**Project: Building a Loan Analytics System with Snowflake Views for Spring Financial**

**Project Overview**

**Objective**: As a Data Engineer at Spring Financial, you’re tasked with building a Snowflake-based analytics system to support loan processing, credit reporting, and regional compliance reporting. You’ll create regular views for customer contact details, secure views for sensitive loan data, and materialized views for frequently accessed high-priority loan metrics, ensuring data security and performance optimization.

**Business Context**:

* **Customer Data**: Spring Financial requires contact details for customers in specific provinces (e.g., British Columbia) for targeted outreach.
* **Loan Data**: Analysts need secure access to loan details (e.g., loan amount, interest rate) for customers in North America, with sensitive data protected.
* **High-Priority Loans**: The operations team frequently queries loans with high interest rates (>20%) for risk assessment, requiring fast access.
* **Data Security**: Compliance teams need restricted access to sensitive data, using secure views to mask PII (Personally Identifiable Information).
* **Performance**: Queries must be optimized using Snowflake’s caching and materialized views to reduce costs.

**Resume Highlight**:

* Developed a Snowflake-based loan analytics system for a fintech platform, implementing regular, secure, and materialized views to support customer outreach, secure loan reporting, and high-priority loan monitoring, improving query performance by 30% and ensuring compliance with data privacy regulations.

**Project Tasks**

* The project consists of tasks that mirror real-world data engineering scenarios at Spring Financial, focusing on creating and managing views, optimizing performance, and ensuring security. Each task includes SQL code and explanations, allowing you to practice and document your work for your resume

**Task 1: Create a Regular View for Customer Contact Details**

* **Requirement**: The marketing team needs contact details (name, email, phone, address) for customers in British Columbia for a loan promotion campaign.
*  Create a regular view VW\_BC\_CUSTOMERS to fetch customer details from CUSTOMERS for British Columbia.
*  Query the view and check the Query Profile to observe caching behavior.
*  Run the query again to confirm result reuse (100% cache).
*  Disable result caching (ALTER SESSION SET USE\_CACHED\_RESULT = FALSE) and re-run to understand warehouse cache.
*  Grant SELECT access to the PUBLIC role.

**Task 2: Create a Secure View for Loan Details**

**Requirement**: The analytics team needs loan details (loan ID, customer name, loan amount, interest rate) for Canadian customers, but sensitive data (customer name) must be masked for non-admin roles to comply with privacy regulations.

**Steps**:

1. Create a secure view SEC\_VW\_LOAN\_DETAILS to fetch loan and customer data for Canada, masking customer\_name for non-admin roles.
2. Query the view and check the Query Profile.
3. Re-run the query with caching enabled (ALTER SESSION SET USE\_CACHED\_RESULT = TRUE) to observe result reuse.
4. Use SHOW VIEWS to compare visibility of view definitions for ACCOUNTADMIN vs. PUBLIC.
5. Grant SELECT access to the PUBLIC role and verify secure view behavior.

**Task 3: Create a Materialized View for High-Priority Loans**

**Requirement**: The risk team frequently queries loans with interest rates >20% for monitoring high-risk accounts. A materialized view is needed to improve query performance.

**Steps**:

1. Create a materialized view MAT\_VW\_HIGH\_RISK\_LOANS for loans with interest rates >20%.
2. Query the view and check the Query Profile.
3. Insert a new loan record into the LOANS table to trigger a refresh.
4. Check the materialized view refresh history.
5. Grant SELECT access to the PUBLIC role.