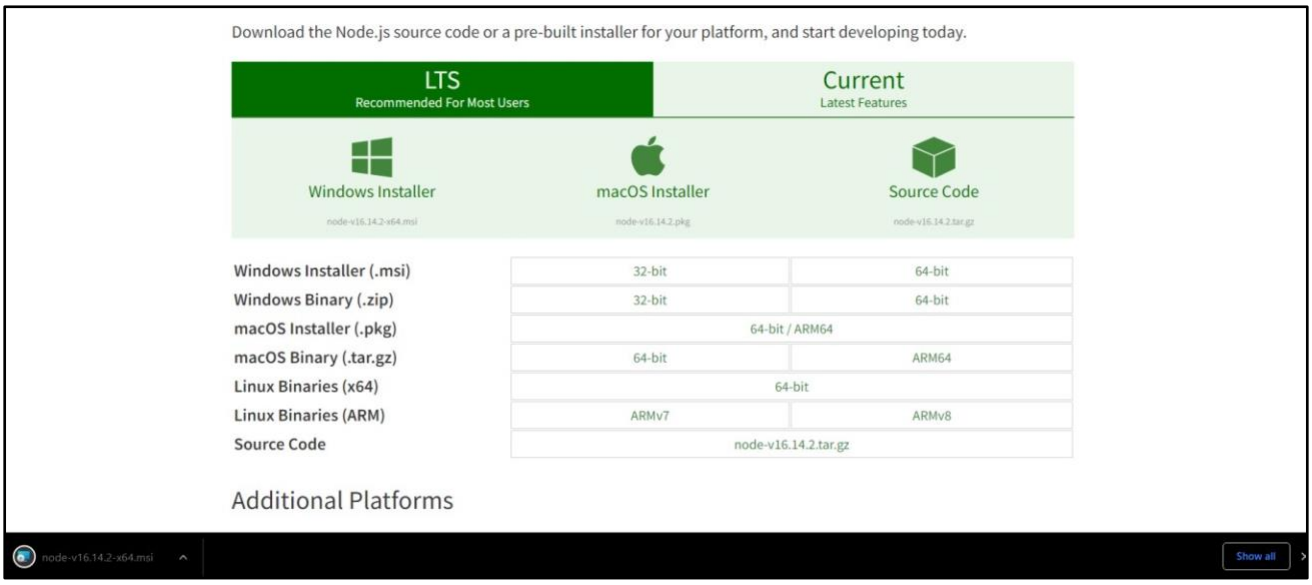
INDEX

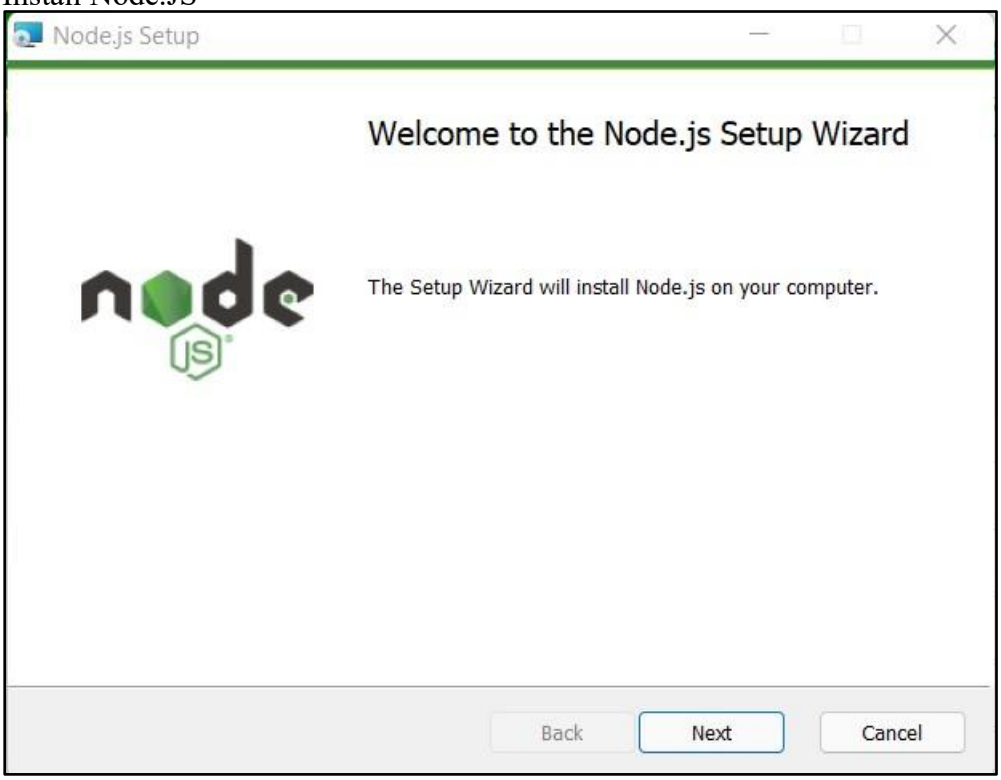
Module 1: Introduction To Node JS

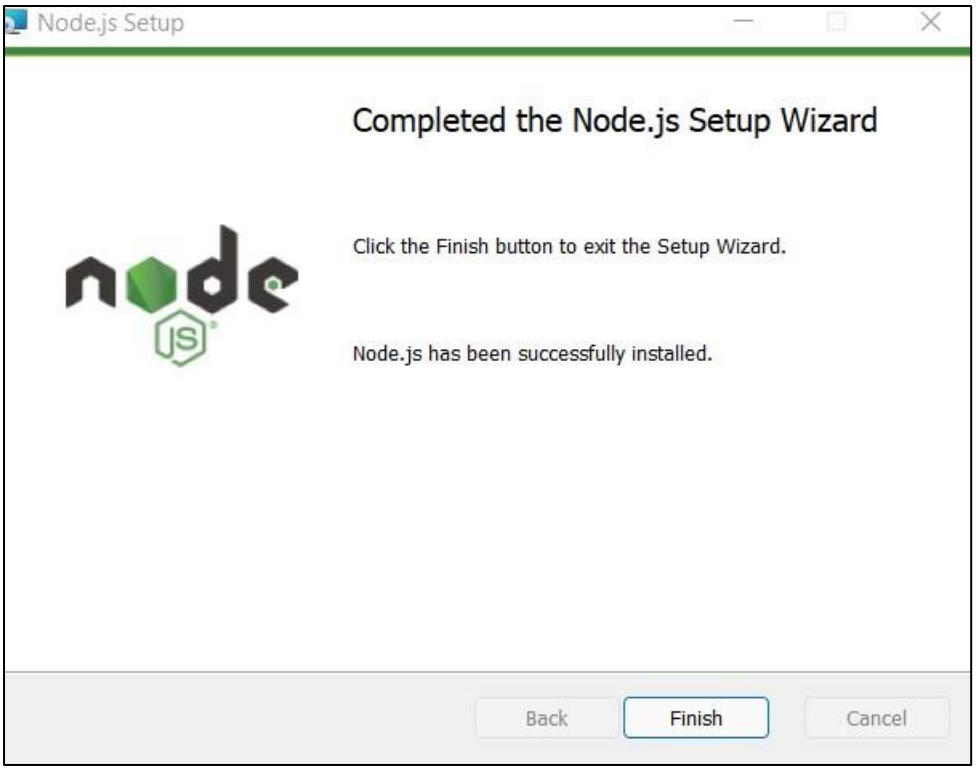
1A. Install Node JS and verify Installation

