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JOB GUARANTEED

PROGRAM

QUALITY EDUCATION FROM QUALITY PEOPLE

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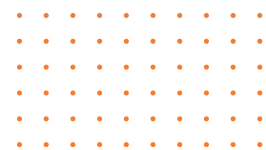
PROGRAM NAME

BUSINESS INTELLIGENCE
DEVELOPER PROGRAM

QUALITY EDUCATION FROM QUALITY PEOPLE

BUSINESS INTELLIGENCE DEVELOPER PROGRAM

This Business Intelligence Developer Program focuses on the end-to-end lifecycle of designing, developing, and maintaining BI solutions. Participants gain comprehensive knowledge of databases, ETL/ELT processes, data modeling, cloud-based technologies, and interactive reporting tools. By completing this program, learners will be able to translate business needs into effective data-driven solutions that power strategic decision-making.

Course Overview

The role of a Business Intelligence (BI) Developer is critical for leveraging organizational data to generate insights. The program delves into:
– SQL Proficiency: Advanced query writing, joins, subqueries, common table expressions (CTEs), and window functions.
– Data Warehousing: OLAP vs. OLTP, Kimball and Inmon methodologies, dimensional modeling, indexing, and schema design.
– ETL/ELT Tools: Microsoft SSIS, Azure Data Factory, AWS Glue, Python scripts, and API integrations for data manipulation.
– Data Visualization & Reporting: Power BI, Tableau, SSRS, and principles of effective dashboard creation.

COURSE OVERVIEW

– Advanced Analytics & Cloud: Cubes with SSAS, orchestration tools, and an introduction to big data processing with Spark/Hadoop.
– Soft Skills & Project Best Practices: Requirements gathering, communication, agile methodologies, and version control.
– Capstone Project: An end-to-end BI solution, from data ingestion to interactive dashboards.

Course Type

This program is designed for a beginner-to-intermediate audience. It gradually introduces fundamental concepts before moving into advanced BI tools and development techniques, making it appropriate for newcomers while also offering depth for those with some data background.

COURSE OBJECTIVES

1. Master RDBMS & SQL: Develop an in-depth understanding of relational database concepts, complex joins, indexing, window functions, and best practices for performance tuning.

2. Learn ETL/ELT Methods: Use mainstream tools (SSIS, Azure Data Factory, AWS Glue) to build reliable data pipelines, from ingestion and staging to transformation and loading.

3. Build Data Warehouses: Implement dimensional modeling, star/snowflake schemas, and handle slowly changing dimensions.

4. Leverage Python for Automation: Employ Python scripting (NumPy, Pandas) for data manipulation and advanced transformations.

5. Implement BI & Analytics: Create dashboards and reports using Power BI, Tableau, and SSRS. Gain exposure to OLAP cubes, SSAS, and basic data science integrations.

6. Adopt Cloud Solutions: Explore cloud-based data warehousing platforms (Snowflake, Azure Synapse, AWS Redshift) and orchestration tools for large-scale analytics.

7. Practice Good Governance & Security: Understand data governance, role-based access control, and data lineage to ensure secure, accurate reporting.

8. Develop Soft Skills & Agile Mindsets: Communicate effectively with business stakeholders, manage agile sprints, and use version control to streamline collaboration.

DURATION

120 Hours

Requirements

– A computer (Windows / macOS / Linux) with at least 8 GB of RAM and sufficient storage.
– Internet access for cloud-based exercises, collaboration, and tool installations.
– Willingness to install and configure databases (SQL Server, PostgreSQL, or MySQL) and BI tools (Power BI, Tableau Public, SSIS, etc.).

Pre-requisites

– Basic understanding of databases and spreadsheets is helpful but not mandatory.
– No prior programming or BI experience required—this course ramps up from foundational to advanced topics.

TARGET AUDIENCE

– Aspiring BI Developers from both technical and non-technical backgrounds.
– Database professionals expanding into reporting, data warehousing, or ETL.
– Data Analysts looking to deepen knowledge of BI pipelines and architecture.
– IT managers or professionals seeking an integrated view of data management and analytics.
– Recent graduates with an interest in data-centric careers.

Career and Future Prospects

Graduates can explore roles such as:
– Business Intelligence (BI) Developer
– Data Warehouse Developer
– ETL Developer
– BI Analyst / Consultant
– Data Engineer (with additional specialization)
– Cloud Data Solutions Engineer
As data continues to drive business decisions, skilled BI Developers can grow into senior development roles, solutions architecture, or BI management positions, often commanding strong salary growth and leadership opportunities.

