**Data Engineering Roadmap For Freshers & Resources**

1. Programming Language :
   1. Python
   2. Scala
   3. Java
2. Operating Systems & Scripting:
   1. Linux
   2. Unix
   3. Shell Scripting
3. Data Structures & Algorithms (Average Level, No Hard level):
   1. Arrays
   2. Strings
   3. Linked List
   4. Stack
   5. Queue
   6. Tree
   7. Graph (Basics)
   8. Dynamic Programming
   9. Searching
   10. Sorting
4. Core Basics of DBMS :
   1. DDL
   2. DCL
   3. DML
   4. Integrity Constraints
   5. Data Schema
   6. Basic Operations
   7. ACID Properties
   8. Transactions
   9. Concurrency Control
   10. Deadlock
   11. Indexing
   12. Hashing
   13. Normalization forms
   14. Views
   15. Stored Procedures
   16. ER Diagrams
5. SQL Scripting :
   1. Transactional Databases : MySQL, PostgreSQL
   2. All types of joins
   3. Nested Queries
   4. Group By
   5. Use of Case When Statements
   6. Window Functions
6. Basic Terminologies In BigData :
   1. What is BigData?
   2. 5 V’s of BigData
   3. Distributed Computation
   4. Distributed Storage
   5. Vertical vs Horizontal Scaling
   6. Commodity Hardwares
   7. Clusters
   8. File formats
      1. CSV
      2. JSON
      3. AVRO
      4. Parquet
      5. ORC
   9. Type of Data
      1. Structured
      2. Unstructured
      3. Semi-structured
7. Data Exploration Libraries :
   1. Pandas
   2. NumPy
8. Data Warehousing Concepts:
   1. OLAP vs OLTP
   2. Dimension Tables
   3. Fact Tables
   4. Star Schema
   5. Snowflake Schema
   6. Warehouse Designing Questions
   7. Many more topics
9. BigData Frameworks :
   1. Apache Hadoop (Architecture Understanding Most Imp)
      1. HDFS
      2. Mar-Reduce
      3. Yarn
   2. Apache Hive
      1. How to load data in different file formats
      2. Internal Tables
      3. External Tables
      4. Querying table data stored in HDFS
      5. Partitioning
      6. Bucketing
      7. Map-Side Join
      8. Sorted-Merge Join
      9. UDF’s in Hive
      10. SerDe in Hive
   3. Apache Spark (Most Important)
      1. Spark Core
      2. Spark SQL
      3. Spark Streaming
   4. Apache SQOOP
   5. Apache NIFI
   6. Apache FLUME
10. Workflow Schedulers, Dependency Management :
    1. Apache Airflow
    2. Azkaban
11. NoSQL Databases :
    1. HBase
    2. DataStax Cassandra (Recommended)
    3. ElasticSearch
    4. MongoDB
12. Messaging Queue Frameworks :
    1. Apache KAFKA
13. Dashboarding Tools :
    1. Tableau
    2. PowerBI
    3. Grafana
    4. Kibana (Part of ELK (ElasticSearch - Logstash - Kibana)
14. BigData Services in Cloud (AWS) :
    1. Ondemand Machines
       1. AWS EC2
    2. Access Management
       1. AWS IAM
    3. For Storing and Accessing Credentials
       1. AWS Secret Manager
    4. Distributed File Storage
       1. AWS S3
    5. Transactional Database Services
       1. AWS RDS
       2. AWS Athena
       3. AWS Redshift
    6. NoSQL Database Services
       1. AWS Dynamo
    7. Serverless
       1. AWS Lambda
    8. ETL Services
       1. AWS Glue
    9. Scheduler
       1. AWS Cloudwatch
    10. Distributed Data Computation
        1. AWS EMR
    11. Messaging Queue
        1. AWS SNS
        2. AWS SQS
    12. Real Time Data Processing
        1. AWS Kinesis