1. Download Node.JS

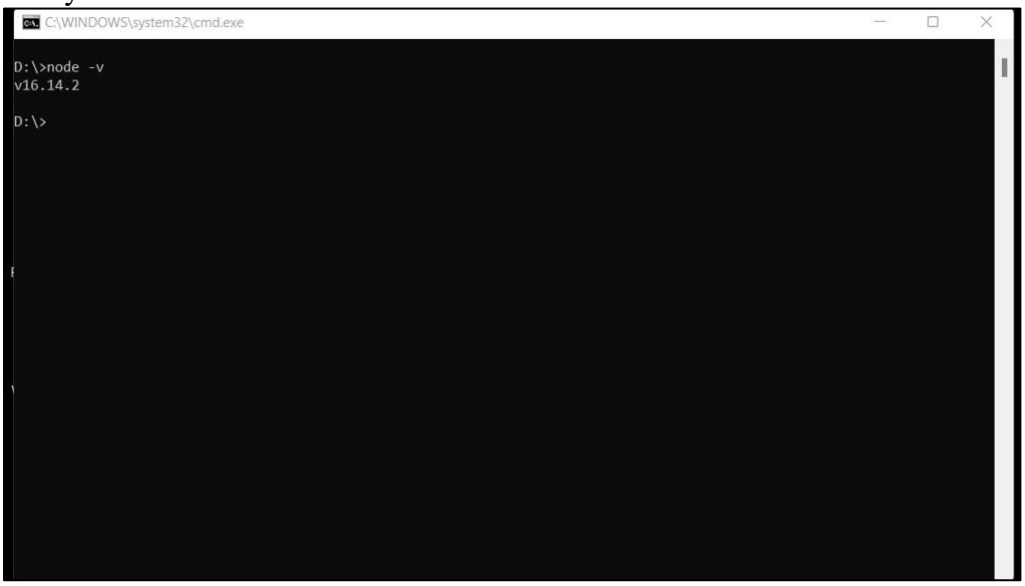


2. Install Node.JS



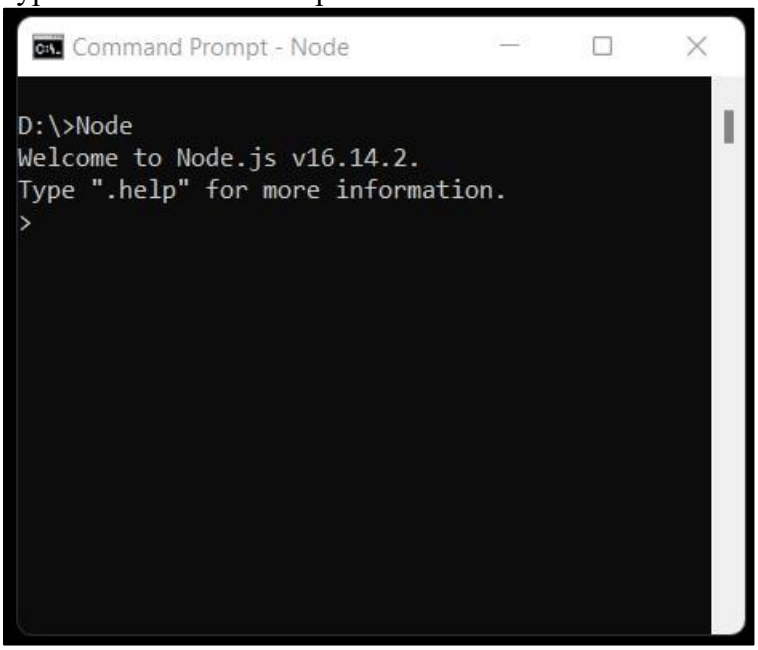


3. Verify Node.JS Installation

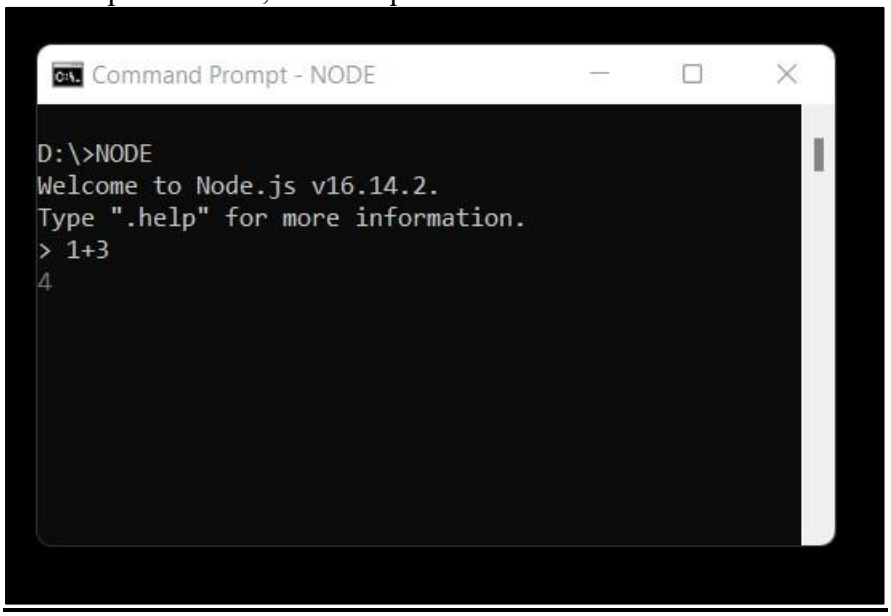


1B. Node JS REPL Terminal

1. Type Node in CMD and press enter



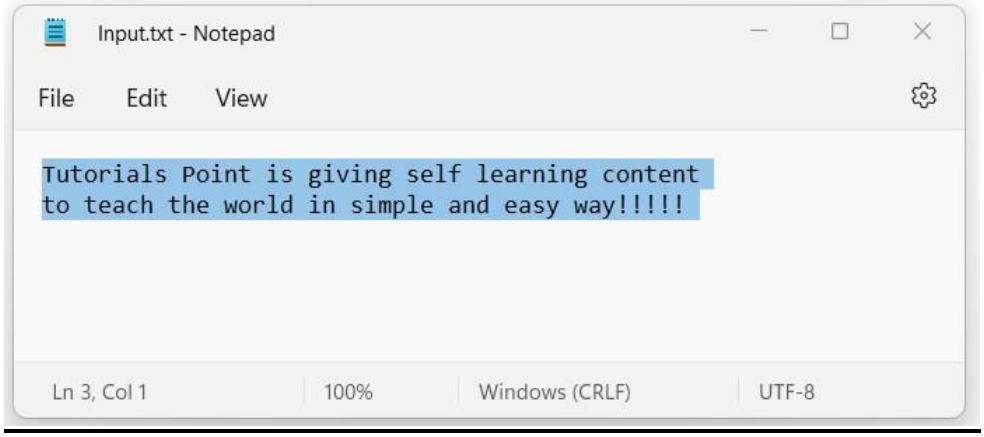
2. Enter expression i.e., 1+3 and press enter