DESIGNATION/TITLE

Common job titles for those completing this program include:
– Junior BI Developer
– BI Developer
– Senior BI Developer
– BI Architect
– Data Warehouse Engineer
– Cloud BI Engineer

Projects

Projects are embedded throughout each module, culminating in a comprehensive capstone:
1. SQL & DBMS Project
– Build and optimize a relational database using advanced SQL constructs (window functions, indexing).
– Use T-SQL / PL/SQL / PostgreSQL queries to manipulate test data.
2. ETL/ELT Pipeline Development
– Develop a data integration workflow with SSIS or Azure Data Factory.
– Implement error handling, logging, and schedule the pipeline to run automatically.

PROJECTS

3. Data Warehouse & Modeling
– Implement dimensional modeling using star/snowflake schemas.
– Create fact and dimension tables, handle slowly changing dimensions.
4. Python for Data Processing
– Leverage Pandas for data cleaning and transformation.
– Automate tasks with Python scripts (e.g., reading APIs, merging datasets).
5. Reporting & Dashboard
– Design an interactive dashboard in Power BI or Tableau.
– Incorporate calculated fields/measures (DAX in Power BI, LOD in Tableau).
6. Capstone Project
– An end-to-end BI solution: ingest data from multiple sources, store it in a data warehouse, clean/transform it, and develop a real-time or scheduled dashboard.
– Present final insights to a mock executive team or technical audience.

SALARY

ndia : ₹6 LPA – ₹15 LPA
USA : $70,000 – $110,000
Canada : CA$65,000 – CA$100,000
UK : £35,000 – £60,000
Australia : AU$75,000 – AU$110,000

FEATURES

– Hands-On Curriculum: Engage with real tools like SSIS, Power BI, Tableau, and Python for robust BI solutions.
– Cloud Integration: Explore Azure, AWS, or GCP for modern, scalable analytics.
– Industry Best Practices: Adopt dimensional modeling, agile sprints, version control, and data security measures.
– Portfolio-Building Projects: Each module includes practical tasks leading to a final capstone solution.
– Career Support: Resume/CV guidance, interview preparation, and mentorship for BI-focused roles.

BENEFITS

– End-to-End BI Mastery: Gain skills in data warehousing, ETL, and interactive reporting.
– Technical & Soft Skills: Combine coding, database design, data visualization, and stakeholder communication.
– Real-World Relevance: Learn methods and tools widely used in top tech and data-centric organizations.
– Professional Network: Collaborate with peers, instructors, and potential employers within a supportive environment.
– Enhanced Career Prospects: Position yourself for roles in data engineering, advanced analytics, or BI architecture.

MODULE 1. FOUNDATIONAL CONCEPTS

- SQL Mastery:
- Advanced T-SQL (SQL Server),
- PL/SQL (Oracle), or PostgreSQL
- Complex joins
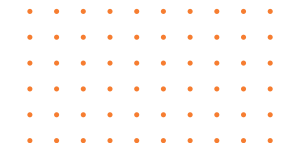
UNDERSTANDING JOINS
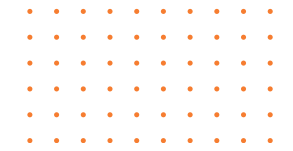
- Purpose of joins in relational databases
- Types of relationships: One-to-One, One-to-Many, Many-to-Many

SQL JOIN TYPES

- INNER JOIN: Most common, returns matching rows
- LEFT (OUTER) JOIN: Returns all rows from left table, matches from right
- RIGHT (OUTER) JOIN: Returns all rows from right table, matches from left
- FULL (OUTER) JOIN: Returns all rows when there is a match in either table
- SELF JOIN: Joining a table to itself
- CROSS JOIN: Cartesian product

JOIN CONDITIONS

- ON clause vs. USING clause
- Multiple join conditions

SUBQUERIES

- Scalar subqueries: Returning a single value
- Row subqueries: Returning a single row
- Table subqueries: Returning a table (used with IN, EXISTS, ANY, ALL)
- Correlated subqueries: Dependent on outer query
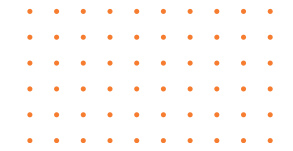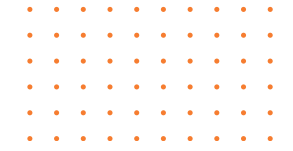
CTES

- WITH clause for readability and complex queries
- Recursive CTEs for hierarchical data (e.g., organizational charts)

WINDOW FUNCTIONS

- ROW_NUMBER(), RANK(), DENSE_RANK(), NTILE()
- LEAD(), LAG(), FIRST_VALUE(), LAST_VALUE()
- Aggregate window functions (SUM() OVER(...), AVG() OVER(...))

