**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.

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345"

});

con.connect(function(err) {

if (err) throw err;

console.log("Connected!");

});



**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.

con.connect(function(err) {

if (err) throw err;

console.log("Connected!");

con.query(sql, function (err, result) {

if (err) throw err;

console.log("Result: " + result);

});

});

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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345"

});

con.connect(function(err) {

if (err) throw err;

console.log("Connected!");

con.query("CREATE DATABASE mydb", function (err, result) {

if (err) throw err;

console.log("Database created");

});

});



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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

console.log("Connected!");

var sql = "CREATE TABLE customers (name VARCHAR(255), address VARCHAR(255))";

con.query(sql, function (err, result) {

if (err) throw err;

console.log("Table created");

});

});



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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

console.log("Connected!");

var sql = "ALTER TABLE customers ADD COLUMN id INT AUTO\_INCREMENT PRIMARY KEY";

con.query(sql, function (err, result) {

if (err) throw err;

console.log("Table altered");

});

});



**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.

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

console.log("Connected!");

var sql = "INSERT INTO customers (name, address) VALUES ('Company Inc', 'Highway 37')";

con.query(sql, function (err, result) {

if (err) throw err;

console.log("1 record inserted");

});

});



**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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

console.log("Connected!");

var sql = "INSERT INTO customers (name, address) VALUES ?";

var values = [

['John', 'Highway 71'],

['Peter', 'Lowstreet 4'],

['Amy', 'Apple st 652'],

['Hannah', 'Mountain 21'],

['Michael', 'Valley 345'],

['Sandy', 'Ocean blvd 2'],

['Betty', 'Green Grass 1'],

['Richard', 'Sky st 331'],

['Susan', 'One way 98'],

['Vicky', 'Yellow Garden 2'],

['Ben', 'Park Lane 38'],

['William', 'Central st 954'],

['Chuck', 'Main Road 989'],

['Viola', 'Sideway 1633']

];

con.query(sql, [values], function (err, result) {

if (err) throw err;

console.log("Number of records inserted: " + result.affectedRows);

});

});



**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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

con.query("SELECT \* FROM customers", function (err, result, fields) {

if (err) throw err;

console.log(result);

});

});



**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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

con.query("SELECT name, address FROM customers", function (err, result, fields) {

if (err) throw err;

console.log(result);

});

});



**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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

con.query("SELECT name, address FROM customers", function (err, result, fields) {

if (err) throw err;

console.log(fields);

});

});



**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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

con.query("SELECT \* FROM customers WHERE address = 'Park Lane 38'", function (err, result) {

if (err) throw err;

console.log(result);

});

});



**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.

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

con.query("SELECT \* FROM customers WHERE address LIKE 'S%'", function (err, result) {

if (err) throw err;

console.log(result);

});

});



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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

con.query("SELECT \* FROM customers ORDER BY name", function (err, result) {

if (err) throw err;

console.log(result);

});

});



**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.

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

var sql = "DELETE FROM customers WHERE address = 'Mountain 21'";

con.query(sql, function (err, result) {

if (err) throw err;

console.log("Number of records deleted: " + result.affectedRows);

});

});



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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

var sql = "DROP TABLE customers";

con.query(sql, function (err, result) {

if (err) throw err;

console.log("Table deleted");

});

});



**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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

var sql = "UPDATE customers SET address = 'Canyon 123' WHERE address = 'Valley 345'";

con.query(sql, function (err, result) {

if (err) throw err;

console.log(result.affectedRows + " record(s) updated");

});

});



**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.

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

var sql = "SELECT \* FROM customers LIMIT 5";

con.query(sql, function (err, result) {

if (err) throw err;

console.log(result);

});

});



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

var mysql = require('mysql');

var con = mysql.createConnection({

host: "localhost",

user: "root",

password: "12345",

database: "mydb"

});

con.connect(function(err) {

if (err) throw err;

var sql = "SELECT users.name AS user, products.name AS favorite FROM users JOIN products ON users.favorite\_product = products.id";

con.query(sql, function (err, result) {

if (err) throw err;

console.log(result);

});

});