Module 2: JS Node.js Modules, Events & Functions

2A. Node JS callback pattern function callback

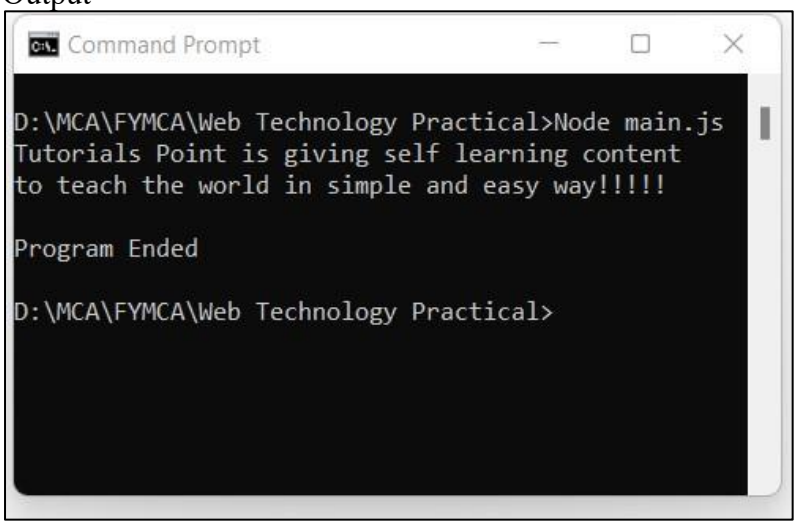
1. Create and save text file with name input.txt with below content



2. Create a **main.js** file with below code and store it in same location where input.txt is stored

```
var fs = require("fs");
var data = fs.readFileSync('input.txt');
console.log(data.toString());
console.log("Program Ended");
```

3. Go to location where file is stored and run command **Node main.js** and press enter
   Output-

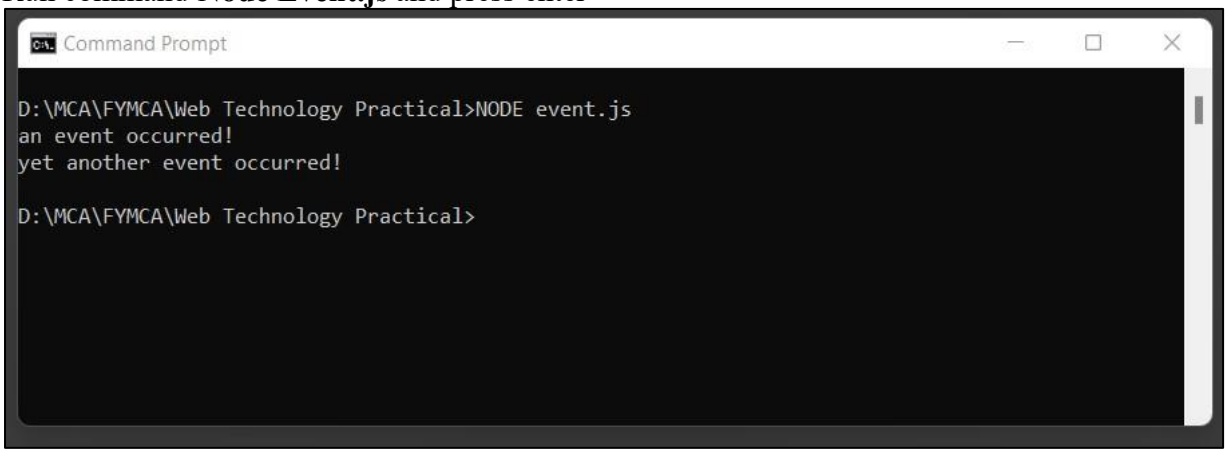


2B. Node JS callback pattern function callback

1. Create a new file **Event.js** and add below code

```
var EventEmitter = require('events'); const
myEmitter = new EventEmitter();
 function c1()
{
   console.log('an event occurred!');
} function c2()
{
   console.log('yet another event occurred!');
}
myEmitter.on('eventOne', c1); // Register for eventOne
myEmitter.on('eventOne', c2); // Register for eventOne
myEmitter.emit('eventOne');
```

2. Run command **Node Event.js** and press enter



Module 3 : File Handling & HTTP Web Server

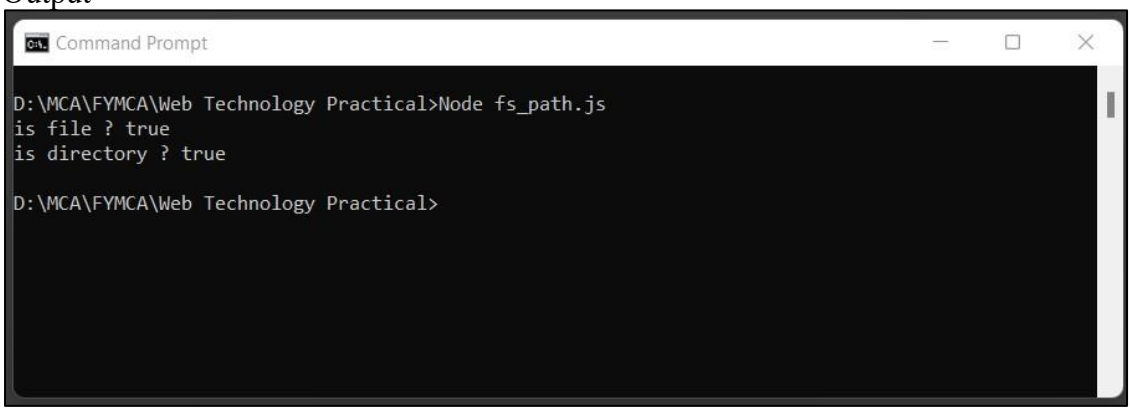
3A. FS Module File Path

1. Create a file with name **fs_path.js** and save with below code

```
// Require the given module  var
fs = require('fs');
// Use statSync() method to store the returned //
instance into variable named stats
var stats = fs.statSync("D:/MCA/FYMCA/Web Technology
Practical/Students/main.js");
// Use isFile() method to log the result to screen
console.log('is file ? ' + stats.isFile()); var
stats = fs.statSync("D:/MCA/FYMCA/Web Technology
Practical/Students");
// Use isDirectory() method to log the result to screen
console.log('is directory ? ' + stats.isDirectory());
```

