

Exercise 2: MongoDB CRUD Operations (2 hrs)

Invoice Management System - Database Integration

Objective: Implement MongoDB integration for invoice management system with complete CRUD operations.

Requirements:

1. Setup MongoDB connection using Mongoose
2. Create Invoice Schema
3. Implement CRUD operations:

```
CREATE: POST /api/invoices
READ:   GET /api/invoices
        GET /api/invoices/:id
UPDATE: PUT /api/invoices/:id
DELETE: DELETE /api/invoices/:id
```

Technical Specifications:

1. MongoDB Schema:

```
Invoice {
  invoiceNumber: { type: Number, unique: true },
  customerName: { type: String, required: true },
  billingAddress: { type: String, required: true },
  date: { type: Date, default: Date.now },
  items: [{
    itemName: String,
    quantity: Number,
    price: Number,
    amount: Number
  }],
  totalAmount: Number
}
```

2. Implementation Requirements:

- Connect to MongoDB (local or Atlas)
- Implement proper error handling
- Add data validation
- Ensure invoice number auto-increment
- Calculate totals before saving

3. API Response Format:

```
{
  success: boolean,
  data: object | array,
  message: string
}
```

Deliverables:

1. Mongoose Schema definition
2. CRUD operation implementations
3. Data validation middleware
4. Error handling

Testing:

- Test all CRUD operations
- Verify data persistence
- Check validation rules
- Test error scenarios