



Name: Apurba Koirala

Reg no: 22BCE3799

Subject Code: BCSE302L

Course Title: Database Systems

Guided by: Dr. Shashank Mouli Satapathy

Theory Digital Assignment on MONGODB

Unit 1:

Unit wise learning: In the MongoDB course, I received a basic introduction to MongoDB, which covered its core concepts and features. The MongoDB team explained how the course would be structured and outlined the various tools used to support the learning process. These tools included Labs for hands-on practice, Quizzes to test knowledge, and a system of Points and Badges to track progress and reward achievements.

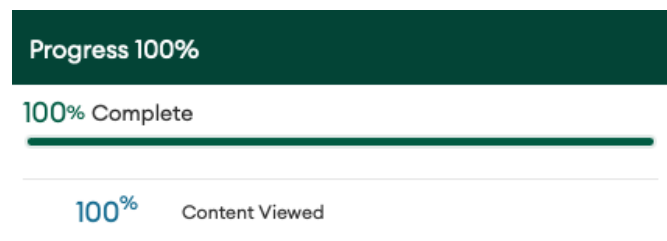
REQUIRED

Start Here - Intro to MongoDB

View

Unit | 15 Minutes
This unit gives an overview of MongoDB fundamentals, from the document model to CRUD operations to indexing, that you will learn during the Introduction to MongoDB course.

Completion certificate:



Unit 2:

REQUIRED

Getting Started with MongoDB Atlas

View

Unit | 1 Hour
Learn about MongoDB Atlas, our multi-cloud developer data platform, its latest features, and how to deploy your first cluster.

Unit Wise learning: In this unit, I explored MongoDB Atlas, a developer data platform designed for managing data within Atlas clusters—a global, multi-cloud database service. The platform provides various features enabling developers to build diverse applications. I created and deployed my first Atlas cluster and prepared for connectivity by configuring a database user, setting a password, and adding an IP address to the IP Access list.

Progress 100%

100% Complete



1/1

Passed Assessments

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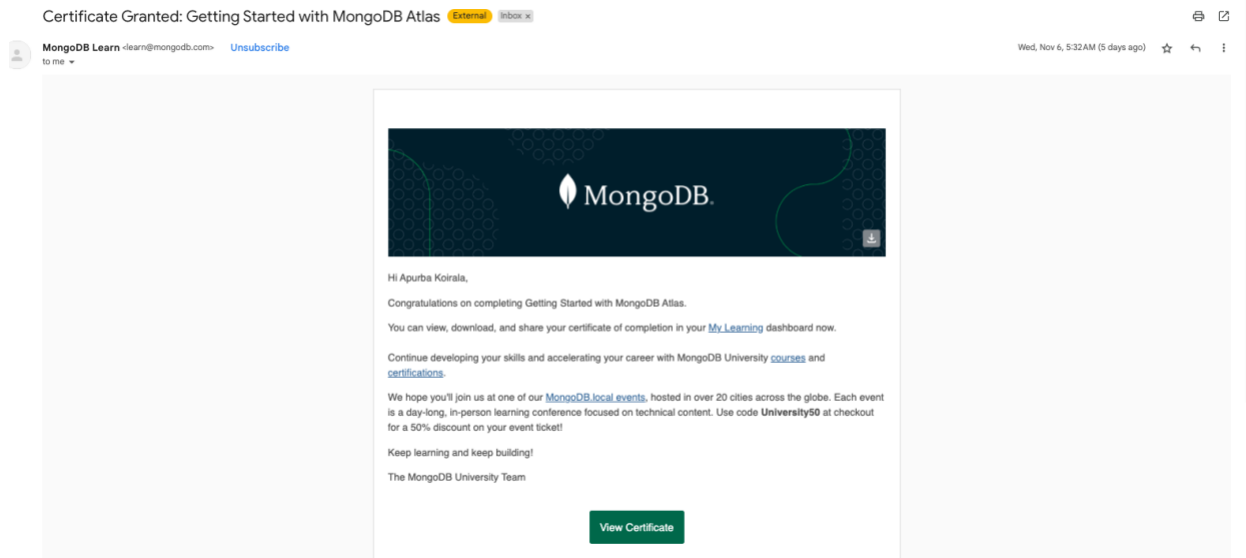
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Getting Started with MongoDB Atlas

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Unit 3:

REQUIRED MongoDB and the Document Model

View



Unit | Parker Faucher, Rachelle Palmer, Julianna Chen, Emily Pope, Laura Gutierrez Munoz
1.25 Hours

Want to learn more about MongoDB and the document model? In this unit, you'll learn how to manage MongoDB databases, collections, and documents.

Unit wise learning:

This chapter introduced MongoDB as a versatile, document-based database that integrates with Atlas, a developer data platform. It covered MongoDB's document model, where data is stored in BSON format, supporting various data types and allowing for flexible schemas within collections. Each document requires a unique `_id` field, with MongoDB auto-generating one if missing. The Atlas Data Explorer was highlighted as a tool for creating and managing databases,

collections, and documents. Key resources further explained MongoDB's structure, BSON, and database management functions.