2. In Command prompt navigate to folder where fs_path.js is stored and run command **Node Fs_path.js** and press enter

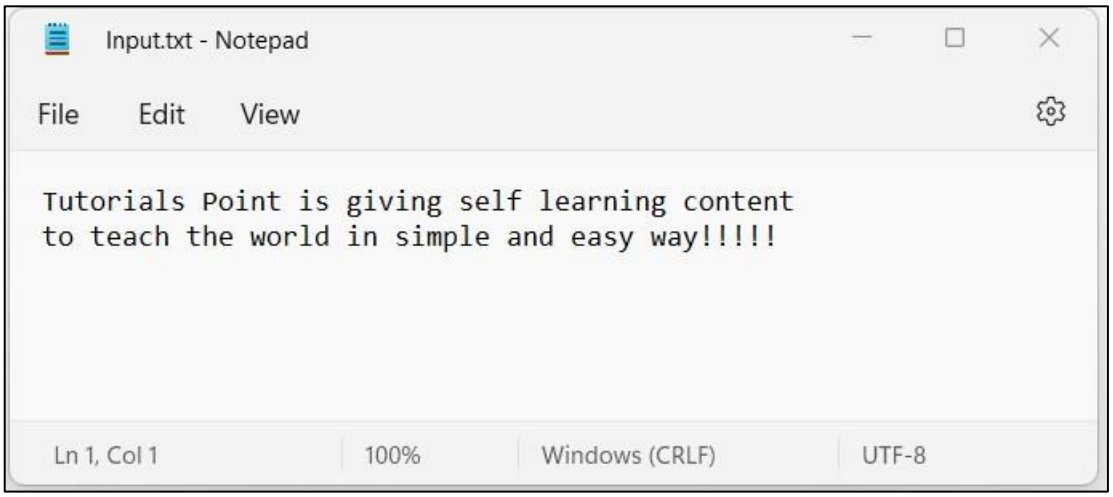
   Output-



3B. FS Module File Path

Read file in Node.JS

1. Create a new text file name **Input.txt** and add below content



2. Create a new file name **app.js** and add below code

```
var fs = require("fs");
fs.readFile("input.txt", function(err, buf) {
console.log(buf.toString());
});
```

3. In Command prompt navigate to location where app.js is stored and run command **Node app.js** and press enter

Module 4 : Connect MySQL with Node.JS

4A. Connect MySQL with Node.JS

1. Add a folder with name **node-mysql**
2. In Command Prompt navigate to folder **node-mysql** folder and enter **npm init** command and press enter (for adding package.json file)

```
Command Prompt

D:\MCA\FYMCA\Web Technology Practical>cd node-mysql

D:\MCA\FYMCA\Web Technology Practical\node-mysql>npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.

See `npm help init` for definitive documentation on these fields
and exactly what they do.

Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
package name: (mysql) mysql
version: (1.0.0)
description:
entry point: (index.js)
test command:
git repository:
keywords:
author:
license: (ISC)
About to write to D:\MCA\FYMCA\Web Technology Practical\node-mysql\package.json:

{
  "name": "mysql",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "author": "",
  "license": "ISC"
}


Is this OK? (yes) yes
npm notice
npm notice New patch version of npm available! 8.5.0 -> 8.5.5
npm notice Changelog: https://github.com/npm/cli/releases/tag/v8.5.5
npm notice Run npm install -g npm@8.5.5 to update!
npm notice
```

3. Enter Command **npm install mysql** and press enter (for installing mySql Package)

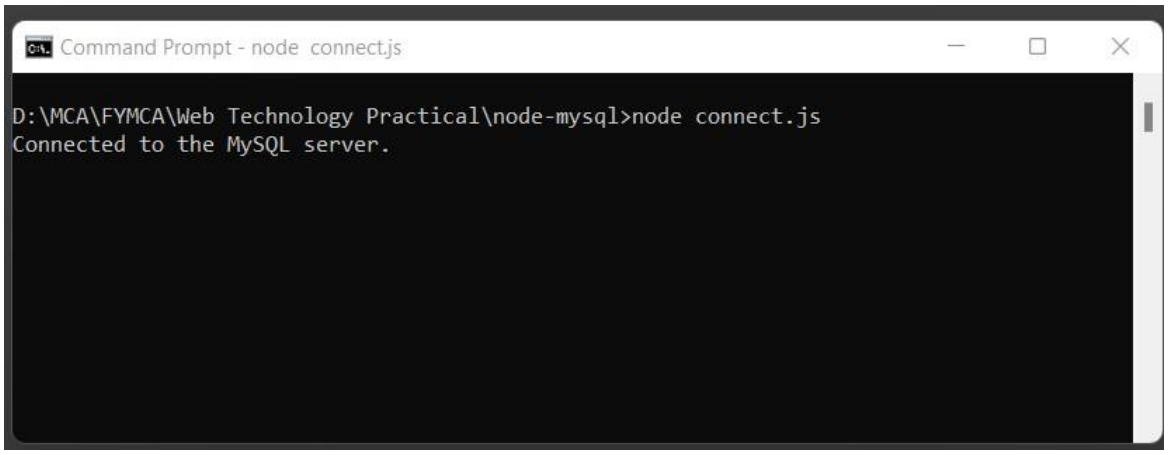
```
Command Prompt

D:\MCA\FYMCA\Web Technology Practical\node-mysql>npm install mysql

up to date, audited 12 packages in 2s

found 0 vulnerabilities

D:\MCA\FYMCA\Web Technology Practical\node-mysql>
```

4. Create Database **todoapp** in MySql

5. Create a file name **Connect.js** and add below code in it

```
let mysql = require('mysql'); let
connection = mysql.createConnection({
host: 'localhost',     user: 'root',
password: '1234',     database:
'todoapp'
});
connection.connect(function(err) {
if (err) {
    return console.error('error: ' + err.message);
  }
  console.log('Connected to the MySQL server.');
});
```

6. Open command prompt Navigate to folder where **connect.js** is located
   And run command **node connect.js** and press enter



