# Department of Computing

**CS-213: Advanced Programming**

**Class: BSCS 7AB**

# Lab 5: Node.js MySQL

**Date: 3rd October, 2019**

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

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# Lab 5: Node.js MySQL

**Introduction**

Node.js can be used in database applications. One of the most popular databases is MySQL.client.

**Objectives**

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

**Tools/Software Requirement**

Node.js, Notepad

**Description**

## **MySQL Database**

To be able to experiment with the code examples, you should have MySQL installed on your computer.

You can download a free MySQL database at <https://www.mysql.com/downloads/>.

**Install MySQL Driver**

Once you have MySQL up and running on your computer, you can access it by using Node.js.

To access a MySQL database with Node.js, you need a MySQL driver. This tutorial will use the "mysql" module, downloaded from NPM.

To download and install the "mysql" module, open the Command Terminal and execute the following:

C:\Users\Your Name>npm install mysql

Now you have downloaded and installed a mysql database driver.

Node.js can use this module to manipulate the MySQL database:

var mysql = require('mysql');

**Helping Material**

Slides of Lecture 6

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

**Lab Tasks**

**Task 1:** Start by creating a connection to the database. Use the username and password from your MySQL database.

**Task 2:** Use SQL statements to read from (or write to) a MySQL database. The query method takes an sql statements as a parameter and returns the result.

**Task 3:** Create a database named "mydb". Save the code in a file called "demo\_create\_db.js" and run the file.

**Task 4:** Create a table named "customers". Save the code above in a file called "demo\_create\_table.js" and run the file

**Task 5:** Create primary key when creating the table. If the table already exists, use the ALTER TABLE keyword.

**Task 6:** Insert a record in the "customers" table. Save the code above in a file called "demo\_db\_insert.js", and run the file.

**Task 7:** Fill the "customers" table with multiple data. Save the code above in a file called "demo\_db\_insert\_multple.js", and run the file. Return the number of affected rows

**Task 8:** Select all records from the "customers" table, and display the result object. Save the code above in a file called "demo\_db\_select.js" and run the file

**Task 9:** Select name and address from the "customers" table, and display the return object. Save the code above in a file called "demo\_db\_select2.js" and run the file

**Task 10:** Select all records from the "customers" table, and display the fields object. Save the code above in a file called "demo\_db\_select\_fields.js" and run the file

**Task11:** Select record(s) with the address "Park Lane 38". Save the code above in a file called "demo\_db\_where.js" and run the file

**Task 12:** Select records where the address starts with the letter 'S'. Save the code above in a file called "demo\_db\_where\_s.js" and run the file.

**Task 13:** Sort the result alphabetically by name. Save the code above in a file called "demo\_db\_orderby.js" and run the file

**Task 14:** Delete any record with the address "Mountain 21". Save the code above in a file called "demo\_db\_delete.js" and run the file.

**Task 15:** Delete the table "customers". Save the code above in a file called "demo\_db\_drop\_table\_if.js" and run the file.

**Task 16:** Overwrite the address column from "Valley 345" to "Canyon 123". Save the code above in a file called "demo\_db\_update.js" and run the file

**Task 17:** Select the 5 first records in the "customers" table. Save the code above in a file called "demo\_db\_limit.js" and run the file. Now Start from position 3, and return the next 5 records.

**Task 18:** Practice the Join operations on different tables.

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| Solution |
| Task Code:  Task1  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza"  });  con.connect(function(err) {  con.query(sql, function (err, result) {    if (err) throw err;  console.log("Connected!");  if (err) throw err;  console.log("Result: " + result);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task1.PNG  Task2 + Task3  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza"  });  con.connect(function(err) {  var sql = "CREATE DATABASE mydb";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log("Database has been created!");  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task3.PNG  Task4 + Task5  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "CREATE TABLE customers (id INT AUTO\_INCREMENT PRIMARY KEY, name VARCHAR(255), address VARCHAR(255))";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log("Table has been created!");  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task4.PNG  Task6  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "INSERT INTO customers (name, address) VALUES ('Hamza Zakir', 'House 69')";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log("1 record inserted!");  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task6.PNG  Task7  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "INSERT INTO customers (name, address) VALUES ?";  var vals = [  ['Ali', 'Highway 71'],  ['Malik', 'Lowstreet 4'],  ['Mariyah', 'Apple st 652'],  ['Shuja', 'Mountain 21'],  ['Mikaael', 'Valley 345'],  ['Azka', 'Ocean blvd 2'],  ['Hammad', 'Green Grass 1'],  ['Ramiz', 'Sky st 331'],  ];  if (err) throw err;  console.log("Connected!");  con.query(sql, [vals], function (err, result) {    if (err) throw err;  console.log("Number of affected rows: " + result.affectedRows);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task7.PNG  Task8’  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "SELECT \* FROM customers";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result, fields) {    if (err) throw err;  console.log(result);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task8.PNG  Task9  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "SELECT name,address FROM customers";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result, fields) {    if (err) throw err;  console.log(result);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task9(1).PNG  Task10  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "SELECT \* FROM customers";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result, fields) {    if (err) throw err;  console.log(fields);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task10.PNG  Task11  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "SELECT \* FROM customers WHERE address = 'Park Lane 38'";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    cd desktop  node demo\_db\_where  if (err) throw err;  console.log(result);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task11.PNG  Task12  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "SELECT \* FROM customers WHERE address LIKE 'S%'";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log(result);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task12.PNG  Task13  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "SELECT \* FROM customers ORDER BY name";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log(result);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task13.PNG  Task14  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "DELETE FROM customers WHERE address = 'Mountain 21'";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log("Number of deleted rows: " + result.affectedRows);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task14.PNG  Task15  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "DROP TABLE customers";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log("Table has been deleted!");  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task15.PNG  Task16  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "UPDATE customers SET address = 'Canyon 123' WHERE address = 'Valley 345'";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log("Number of updated rows: " + result.affectedRows);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task16.PNG  Task17  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "SELECT \* FROM customers LIMIT 5 OFFSET 2";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log(result);  });  });  C:\Users\mzakir.bscs17seecs\Desktop\task17.PNG  Task18  var mysql = require("mysql");  var con = mysql.createConnection({  host: "127.0.0.1",  user: "hamza",  password: "hamza",  database: "mydb"  });  con.connect(function(err) {  var sql = "SELECT users.name AS user, products.name AS favorite FROM users RIGHT JOIN products ON users.favorite\_products = products.id";  if (err) throw err;  console.log("Connected!");  con.query(sql, function (err, result) {    if (err) throw err;  console.log(result);  });  });  Join  C:\Users\mzakir.bscs17seecs\Desktop\joinPrac1.PNG  Left Join  C:\Users\mzakir.bscs17seecs\Desktop\leftJoin.PNG  Right Join  C:\Users\mzakir.bscs17seecs\Desktop\rightJoin.PNG |

### 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).