

MongoDB Event Management System

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Subject: MongoDB Assignment

Topic: Event, Ticket & User Management System

1. Introduction

This project is designed to demonstrate the use of MongoDB for managing an Event Management System. The system allows users to browse events, book tickets, and organizers to manage events and track ticket sales.

2. Database Schema Design

The database consists of four main collections: Users, Events, Tickets, and Categories. Each collection is structured to support efficient data storage and querying.

Users: Stores attendee and organizer details.

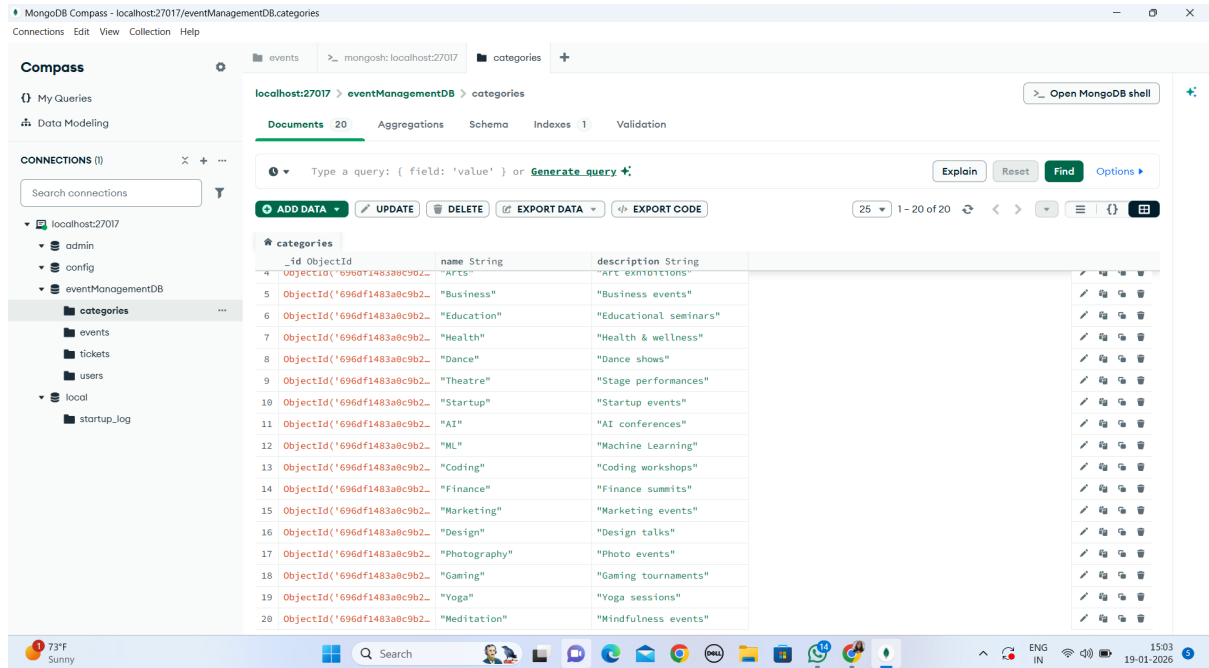
Events: Stores event details created by organizers.

Tickets: Stores ticket booking information.

Categories: Stores event categories like Music, Tech, Sports.

3. Users Collection

The Users collection stores information about attendees and organizers. Each user has a role that defines their access in the system.



The screenshot displays the MongoDB Compass interface. On the left, the 'CONNECTIONS' panel shows the connection to 'localhost:27017' and the database 'eventManagementDB'. The 'categories' collection is selected. The main panel shows the 'Documents' tab with a list of 20 documents. Each document has an '_id' (ObjectId), a 'name' (String), and a 'description' (String). The documents are numbered 4 through 20. The bottom status bar shows the system temperature as 73°F and the date as 19-01-2026.

