



**KIDS & TEENS FREELANCING TRAINING INSTITUTE**

# Mongo DB Course Outline

## Module 1: What is MongoDB?

- Introduction to MongoDB as a NoSQL database
  - Real-life example: Storing blog posts or user profiles in a flexible database
  - Key differences between SQL and NoSQL databases
  - Installing MongoDB and setting up a local database
  - Activity: Create your first MongoDB database and collection
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## Module 2: Basic MongoDB Operations

- Understanding CRUD operations: Create, Read, Update, Delete
  - Real-life example: Adding, retrieving, and updating user data
  - Using MongoDB's shell to interact with the database
  - Activity: Add some data to a collection and retrieve it using queries
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## Module 3: Data Modeling in MongoDB

- Designing schemas and collections for MongoDB
  - Real-life example: Structuring data for an online store or blog
  - Using embedded documents and references for data relationships
  - Activity: Create a database schema for an e-commerce site
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## Module 4: Querying Data in MongoDB

- Writing basic and advanced queries in MongoDB
- Using operators like `$gt`, `$lt`, `$in`, and `$and` for filtering data
- Real-life example: Searching products by price range or customer reviews
- Activity: Write queries to retrieve data based on conditions

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## Module 5: Indexing and Performance Optimization

- Understanding indexes in MongoDB and their role in performance
- How to create and manage indexes for faster queries
- Real-life example: Speeding up search queries for a large dataset
- Activity: Create an index and compare query performance before and after

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## Module 6: Aggregation Framework

- Introduction to MongoDB's aggregation framework
- Using operators like `$group`, `$match`, `$sort` to process data
- Real-life example: Generating reports or statistics from raw data
- Activity: Use aggregation to calculate the average price of products

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## Module 7: Data Validation and Security

- Validating data before insertion with MongoDB's schema validation
- Real-life example: Ensuring that all user data is valid and consistent
- Basic authentication and securing MongoDB connections
- Activity: Set up validation rules and user authentication in MongoDB

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## Module 8: MongoDB in Real-World Applications

- Integrating MongoDB with web and mobile applications (Node.js, Express)
- Using MongoDB in production environments with cloud services like Atlas
- Real-life example: Storing and managing data for a social media app
- Activity: Build a simple app that uses MongoDB for storing user data

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## Bonus Materials

- MongoDB cheat sheet and query guide
- Mini projects: To-do list app, blog site backend, inventory management
- Free MongoDB cloud resources (MongoDB Atlas)
- Certificate of Completion for MongoDB Mastery

