Modern Data Warehousing and BI Architecture Solutions Training Course

Ref: #BUI1903

Course Introduction / Overview:

In today's data-driven economy, the ability to transform raw data into actionable intelligence is a critical competitive advantage. This course provides a comprehensive exploration of designing, implementing, and managing robust Enterprise Data Warehousing (EDW) and Business Intelligence (BI) architectures. We delve into foundational principles and modern solutions, moving beyond theory to practical application. As the renowned author Ralph Kimball articulated in his seminal work, "The Data Warehouse Toolkit," a well-designed dimensional model is the key to understandable and high-performance BI. This training program, offered by BIG BEN Training Center, builds upon such foundational concepts, integrating them with contemporary practices like cloud data warehousing, big data integration, and agile BI development. Participants will gain a holistic understanding of the entire data lifecycle, from source system analysis and ETL/ELT process design to the final delivery of insightful dashboards and reports. This course is meticulously structured to equip professionals with the strategic and technical skills needed to build scalable, secure, and high-performing data analytics platforms that drive business value and informed decision-making.

Target Audience / This training course is suitable for:

- Data Architects and Solution Architects.
- Business Intelligence (BI) Developers and Managers.
- Data Engineers and ETL Developers.
- IT Managers and Project Managers overseeing data projects.
- Data Analysts and Business Analysts.
- Database Administrators (DBAs) moving into data warehousing.
- Professionals seeking to understand modern data platform architecture.

Target Sectors and Industries:

- Financial Services and Banking.
- Healthcare and Pharmaceuticals.
- Retail and E-commerce.
- Telecommunications.
- Manufacturing and Supply Chain.
- Government and Public Sector Agencies.
- Technology and Software Services.

Target Organizations Departments:

- Information Technology (IT) and Data Management.
- Finance and Accounting.
- Marketing and Sales.
- Operations and Logistics.
- Business Development and Strategy.
- Human Resources.
- Customer Service and Support.

Course Offerings:

By the end of this course, the participants will have able to:

- Design scalable and efficient data warehouse architectures.
- Compare and contrast different data modeling methodologies like Inmon and Kimball.
- Implement robust ETL and ELT data integration pipelines.
- Develop effective dimensional models, including star and snowflake schemas.
- Integrate big data sources into an enterprise data warehouse environment.
- Select and utilize appropriate BI tools for reporting and visualization.
- Establish data governance and data quality frameworks.
- Architect solutions using modern cloud data warehousing platforms.
- Develop a strategic roadmap for BI and analytics initiatives.
- Manage the complete lifecycle of a data warehousing project.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be immersive, interactive, and highly practical. We believe that mastering complex topics like data warehousing and BI architecture requires a blend of theoretical knowledge and hands-on application. The course is delivered through a series of expert-led presentations, interactive group discussions, and collaborative workshops. Participants will analyze real-world case studies to understand the challenges and successes of various implementation strategies. Team-based exercises will encourage problem-solving and the application of design principles to practical scenarios. The sessions emphasize a two-way communication flow, allowing participants to ask questions, share their own professional experiences, and receive personalized feedback from the instructor. This dynamic learning environment ensures that participants not only grasp the core concepts but also develop the confidence to apply them directly to their organizational challenges. The focus is on building practical skills and strategic thinking, empowering attendees to lead and contribute to data initiatives effectively.

Course Agenda (Course Units):

Unit One: Foundations of Data Warehousing and Business Intelligence

- Introduction to Enterprise Data Warehousing (EDW).
- The strategic importance of Business Intelligence (BI).
- Comparing OLTP and OLAP systems.
- Exploring the Kimball vs. Inmon architectural philosophies.
- Understanding the components of a BI architecture.
- The evolution of data warehousing to modern data platforms.
- Key terminology and concepts in the data domain.

Unit Two: Data Warehouse Architecture and Design

- Designing a layered data warehouse architecture.
- Data sources, data extraction, and the staging area.
- ETL (Extract, Transform, Load) vs. ELT (Extract, Load, Transform) processes.
- Introduction to data lakes and the data lakehouse concept.
- Architecting for the cloud (AWS, Azure, GCP).
- Understanding data marts and their role in the architecture.
- Principles of scalable and maintainable design.

Unit Three: Dimensional Data Modeling

- The fundamentals of dimensional modeling.
- Designing dimension tables and their attributes.
- Designing fact tables and understanding granularity.
- Star schema vs. snowflake schema designs.
- Handling slowly changing dimensions (SCD Types 1, 2, and 3).
- Advanced concepts like junk dimensions and degenerate dimensions.
- Practical workshop on creating a dimensional model.

Unit Four: BI Implementation and Data Delivery

- The role of BI tools in the architecture (e.g., Power BI, Tableau).
- Developing effective reports and interactive dashboards.
- Introduction to Online Analytical Processing (OLAP) cubes.
- Implementing self-service BI and analytics.
- Data visualization best practices for business users.
- Ensuring performance in BI queries and reports.
- Managing the BI project lifecycle from requirements to deployment.

Unit Five: Governance, Quality, and Future Trends

- Establishing a Data Governance framework.
- Implementing Data Quality and Master Data Management (MDM).
- Data security and privacy considerations in EDW.
- Integrating big data and real-time streaming data.
- Introduction to Data Mesh and Data Fabric concepts.
- Agile methodologies for data warehouse development.
- The future of analytics and the role of AI/ML.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As data architectures evolve towards decentralized models like data mesh, how does the role of a central enterprise data warehouse need to adapt to remain relevant?

What unique qualities does this course offer compared to other courses?

This training course distinguishes itself by providing a holistic and strategic perspective on data architecture, bridging the gap between timeless foundational principles and cutting-edge modern solutions. While many courses focus narrowly on a specific tool or technology, our curriculum, inspired by the foundational work of experts like Ralph Kimball, emphasizes the architectural and modeling principles that transcend any single platform. We focus on the "why" behind the design choices, enabling participants to architect robust solutions regardless of the technology stack. The program uniquely integrates traditional EDW concepts with contemporary topics such as cloud data platforms, data lakehouse architecture, and the strategic implications of data mesh. This dual focus ensures that participants not only learn the proven best practices that have powered business intelligence for decades but are also fully prepared to navigate the complexities of the modern data landscape. The course is designed to foster critical thinking and strategic planning, moving beyond mere technical execution to empower participants as true data architects and leaders within their organizations.