

Tutorial

REST API

with node.js, ExpressJS and a MSSQL database

Installation

To edit the file, you need an editor, something like Notepad++ is sufficient. This tutorial is made with an MSSQL database, but you can use other databases with a REST API.

To install node.js, visit the homepage www.nodejs.org and download the LTS file. Run the installation wizard.

After that create a new folder for the project and open the terminal in it.

To install ExpressJS, run the command
`'npm install express --save'`.

To install the mssql package, run
`'npm install mssql'`.

Setting up

Create a .js file in the folder.

First the express framework and the mssql framework need to be involved.

```
1  var express = require('express');
2  var app = express();
3  var router = express.Router();
4  var sql = require("mssql");
```

The app should listen to a port, in this example I use the port 5000. If you want to access the information from another client than the server itself, you have to open

```
14  var server = app.listen(5000, function(){
15    |    console.log('Server is running.')
16  });
```

this port in the firewall. A console log helps you debugging.

First route

In this example I use a router to built multiple routes. With the `app.use('/api', router)` command, the root route is set to `localhost:5000/api`.

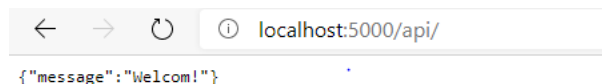
To start the router the `app.use` command is used. Again, a console log helps you debugging.

```
18 app.use('/api', router);
19
20 router.use(function(req, res, next){
21   console.log('router macht was.');
22   next();
23 });
24
25 router.get('/', function(req, res){
26   res.json({message: 'Welcom!'});
27 });
```

To get a first welcome message we create get request on the router on a simple `/`. Now we return a result to the requestor with a json message `'Welcome!'`.

Start the api with the command

`'node <filename.js>`
in the terminal.



The screenshot shows a web browser window with the address bar containing `localhost:5000/api/`. Below the address bar, the response is displayed as a JSON object: `{"message": "Welcom!"}`. The browser interface includes back, forward, and refresh buttons.

Requests to the database

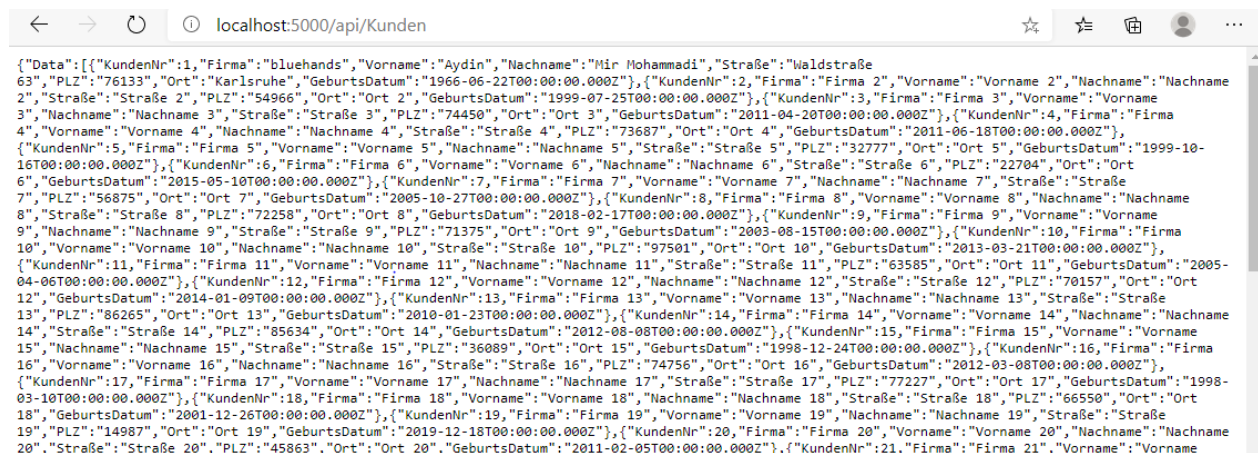
To access the database, we need a config.

```
6   var config = {
7     user: '',
8     password: '',
9     server: '',
10    database: 'Shop',
11    port: 1434
12  };
```

To get all the clients stored in the database, we create a new route with a new get request.