Progress 100%

100% Complete

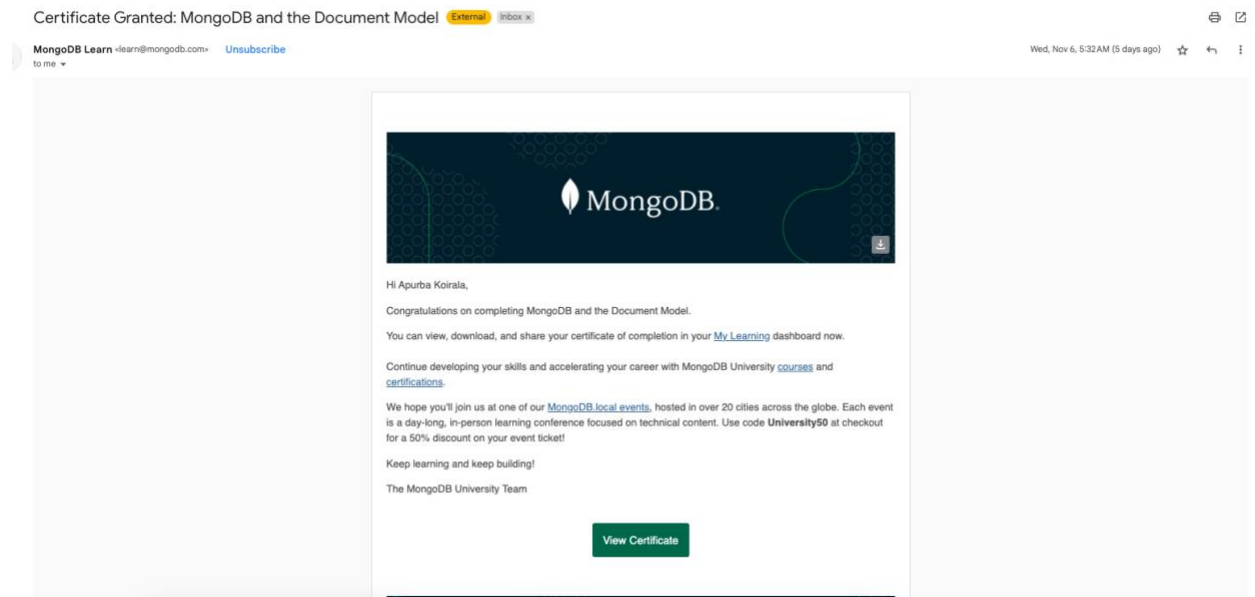
▼ 3/3 Passed Assessments

- Quiz: The MongoDB Database
- Quiz: The MongoDB Document Model
- Quiz: Managing Databases, Collections, and Documents in Atlas Data Explorer

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Unit 4:

REQUIRED Connecting to a MongoDB Database View

Unit | Sarah Evans, Parker Faucher, Daniel Curran
1 Hour

Learn how to connect to MongoDB databases by using connection strings. Connection strings allow you to connect your cluster with the mongo shell, with Compass (our GUI that enables querying, optimizing and analyzing MongoDB data), and to an application.

Unit wise learning: In this unit, I learned to connect to a MongoDB database on Atlas using three main methods: MongoDB Shell, MongoDB Compass, and applications. Additionally, the unit covered common connection issues and troubleshooting techniques. Key resources included instructions on using connection strings, connecting with various tools, and resolving connection errors.

Progress 100%

100% Complete

▼ 4/4 Passed Assessments

- Quiz: Locate the Atlas Connection String
 - Quiz: Connecting to a MongoDB Atlas Cluster with Shell
 - Quiz: Define MongoDB Compass
 - Quiz: Connecting to a MongoDB Atlas Cluster from an Application
-

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Keep learning and keep building!

The MongoDB University Team

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Unit 5:

REQUIRED MongoDB CRUD Operations: Insert and Find Documents

View



Unit | Emily Pope, Parker Faucher

1.75 Hours

Learn how to create, find, and query MongoDB documents in the mongo shell.

Unit wise learning: In this unit, I learned to insert and retrieve documents in MongoDB using key CRUD operations. I practiced using comparison operators like `\$gt`, `\$lt`, `\$lte`, and `\$gte` and logical operators such as `\$and` and `\$or` to build queries. Additionally, I explored querying array elements with the `\$elemMatch` operator.

