# Department of Computing

**Muhammad Nouman**

**BSCS7B**

**REG# 218663**

**CS-213: Advanced Programming**

**Class: BSCS 7AB**

# Lab 06: Node.js MongoDB

**Date: 3rd October, 2019**

**Time: 10:00-01:00pm & 02:00-05:00pm**

# Instructor: Dr. Sidra Sultana

**Lab Engineer: Ms. Ayesha Asif**

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# Lab 06: Node.js MongoDB

**Introduction**

Node.js can be used in database applications. One of the most popular NoSQL database is MongoDB.

**Objectives**

This lab will get you familiar with the node.js MongoDB environment.

**Tools/Software Requirement**

Node.js, Notepad

**Description**

To be able to experiment with the code examples, you will need access to a MongoDB database.

You can download a free MongoDB database at [https://www.mongodb.com](https://www.mongodb.com/)**Install MongoDB Driver**

Let us try to access a MongoDB database with Node.js.

To download and install the official MongoDB driver, open the Command Terminal and execute the following:

Download and install mongodb package:

C:\Users\*Your Name*>npm install mongodb

Now you have downloaded and installed a mongodb database driver.

Node.js can use this module to manipulate MongoDB databases:

var mongo = require('mongodb');

**Helping Material**

Slides of Lecture 7

<https://www.w3schools.com/nodejs/nodejs_mongodb.asp>

**Lab Tasks**

**Task 1:** Create a database named "mydb". Save the code in a file called "demo\_create\_mongo\_db.js" and run the file.

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| Solution |
| Task Code:  var MongoClient = require('mongodb').MongoClient; var url = "mongodb://localhost:27017/mydb";  MongoClient.connect(url, { useUnifiedTopology: true } ,function(err, db) {  if (err) throw err;  *console*.log("Database created!");  db.close(); });  Task Output Screenshot: |

**Task 2:** Create a collection called "customers". Save the code in a file called "demo\_mongodb\_createcollection.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/'; mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  dbo.createCollection("customers", function(err, res){  if (err) throw err;  *console*.log("Collection created!");  db.close();  }); });  Task Output Screenshot: |

**Task 3:** Insert a document in the "customers" collection. Save the code in a file called "demo\_mongodb\_insert.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/'; mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  var obj = {name: 'Hamza', address: 'House 420'};  dbo.collection("customers").insertOne(obj, (err, res) =>{  if (err) throw err;  console.log(res.insertedCount + " row(s) inserted!");  db.close();  }); });  Task Output Screenshot: |

**Task 4:** Insert multiple documents in the "customers" collection. Save the code in a file called "demo\_mongodb\_insert\_multiple.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/'; mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  var myobj = [  { name: 'John', address: 'Highway 71'},  { name: 'Peter', address: 'Lowstreet 4'},  { name: 'Amy', address: 'Apple st 652'},  { name: 'Hannah', address: 'Mountain 21'},  { name: 'Michael', address: 'Valley 345'},  { name: 'Sandy', address: 'Ocean blvd 2'},  { name: 'Betty', address: 'Green Grass 1'},  { name: 'Richard', address: 'Sky st 331'},  { name: 'Susan', address: 'One way 98'},  { name: 'Vicky', address: 'Yellow Garden 2'},  { name: 'Ben', address: 'Park Lane 38'},  { name: 'William', address: 'Central st 954'},  { name: 'Chuck', address: 'Main Road 989'},  { name: 'Viola', address: 'Sideway 1633'}  ];  dbo.collection("customers").insertMany(myobj, (err, res) =>{  if (err) throw err;  *console*.log(res.insertedCount + " row(s) inserted!");  db.close();  }); });  Task Output Screenshot: |

**Task 5:** Insert three records in a "products" table, with specified \_id fields. Save the code in a file called "demo\_mongodb\_insert\_id.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/';  mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  var myobj = [  { \_id: 157, name: 'Chocolate Heavens'},  { \_id: 158, name: 'Tasty Lemons'},  { \_id: 159, name: 'Vanilla Dreams'}  ];  dbo.collection("products").insertMany(myobj, (err, res) =>{  if (err) throw err;  console.log(res);  db.close();  }); });  Task Output Screenshot: |