4B. Insert Data in SQL using Node.JS

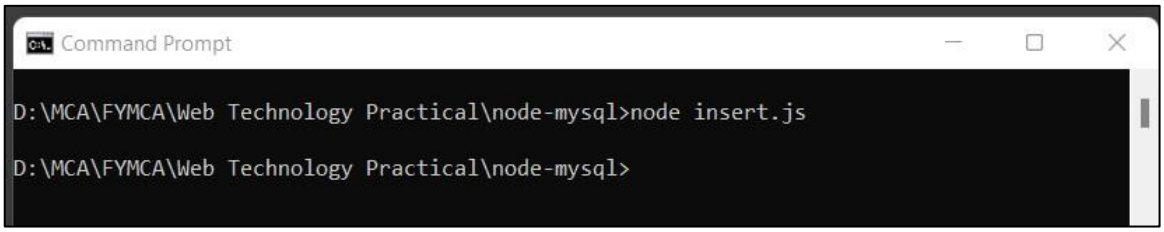
1. Create a file with name **Config.js** and add below code in it

```
 let config = {   host
: 'localhost',   user
: 'root',   password:
'1234',   database:
'todoapp'
};
module.exports = config;
```

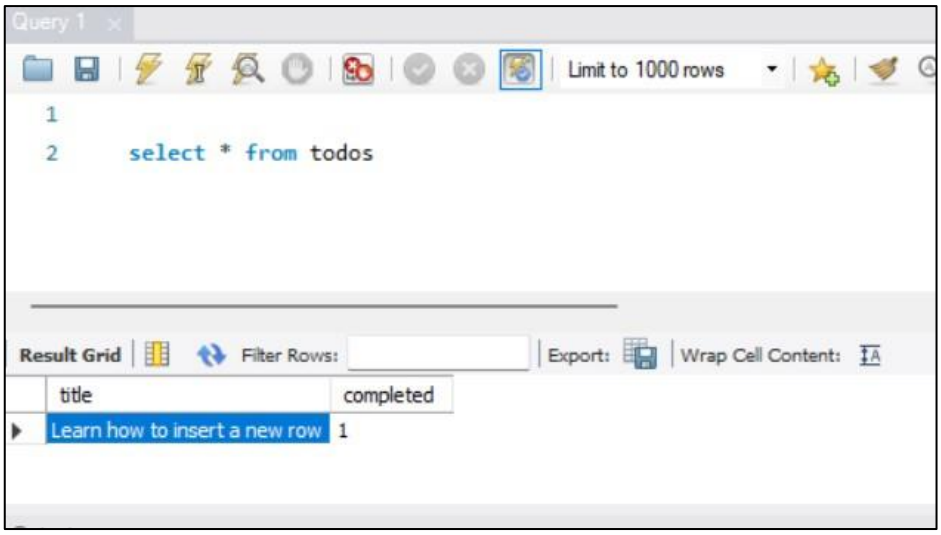
2. Create a insert.js file and add below code in it

```
let mysql  = require('mysql'); let
config = require('./config.js');
let connection = mysql.createConnection(config);
// insert statment
let sql = `INSERT INTO todos(title,completed)
VALUES('Learn how to insert a new row',true)`;
// execute the insert statment
connection.query(sql);
connection.end();
```