Progress 100%

100% Complete

▼ 5/5

Passed Assessments

- Quiz: Inserting Documents in a MongoDB Collection
- Quiz: Finding Documents in a MongoDB Collection
- Quiz: Finding Documents by Using Comparison Operators
- Quiz: Querying on Array Elements in MongoDB
- Quiz: Finding Documents by Using Logical Operators

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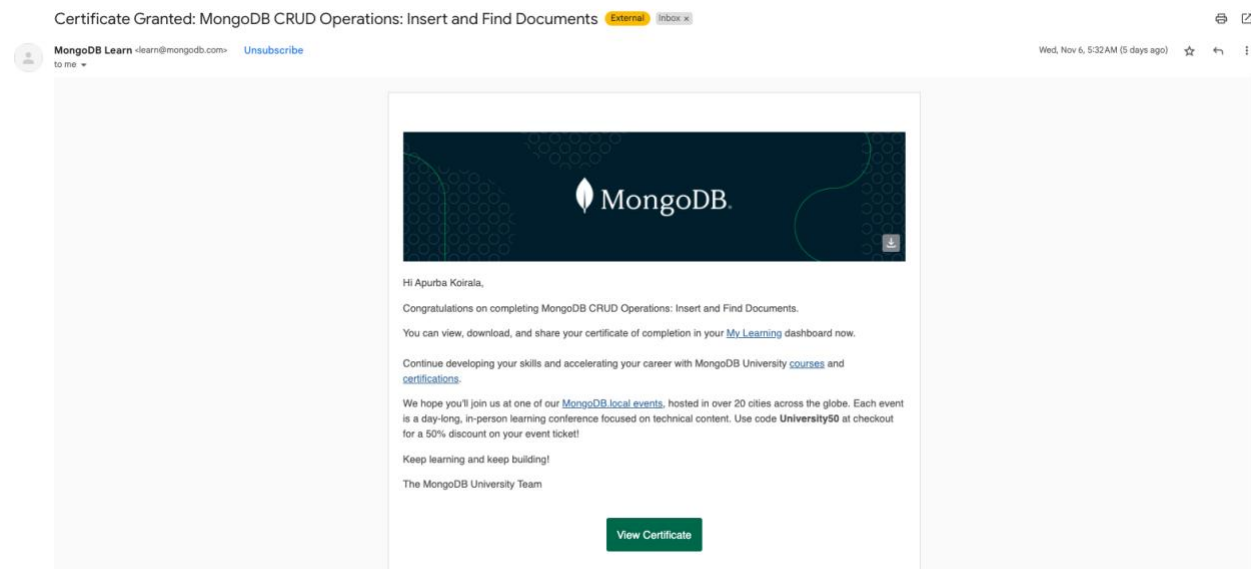


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Unit 6:

REQUIRED

MongoDB CRUD Operations: Replace and Delete Documents

[View](#)



Unit | Camden Kirkland, Emily Pope, John McCambridge

1.75 Hours

Learn how to replace and delete documents in the mongo shell.

Unit Wise Learning:

In this unit, I learned how to modify MongoDB query results. Specifically, I practiced using `cursor.sort()` to return results in a specified order and `cursor.limit()` to constrain the number of results. I also learned how to use a projection document in `db.collection.find()` to specify which fields to return. Additionally, I explored how to count the number of documents matching a query using `db.collection.countDocuments()`.

Progress 100%

100% Complete

▼ 5/5 Passed Assessments

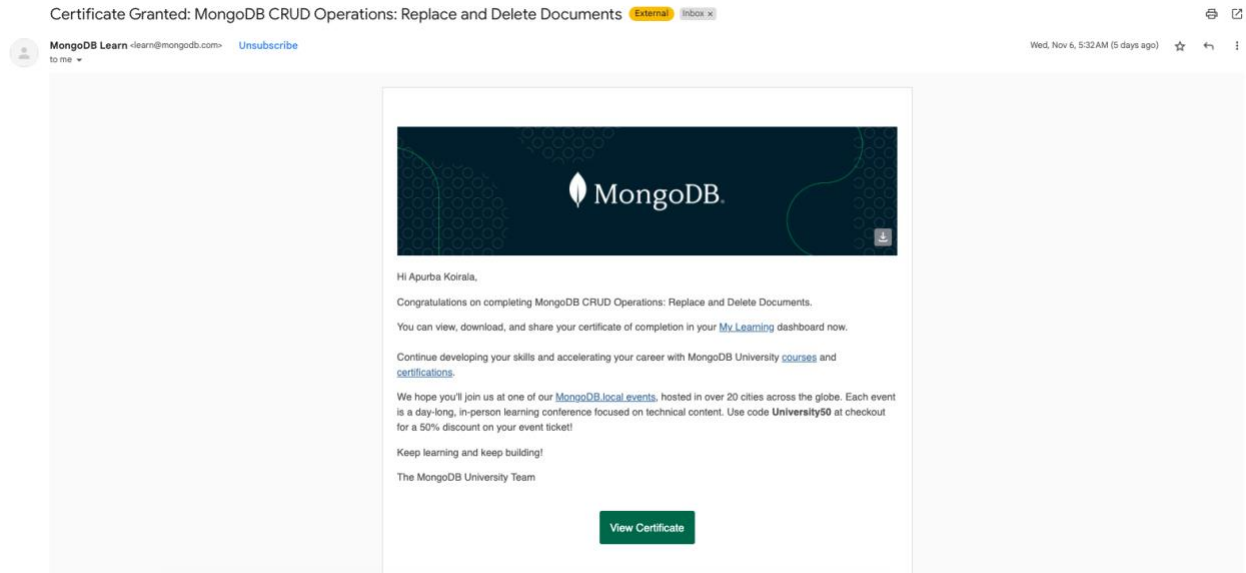
- Quiz: Replacing a Document in MongoDB
- Quiz: Updating MongoDB Documents by Using `updateOne()`
- Quiz: Updating MongoDB Documents by Using `findAndModify()`
- Quiz: Updating MongoDB Documents by Using `updateMany()`
- Quiz: Deleting Documents in MongoDB

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Unit 7:

REQUIRED MongoDB CRUD Operations: Modifying Query Results

View



Unit | Camden Kirkland, Emily Pope
1.25 Hours

Learn how to sort and limit query results and how to count documents in MongoDB.

