



SALIENT TECH SOLUTIONS'

SNOWFLAKE

SALIENT

DEVELOPER



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Week 1: SQL & Data Modeling in Snowflake

Day 1: Intro to Snowflake & Project Setup

- Overview of Snowflake & its architecture (storage/compute separation, warehouses)
- Overview of project scope & dataset
- SQL basics: databases, schemas, tables

Project Task:

- Set up Snowflake account, DB, schema
- Analyze source dataset and draft ERD (Customers, Orders, Products, etc.)

Day 2: Schema Design & SQL DDL

- Star vs. Snowflake schema
- DDL: CREATE, ALTER, DROP
- Constraints, primary/foreign keys

Project Task:

- Implement normalized schema in Snowflake using DDL

Day 3: Data Insertion & Control

- DML: INSERT, UPDATE, DELETE
- DCL: GRANT, REVOKE
- Roles and privileges in Snowflake

Project Task:

- Load initial data using DML
- Create roles for developer, analyst, and admin

Day 4: Querying & Filtering

- SELECT, FROM, WHERE
- Filtering with IN, BETWEEN, LIKE, DISTINCT

Project Task:

- Write queries for product search, customer lookup, order history

Day 5: Joins, Aggregation & Subqueries

- INNER, LEFT, RIGHT, FULL joins
- GROUP BY, HAVING, subqueries

Project Task:

- Implement KPI queries: total revenue, top-selling products, customer LTV

Week 2: Snowflake Architecture, Python & Data Ingestion

Day 6: Warehouses & Data Loading

- Virtual warehouses, auto-suspend/resume
- Internal/external stages
- File formats & COPY INTO

Project Task:

- Upload CSV/JSON to Snowflake stage
- Load into staging tables using COPY INTO

Day 7: Python + Snowflake Connector

- Python-Snowflake connector
- Running queries via Python
- Parameterization & config files

Project Task:

- Build a Python script to load and query data from Snowflake

Day 8: Data Validation in Python

- Data quality: nulls, duplicates, referential integrity
- Logging, alerts

Project Task:

- Write a Python validation script for staged data (log issues)

Day 9: Handling Semi-Structured Data

- VARIANT data type
- Flattening JSON in SQL
- LATERAL FLATTEN

Project Task:

- Load and query nested JSON (e.g., order items or metadata)

Day 10: Query Optimization & Profiling

- Query Profile tool
- Result caching & metadata caching
- Clustering keys

Project Task:

- Compare performance with and without clustering
- Analyze slow queries in Query Profile

Week 3: DBT Transformations & Modeling**Day 11: DBT Setup & Structure**

- What is DBT and how it works
- Project structure (models, seeds, snapshots)
- Connecting to Snowflake via profiles.yml

Project Task:

- Initialize DBT project & connect to Snowflake
- Create basic staging model for orders

Day 12: Modeling with DBT

- ref(), source(), CTEs in models
- Model dependencies and DAG

Project Task:

- Build DBT staging models: stg_orders, stg_customers, etc.

Day 13: DBT Testing & Documentation

- Built-in tests: unique, not_null, relationships
- schema.yml documentation

Project Task:

- Write tests for models
- Add model descriptions and generate docs

Day 14: Snapshots, Seeds, and Incremental Models

- Slowly Changing Dimensions (SCD) with snapshots
- Seeds for static data
- Incremental models

Project Task:

- Create SCD snapshot for customers
- Add product category data as seed

Day 15: Run Full DBT Transformation

- dbt run, dbt test, dbt docs serve
- Debugging models

Project Task:

- Run end-to-end DBT pipeline from raw → staging → final
- Push to GitHub

Week 4: Apache Airflow Orchestration

Day 16: Airflow Basics

- DAGs, tasks, operators
- Airflow UI and architecture

Project Task:

- Install and configure Airflow
- Create a dummy DAG

Day 17: Triggering DBT with Airflow

- BashOperator, PythonOperator
- Running DBT commands via DAGs

Project Task:

- Create DAG that runs DBT transformations daily

Day 18: Validation and Dependencies

- PythonOperator for validation
- Task chaining and dependencies

Project Task:

- Add a Python task to validate raw data before DBT tasks

Day 19: Scheduling and Monitoring

- Scheduling with cron
- Logs, retries, alerts

Project Task:

- Schedule DAG to run nightly and alert on failure

Day 20: Run Full Airflow Pipeline

- Review orchestration flow
- Error handling

Project Task:

- Run complete pipeline: Ingest → Validate → Transform

Week 5: Git, CI/CD, and Advanced Snowflake Features**Day 21: Git Workflow for DBT Projects**

- Git basics, branches, PRs
- Git with DBT teams

Project Task:

- Create feature branch, update model, submit PR

Day 22: GitHub Actions for CI/CD

- GitHub Actions YAML
- Running dbt run and dbt test on push

Project Task:

- Build CI workflow to test and deploy DBT on Git push

Day 23: Advanced SQL in Snowflake

- CTEs, window functions
- Stored procedures and UDFs

Project Task:

- Create UDF to categorize customers
- Use window functions for RFM metrics

Day 24: Monitoring & Resource Management

- Resource monitors
- Snowflake credit tracking
- Auto-suspend best practices

Project Task:

- Set up a resource monitor and analyze warehouse usage

Day 25: Project Review & Enhancement

- Review pipeline performance
- Model improvements

Project Task:

- Tune models and queries
- Ensure all models are documented and tested

Week 6: Security, BI, and Final Delivery**Day 26: Snowflake Security & RBAC**

- Role hierarchy, masking policies
- Secure views

Project Task:

- Add role-based access
- Mask PII in views (emails, phone numbers)

Day 27: BI Tool Integration

- Connecting Power BI / Tableau to Snowflake
- Publishing dashboards

Project Task:

- Build dashboard for key metrics: sales, customer segments, trends

Day 28: Logging, Errors & Final Checks

- Airflow & Python logging
- Final test coverage and validation

Project Task:

- Log and track all pipeline steps
- Final dry-run of the entire workflow

Day 29: Final Touches & Demo Prep

- Slide/demo tips
- Peer feedback and questions

Project Task:

- Final Git push
- Prepare project walkthrough and visuals

Day 30: Final Presentation & Delivery

- Present your project: architecture, pipeline, results
- Reflect on challenges and learning

Project Task:

- Live project demo (or recorded)
- Submit final GitHub repo and documentation

