

INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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IBM Db2 TRAINING

. Introduction to IBM Db2

- Overview of IBM Db2
- History and evolution of Db2
- Comparison with other RDBMS
- Db2 editions and features
- Installation and setup of Db2

2. Database Fundamentals

- Basic database concepts
- Relational database design
- SQL overview and syntax
- Data types and structures
- Primary keys, foreign keys, and indexes

3. Db2 Architecture

- Db2 instance and database architecture
- Buffer pools and memory management
- Tablespaces and storage management
- Db2 objects: Tables, Views, Indexes, Sequences

4. Db2 SQL and PL/SQL

- Basic SQL queries (SELECT, INSERT, UPDATE, DELETE)
- Advanced SQL (JOINS, UNION, INTERSECT, EXCEPT)
- Subqueries and nested queries
- Functions and expressions
- Procedural SQL (PL/SQL)

- Triggers, stored procedures, and user-defined functions

5. Db2 Database Design and Implementation

- Database schema design
- Normalization and denormalization
- ER diagrams and data modeling
- Creating and managing tables and views
- Implementing constraints and referential integrity

6. Db2 Data Manipulation

- Loading and unloading data
- Import and export utilities
- Backup and restore operations
- Data movement and replication
- Batch processing and bulk operations

7. Db2 Administration and Management

- Db2 administration tools and interfaces
- User and security management
- Roles and privileges
- Database configuration and tuning
- Monitoring and diagnostics
- Backup and recovery strategies

8. Db2 Performance Tuning

- Performance monitoring and analysis
- Query optimization techniques
- Index design and management
- Memory and storage optimization
- Locking and concurrency control
- Troubleshooting performance issues

9. Advanced Db2 Features

- Partitioning and clustering
- High availability and disaster recovery

- Db2 pureScale and Db2 BLU Acceleration
- Temporal tables and time-travel queries
- XML data and XQuery
- JSON support

10. Db2 Integration and Tools

- Db2 Connect and integration with other databases
- Working with IBM Data Studio
- Using IBM InfoSphere tools
- Integration with Hadoop and big data platforms
- Cloud deployment and Db2 on Cloud

Advanced IBM Db2 Syllabus

1. Advanced Db2 Architecture and Concepts

- Deep dive into Db2 internal architecture
- Advanced storage management
 - Tablespaces
 - Buffer pools
 - Storage groups
- Memory architecture and tuning
- Advanced indexing techniques
 - Bitmap indexes
 - Expression-based indexes
 - XML indexes

2. Advanced SQL and PL/SQL

- Advanced SQL features
 - Common table expressions (CTEs)
 - Recursive queries
 - Window functions
 - Pivot and unpivot operations
- Advanced PL/SQL programming
 - Complex stored procedures
 - Advanced triggers
 - Error handling and exception management
- Performance tuning of SQL queries
 - Access plan analysis
 - Optimizer hints and directives

3. Db2 Performance Tuning and Optimization

- Performance monitoring and diagnostic tools
 - Db2 Performance Expert
 - Db2 Query Monitor
- Query optimization strategies
 - Index optimization
 - Statistics collection and management
 - Query rewrite techniques
- Memory tuning
 - Buffer pool tuning
 - Sort and lock memory management
- Locking and concurrency control
 - Isolation levels
 - Lock escalation and contention
 - Deadlock detection and resolution

4. Advanced Backup and Recovery

- Backup strategies
 - Incremental and delta backups
 - Online and offline backups
- Recovery techniques
 - Point-in-time recovery
 - Table-level recovery
 - Recovery with log files
- High availability solutions
 - HADR (High Availability Disaster Recovery)
 - Log shipping and replication
 - Db2 pureScale

5. Advanced Security Features

- Advanced user management
 - Roles and groups
 - Authentication mechanisms
- Data encryption
 - Encryption at rest and in transit
 - Db2 native encryption
- Auditing and compliance
 - Configuring and managing audit policies

- Regulatory compliance (GDPR, HIPAA)

6. Data Warehousing and Analytics

- Db2 BLU Acceleration
 - Columnar storage
 - In-memory processing
 - Data skipping and compression
- Data warehousing design
 - Star and snowflake schemas
 - Fact and dimension tables
- Advanced analytics
 - Integration with R and Python
 - Predictive analytics using Db2

7. Advanced Data Integration and ETL

- ETL processes and tools
 - IBM InfoSphere DataStage
 - Db2 SQL-based ETL
- Integration with big data platforms
 - Hadoop and Spark
 - Db2 Big SQL
- Working with JSON and XML data
 - JSON functions and operators
 - XML data handling and XQuery

8. Db2 in the Cloud

- Db2 on Cloud
 - Db2 on IBM Cloud
 - Deployment and management in cloud environments
- Hybrid cloud solutions
 - Integration with on-premises systems
 - Data migration strategies
- Cloud-native features
 - Containerization with Docker
 - Kubernetes orchestration

9. Advanced Troubleshooting and Diagnostics

- Diagnostic logs and trace files
- Problem determination and resolution
- Advanced diagnostic tools
 - db2pd
 - db2diag
- Case studies of complex troubleshooting scenarios