Unit wise learning:

In this unit, I learned how to modify MongoDB query results in various ways. I explored how to return query results in a specific order using `cursor.sort()` and limit the number of results with `cursor.limit()`. I also learned how to use projection to specify which fields to return in a query by adding a projection document in `db.collection.find()`. Additionally, I discovered how to count the number of documents that match a query with `db.collection.countDocuments()`.

Progress 100%

100% Complete

▼ 3/3 Passed Assessments

- Quiz: Sorting and Limiting Query Results in MongoDB
- Quiz: Returning Specific Data from a Query in MongoDB
- Quiz: Counting Documents in a MongoDB Collection

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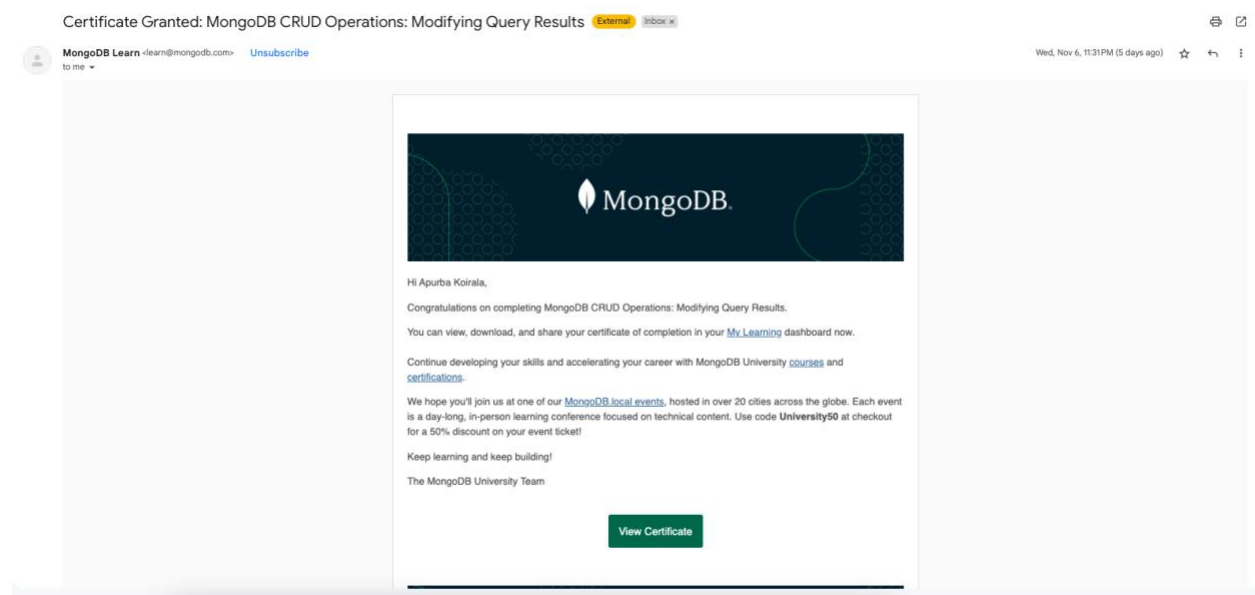


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Unit 8:

REQUIRED

MongoDB Aggregation

View



Unit | Laura Gutierrez Munoz, Julie Gauthier, Emily Pope

1.75 Hours

Learn how to create aggregation pipelines that enable you to analyze and summarize data by stringing together stages that filter, sort, group, and/or transform data.

Unit wise learning: In this unit, I learned how to use aggregation in MongoDB to process and analyze data. I explored the creation of aggregation pipelines, which allow for complex data transformations. I worked with several common aggregation stages, such as `$match` for filtering, `$group` for grouping data, `$sort` and `$limit` for ordering and limiting results, and `$project` for reshaping documents. I also learned about the `$count`, `$set`, and `$out` stages for counting, modifying documents, and exporting results to another collection.