**Task 6:** Find the first document in the customer’s collection. Save the code in a file called "demo\_mongodb\_findone.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/';  mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  dbo.collection("customers").findOne({}, (err, res) =>{  if (err) throw err;  console.log(res.name);  db.close();  }); });  Task Output Screenshot: |

**Task 7:** Return the fields "name" and "address" of all documents in the customers collection

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/';  mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  dbo.collection("customers").find({}).toArray((err, res) =>{  if (err) throw err;  console.log(res);  db.close();  }); });  Task Output Screenshot: |

**Task 8:** Find documents with the address "Park Lane 38". Save the code in a file called "demo\_mongodb\_query.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/'; mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  var query = {address: 'Park Lane 38'};  dbo.collection("customers").find(query).toArray((err, res) =>{  if (err) throw err;  console.log(res);  db.close();  }); });  Task Output Screenshot: |

**Task 9:** Sort the result alphabetically by name. Save the code in a file called "demo\_sort.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/';  mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  var mysort = {name: 1};  dbo.collection("customers").find().sort(mysort).toArray((err, res) =>{  if (err) throw err;  console.log(res);  db.close();  }); });  Task Output Screenshot: |

**Task 10:** Delete the document with the address "Mountain 21". Save the code in a file called "demo\_delete.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/';  mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  var query = {address : "Mountain 21"};  dbo.collection("customers").deleteOne(query, function (err, res){  if (err) throw err;  console.log("1 document deleted!");  db.close();  }); });  Task Output Screenshot: |

**Task 11:** Delete all documents were the address starts with the letter "O". Save the code in a file called "demo\_delete\_many.js" and run the file

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/'; mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  var query = {address: /^O/};  dbo.collection("customers").deleteMany(query, function (err, obj){  if (err) throw err;  console.log(obj.result.n + " documents have been removed!!");  db.close();  }); });  Task Output Screenshot: |

**Task 12:** Delete the "customers" table. Save the code in a file called "demo\_drop.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/'; mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  dbo.collection("customers").drop(function(err, delOK){  if (err) throw err;  if(delOK) console.log('Table has been dropped');  db.close();  }); });  Task Output Screenshot: |

**Task 13:** Update the document with the address "Valley 345" to name="Mickey" and address="Canyon 123". Save the code in a file called "demo\_update\_one.js" and run the file

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/';  mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  var query = {address: 'Valley 345'};  var newVals = {$set: { name: 'Mickey', address: 'Canyon 123' }}  dbo.collection("customers").updateOne(query, newVals, function (err, res){  if (err) throw err;  console.log("1 document updated!!");  db.close();  }); });  Task Output Screenshot: |

**Task 14:** Consider you have a "customers" collection. Limit the result to only return 5 documents. Save the code above in a file called "demo\_mongodb\_limit.js" and run the file.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/';  mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  dbo.collection("customers").find().limit(5).toArray((err, res) => {  if (err) throw err;  console.log(res);  db.close();  }); });  Task Output Screenshot: |

**Task 15:** Practice the Join operations on different tables.

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| Solution |
| Task Code:  var mongo = require('mongodb').MongoClient; var url = 'mongodb://localhost:27017/';  mongo.connect(url, {useNewUrlParser: true,  useUnifiedTopology: true}, function (err, db){  if (err) throw err;  var dbo = db.db('mydb');  dbo.collection("orders").aggregate([  {  $lookup: {  from: 'products',  localField: 'product\_id',  foreignField: '\_id',  as: 'orderdetails'  }  }  ]).toArray((err, res)=>{  if (err) throw err;  console.log(JSON.stringify(res))  db.close();  }); });  Task Output Screenshot: |

### Deliverables

Compile a single word document by filling in the solution part and submit this Word file on LMS. This lab grading policy is as follows: The lab is graded between 0 to 10 marks. The submitted solution can get a maximum of 5 marks. At the end of each lab or in the next lab, there will be a viva related to the tasks. The viva has a weightage of 5 marks. Insert the solution/answer in this document. You must show the implementation of the tasks in the designing tool, along with your complete Word document to get your work graded. You must also submit this Word document on the LMS. In case of any problems with submissions on LMS, submit your Lab assignments by emailing it to Ms. Ayesha Asif: [ayesha.asif@seecs.edu.pk](mailto:ayesha.asif@seecs.edu.pk).