3. Navigate to Folder where insert.js is located and run command **node insert.js** and press enter



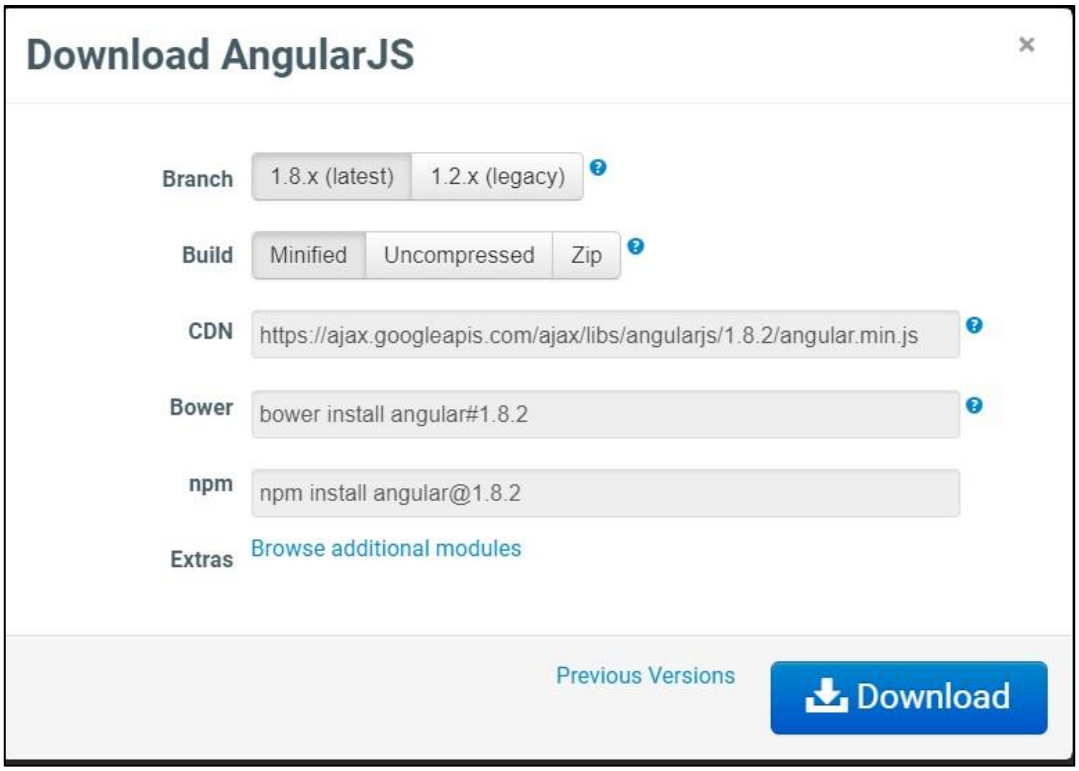
4. Verify in database



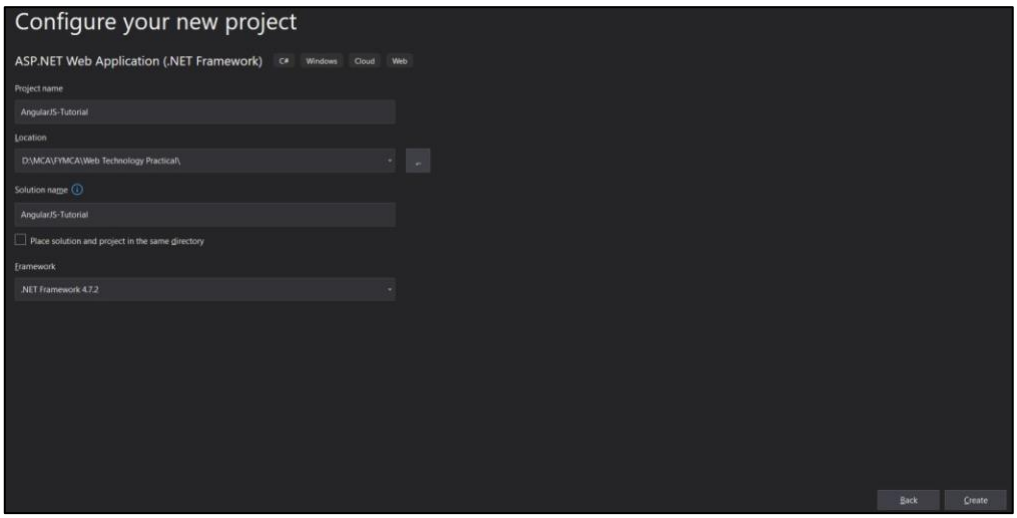
Module 5 : Angular JS Basics

5A. Setting up the environment

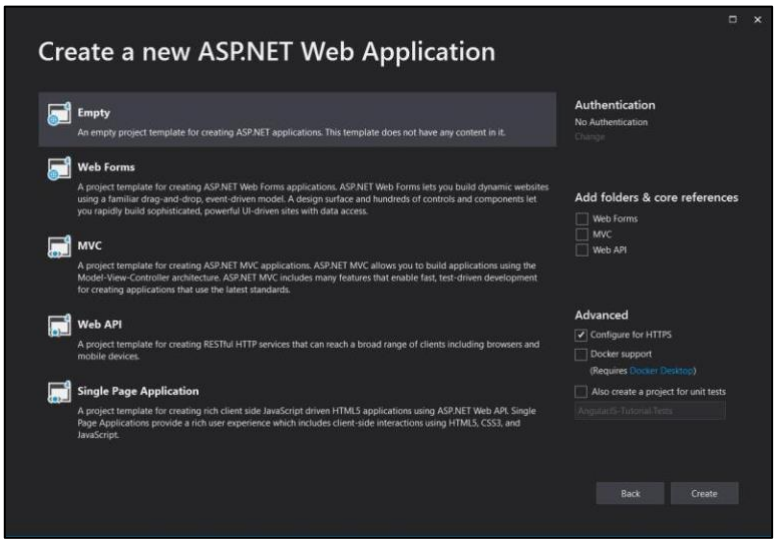
1. Download **Angular JS**



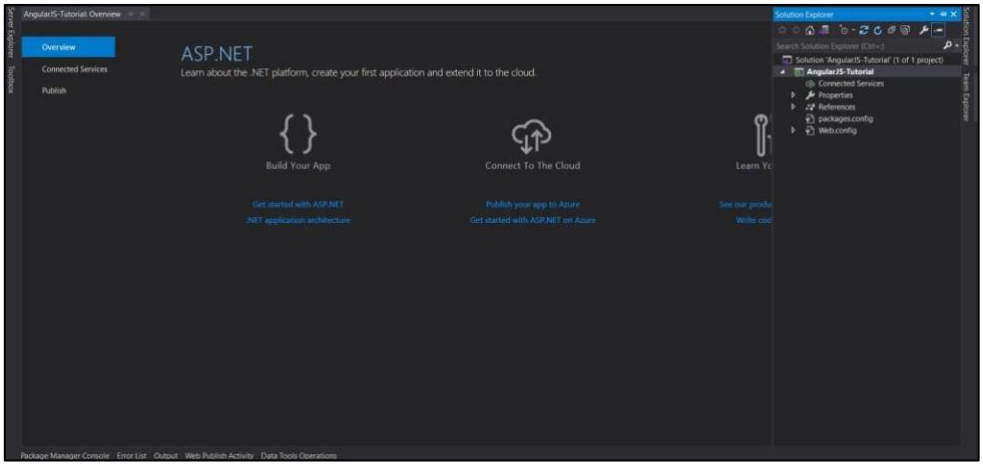
2. Open Visual Studio Create new project with name **AngularJS-Tutorial** and press Create



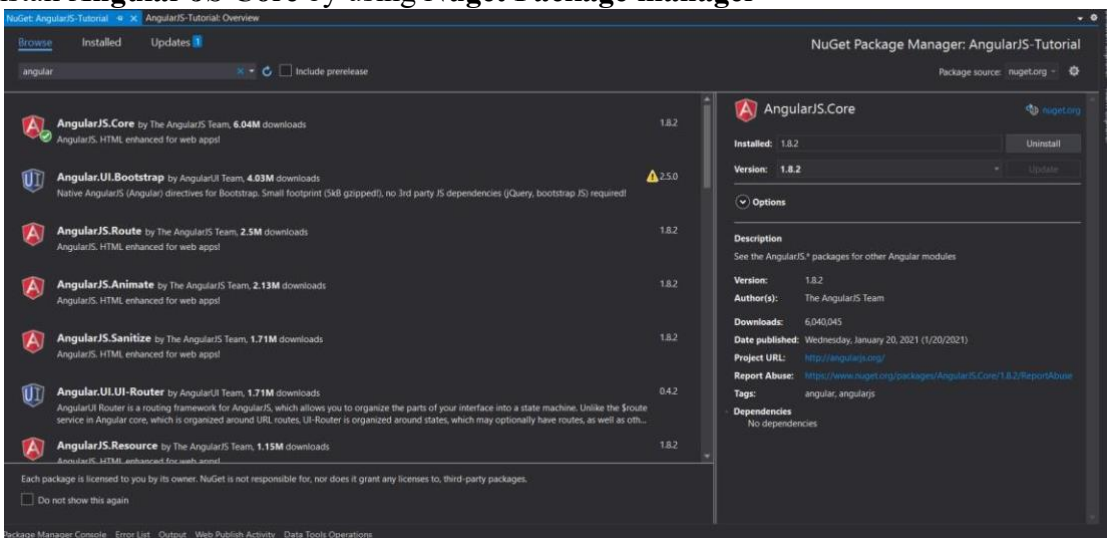
3. Select Empty and press Create button



4. This will create an empty Asp.net Project



5. Install **Angular JS Core** by using **Nuget Package manager**

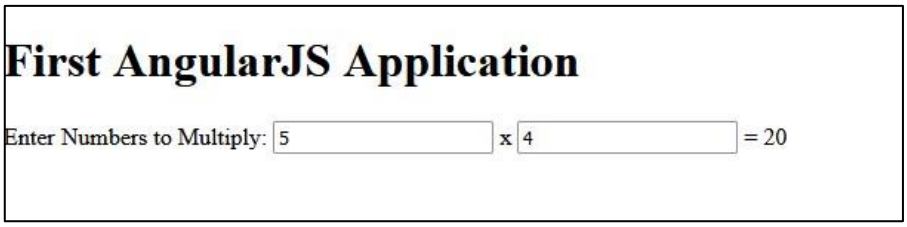


5B. First Application (Multiplier)

1. Create an HTML file in Visual Studio and add below html and **Angular.JS script path/URL** in it

```
<!DOCTYPE html>

<html>
    <head>
        <title>First AngularJS Application</title>
        <script src="Scripts/angular.js"></script>

    </head>
    <body ng-app>
        <h1>First AngularJS Application</h1>

        Enter Numbers to Multiply:
        <input type="text" ng-model="Num1" /> x <input type="text"
ng-model="Num2" />
        = <span>{{Num1 * Num2}}</span>
    </body>

</html>
```