Progress 100%

100% Complete

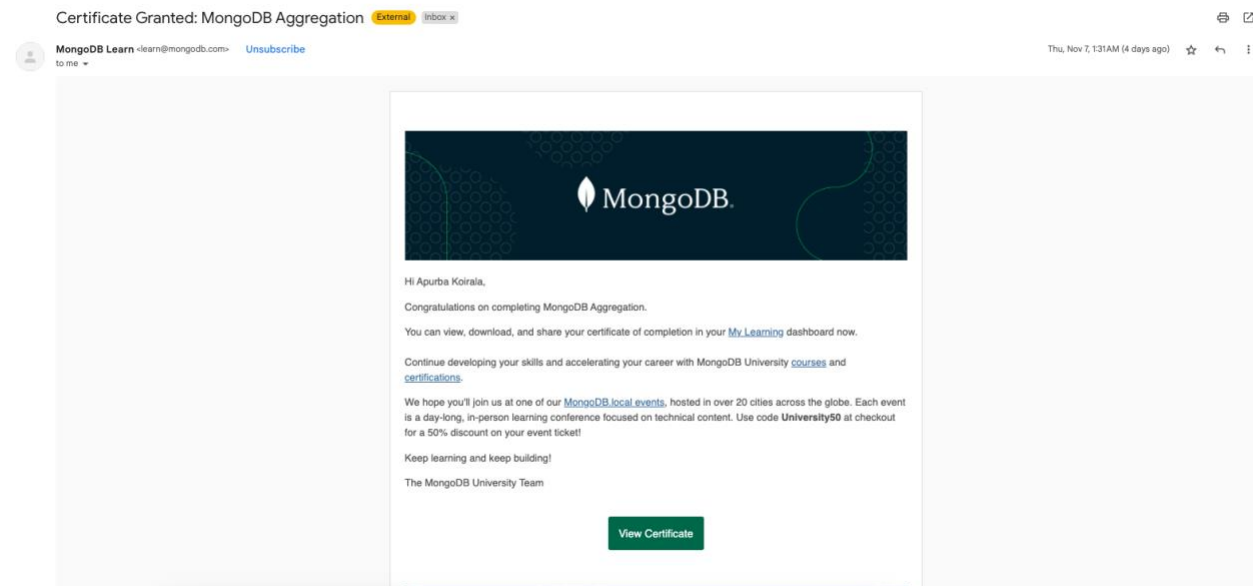
▼ **5/5** Passed Assessments

- Quiz: Introduction to Aggregation
 - Quiz: Using \$match and \$group Stages in a MongoDB Aggregation Pipeline
 - Quiz: Using \$sort and \$limit Stages in a MongoDB Aggregation Pipeline
 - Quiz: Using \$project, \$count, and \$set Stages in a MongoDB Aggregation Pipeline
 - Quiz: Using the \$out Stage in a MongoDB Aggregation Pipeline
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Unit 9:

REQUIRED MongoDB Indexes

View



Unit | Laura Gutierrez Munoz, Daniel Curran, John McCambridge
1.75 Hours

Learn how to improve MongoDB performance by learning how to create single, compound, and multikey indexes as well as how to delete indexes.

Unit wise learning: In this unit, I learned about MongoDB indexes and how they enhance query performance. I explored different types of indexes, including single-field indexes (for one field) and compound indexes (for 2 to 32 fields). I also worked with multikey indexes, which index array fields. I practiced creating and deleting indexes using the `createIndex()` and `dropIndex()` commands. Additionally, I learned how to view the indexes in a collection with the `getIndexes()` command and how to check if an index is being used in a query using the `explain()` command.

Progress 100%

100% Complete

▼ 5/5

Passed Assessments

- Quiz: MongoDB Indexes
- Quiz: Creating a Single Field Index in MongoDB
- Quiz: Multikey Indexes in MongoDB
- Quiz: Working with Compound Indexes in MongoDB
- Quiz: Deleting MongoDB Indexes

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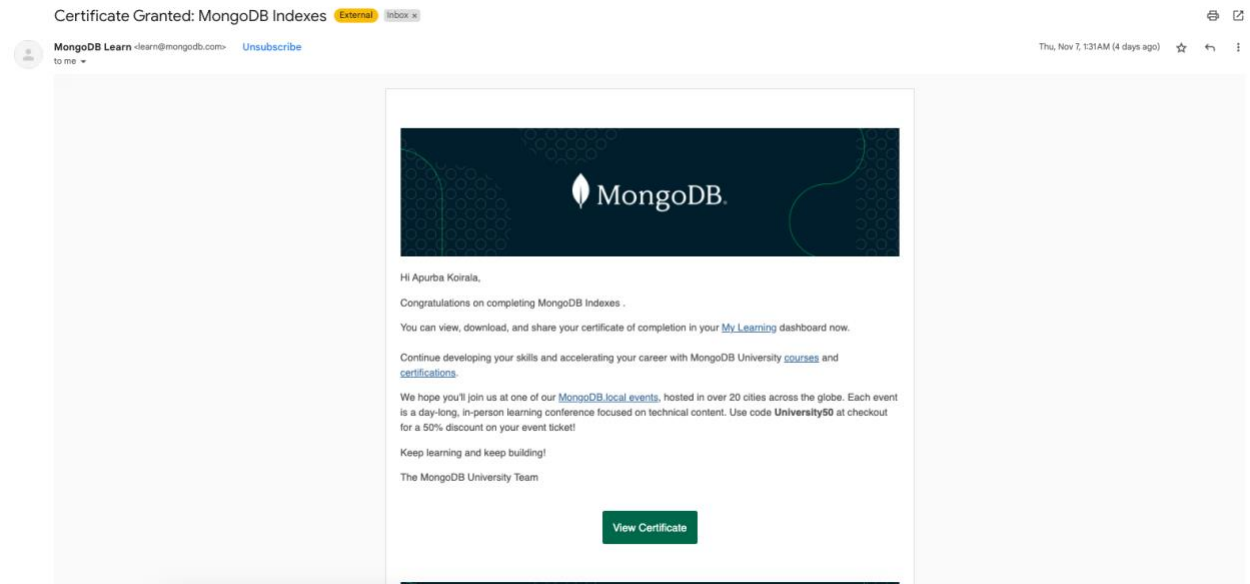