MODULE 2. DATABASE MANAGEMENT SYSTEMS (DBMS)

RELATIONAL DATABASE (RDBMS) CONCEPTS

- Data, Information, Database, DBMS, RDBMS
- Key concepts: Tables, Rows (Records), Columns (Fields), Primary Keys, Foreign Keys, Relationships (One-to-One, One-to-Many, Many-to-Many)
- SQL standards (ANSI SQL-92, SQL:1999, SQL:2003, SQL:2008, SQL:2011, SQL:2016)

SCHEMA DESIGN (NORMALIZATION/DENORMALIZATION)

- Benefits of normalization (data integrity, reduced redundancy)
- Denormalization strategies for performance
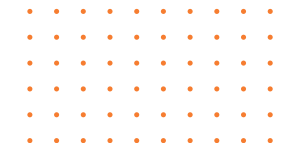
INDEXING STRATEGIES (CLUSTERED, NON-CLUSTERED)

- When to use indexes, types of indexes
- Impact on read/write performance
- Covering indexes, composite indexes

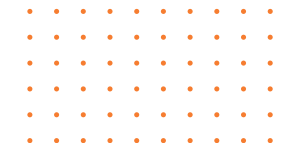## MODULE 3. DATA WAREHOUSING (DW) CONCEPTS

- OLAP vs. OLTP; Kimball vs. Inmon methodologies; dimensional modeling (facts, dimensions, measures, hierarchies).

MODULE 4. DATA GOVERNANCE & SECURITY

- Data quality principles (accuracy, completeness, consistency), data lineage, role-based access control (RBAC).

MODULE 5. DATA INTEGRATION (ETL/ELT)

- **ETL Tools:** Proficiency in Microsoft SSIS (SQL Server Integration Services) for package creation, deployment, and scheduling; error handling, logging.
- **Cloud ETL/ELT:** Azure Data Factory, AWS Glue, Google Cloud Dataflow for scalable cloud-native data pipelines.
- **Scripting:**
- Python for data manipulation (Pandas, NumPy)
- **Introduction to NumPy**
- What is NumPy? The core library for numerical operations (e.g., C-optimized arrays for speed)
- NumPy arrays (ndarray): Creation, indexing, slicing, reshaping
- Array operations: Element-wise operations, broadcasting rules
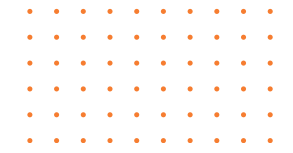
- **Advanced NumPy**
- Linear algebra operations (e.g., dot product, matrix multiplication, inverse)
- Statistical functions (e.g., mean, median, standard deviation on arrays)
- Random number generation (e.g., np.random.rand, np.random.randint)
- **Introduction to Pandas**
- What is Pandas? The foundational library for data structures (e.g., Series, DataFrame)
- Creating DataFrames and Series: From dictionaries, lists, NumPy arrays
- Importing and exporting data: pd.read_csv, pd.read_excel, df.to_csv