This time we connect to the database with the stored config and create a new sql request. This consists of a query with the sql statement. We return the recordset from the database as a json.

```
29  router.route('/Kunden')
30    .get(function(req, res){
31      console.log('/Kunden get geroutet')
32      sql.connect(config, function(err){
33        if (err) console.log(err);
34
35        var request = new sql.Request();
36        request.query('select * from Kunde', function(err, result){
37          if (err) console.log(err)
38          res.json({Data: result.recordset});
39        });
40      });
41    });
```

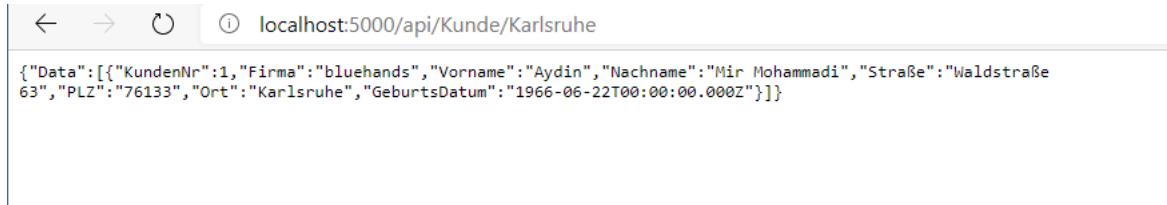


localhost:5000/api/Kunden

```
{
  "Data": [
    {
      "KundenNr": 1,
      "Firma": "bluehands",
      "Vorname": "Aydin",
      "Nachname": "Mir Mohammadi",
      "Straße": "Waldstraße",
      "PLZ": "76133",
      "Ort": "Karlsruhe",
      "GeburtsDatum": "1966-06-22T00:00:00.000Z"
    },
    {
      "KundenNr": 2,
      "Firma": "Firma 2",
      "Vorname": "Vorname 2",
      "Nachname": "Nachname 2",
      "Straße": "Straße 2",
      "PLZ": "54966",
      "Ort": "Ort 2",
      "GeburtsDatum": "1999-07-25T00:00:00.000Z"
    },
    {
      "KundenNr": 3,
      "Firma": "Firma 3",
      "Vorname": "Vorname 3",
      "Nachname": "Nachname 3",
      "Straße": "Straße 3",
      "PLZ": "74450",
      "Ort": "Ort 3",
      "GeburtsDatum": "2011-04-20T00:00:00.000Z"
    },
    {
      "KundenNr": 4,
      "Firma": "Firma 4",
      "Vorname": "Vorname 4",
      "Nachname": "Nachname 4",
      "Straße": "Straße 4",
      "PLZ": "73687",
      "Ort": "Ort 4",
      "GeburtsDatum": "2011-06-18T00:00:00.000Z"
    },
    {
      "KundenNr": 5,
      "Firma": "Firma 5",
      "Vorname": "Vorname 5",
      "Nachname": "Nachname 5",
      "Straße": "Straße 5",
      "PLZ": "32777",
      "Ort": "Ort 5",
      "GeburtsDatum": "1999-10-16T00:00:00.000Z"
    },
    {
      "KundenNr": 6,
      "Firma": "Firma 6",
      "Vorname": "Vorname 6",
      "Nachname": "Nachname 6",
      "Straße": "Straße 6",
      "PLZ": "22704",
      "Ort": "Ort 6",
      "GeburtsDatum": "2015-05-10T00:00:00.000Z"
    },
    {
      "KundenNr": 7,
      "Firma": "Firma 7",
      "Vorname": "Vorname 7",
      "Nachname": "Nachname 7",
      "Straße": "Straße 7",
      "PLZ": "56875",
      "Ort": "Ort 7",
      "GeburtsDatum": "2005-10-27T00:00:00.000Z"
    },
    {
      "KundenNr": 8,
      "Firma": "Firma 8",
      "Vorname": "Vorname 8",
      "Nachname": "Nachname 8",
      "Straße": "Straße 8",
      "PLZ": "72258",
      "Ort": "Ort 8",
      "GeburtsDatum": "2018-02-17T00:00:00.000Z"
    },
    {
      "KundenNr": 9,
      "Firma": "Firma 9",
      "Vorname": "Vorname 9",
      "Nachname": "Nachname 9",
      "Straße": "Straße 9",
      "PLZ": "71375",
      "Ort": "Ort 9",
      "GeburtsDatum": "2003-08-15T00:00:00.000Z"
    },
    {
      "KundenNr": 10,
      "Firma": "Firma 10",
      "Vorname": "Vorname 10",
      "Nachname": "Nachname 10",
      "Straße": "Straße 10",
      "PLZ": "97501",
      "Ort": "Ort 10",
      "GeburtsDatum": "2013-03-21T00:00:00.000Z"
    },
    {
      "KundenNr": 11,
      "Firma": "Firma 11",
      "Vorname": "Vorname 11",
      "Nachname": "Nachname 11",
      "Straße": "Straße 11",
      "PLZ": "63585",
      "Ort": "Ort 11",
      "GeburtsDatum": "2005-04-06T00:00:00.000Z"
    },
    {
      "KundenNr": 12,
      "Firma": "Firma 12",
      "Vorname": "Vorname 12",
      "Nachname": "Nachname 12",
      "Straße": "Straße 12",
      "PLZ": "70157",
