**SQL Descriptive and Popular Interview Questions**

1. What is the difference between Primary Key (PK) and Foreign Key (FK)?
2. What is the difference between a View, a Table, and a Temporary Table?
3. What is the difference between Clustered and Non-clustered Indexes?
4. What is the difference between Stored Procedures and Functions?
5. What is the ACID property in a database?

**SQL Coding Questions**

**Shopify co-op interview questions:**

use the following link to write a query for following question:

<https://www.w3schools.com/SQL/TRYSQL.ASP?FILENAME=TRYSQL_SELECT_ALL>

1. How many orders were shipped by Speedy Express in total?
2. What is the last name of the employee with the most orders?
3. What product was ordered the most by customers in Germany?

**Bank Analysis Task**

**XYZ.Activity\_checking Dataset:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Obs** | **Client\_ID** | **Account\_ID** | **Open\_Date** | **Assets** | **Status** |
| 1 | 1001 | 20032 | 02NOV2019 | 7744 | Active |
| 2 | 1002 | 20056 | 12DEC2020 | -12451 | Inactive |
| 3 | 1003 | 20032 | 12JAN2019 | 1274 | Active |
| 4 | 1003 | 20074 | 19JAN2019 | 7683 | Active |
| 5 | 1002 | 20793 | 17SEP2017 | -591 | Active |
| 6 | 1004 | 20142 | 16FEB2017 | 14144 | Active |
| 7 | 1005 | 21943 | 24OCT2016 | 13981 | Active |
| 8 | 1006 | 29371 | 09JUN2008 | 14049 | Inactive |
| 9 | 1002 | 29081 | 05APR2018 | 2092 | Active |

**XYZ.Activity\_creditcard Dataset:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Obs | Client\_ID | Account\_ID | Open\_Date | Credit\_Status | Assets |
| 1 | 1003 | 313058 | 17DEC2015 | Active | -4059 |
| 2 | 1004 | 339524 | 16JAN2019 | Active | -4327 |
| 3 | 1002 | 330572 | 26SEP2019 | Active | 15392 |
| 4 | 1003 | 396821 | 07FEB2020 | Inactive | -1359 |
| 5 | 1004 | 375271 | 15MAR2018 | Active | -1601 |
| 6 | 1003 | 373859 | 09SEP2020 | Active | 16515 |
| 7 | 1006 | 383733 | 08NOV2017 | Inactive | 5226 |
| 8 | 1006 | 353413 | 16MAR2018 | Inactive | 13741 |
| 9 | 1005 | 365605 | 25JUN2017 | Active | -4110 |

**Task: Create a Summary Report Tracking KPI Metrics**

For each active client, create a summary report with the following metrics:

1. **XYZ\_Since\_Date:** The first date when the customer started a relationship with XYZ (earliest Open\_Date from both datasets).
2. **Product1\_Since\_Date:** The first date when the customer joined Product1 (checking accounts).
3. **Product2\_Since\_Date:** The first date when the customer joined Product2 (credit card accounts).
4. **Total\_Actives:** The total number of active accounts under the customer.
5. **Total\_Assets:** The total assets for each customer.
6. Explain how you would create and insert data into the tables provided for the XYZ activity datasets.
7. How would you track the first relationship date (XYZ\_Since\_Date) for a customer across both checking and credit card datasets?
8. Describe the SQL query you would write to find the first date a customer joined Product1 (checking accounts).
9. How can you calculate the total number of active accounts for each client using data from both datasets?
10. What approach would you use to calculate the total assets for each client, considering both positive and negative asset values?
11. How would you optimize your SQL queries to handle large datasets efficiently?
12. What methods can you use to handle missing data or inconsistencies when generating reports from these datasets?
13. Describe how you can join multiple tables in SQL to create a consolidated report for customer metrics.
14. What indexing strategies would you recommend to improve query performance in this scenario?
15. How can SQL aggregate functions like SUM, MIN, and COUNT help in calculating the required KPIs?

