Experiment – 7: MongoDB

Name of Student	Spandan Deb
Class Roll No	13
D.O.P.	
D.O.S.	
Sign and Grade	

Aim: To study CRUD operations in MongoDB

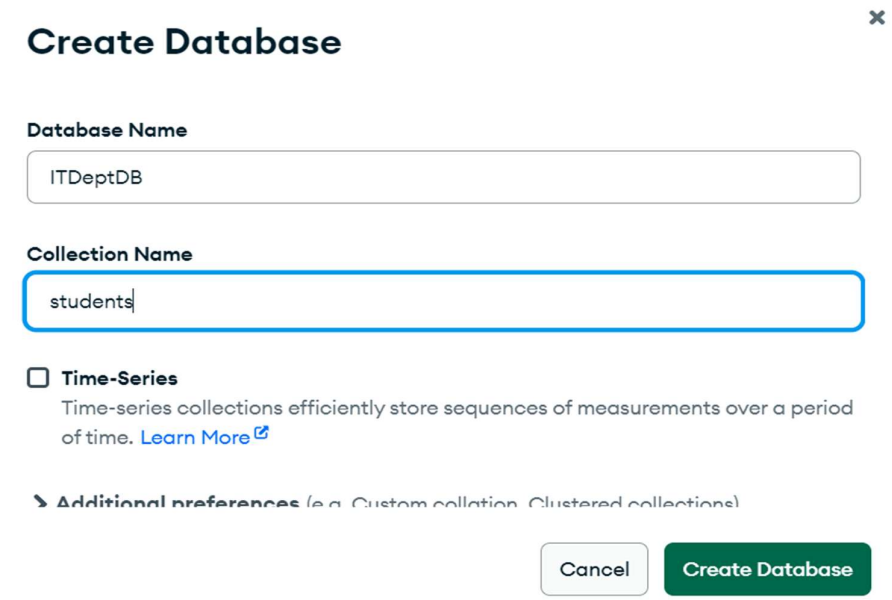
Overview Of Tasks Performed:

This experiment focused on implementing CRUD operations in MongoDB for managing student data, including inserting, updating, and deleting records. Additionally, a RESTful API was developed using Node.js, Express, and Mongoose to handle student data operations such as retrieving, adding, updating, and deleting students. The tasks involved creating a database and collection, performing various MongoDB operations, and testing the API endpoints to ensure proper functionality.

GitHub Link- https://github.com/spandandeb/WebXex7

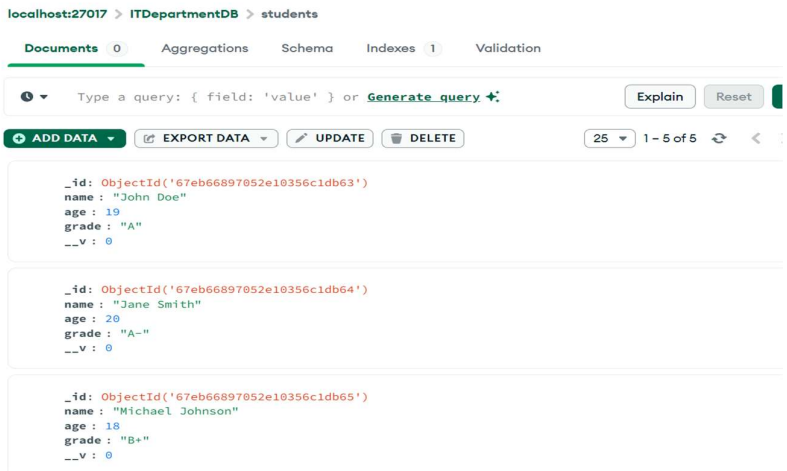
OUTPUT:

A) Created a Database ITDeptDB and collection students



Inserted 1 and multiple student records

```
> use ITDeptDB
< switched to db ITDeptDB
> db.students.insertOne({
    name: "Spandan Deb",
    rollNo: 13,
    className: "IT-101"
  })
< {
    acknowledged: true,
    insertedId: ObjectId('67eb5ad5420f754efddae655')
  }
```



Display a student record for a particular class

```
> db.students.find({ className: "IT-101" })
< {
    _id: ObjectId('67eb5ad5420f754efddae655'),
    name: 'Spandan Deb',
    rollNo: 13,
    className: 'IT-101'
  }
```

Display a particular student record for a given className and rollNo

```
> db.students.find({
    rollNo: 13,
    className: "IT-101"
  })
< {
    _id: ObjectId('67eb5ad5420f754efddae655'),
    name: 'Spandan Deb',
    rollNo: 13,
    className: 'IT-101'
  }
```

Update one student record

```
> db.students.updateOne(
    { name: "Jane Smith" },
    { $set: { rollNo: 110 } }
  )
< {
    acknowledged: true,
    insertedId: null,
    matchedCount: 1,
    modifiedCount: 1,
    upsertedCount: 0
  }
```

Delete one student record

```
> db.students.deleteOne({ name: "Robert Wilson" })
< {
    acknowledged: true,
    deletedCount: 1
  }
```

B) Restful API

```
// File: server.js
const express = require('express');
const mongoose = require('mongoose');
const app = express();
const PORT = process.env.PORT || 3000;

// Middleware
app.use(express.json());

// Connect to MongoDB
mongoose.connect('mongodb://localhost:27017/ITDepartmentDB')
  .then(() => {
    console.log('MongoDB connected');
    // Seed the database with initial data
    initializeDatabase();
  })
  .catch(err => console.log('MongoDB connection error:', err));
```

Conclusion:

Implemented CRUD Operations in MongoDB and implemented a Restful API using Node.js, express and mongoose. We learned about create, read, update and delete student records both via MongoDB shell commands and API endpoints.