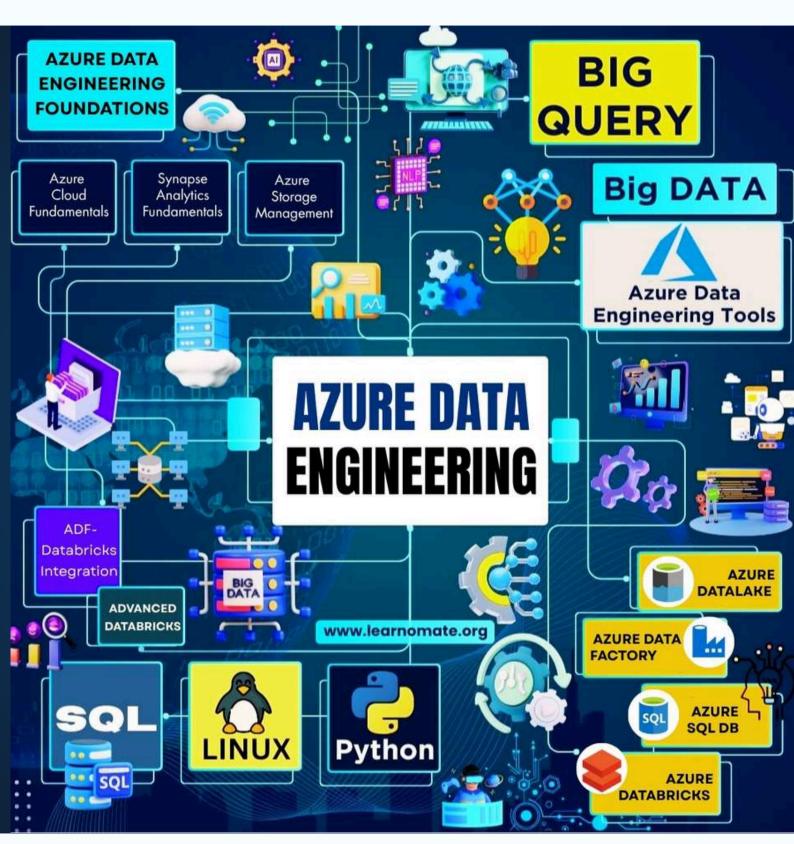# AZURE DATA ENGINEER

AZURE DATA ENGINEER ROADMAP

About Learnomate

At Learnomate Technologies, we take pride in being one of the best software training institutes, offering a wide range of IT training programs and services that cater to learners across the globe. Our mission is simple: to empower aspiring IT professionals with the skills they need to excel in today's competitive tech world. With our global reputation, we are known for delivering high-quality training that transforms careers.

Our CEO, Ankush Thavali, is a renowned Oracle DBA expert, and his training programs are widely recognized for their depth, practicality, and success rates. Backed by a team of highly skilled trainers, we provide the best training material and an exceptionally supportive team to ensure a seamless learning journey for our students.

At Learnomate, we believe that financial constraints should never stop you from achieving your IT dreams. That's why we offer flexible payment options, including EMI and installment plans, making quality IT education accessible to everyone. Whether you're an aspiring professional or looking to upskill, our programs are designed to suit your needs and help you succeed.

Join us today and experience why thousands of students worldwide trust Learnomate Technologies to be their partner in IT growth. Let's build your future together!

What we offer in this training?

Data drives decision-making in today's digital era, and Data Engineers play a pivotal role in ensuring seamless data workflows. Our Data Engineering Training equips you with the skills to design, build, and maintain data pipelines while working with tools like Azure Data Factory, Hadoop, Spark, and more. From handling massive datasets to creating optimized pipelines, this course prepares you for the growing demand for data engineers.

Salient Features:

- Comprehensive training on cloud platforms like Azure.

- Practical exposure to big data tools like Hadoop and Spark.

- Real-time projects to simulate industry work environments.

- Insights into data modeling, ETL processes, and scalability.

- Guidance on how to ace data engineering interviews.

Duration: 3 Months

MODULE -1-SQL

Introduction to SQL
- Theoretical Concepts and Importance of SQL

SQL Commands
- DML- Insert, Update, Delete, Call, Explain call, Lock
- DDL- Create, Drop, Alter Truncate
- DQL- Select
- DCL- Grant, Revoke
- TCL- Commit, Savepoint, Rollback, Set Transaction, Set Constraints

SQL Clauses
AND, OR, Not, Where, In, Between, Top, Group by, Having, Like, Order by

SQL Operators
Min & Max, Count, Average, Sum, Any, All

SQL Join
Inner Join , Outer Join, Left Join , Right Join , Full join , self join ,

SQL Store Procedures
SQL Null Functions
SQL Case
SQL Null Functions
SQL Aliases

SQL Database

Create Database, Drop database, Backup database, Create table, Drop table, Alter table Constraints, Unique, Primary key, Foreign key, Check, Default index, Auto increment Sql Dates, Views, Injection, Hosting, Datatypes.