      "Ort": "Ort 12",
      "GeburtsDatum": "2014-01-09T00:00:00.000Z"
    },
    {
      "KundenNr": 13,
      "Firma": "Firma 13",
      "Vorname": "Vorname 13",
      "Nachname": "Nachname 13",
      "Straße": "Straße 13",
      "PLZ": "86265",
      "Ort": "Ort 13",
      "GeburtsDatum": "2010-01-23T00:00:00.000Z"
    },
    {
      "KundenNr": 14,
      "Firma": "Firma 14",
      "Vorname": "Vorname 14",
      "Nachname": "Nachname 14",
      "Straße": "Straße 14",
      "PLZ": "85634",
      "Ort": "Ort 14",
      "GeburtsDatum": "2012-08-08T00:00:00.000Z"
    },
    {
      "KundenNr": 15,
      "Firma": "Firma 15",
      "Vorname": "Vorname 15",
      "Nachname": "Nachname 15",
      "Straße": "Straße 15",
      "PLZ": "36089",
      "Ort": "Ort 15",
      "GeburtsDatum": "1998-12-24T00:00:00.000Z"
    },
    {
      "KundenNr": 16,
      "Firma": "Firma 16",
      "Vorname": "Vorname 16",
      "Nachname": "Nachname 16",
      "Straße": "Straße 16",
      "PLZ": "74756",
      "Ort": "Ort 16",
      "GeburtsDatum": "2012-03-08T00:00:00.000Z"
    },
    {
      "KundenNr": 17,
      "Firma": "Firma 17",
      "Vorname": "Vorname 17",
      "Nachname": "Nachname 17",
      "Straße": "Straße 17",
      "PLZ": "77227",
      "Ort": "Ort 17",
      "GeburtsDatum": "1998-03-10T00:00:00.000Z"
    },
    {
      "KundenNr": 18,
      "Firma": "Firma 18",
      "Vorname": "Vorname 18",
      "Nachname": "Nachname 18",
      "Straße": "Straße 18",
      "PLZ": "66550",
      "Ort": "Ort 18",
      "GeburtsDatum": "2001-12-26T00:00:00.000Z"
    },
    {
      "KundenNr": 19,
      "Firma": "Firma 19",
      "Vorname": "Vorname 19",
      "Nachname": "Nachname 19",
      "Straße": "Straße 19",
      "PLZ": "74987",
      "Ort": "Ort 19",
      "GeburtsDatum": "2019-12-18T00:00:00.000Z"
    },
    {
      "KundenNr": 20,
      "Firma": "Firma 20",
      "Vorname": "Vorname 20",
      "Nachname": "Nachname 20",
      "Straße": "Straße 20",
      "PLZ": "45863",
      "Ort": "Ort 20",
      "GeburtsDatum": "2011-02-05T00:00:00.000Z"
    },
    {
      "KundenNr": 21,
      "Firma": "Firma 21",
      "Vorname": "Vorname 21",
      "Nachname": "Nachname 21",
      "Straße": "Straße 21",
      "PLZ": "74987",
      "Ort": "Ort 21",
      "GeburtsDatum": "2011-02-05T00:00:00.000Z"
    }
  ]
}
```

To interact with the api, we can use values to specify the request. For example we can search for all clients from a specific town. In the route the value is marked with an :value, which is stored in the http request object in the params. To access it, we set the sql request.input to the http request.params.value from type sql.NVarChar and name it 'Ort'. In the sql statement we can use it with @Ort.

```
43 router.route('/Kunde/:Ort')
44   .get (function(req, res){
45     console.log('/Kunden get geroutet')
46     sql.connect(config, function(err){
47       if (err) console.log(err);
48
49       var request = new sql.Request();
50       request.input('Ort', sql.NVarChar, req.params.Ort)
51
52       request.query ('select * from Kunde where Ort = @Ort', function(err, result){
53         if (err) console.log(err)
54         res.json({Data: result.recordset});
55       });
56     });
57   });
```



← → ↺ ⓘ localhost:5000/api/Kunde/Karlsruhe

```
{
  "Data": [
    {
      "KundenNr": 1,
      "Firma": "bluehands",
      "Vorname": "Aydin",
      "Nachname": "Mir Mohammadi",
      "Straße": "Waldstraße 63",
      "PLZ": "76133",
      "Ort": "Karlsruhe",
      "GeburtsDatum": "1966-06-22T00:00:00.000Z"
    }
  ]
}
```