**Product Sales Analysis Task**

You are provided with the following sample data tables:

**Table 1: Product Sales Data**

CREATE TABLE Product\_Sales1 (

product INT,

no INT,

q INT,

price DECIMAL(10, 2)

);

INSERT INTO Product\_Sales1 VALUES

(23, 3, 12, 250.00),

(23, 15, 24, 450.00),

(23, 25, 16, 346.00),

(46, 45, 25, 560.00);

**Table 2: Additional Product Sales Data**

CREATE TABLE Product\_Sales2 (

product INT,

no INT,

price DECIMAL(10, 2)

);

INSERT INTO Product\_Sales2 VALUES

(46, 23, 250.00),

(27, 15, 450.00),

(37, 25, 36.00),

(46, 50, 700.00);

**POS Tables: Sales Data**

**POS1 Table:**

CREATE TABLE POS1 (

date DATE,

sales DECIMAL(10, 2),

product INT,

no INT

);

INSERT INTO POS1 VALUES

('2001-01-22', 250.00, 23, 3),

('2002-01-22', 300.00, 27, 15);

**POS2 Table:**

CREATE TABLE POS2 (

date DATE,

sales DECIMAL(10, 2),

product INT,

no INT

);

INSERT INTO POS2 VALUES

('2001-01-22', 280.00, 23, 3),

('2002-01-22', 150.00, 37, 25);

**POS3 Table:**

CREATE TABLE POS3 (

date DATE,

sales DECIMAL(10, 2),

product INT,

no INT

);

INSERT INTO POS3 VALUES

('2001-01-22', 280.00, 23, 3),

('2002-01-22', 400.00, 27, 15);

**SQL Questions for Product Sales Analysis**

1. **Find Duplicates:** Write a query to identify common products and records duplicated between Table 1 and Table 2.
2. **Merge Tables:** Write a query to merge the two product tables, including duplicate records, into a new table (Merged\_Table).
3. **Remove Duplicates:** Write a query to create a new table (Cleaned\_Table) by removing duplicate records from Merged\_Table.
4. **Sales Summary:** Create a temporary table to calculate the sum of sales for each product on each date using data from POS1, POS2, and POS3.
5. **Sales Aggregation:** Write a query to calculate the total sales for each product across all dates using the temporary sales table created in the previous step.
6. **Sales Report:** Generate a report that lists each product along with:
   * Total sales (from all POS tables),
   * Total distinct transaction dates,
   * Average sales per transaction.

**Bank Analysis Task: Transaction and Account Management Analysis**

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You are provided with the following sample data:

**Txn\_tbl:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Obs | customer\_id | txn\_id | Txn\_type\_key | amount |
| 1 | 1 | 1001 | 3125 | 100 |
| 2 | 1 | 1002 | 3124 | 50 |
| 3 | 2 | 1003 | 3546 | 200 |
| 4 | 1 | 1004 | 3543 | 50 |
| 5 | 3 | 1005 | 14 | 30 |
| 6 | 2 | 1006 | 3125 | 20 |
| 7 | 2 | 1007 | 3600 | 10 |
| 8 | 1 | 1008 | 1600 | 20 |

**Transaction Type Classification:**

* **Credit Types:** 3125, 3124, 3600, 4500, 6577, 8900
* **Debit Types:** 3546, 3543, 14, 1600, 8700, 8888

**Account\_tbl:**

|  |  |  |
| --- | --- | --- |
| customer\_id | account\_id | create\_date |
| 1 | 101 | 01SEP2022 |
| 1 | 102 | 15NOV2023 |
| 1 | 103 | 01JAN2025 |
| 2 | 104 | 22OCT2018 |
| 3 | 105 | 18SEP2020 |

**SQL Questions for Transaction and Account Management**

1. Write a query to find the most recent account\_id for each customer based on the create\_date.
2. Join Txn\_tbl with Account\_tbl and return the transaction details along with the most recent account\_id for each customer.
3. How can you calculate the total transaction amount for each customer and display it alongside their most recent account information?
4. Describe how you would handle cases where a customer has no account records in the Account\_tbl.
5. Suggest an indexing strategy to optimize the query performance when joining the Txn\_tbl and Account\_tbl.
6. Write a query that returns one row for each customer with:
   * A column for the number of credit transactions,
   * A column for the total amount of credit transactions,
   * A column for the number of debit transactions,
   * A column for the total amount of debit transactions.