MODULE- 2 LINUX SYLLABUS

- **Introduction and installation of Ubuntu.**
- **Add/remove user**
- **Change ownership/ owner**
- **Change permissions of files, groups**
- **Create linux group**
- **Cut command in linux**
- **Delete user Files & Directories**
- **Grep command**
- **Linux file content command**
- **User management MAN Command**
- **Package in linux**
- **Rename & delete Linux Backup**
- **Tr command in linux**
- **Vi editor**
- **Unix command.**

MODULE- 3 Python for Data Engineer

CHAPTER 1 - Python Basics

- Strings
- Operators
- Numbers (Int, Float)
- Booleans

CHAPTER 2 - Data Types & Data Structures

- Lists
- Tuple
- Dictionary
- Sets

CHAPTER 3 - Python Programming Constructs

- if, elif, else statements
- for loops, while loops
- Exception Handling
- File I/O operations

CHAPTER 4- Modular Programming in Python

- Functions
- Lambda Functions and Classes

MODULE 3- BIG DATA

- Introduction to big data
- Comparison between monolithic and distributed systems.
- Hadoop: evolution, overview and core components
- Challenges with hadoop
- Comparison between on-premise and cloud
- Introduction to database
- Introduction to data warehouse
- Introduction to data lake
- Data engineering flow
- Data pipeline on hadoop
- Data pipeline workflow visualization for on-premise
- Data pipeline workflow visualization for cloud
- Categories of computation
- Serverless computing
- Serverful computing
- Hdfs architecture
- Role of data engineers
- Traditional ways of processing data and its challenges

MODULE 4- AZURE CLOUD FUNDAMENTALS

- What is cloud?
- Characteristics of cloud
- categories of cloud services:
  - IAAS
  - PAAS
  - SAAS
- Introduction to cloud deployment models
  - Public
  - private
  - hybrid
- Steps to create an azure account
- Various methods for generating resources in azure
- Introduction to azure global infrastructure
  - Data centre
  - region
  - Availability zone
  - Region pairs
  - Geography
- virtual machines in azure
- virtual machines scale set
- Availability set
- Availability set vs availability zone

MODULE 5- AZURE STORAGE FUNDAMENTALS

- Azure storage service fundamentals
- Introduction to azure datalake storage gen 2
- Blob storage account creation
- Blob access tiers
- Hot
- Cold
- Archive
- Different redundancy options
- Introduction of ADLS gen2
- ADLS gen2 storage account creation hands on
- Difference between blob storage & adls gen2 storage
- life cycle management of storage account
- Azure storage - pricing

MODULE 6- AZURE DATA ENGINEERING FOUNDATIONS

- Azure Data Platform Overview
- Data Engineer Role & Responsibilities
- Data Architecture Patterns
- Azure Storage Solutions (Blob, ADLS Gen2)
- Hands-on: Setting up Azure Environment

MODULE 7- ADF ARCHITECTURE & COMPONENTS

- ADF Architecture & Components
- Pipelines, Activities & Triggers
- Data Flow Transformations
- Integration Runtime Types
- Monitoring & Debugging
- Hands-on: Building ETL Pipeline with ADF

MODULE 8- AZURE SYNAPSE ANALYTICS FUNDAMENTALS

- Synapse Architecture & Components
- Dedicated SQL Pools vs Serverless SQL
- PolyBase & COPY Command
- Data Distribution Strategies
- Spark Pools in Synapse
- Hands-on: Data Warehousing with Synapse

MODULE 9- ADVANCED SYNAPSE ANALYTICS

- Synapse Link for Real-time Analytics
- Synapse Pipelines & Triggers
- Integrating with Power BI
- Security & Access Control

MODULE 10- AZURE DATABRICKS FUNDAMENTALS

- Databricks Architecture & Workspace
- Cluster Management
- Notebook Development
- Spark Fundamentals in Databricks
- Hands-on: First Databricks ETL Job

MODULE- 11 DELTA LAKE ARCHITECTURE

- ACID Transactions in Delta
- Time Travel & Versioning
- Schema Evolution & Constraints
- Optimizations (Z-Ordering, Compaction)
- Hands-on: Building a Delta Lake Solution

MODULE 12- ADVANCED DATABRICKS

- Databricks SQL & Dashboards
- Unity Catalog & Governance
- MLflow for ML Lifecycle
- Photon Engine & Query Optimization
- Structured Streaming
- Hands-on: Real-time Streaming Pipeline
-

MODULE 13- ADF-DATABRICKS INTEGRATION

- ADF-Databricks Integration
- Synapse-Databricks Integration
- Event-driven Architectures
- CI/CD for Data Solutions
- Monitoring & Observability

MODULE 14- PROJECTS

- End-to-End Data Engineering Solution
-

Training Highlights

- **Online Training available**

- **All sessions are practical based**

- **Recording Access shared to students**

- **Job Assistance**

- **Resume Preparation**

- **Dedicated Support Team to solve issues**

Course Details

- **Trainer: Ankush Sir**

- **Duration: 3 Months**

Contact details

If you required any further information, please fill free to contact us.

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