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Unit 10:

REQUIRED

MongoDB Atlas Search

View



Unit | Emily Pope, Julie Gauthier

1.5 Hours

Learn about MongoDB Atlas Search, a full text search feature that combines three systems - database, search engine, and sync mechanisms.

Unit wise learning: In this unit, I learned about Atlas Search, a powerful feature in MongoDB that enables advanced search functionality in applications. I explored how to create search indexes, both dynamically mapped (to search across any field) and statically mapped (to focus on relevant fields). I practiced using the aggregation pipeline with the \$search operator to perform searches and compound operators to combine multiple search criteria. Additionally, I learned how to adjust search relevance by assigning different weights to fields and how to use \$searchMeta and \$facet to categorize search results and improve user experience in apps.

Progress 100%

100% Complete

▼ **5/5** Passed Assessments

- Quiz: Using Relevance-Based Search and Search Indexes
- Quiz: Creating a Search Index with Dynamic Field Mapping
- Quiz: Dynamic vs. Static Field Mapping
- Quiz: Using \$search and Compound Operators
- Quiz: Group Search Results by Using Facets

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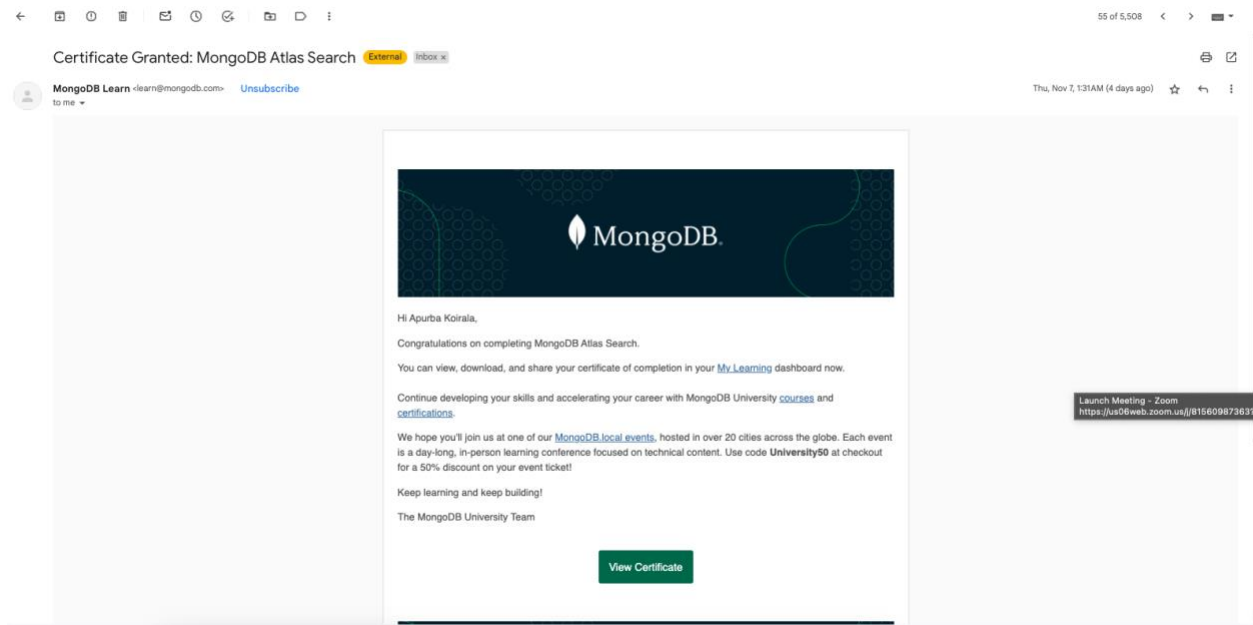


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Unit 11:

REQUIRED MongoDB Data Modeling Intro

View



Unit | Rachelle Palmer, Xijing Zhang, Daniel Curran
45 Minutes

Learn the basics of data modeling, the process of defining how data is stored and the relationships among different entities in your data, in MongoDB.

Unit wise learning: In this unit, I learned the fundamentals of MongoDB data modeling, including the purpose of data modeling and the different types of data relationships such as one-to-one, one-to-many, and many-to-many. I explored how to model these relationships effectively, as well as the differences between embedded and referenced data models. I also gained insight into how to scale data models for performance and scalability. Additionally, I learned how to use Atlas tools to assist with schema design and identify common schema design pitfalls.