_id	name	description
ObjectId('696df1483a8c9b2...')	Arts	Art exhibitions
ObjectId('696df1483a8c9b2...')	Business	Business events
ObjectId('696df1483a8c9b2...')	Education	Educational seminars
ObjectId('696df1483a8c9b2...')	Health	Health & wellness
ObjectId('696df1483a8c9b2...')	Dance	Dance shows
ObjectId('696df1483a8c9b2...')	Theatre	Stage performances
ObjectId('696df1483a8c9b2...')	Startup	Startup events
ObjectId('696df1483a8c9b2...')	AI	AI conferences
ObjectId('696df1483a8c9b2...')	ML	Machine Learning
ObjectId('696df1483a8c9b2...')	Coding	Coding workshops
ObjectId('696df1483a8c9b2...')	Finance	Finance summits
ObjectId('696df1483a8c9b2...')	Marketing	Marketing events
ObjectId('696df1483a8c9b2...')	Design	Design talks
ObjectId('696df1483a8c9b2...')	Photography	Photo events
ObjectId('696df1483a8c9b2...')	Gaming	Gaming tournaments
ObjectId('696df1483a8c9b2...')	Yoga	Yoga sessions
ObjectId('696df1483a8c9b2...')	Meditation	Mindfulness events

4. Events Collection

The Events collection stores event details such as title, date, venue, price, and available tickets. Each event is linked to an organizer.

The screenshot shows the MongoDB Compass interface for the `eventManagementDB` database. The `events` collection is selected, showing 22 documents. The interface includes a search bar, a query editor, and a list of documents. The documents are displayed in a JSON format, showing fields such as `_id`, `title`, `description`, `category`, `date`, `venue`, `organizer`, `price`, `totalTickets`, `availableTickets`, and `status`.

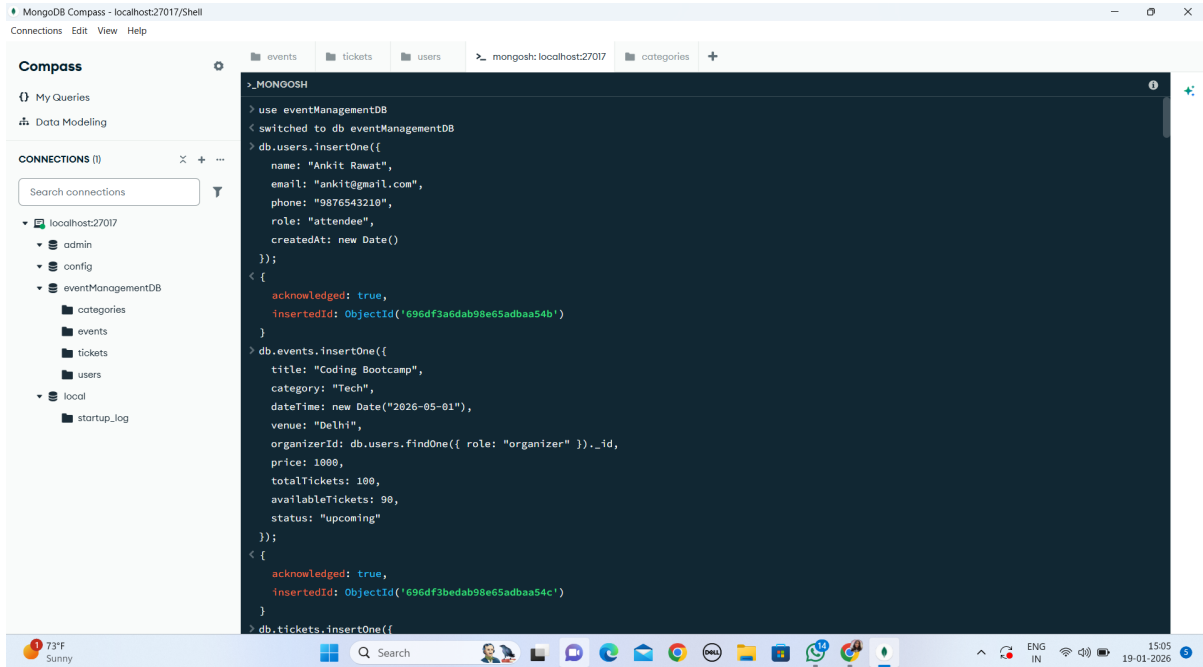
```
{
  "_id": "ObjectID('696de24e6d56c739c768e2e5')",
  "title": "Rock Music Night",
  "description": "Live rock concert",
  "category": "ObjectID('696de1ebd56c739c768e2e1')",
  "date": "2026-03-20T00:00:00.000+00:00",
  "venue": "Delhi",
  "organizer": "ObjectID('696de0a95a8b2c5e06818b80')",
  "price": 1300,
  "totalTickets": 300,
  "availableTickets": 200,
  "status": "completed"
}
```

