

# CloudPandith

## Azure Data Factory Mastery | SQL & Real-Time Pipelines & Automation

Real-Time Projects | Interview Ready Training

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### Section 1: Introduction to Azure Data Factory & Core Concepts

What you learn: ADF basics, architecture, components, and real-time use cases

1. Introduction to Azure Data Factory & Real-Time Use Cases
2. Azure Data Factory Architecture & Core Components
3. Copy Data Activity Deep Dive (Linked Services, Datasets, Pipelines)

### Section 2: File-Based Data Ingestion & ADLS Integration

What you learn: File ingestion patterns, dynamic pipelines, and scalable data movement

4. Copy Multiple Folders using Dataset Parameters
5. Dynamic File Ingestion using Lookup and ForEach Activity
6. Metadata-Driven File Ingestion Framework (ADLS to ADLS)

### Section 3: Database Integration & Hybrid Connectivity

What you learn: Integrating cloud and on-prem data sources with ADF

7. Ingest Multiple Tables from Azure SQL Database to ADLS
8. SQL Fundamentals for Data Engineering in ADF
9. Using Stored Procedures in ADF Pipelines
10. Copy Data from On-Prem SQL Server using Self-Hosted Integration Runtime

11. Copy Data from On-Prem File System to ADLS using SHIR
12. Ingest Data from PostgreSQL to Azure Blob Storage
13. Snowflake to Azure SQL Integration using ADF
14. Multi-Database & Multi-Server Data Ingestion Design

#### **Section 4: SQL for Data Engineering & Interview Preparation**

What you learn: SQL concepts required for ADF pipelines and interviews

15. SQL Joins Explained (Inner, Left, Right, Full, Self Joins)
16. SQL Window Functions (ROW\_NUMBER, RANK, LEAD, LAG)
17. SQL String and Date Functions for ETL
18. Advanced SQL Scenarios for Real-Time Use Cases
19. Recursive CTE and Duplicate Data Handling Techniques

#### **Section 5: Incremental Load & Data Engineering Strategies**

What you learn: Efficient data loading patterns for real-time pipelines

20. Full Load vs Incremental Load Concepts
21. Delta Load Strategy and Change Data Handling
22. Incremental Load using Last Modified Date
23. Watermark-Based Incremental Load Implementation
24. Multi-Table Incremental Load Design
25. Control Table Driven Pipeline Architecture

#### **Section 6: Scheduling, Triggers & Pipeline Automation**

What you learn: Automating pipelines using different trigger mechanisms

26. Scheduling Pipelines (Minute, Hourly, Daily, Weekly, Monthly)

- 27. Tumbling Window Trigger for Incremental Processing
- 28. Event-Based Trigger for Near Real-Time Pipelines
- 29. External Dependency Trigger (Upstream Job Integration)
- 30. File-Based Triggering using File Name Patterns

## **Section 7: Advanced Pipeline Design & Frameworks**

What you learn: Building reusable, scalable, and enterprise-grade pipelines

- 31. Metadata-Driven Ingestion Framework Design
- 32. Single Pipeline Design for Multiple Data Sources
- 33. Dynamic Mapping for Multiple Excel Schemas
- 34. Excel to SQL Ingestion with Metadata Columns
- 35. Pipeline Concurrency Control using Control Tables

## **Section 8: REST API Integration & Data Ingestion**

What you learn: Integrating external APIs into ADF pipelines

- 36. REST API Ingestion to ADLS (JSON Data Processing)
- 37. Token-Based API Authentication and Secure Access
- 38. Handling Paginated API Data (Next Page, Offset, Query Params)

## **Section 9: Data Flows & Transformations in ADF**

What you learn: Transforming and cleansing data using Mapping Data Flows

- 39. Mapping Data Flows Overview and Architecture
- 40. Data Quality Validation and Duplicate Handling
- 41. SCD Type 1 Implementation using Data Flows
- 42. SCD Type 2 Implementation using Data Flows

43. SCD Type 1 with ADLS-Based Pattern

44. Pivot and Unpivot Transformations in ADF

## **Section 10: Automation, Notifications & Integrations**

What you learn: Integrating ADF with other Azure services for automation

45. Secure Data Movement using Key Vault with ADF

46. ADLS to SQL Pipeline with Logic Apps Notification

47. Email Automation using Logic Apps with Attachments

48. Email Notification after Pipeline Completion

49. Trigger Databricks Notebook from ADF

## **Section 11: Logging, Monitoring & Production Best Practices**

What you learn: Building production-ready pipelines with monitoring

50. Pipeline Logging using Stored Procedures

51. Managing Pipeline Concurrency and Failures