2. Execute the code and verify the output by entering number in textbox



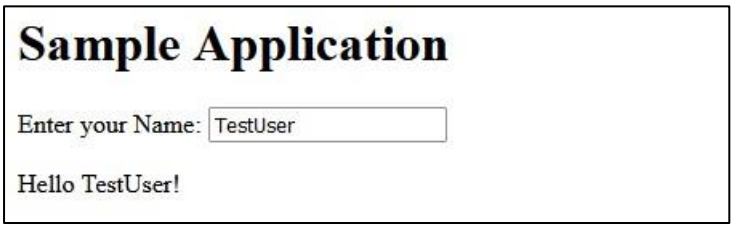
Module 6 : Filters, Directive

6A. Program to display your name with welcome note: HELLO

1. Create a html file name **WelcomeMessage.html** and write below html and **Angular.JS script path/URL** in it

```
<html>
<head>
    <title>AngularJS First Application</title>
</head>
<body>
    <h1>Sample Application</h1>

    <div ng-app="">
        <p>Enter your Name: <input type="text" ng-model="name"></p>
        <p>Hello <span ng-bind="name"></span>!</p>
    </div>

    <script
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.
min.js">     </script>

</body>
</html>
```

2. Run the code and verify output by entering text in textbox



6B. Experiment: Create an application using Filters

1. Create an HTML file name **filter.html** and write below HTML and **Angular.JS script path/URL** in it

```
<html>
<head>
    <title>Angular JS Filters</title>
    <script
```

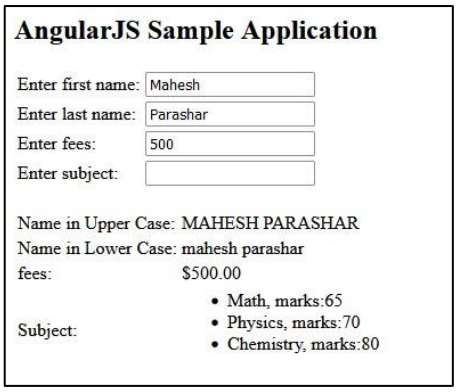
```
src="https://ajax.googleapis.com/ajax/libs/angularjs/1.3.14/angular.min.js"
>
    </script>
</head>

<body>
    <h2>AngularJS Sample Application</h2>

    <div ng-app="mainApp" ng-controller="studentController">
        <table border="0">
            <tr>
                <td>Enter first name:</td>
                <td><input type="text" ng-model="student.firstName"></td>
            </tr>
            <tr>
                <td>Enter last name: </td>
                <td><input type="text" ng-model="student.lastName"></td>
            </tr>
            <tr>
                <td>Enter fees: </td>
                <td><input type="text" ng-model="student.fees"></td>
            </tr>
            <tr>
                <td>Enter subject: </td>
                <td><input type="text" ng-model="subjectName"></td>
            </tr>
        </table>
        <br />

        <table border="0">
            <tr>
                <td>Name in Upper Case: </td>
                <td>{{student.fullName() | uppercase}}</td>
            </tr>
            <tr>
                <td>Name in Lower Case: </td>
                <td>{{student.fullName() | lowercase}}</td>
            </tr>
            <tr>
                <td>fees: </td>
                <td>
                    {{student.fees | currency}}
                </td>
            </tr>
            <tr>
                <td>Subject:</td>
                <td>
                    <ul>
                        <li ng-repeat="subject in student.subjects |
filter: subjectName |orderBy:'marks'">
                            {{ subject.name + ', marks:' + subject.marks }}
```

```
                        </li>
                    </ul>
                </td>
            </tr>
        </table>
    </div>
</body>
</html>
```

2. Add below JavaScript using script tag in html code

```
 <script>
        var mainApp = angular.module("mainApp", []);

        mainApp.controller('studentController', function ($scope) {
            $scope.student = {
firstName: "Mahesh",
lastName: "Parashar",
fees: 500,

                subjects: [
                    { name: 'Physics', marks: 70 },
                    { name: 'Chemistry', marks: 80 },
                    { name: 'Math', marks: 65 }
                ],
                fullName: function () {
var studentObject;                    studentObject =
$scope.student;                    return
studentObject.firstName + " " + studentObject.lastName;
                }
            };
        });
    </script>
```

3. Execute the code and verify the output



Module 7 : Controllers

7A. Programming Controllers & $scope object

1. Add HTML file with name **Controller.html** and add below HTML and **Angular.JS script path/URL** in it

```
<!DOCTYPE html>
<html>
<head>
    <title>AngualrJS Controller</title>
    <script src="Scripts/angular.js"></script>
</head>
<body ng-app="myNgApp">
    <div ng-controller="myController">
        {{message}}
    </div>

</body>
</html>
```

2. Add Below script using script tag in HTML

```
<script>
        var ngApp = angular.module('myNgApp', []);

        ngApp.controller('myController', function ($scope) {
            $scope.message = "Hello World!";
        });
    </script>
```

3. Run the HTML file and verify the output

7B. Adding Behaviour to a Scope Object

1. Add Html file with name **ScopeBehaviour.html** and add below html and **Angular.JS script path/URL** in it

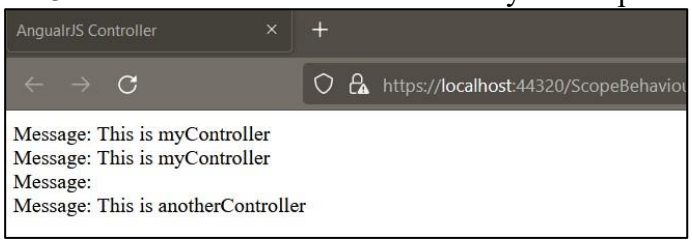
```
<!DOCTYPE html>
```

```html
<html>
<head>
    <title>AngualrJS Controller</title>
    <script src="Scripts/angular.js"></script>
</head>
<body ng-app="myNgApp">
    <div id="div1" ng-controller="myController">
        Message: {{message}} <br />
        <div id="div2">
            Message: {{message}}
        </div>
    </div>
    <div id="div3">
        Message: {{message}}
    </div>
    <div id="div4" ng-controller="anotherController">
        Message: {{message}}
    </div>

</body>
</html>
```

2. Add below JavaScript within script tag in HTML

```html
<script>
  var ngApp = angular.module('myNgApp', []);

  ngApp.controller('myController', function ($scope) {
      $scope.message = "This is myController";
  });

  ngApp.controller('anotherController', function ($scope) {
      $scope.message = "This is anotherController";
  });
</script>
```

3. Run above HTML file and verify the output



Module 8 : Forms and SPA (Single Page Application)