The screenshot shows the MongoDB Compass interface for the `eventManagementDB` database. The `events` collection is selected, showing 22 documents. The interface includes a search bar, a query editor, and a table view of the documents. The table view displays the following columns: `_id`, `ObjectID`, `title`, `String`, `description`, `String`, `category`, `ObjectID`, `date`, `Time`, `Date`, and `String`.

	<code>_id</code>	<code>ObjectID</code>	<code>title</code>	<code>String</code>	<code>description</code>	<code>String</code>	<code>category</code>	<code>ObjectID</code>	<code>date</code>	<code>Time</code>	<code>Date</code>	<code>String</code>
7	<code>ObjectID('696df2663a8c9b2...')</code>		Art Expo		Art & craft exhibition		No field		2026-04-01T00:00:00.000+0...			
8	<code>ObjectID('696df2663a8c9b2...')</code>		Photography Workshop		Basics of photography		No field		2026-04-10T00:00:00.000+0...			
9	<code>ObjectID('696df2663a8c9b2...')</code>		Football Tournament		Inter-college football		No field		2026-03-01T00:00:00.000+0...			
10	<code>ObjectID('696df2663a8c9b2...')</code>		Cricket League		Local cricket matches		No field		2026-02-18T00:00:00.000+0...			
11	<code>ObjectID('696df2663a8c9b2...')</code>		Voga Retreat		Wellness & yoga		No field		2026-03-15T00:00:00.000+0...			
12	<code>ObjectID('696df2663a8c9b2...')</code>		Meditation Camp		Mindfulness training		No field		2026-03-20T00:00:00.000+0...			
13	<code>ObjectID('696df2663a8c9b2...')</code>		Rock Music Night		Live rock concert		No field		2026-02-01T00:00:00.000+0...			
14	<code>ObjectID('696df2663a8c9b2...')</code>		Jazz Evening		Smooth jazz performance		No field		2026-02-05T00:00:00.000+0...			
15	<code>ObjectID('696df2663a8c9b2...')</code>		Tech Summit 2026		AI & Cloud Conference		No field		2026-03-10T00:00:00.000+0...			
16	<code>ObjectID('696df2663a8c9b2...')</code>		Startup Meetup		Entrepreneur networking		No field		2026-01-20T00:00:00.000+0...			
17	<code>ObjectID('696df2663a8c9b2...')</code>		Art Expo		Art & craft exhibition		No field		2026-04-01T00:00:00.000+0...			
18	<code>ObjectID('696df2663a8c9b2...')</code>		Photography Workshop		Basics of photography		No field		2026-04-10T00:00:00.000+0...			
19	<code>ObjectID('696df2663a8c9b2...')</code>		Football Tournament		Inter-college football		No field		2026-03-01T00:00:00.000+0...			
20	<code>ObjectID('696df2663a8c9b2...')</code>		Cricket League		Local cricket matches		No field		2026-02-18T00:00:00.000+0...			
21	<code>ObjectID('696df2663a8c9b2...')</code>		Voga Retreat		Wellness & yoga		No field		2026-03-15T00:00:00.000+0...			
22	<code>ObjectID('696df2663a8c9b2...')</code>		Meditation Camp		Mindfulness training		No field		2026-03-20T00:00:00.000+0...			

