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SQL ASSESSMENT WORKBOOK

V2: GEOGRAPHIC RISK ANALYSIS

**EduFin SQL Skill Assessment Workbook:**

***A Beginner-Friendly Guide to Multi-Table Joins, Geographic Business Intelligence, and Risk Pattern Detection***

**Program: Skill AI Path – Data Analyst Pretraining Track  
Module: EduFin Risk Analytics Simulation – Session 2  
Assessment Type: Skill Validation – SQL JOINs + Geographic Aggregation + Risk Classification  
Prepared For: EduFin Data Analyst Cohort  
Organization: Krishnav Tech | Skill AI Path**

**Objective**

To assess and validate your ability to work with normalized schemas, perform multi-table JOINs, analyze customer and loan data across geographic hierarchies (state → city → customer), and identify risk concentration patterns—preparing you for real-world regional crisis diagnostics in financial analytics.

# SQL Skill Check Assessment – Pretraining WorkbooK

**SKILL CHECK ASSESSMENT**

This skill check is designed to validate your understanding of multi-table SQL concepts, JOINs, filtering, and geographic business intelligence patterns.

## Part A: Query Writing

**Question 1 (10 points):**  
Write a query showing all states with their total number of cities, total customers, and total loan portfolio value. Include states even if they have no customers.

**Answer:**

**Question 2 (10 points):**  
Find the top 10 cities by total loan portfolio value. Show city name, state name, tier classification, number of loans, and formatted portfolio value.

**Answer:**

**Question 3 (10 points):**  
Create a geographic risk analysis showing:

* State name
* Total number of loans
* Problem loan count (defaulted + overdue)
* Problem loan percentage
* Risk classification (High, Medium, Low)

**Answer:**

**Question 4 (10 points):**  
Show all institutions with their geographic presence. Include:

* Institution name
* Number of states they operate in
* Number of cities
* Total loans
* Average loan size

**Answer:**

**Question 5 (10 points):**  
Find customers who have loans totaling more than ₹15 lakhs and are located in Tier-1 cities. Include complete customer, geographic, and loan information.

**Answer:**

**Question 6 (10 points):**  
Compare loan performance between Tier-1, Tier-2, and Tier-3 cities. Show:

* Average loan amounts
* Default rates
* Total portfolio values

**Answer:**

## Part B: Multiple Choice Questions

**Total: 40 points (10 questions × 4 points)**

**Instructions:** Choose the correct option for each question. Only one option is correct.

**Question 7:** What’s the difference between INNER JOIN and LEFT JOIN?

* A) No difference
* B) INNER JOIN returns only matching records, LEFT JOIN returns all left table records
* C) LEFT JOIN is faster
* D) INNER JOIN handles NULLs better

**Answer:** \_\_\_

**Question 8:** In the query FROM customers c INNER JOIN loans l ON c.customer\_id = l.customer\_id, what does the alias 'c' represent?

* A) Column name
* B) Table name shortcut
* C) Join condition
* D) Group by clause

**Answer:** \_\_\_

**Question 9:** Which JOIN would you use to show all cities, even those without any customers?

* A) INNER JOIN
* B) LEFT JOIN (with cities as left table)
* C) RIGHT JOIN
* D) FULL OUTER JOIN

**Answer:** \_\_\_

**Question 10:** What does COUNT(DISTINCT city\_id) return?

* A) Total number of records
* B) Number of unique cities
* C) Number of NULL cities
* D) Average city count

**Answer:** \_\_\_

**Question 11:** In a normalized schema, why are geographic details stored in separate dimension tables?

* A) Improves performance
* B) Reduces data duplication
* C) Enforces data consistency
* D) All of the above

**Answer:** \_\_\_

**Question 12:** What happens if you JOIN tables without a proper ON condition?

* A) Returns no results
* B) Returns Cartesian product (all combinations)
* C) Throws an error
* D) Returns only first table

**Answer:** \_\_\_

**Question 13:** Which is the correct syntax for a three-table JOIN?

* A) FROM table1 JOIN table2 JOIN table3
* B) FROM table1 INNER JOIN table2 ON condition1 INNER JOIN table3 ON condition2
* C) FROM table1, table2, table3 WHERE conditions
* D) Both B and C are correct

**Answer:** \_\_\_

**Question 14:** What does HAVING COUNT(\*) > 10 do in a GROUP BY query?

* A) Filters individual records
* B) Filters grouped results
* C) Counts only 10 records
* D) Sorts by count

**Answer:** \_\_\_

**Question 15:** In geographic analysis, why use COALESCE(COUNT(customer\_id), 0)?

* A) Improves performance
* B) Handles NULL counts in LEFT JOINs
* C) Required by SQL standard
* D) Prevents duplicate counting

**Answer:** \_\_\_

**Question 16:** Which query finds cities that exist in multiple states (data quality issue)?

* A) GROUP BY city\_name HAVING COUNT(DISTINCT state\_id) > 1
* B) WHERE city\_name IN (SELECT city\_name FROM cities)
* C) JOIN cities ON duplicate conditions
* D) COUNT(\*) > 1 in WHERE clause

**Answer:** \_\_\_

## Passing Criteria

* **Minimum Score:** 80 out of 100
* **Query Writing:** At least 48/60
* **MCQ Section:** At least 32/40
* **Unlimited Attempts:** Yes
* **Time Limit:** 120 minutes per attempt

## Skills You Will Validate

By completing this assessment, you will demonstrate:

* Proficiency in INNER and LEFT JOINs
* Ability to write multi-table queries
* Comfort navigating normalized schemas
* Skills in geographic and hierarchical data analysis
* Ability to calculate risk concentrations and filter complex logic
* Experience using subqueries and comparative metrics

## Next Step: Session 2 Preparation

Once you pass:

* ✅ You'll be equipped to identify regional risk concentrations
* ✅ You'll be able to apply JOIN techniques to real-world crisis data
* ✅ You'll be ready to uncover the ₹12 crore problem using geographic BI skills

## Study Recommendations Before Attempting Again

1. Review JOIN types and use cases
2. Practice 4–5 table JOINs
3. Master GROUP BY with aggregations
4. Understand tier and regional segmentation
5. Strengthen WHERE and HAVING filtering logic

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