8A. Create Simple Angular Forms using different input controls & events

1. Add an HTML file with name **AngularForm.html** and add below HTML and **Angular.JS script path/URL** in it

```
<!DOCTYPE html>
<html>
<head>
    <title>Angular JS Forms</title>
    <script src="Scripts/angular.js"></script>

    <style>         table, th, td {
border: 1px solid grey;
border-collapse: collapse;
padding: 5px;
        }
            table tr:nth-child(odd) {
background-color: lightpink;
            }

            table tr:nth-child(even) {
background-color: lightyellow;
            }
    </style>

</head>
<body>

    <h2>AngularJS Sample Application</h2>
    <div ng-app="mainApp" ng-controller="studentController">

        <form name="studentForm" novalidate>
            <table border="0">
                <tr>
                    <td>Enter first name:</td>
                    <td>
                        <input name="firstname" type="text"
ngmodel="firstName" required>
                        <span style="color:red"
ngshow="studentForm.firstname.$dirty &&
studentForm.firstname.$invalid">
<span ng-
show="studentForm.firstname.$error.required">First Name is
required.</span>
                        </span>
```

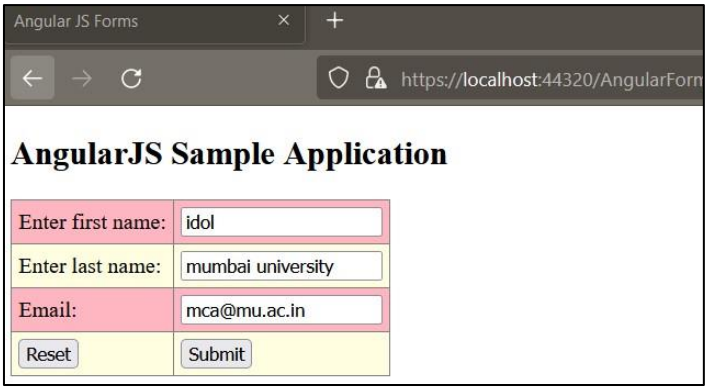
```
                    </td>
                </tr>

                <tr>
                    <td>Enter last name: </td>
                    <td>
                        <input name="lastname" type="text"
ngmodel="lastName" required>
                        <span style="color:red" ng-
show="studentForm.lastname.$dirty && studentForm.lastname.$invalid">
                            <span ng-
show="studentForm.lastname.$error.required">Last Name is
required.</span>
                        </span>
                    </td>
                </tr>

                <tr>
                    <td>Email: </td>
                    <td>
                        <input name="email" type="email" ng-
model="email" length="100" required>
                        <span style="color:red" ng-
show="studentForm.email.$dirty && studentForm.email.$invalid">
                            <span ng-
show="studentForm.email.$error.required">Email is required.</span>
                            <span ng-
show="studentForm.email.$error.email">Invalid email address.</span>
                        </span>
                    </td>
                </tr>

                <tr>
                    <td>
                        <button ng-click="reset()">Reset</button>
                    </td>
                    <td>
                        <button
ngdisabled="studentForm.firstname.$dirty &&
                        studentForm.firstname.$invalid ||
studentForm.lastname.$dirty &&
                        studentForm.lastname.$invalid ||
studentForm.email.$dirty &&
                        studentForm.email.$invalid" ng-
click="submit()">
                            Submit
                        </button>
```

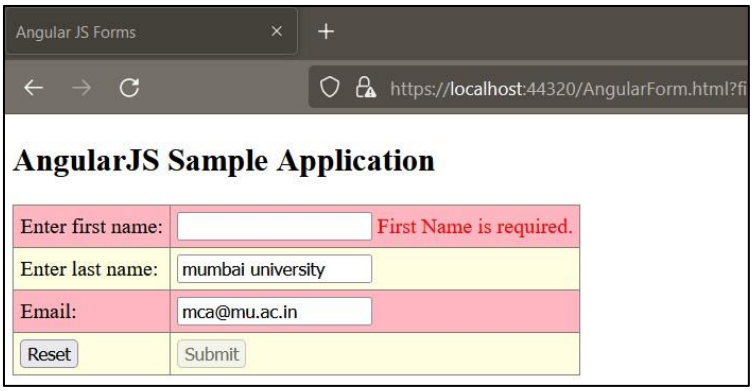
```
                    </td>
                </tr>

            </table>
        </form>
    </div>



</body>
</html>
```

2. Add below Angular JavaScript code inside script tag in html

```
<script>
        var mainApp = angular.module("mainApp", []);

        mainApp.controller('studentController', function ($scope) {
            $scope.reset = function () {
                $scope.firstName = "idol";
                $scope.lastName = "mumbai university";
                $scope.email = "mca@mu.ac.in";
            }

            $scope.reset();
        });
    </script>
```

3. Run the html and verify the Output





8B. Implement the concept of Single page application

1. Add a new HTML file name **SinglePageApplication.html** and add below code with **AngularJS** and **AngularJS routing script URL**

```
<!doctype html>
<html ng-app="myApp">
<head>
<script
src="https://cdnjs.cloudflare.com/ajax/libs/angular.js/1.4.7/angular.m
in.js"></script>     <script
src="https://cdnjs.cloudflare.com/ajax/libs/angular.js/1.4.7/angular-
route.min.js"></script>
</head>
<body >
    <script type="text/ng-template" id="pages/first.html">
        <h1>First</h1>
        <h3>{{message}}</h3>
    </script>
    <script type="text/ng-template" id="pages/second.html">
        <h1>Second</h1>
        <h3>{{message}}</h3>
    </script>
```

```
    <script type="text/ng-template" id="pages/third.html">
        <h1>Third</h1>
        <h3>{{message}}</h3>
    </script>

        <a href="#/">First</a>
        <a href="#/second">Second</a>
        <a href="#/third">Third</a>

        <div ng-view></div>
    <script src="app.js"></script>
</body>
</html>
```

2. Add a new JS file name app.js and add below Angular JS code for routing

```
var app = angular.module('myApp', []);

app.controller('FirstController', function ($scope) {
    $scope.message = 'Hello from FirstController';
});
var app = angular.module('myApp', ['ngRoute']); app.config(function
($routeProvider) {
    $routeProvider
        .when('/', {
            templateUrl: 'pages/first.html',
controller: 'FirstController'
        })
        .when('/second', {
            templateUrl: 'pages/second.html',
controller: 'SecondController'
        })
        .when('/third', {
            templateUrl: 'pages/third.html',
controller: 'ThirdController'
        })
        .otherwise({ redirectTo: '/' });
});
app.controller('FirstController', function ($scope) {
    $scope.message = 'Hello from FirstController';
});

app.controller('SecondController', function ($scope) {
    $scope.message = 'Hello from SecondController';
});

app.controller('ThirdController', function ($scope) {
```

```
    $scope.message = 'Hello from ThirdController';
});
```

3. Run the HTML file and verify the Output