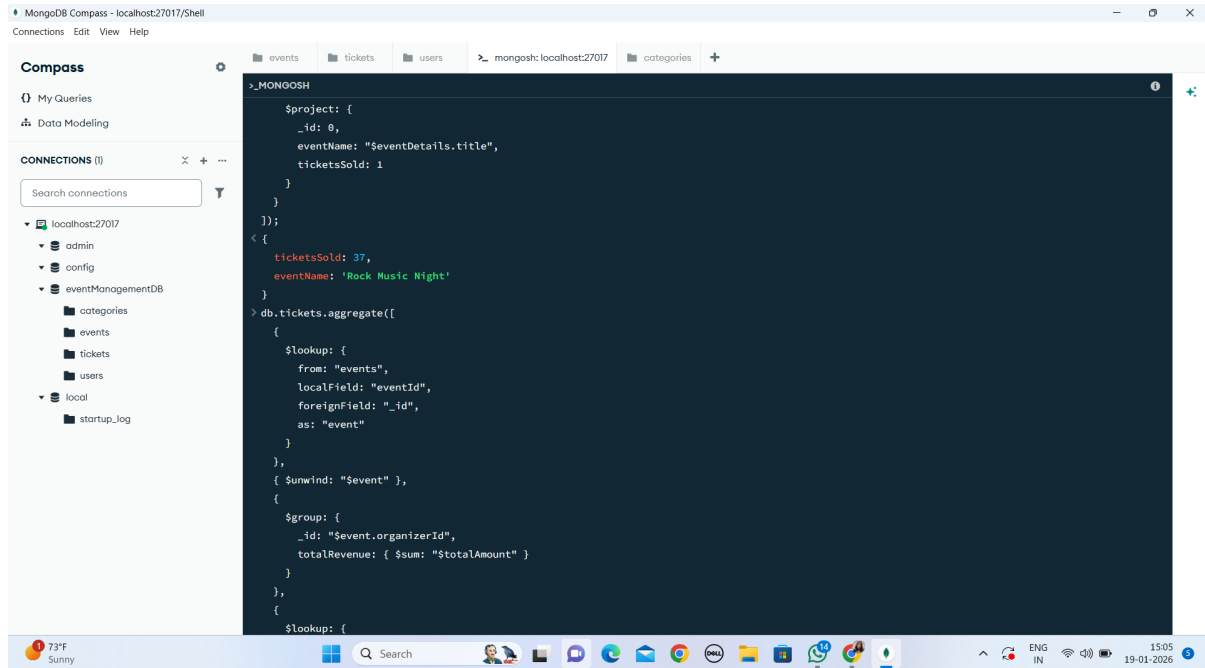
5. Tickets Collection

The Tickets collection stores booking information. Users can book multiple tickets for an event.



