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AI-generated content may be incorrect.SQL ASSESSMENT WORKBOOK V2 Step-5: Risk Management Optimization – Predictive, Dynamic, Automated**

**EduFin SQL Skill Assessment Workbook: Step 5 Evaluation**

**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 learners’ ability to:

* Build predictive insights for early default detection.
* Create dynamic risk scoring across multiple factors.
* Simulate automated alert systems with SQL conditions.

# SQL Skill Check Assessment – Pretraining Workbook

## PART A: Query Writing (60 points)

**Q1 (10 pts) — Early Default Signals**  
Write a query to identify the top 3 risk factors that can predict defaults within 60 days, ensuring no data leakage occurs.

**Your Answer:**

**Q2 (10 pts) — Predictive Default Risk Flag**  
Create a dynamic risk scoring system with at least 4 weighted factors and validate the scores against actual default outcomes.

**Your Answer:**

**Q3 (10 pts) — Dynamic Risk Score**  
Build a portfolio risk heatmap showing risk levels across geographic and product dimensions with color-coded risk levels.

**Your Answer:**

**Q4 (10 pts) — Tiered Risk Segmentation**  
Design an anomaly detection system that flags when default rates exceed statistical thresholds (2+ standard deviations).

**Your Answer:**

**Q5 (10 pts) — Automated Alerts**  
Create an executive dashboard showing current risk distribution, early warning indicators, and optimization recommendations.

**Your Answer:**

**Q6 (10 pts) — Portfolio Risk Dashboard (SQL View)**  
Create a query/view that outputs: institution\_name, total\_loans, high\_risk\_count, medium\_risk\_count, low\_risk\_count, default\_rate.

**Your Answer:**

## PART B: Multiple Choice (40 points)

**Q7:**  In risk scoring, why are weights important?

- A) They make calculations faster

- B) Different factors have different predictive power

- C) They are required by regulations

- D) They simplify the model

**Answer:**

**Q8:** What does a Z-score of 3 indicate in anomaly detection?

- A) 3% chance of occurrence

- B) 3 times the average value

- C) Value is 3 standard deviations from mean

- D) Critical threshold reached

**Answer:**

**Q9:** Why is risk concentration dangerous?

- A) It makes calculations complex

- B) It concentrates losses in specific areas

- C) It requires more monitoring

- D) It violates regulations

**Answer:**

**Q10:** What is the purpose of early warning systems?

- A) Reduce calculation time

- B) Identify problems before they become critical

- C) Automate all decisions

- D) Replace human judgment

**Answer:**

**Q11:** In portfolio optimization, what does diversification achieve?

- A) Higher returns

- B) Reduced concentrated risk

- C) Simplified management

- D) Lower costs

**Answer:**

**Q12:** Why calibrate risk scores against actual outcomes?

- A) Legal requirement

- B) Ensure scores actually predict defaults

- C) Improve calculation speed

- D) Simplify reporting

**Answer:**

**Q13:** What makes a risk factor "predictive"?

- A) High correlation with future defaults

- B) Easy to calculate

- C) Available for all customers

- D) Commonly used in industry

**Answer:**

**Q14:** In anomaly detection, what's the difference between statistical and rule-based methods?

- A) No difference

- B) Statistical uses historical patterns, rules use fixed thresholds

- C) Statistical is more accurate

- D) Rules are more complex

**Answer:**

**Q15:** Why are executive dashboards important in risk management?

- A) They look professional

- B) They enable quick decision-making

- C) They are required by law

- D) They reduce costs

**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

## Quality Assurance Checklist:

- ✅ Risk scores correlate with actual default rates

- ✅ No future information used in predictive models

- ✅ Anomaly detection has appropriate sensitivity

- ✅ Executive dashboards are action-oriented

- ✅ All calculations handle NULL values properly

## STUDY RECOMMENDATIONS

1. **Master predictive modeling concepts** - understand what makes factors predictive

2. **Practice weight calibration** - learn how to balance multiple risk factors

3. **Understand statistical significance** - know when patterns are meaningful vs random

4. **Focus on business communication** - practice translating technical insights into business language

5. **Learn validation techniques** - always test your models against reality

**Time Investment:** Allow 6-7 hours for complete mastery before assessment.

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