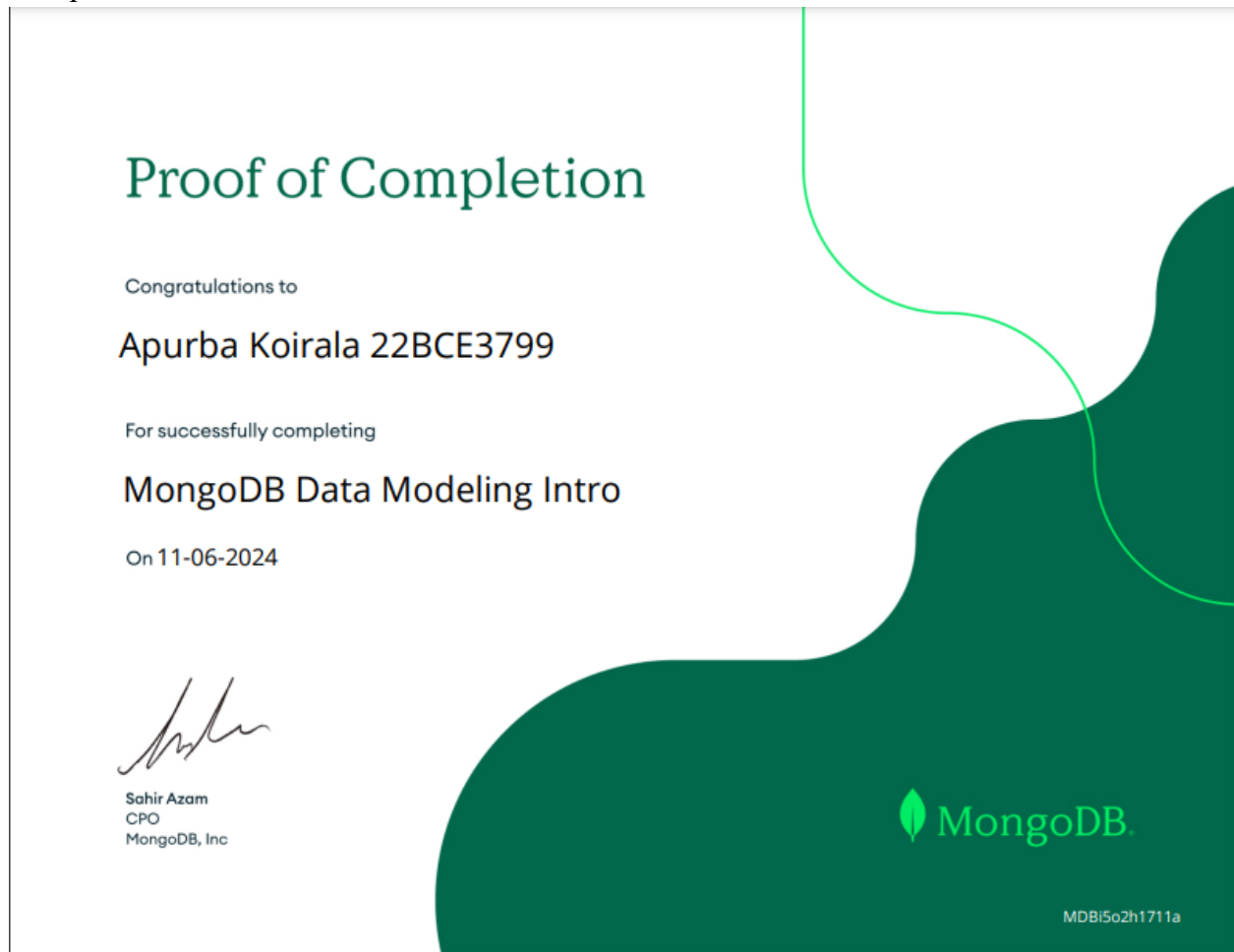
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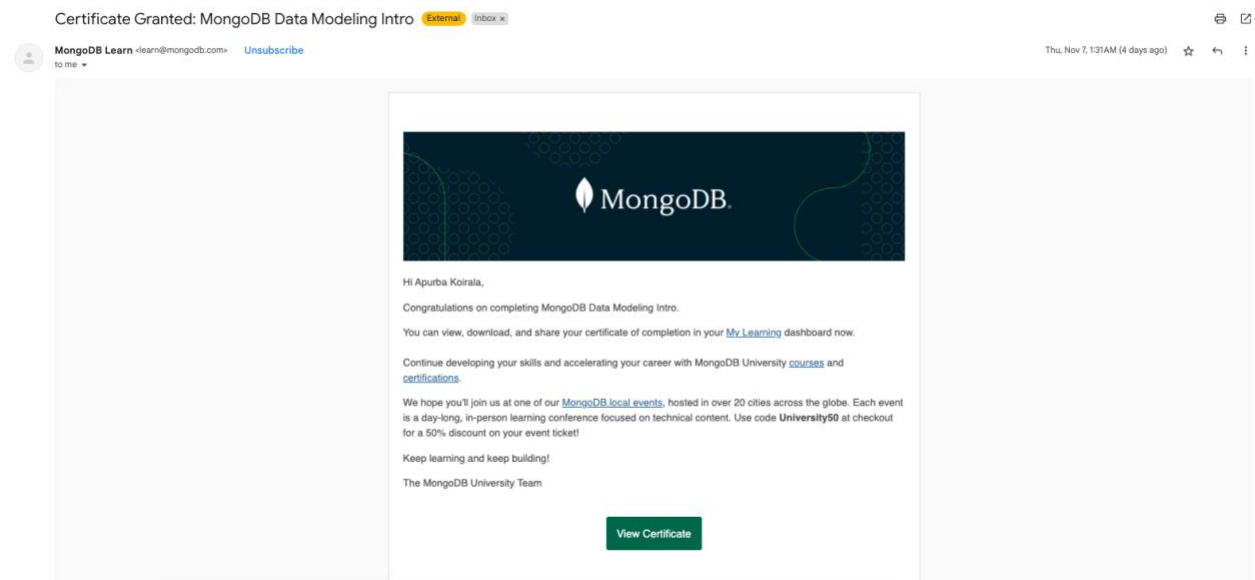
▼ 7/7 Passed Assessments