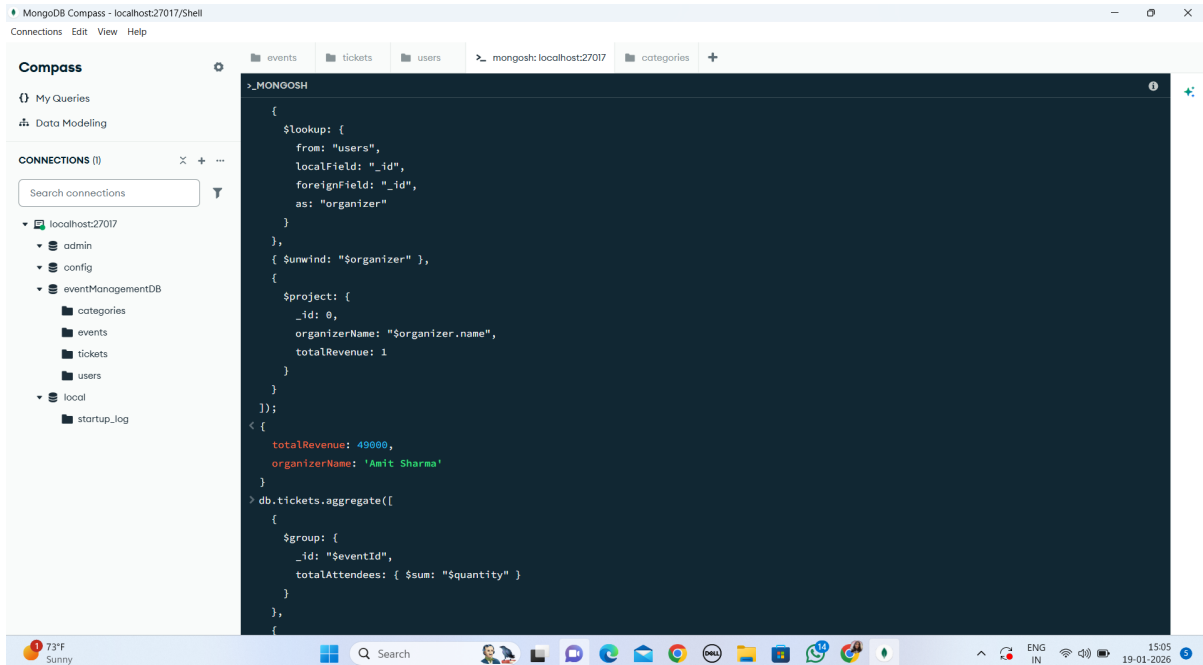
6. CRUD Operations

CRUD operations were performed on all collections including inserting new data, updating records, fetching data, and deleting records.