- **Data Inspection and Cleaning**
- Viewing data: df.head(), df.info(), df.describe(), df.shape
- Handling missing data: df.isnull(), df.dropna(), df.fillna()
- Data type conversion: df.astype(), pd.to_datetime
- Removing duplicates: df.drop_duplicates()
- **Data Selection and Filtering**
- Column selection: df['column'], df[['col1', 'col2']]
- Row selection: df.loc, df.iloc
- Conditional filtering: Boolean indexing (e.g., df[df['age'] > 30])
- **Data Transformation**
- Applying functions: df.apply(), df.map(), df.transform()
- Grouping and aggregation: df.groupby(), agg() (e.g., df.groupby('category') ['value'].mean())
- Merging and joining DataFrames: pd.merge(), pd.concat() (e.g., inner, outer, left, right joins)
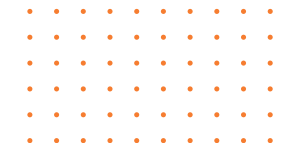
- **Pivoting and melting data:** df.pivot_table(), pd.melt()
- Automation scripts, API integrations.
- **Data Loading Techniques:** Full load, incremental load strategies; change data capture (CDC) mechanisms.
- **Data Modeling & Storage**
- **Dimensional Modeling:** Star schema, snowflake schema implementation; slowly changing dimensions (SCD Type 1, 2, 3).
- **Data Lake/Lakehouse Concepts:** Understanding Parquet, ORC, Delta Lake formats; structured vs. unstructured data storage.
- **Cloud Data Warehouses:** Snowflake, Azure Synapse Analytics, AWS Redshift, Google BigQuery for large-scale analytics.

MODULE 6. REPORTING & VISUALIZATION
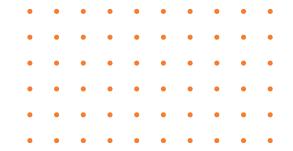
- **Reporting Tools:** Power BI Desktop and Service (DAX, M-query, direct query, import mode), Tableau Desktop and Server (calculated fields, LOD expressions), SSRS (report builder, report server deployment).
- **Dashboard Design:** Principles of effective data visualization (Tufte, Few); UX/UI for clear insights; storytelling with data.
- **Ad-hoc Reporting:** Empowering business users with self-service BI capabilities via tools like Power BI or Tableau.

MODULE 7. ADVANCED TOPICS & PERFORMANCE

- **Analytical Processing (OLAP):** Building cubes with SQL Server Analysis Services (SSAS) - Tabular and Multidimensional models; MDX queries.
- **Data Pipeline Orchestration:** Using Airflow, Azure DevOps, or similar tools for end-to-end workflow management.
- **Performance Tuning:** Optimizing SQL queries, ETL packages, and dashboard load times; understanding query plans, indexing.
- **Big Data Fundamentals:** Introduction to Spark, Hadoop, NoSQL databases (MongoDB, Cassandra) for handling massive datasets.
- **Introduction to Data Science/Machine Learning:** Basic understanding of statistical analysis, predictive modeling concepts, integration with BI tools (e.g., Python scripts in Power BI).

MODULE 8. SOFT SKILLS & PROJECT MANAGEMENT
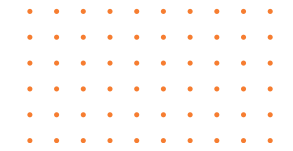
- **Communication:** Translating technical concepts for non-technical stakeholders; gathering requirements effectively.
- **Problem-Solving:** Debugging complex data issues; analytical thinking to solve business challenges.
- **Agile Methodologies:** Participating in sprint planning, daily stand-ups, backlog grooming for BI projects.
- **Version Control:** Using Git/Azure DevOps Repos for code management and collaboration.

MODULE 9. REAL-WORLD APPLICATION
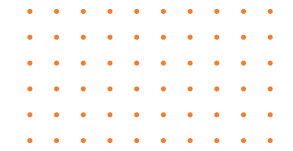
- **Case Studies:** Analyzing and designing BI solutions for specific industries (e.g., retail sales, healthcare operations, financial reporting).
- **Capstone Project:** Developing a complete BI solution from data source to interactive dashboard using acquired skills.
- **Project Definition:**
- Choosing a dataset (e.g., Kaggle, UCI ML Repository)
- Defining problem statement and objectives
- **Data Analysis Workflow:**
- End-to-end application of learned skills: data loading, cleaning, EDA, visualization, feature engineering, model building, evaluation, and interpretation
- **Presentation and Communication:**
- Preparing a Jupyter Notebook report
- Summarizing findings and insights
- Discussing limitations and future work

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Company Description

At Tech Learniversity, we are dedicated to transforming lives through accessible, cutting-edge technology education and personalized learning experiences that empower individuals to excel in the digital era.

ABOUT US

Company Description

Tech Learniversity is a cutting-edge EdTech firm dedicated to revolutionizing global education through personalized learning experiences. We offer innovative training programs, including immersive bootcamps and next-generation AI courses, designed to equip learners with the skills needed to excel in today's competitive job market.

More Information

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