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AI-generated content may be incorrect.SQL ASSESSMENT WORKBOOK V2 Step-1: SYSTEMIC ISSUE DETECTION**

**EduFin SQL Skill Assessment Workbook: A Beginner-Friendly Guide to SQL Queries, Business Logic, and Output Interpretation**

**Program: Skill AI Path – Data Analyst Pretraining Track  
Module: EduFin Risk Analytics Simulation  
Assessment Type: Skill Validation – SQL Query Writing + Business Understanding  
Prepared For: EduFin Data Analyst Cohort  
Organization: Krishnav Tech | Skill AI Path**

**Objective**

To assess and validate your foundational SQL skills, including query construction, systemic error detection, reconciliation analysis, and interpretation of institutional data quality, preparing you for **root cause investigation** in financial data analytics.

# SQL Skill Check Assessment – Pretraining Workbook

## PART A: Query Writing (60 points)

**Question 1 (10 points)**  
Write a query to identify all loans where the disbursement amount doesn't match the approved loan amount, indicating potential manual processing errors..

**Your Answer:**

**Question 2 (10 points)**  
Create an audit query to find customers who have multiple active loans but only went through verification once, showing a gap in the re-verification process.

**Your Answer:**

**Question 3 (10 points)**  
Build a dependency mapping query showing how many customers are stuck at each stage of the loan process and what's blocking their progression.

**Your Answer:**

**Question 4 (10 points)**  
Write a cross-system validation query to identify discrepancies between the expected payment schedule and actual payment records, highlighting collection system issues.

**Your Answer:**

**Question 5 (10 points)**  
Create a pattern detection query to identify loan officers or branches with abnormally high rates of data entry errors or rule violations.

**Your Answer:**

**Question 6 (10 points)**  
Design a systemic impact analysis query showing how missing customer documentation cascades to affect loan performance, collection success, and default rates.

**Your Answer:**

## PART B: Multiple Choice Questions (40 points)

**Question 7:**  
Which join type is best for identifying orphaned records?

- A) INNER JOIN

- B) LEFT JOIN with NULL check

- C) RIGHT JOIN

- D) CROSS JOIN

**Answer:**

**Question 8:**  
What indicates a systemic data flow issue?

- A) Individual record errors

- B) Missing foreign key relationships across multiple records

- C) Slow query performance

- D) Normal data variations

**Answer:**

**Question 9:**  
In audit queries, why use FULL OUTER JOIN?

- A) Better performance

- B) Find records that exist in one system but not another

- C) Required by SQL standard

- D) Handles NULL values better

**Answer:**

**Question 10:**  
Which pattern suggests manual data entry errors?

- A) Random distribution of errors

- B) Errors clustered by time, user, or location

- C) Errors in primary keys only

- D) Errors in calculated fields

**Answer:**

**Question 11:**  
What's the primary purpose of dependency mapping?

- A) Improve query performance

- B) Identify which processes depend on others and where bottlenecks occur

- C) Create database indexes

- D) Generate reports faster

**Answer:**

**Question 12:**  
In root cause analysis, what should you look for?

- A) The most recent error

- B) The most expensive error

- C) Common factors across multiple types of issues

- D) The easiest error to fix

**Answer:**

**Question 13:**  
Why validate business rules systematically?

- A) Improve data entry speed

- B) Ensure compliance and identify where controls are bypassed

- C) Reduce storage requirements

- D) Enhance user experience

**Answer:**

**Question 14:**  
What indicates cross-system integration issues?

- A) Slow performance

- B) Data exists in one system but not in related systems

- C) Complex queries

- D) Large data volumes

**Answer:**

**Question 15:**  
In statistical outlier detection, what does 3 standard deviations represent?

- A) Average values

- B) Values that are extremely unusual and likely errors

- C) Median calculations

- D) Normal business variations

**Answer:**

**Question 16:**  
Which metric best indicates systemic process breakdown?

- A) Total record count

- B) Percentage of records failing validation at each process step

- C) Query execution time

- D) Database size

**Answer:**

## PASSING CRITERIA

* Minimum Score Required: **80 out of 100**
* Query Writing: **At least 48/60**
* MCQ Section: **At least 32/40**
* Time Limit: **90 minutes**
* Retakes Allowed: Unlimited until 80% is achieved

## SKILLS YOU VALIDATE

Upon achieving 80%, you will have demonstrated:

- ✅ Audit trail query construction and data flow tracking

- ✅ Missing data detection and impact quantification

- ✅ Complex multi-table dependency mapping

- ✅ Manual error detection through pattern analysis

- ✅ Business rule validation and gap analysis

- ✅ Cross-system integrity checking

- ✅ Systemic issue identification and prioritization

- ✅ Executive-level root cause analysis reporting

## STUDY RECOMMENDATIONS

1. Master multi-table audit queries - crucial for tracing complex data flows

2. Practice dependency mapping logic - understanding process interdependencies is key

3. Focus on pattern detection - systematic errors have recognizable signatures

4. Get comfortable with statistical outlier detection - unusual patterns indicate problems

5. Understand business rule validation - compliance gaps often cause crises

**Time Investment:** Allow 5-6 hours for complete mastery before assessment.

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