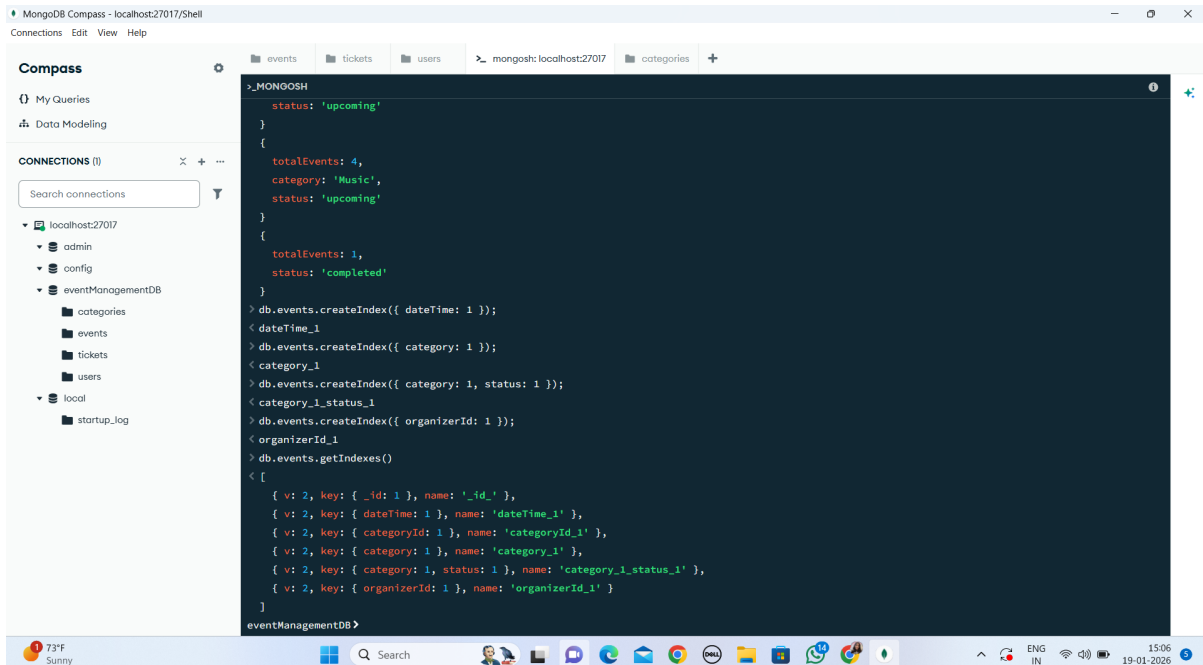
7. Aggregation Pipelines

Aggregation pipelines were used to generate reports such as top events by ticket sales, total revenue per organizer, and attendees per event.



The screenshot shows the MongoDB Compass interface with the 'tickets' collection selected. The aggregation pipeline in the shell is as follows:

```
>_MONGOOSH
{
  $lookup: {
    from: "users",
    localField: "_id",
    foreignField: "_id",
    as: "organizer"
  }
},
{ $unwind: "$organizer" },
{
  $project: {
    _id: 0,
    organizerName: "$organizer.name",
    totalRevenue: 1
  }
}
});
< {
  totalRevenue: 49000,
  organizerName: 'Amit Sharma'
}
> db.tickets.aggregate([
  {
    $group: {
      _id: "$eventId",
      totalAttendees: { $sum: "$quantity" }
    }
  },
  {
    $sort: {
      totalAttendees: -1
    }
  }
])
```



The screenshot shows the MongoDB Compass interface with the 'events' collection selected. The commands in the shell are as follows:

```
>_MONGOOSH
{
  status: 'upcoming'
}
{
  totalEvents: 4,
  category: 'Music',
  status: 'upcoming'
}
{
  totalEvents: 1,
  status: 'completed'
}
> db.events.createIndex({ dateTime: 1 });
< dateTime_1
> db.events.createIndex({ category: 1 });
< category_1
> db.events.createIndex({ category: 1, status: 1 });
< category_1_status_1
> db.events.createIndex({ organizerId: 1 });
< organizerId_1
> db.events.getIndexes()
< [
  { v: 2, key: { _id: 1 }, name: '_id_1' },
  { v: 2, key: { dateTime: 1 }, name: 'dateTime_1' },
  { v: 2, key: { categoryId: 1 }, name: 'categoryId_1' },
  { v: 2, key: { category: 1 }, name: 'category_1' },
  { v: 2, key: { category: 1, status: 1 }, name: 'category_1_status_1' },
  { v: 2, key: { organizerId: 1 }, name: 'organizerId_1' }
]
```

The screenshot displays the MongoDB Compass application interface. The top navigation bar shows the connection path: 'localhost:27017/eventManagementDB'. Below this, the 'eventManagementDB' database is selected, and the 'categories' collection is highlighted. The main panel shows a table of collections with the following data:

Collection name	Properties	Storage size	Documents	Avg. document size	Indexes	Total index size
categories	-	36.86 kB	20	72.00 B	1	36.86 kB
events	-	36.86 kB	22	247.00 B	3	110.59 kB
tickets	-	36.86 kB	20	134.00 B	2	73.73 kB
users	-	36.86 kB	47	132.00 B	1	36.86 kB

The left sidebar shows the 'CONNECTIONS' list with the following items:

- localhost:27017
 - admin
 - config
 - eventManagementDB (selected)
 - categories
 - events
 - tickets
 - users
- local
 - startup_log

The bottom status bar shows the system clock as 19:06 on 19-01-2026, along with various system icons.

8. Indexes

Indexes were created on frequently searched fields such as event date and category to improve query performance.

9. Conclusion

This assignment demonstrates how MongoDB can be effectively used for a real-world event management application. The schema design, CRUD operations, and aggregations fulfill all assignment requirements.