## **RECOMMENDATIONS**

### **1. For Products with Zero Sales:**

- **Market Research:** Investigate reasons for low sales and consider revising marketing strategies.
- **Promotions:** Introduce discounts or bundles to stimulate interest.

### **2. For Low Inventory Products:**

- **Reorder Strategy:** Implement proactive restocking for high-demand items to avoid stockouts.
- **Demand Forecasting:** Use sales data to improve inventory planning.

### **3. For Sufficient Inventory:**

- **Marketing Focus:** Enhance marketing strategies to boost sales further for adequately stocked products.
- **Cross-Promotion:** Leverage opportunities for cross-selling and upselling.

### **4. Overall Inventory Management:**

- **Regular Monitoring:** Establish routine inventory evaluations to identify trends.
- **Technology Utilization:** Consider inventory management software for real-time insights.

## Problem 9

Write a query to display product\_id, product\_desc and total quantity of products which are sold together with product id 201 and are not shipped to city bangalore and new delhi. Display the output in descending order concerning tot\_qty.(use sub-query)

[note: tables to be used -order\_items,product,order\_header, online\_customer, address]

### SOLUTION

The objective of the query is to identify and analyze products that are sold together with product ID 201, excluding orders shipped to the cities of Bangalore and New Delhi.

### SAMPLE OUTPUT

PRODUCT_ID	PRODUCT_DESC	tot_qty
216	External Hard Disk 500 GB	3
207	Remote Control Car	2
202	Sams 192 L4 Single-door Refrigerator	1
212	Samsung Galaxy On6	1
214	Harry Potter	1



## **BUSINESS INSIGHTS**

1. **Sales Performance:** The query highlights products frequently sold together with product ID 201, providing insight into popular product combinations. This helps identify complementary products that customers tend to purchase together.
2. **Geographical Preferences:** Excluding Bangalore and New Delhi from the sales data reveals customer purchasing patterns in other cities. This can help in targeting and optimizing product offerings outside of these major cities.
3. **Inventory Management:** By analyzing product quantities sold together, the business can forecast demand for complementary products and adjust inventory levels accordingly, ensuring stock availability.

## **RECOMMENDATIONS**

1. **Bundling Opportunities:** Leverage insights from complementary product sales to create bundle offers or promotions, which could increase overall sales and customer satisfaction.
2. **Regional Marketing:** Since sales are excluded from Bangalore and New Delhi, focus on marketing and promotional activities in other regions to boost sales in less targeted cities.
3. **Optimized Stocking:** Use the data to adjust stock levels for frequently sold-together products, preventing stockouts and improving overall customer satisfaction.

## Problem 10

Write a query to display the order\_id, customer\_id and customer fullname and total quantity of products shipped for order ids which are even and shipped to address where pincode is not starting with "5"

[note: tables to be used - online\_customer, order\_header, order\_items, address]

### SOLUTION

The objective of this query is to identify and analyze the orders placed by customers with even order\_ids, specifically focusing on those shipped to addresses where the pincode does not start with "5".

### SAMPLE OUTPUT

ORDER_ID	CUSTOMER_ID	CUSTOMER_FULLNAME	PINCODE	TOTAL_QUANTITY
10008	7	Ashwathi Bhatt	110013	25
10022	23	Anna Pinnock	11201	2
10024	32	Hans Zimmer	6776	2
10028	23	Anna Pinnock	11201	2
10030	52	Suchirithaa Ekanayake	20000	2
10032	7	Ashwathi Bhatt	110013	7
10034	19	Bharti Subhash	635897	2
10036	24	Brian Grazer	2351	4
10040	3	Komal Choudhary	110019	2
10042	26	Stephen E. Rivkin	2019	2

## BUSINESS INSIGHTS

1. **Customer Behavior:** Analyzing the orders with even order\_ids may reveal patterns or preferences among customers, such as seasonal buying trends or specific product interests linked to these orders.
2. **Geographical Distribution:** The restriction on pincodes not starting with "5" might indicate targeting specific regions, thus understanding geographical sales trends and customer bases.
3. **Product Demand:** The total quantity of products shipped can help gauge which products are in demand among customers in these regions, aiding in inventory planning and stock management.
4. **Customer Profile:** Identifying the customers associated with these orders provides insights into who the key buyers are, which can inform future marketing and sales strategies.

## RECOMMENDATIONS

1. **Targeted Marketing Campaigns:** Utilize the insights from customer behavior analysis to launch marketing campaigns targeted at customers in regions with high sales volume (excluding those with pincodes starting with "5").
2. **Inventory Optimization:** Monitor inventory levels for high-demand products identified through this query to prevent stockouts and ensure customer satisfaction.
3. **Customer Engagement:** Engage with customers who frequently place even order\_ids through loyalty programs or special promotions to encourage repeat purchases.
4. **Geographic Expansion:** Explore opportunities to expand product offerings or marketing strategies in regions identified as having significant sales potential (those without pincodes starting with "5").
5. **Continuous Analysis:** Implement regular analysis of customer orders based on various criteria (including order\_id parity) to uncover further insights that could influence strategic decisions.