

Snowflake Administration (3 Months)

Duration: 3 Months (~120 Hours)

Mode: Live Online / Classroom

Tools & Technologies: Snowflake Console, Snowsight, SnowSQL CLI, Warehouses, RBAC, Resource Monitors

Certifications Prepared: SnowPro Core Certification, SnowPro Advanced: Administrator

Syllabus

Week 1: Introduction & Architecture

- Data Warehousing concepts and modern cloud evolution
- Snowflake overview: multi-cluster, shared-data architecture
- Layers: Storage, Compute, Cloud Services
- Snowflake Editions & cloud platforms (AWS, Azure, GCP)
- Hands-on: Set up trial account, explore Snowsight UI and SnowSQL CLI
- Assignment

Week 2: User & Role Management (RBAC)

- Snowflake access model overview
- Creating users, roles, and role hierarchy
- Privileges and grants (database, schema, table level)
- Hands-on: Create admin, developer, and analyst roles with least privilege model
- Assignment

Week 3: Virtual Warehouses & Resource Monitors

- Virtual warehouse concepts: sizing, scaling, multi-cluster
- Auto-suspend & auto-resume configuration
- Monitoring compute credits with Resource Monitors
- Hands-on: Configure multiple warehouses with scaling policies
- Assignment

Week 4: Security & Governance

- Authentication methods (MFA, Key Pair, OAuth, SSO)
- Data security: Row-Level Security (RLS), Dynamic Data Masking, Column Security
- Network policies, IP whitelisting, and firewall integration
- Hands-on: Apply masking policy on sensitive column (e.g., PII data)
- Assignment
- Mock Interview 1

Week 5: Data Loading & Unloading

- Internal vs External Stages (S3, Blob, GCS)

- File formats: CSV, JSON, Avro, Parquet
- COPY INTO for bulk load
- Unloading data from Snowflake back to cloud storage
- Hands-on: Load JSON from AWS S3 into Snowflake tables
- Assignment

Week 6: Monitoring & Query Profiling

- Query History and Access History views
- Using Query Profile to troubleshoot query performance
- Result, Metadata, and Warehouse caching layers
- Hands-on: Profile a complex SQL query and identify bottlenecks
- Assignment

Week 7: Backup, Recovery & Cloning

- Time Travel for recovery
- Fail-safe retention
- Zero-Copy Cloning (databases, schemas, tables)
- Hands-on: Recover dropped table and clone environment for sandbox testing
- Assignment

Week 8: Capstone Project & Interview Prep

- Capstone: Configure secure, multi-warehouse Snowflake environment with RBAC, resource monitors, and data loading
- Assignment
- Mock Interview 2

Learning Outcomes

- Understand Snowflake's architecture and editions across AWS, Azure, and GCP
- Implement RBAC-based access control for secure user and role management
- Manage warehouses, scaling policies, and cost optimization with resource monitors
- Apply data security with masking policies and row-level security
- Load and unload structured and semi-structured data into Snowflake
- Monitor queries and tune performance effectively
- Recover and clone data using Time Travel and Fail-safe
- Prepare for SnowPro Core and SnowPro Advanced: Administrator certifications