- Quiz: Data Modeling
 - Quiz: Types of Data Relationships
 - Quiz: Modeling Data Relationships
 - Quiz: Embedding Data in Documents
 - Quiz: Referencing Data in Documents
 - Quiz: Unscalable Data Models
 - Quiz: Data Explorer
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Unit 12:

REQUIRED

MongoDB Transactions

View



Unit | Camden Kirkland, Sarah Evans, Parker Faucher
1 Hour

Learn about ACID transactions in MongoDB and how they guarantee certain database operations happen together or not at all to ensure data integrity within the database.

Unit wise learning: In this unit, I learned about ACID transactions in MongoDB, which ensure that database operations are reliable by following the principles of Atomicity, Consistency, Isolation, and Durability. These transactions are important for scenarios like transferring funds between accounts, ensuring that all operations occur together or not at all. I explored how ACID transactions work with MongoDB's document model and how to create multi-document transactions using `startTransaction()` and `commitTransaction()`. I also learned how to cancel transactions with `abortTransaction()`.

Progress 100%

100% Complete



3/3

Passed Assessments



Quiz: Introduction to ACID Transactions



Quiz: ACID Transactions in MongoDB

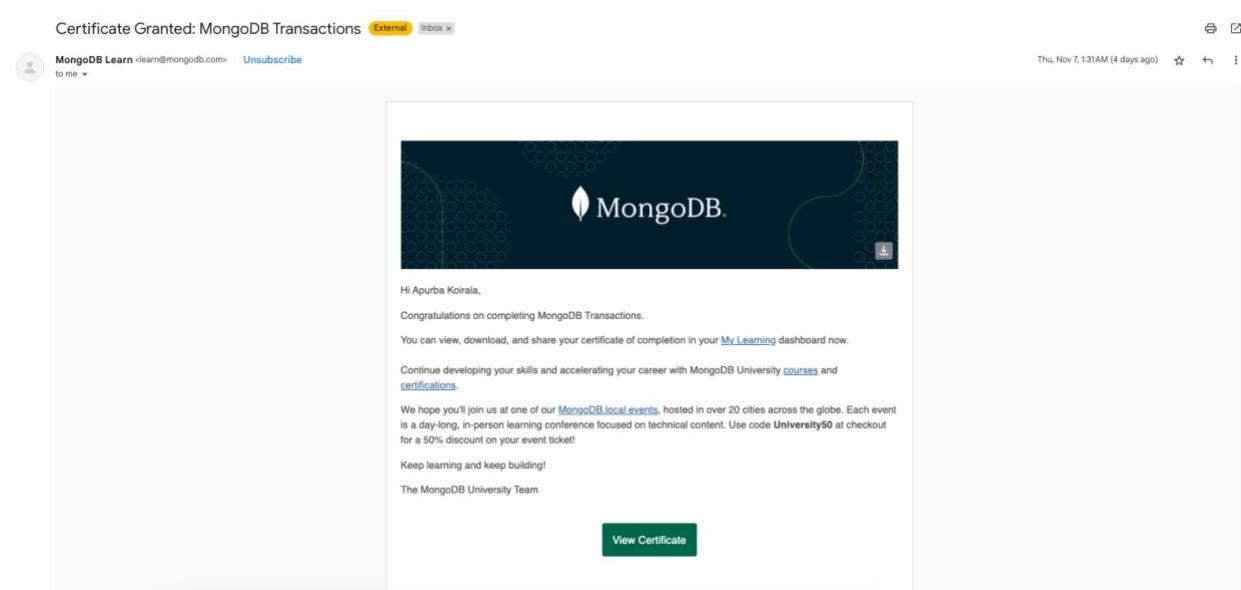


Quiz: Using Transactions in MongoDB

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