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
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Vue.js Tutorial By

Example Template Project Template

tutorial we'll learn by example how to create a full-stack CRUD (Create, Read, Update and Delete) application. We'll build a web application with essential elements to build web applications such as routing and templates etc.

Introduction

In this tutorial, we'll learn how to create a full-stack web application. We'll build a web application with essential elements to build web applications such as routing and templates etc.

The example application we'll be building will allow you to create, read, update and delete records from a MongoDB database with a Vue front-end interface. Express will be used for routing and REST API endpoints.

Start by creating a folder for your project by running the following command:

```
mkdir VueJSNodeProject
```

Navigate inside your newly created project and create a `package.json` file:

```
cd VueJSNodeProject
touch package.json
```

Open the `package.json` file and add the following content:

```
{
  "name": "vuenodeproject",
  "version": "1.0.0",
  "description": "A Vue with Node and Express back end Project",
  "scripts": {
  },
  "author": "",
  "license": "MIT",
  "devDependencies": {
  }
}
```

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```
npm install --save express body-parser cors mongoose nodemon
```

Creating The Express Server

Inside your project's root folder create a `server.js` file and add the following content:

```
var express = require('express'),
    path = require('path'),
    bodyParser = require('body-parser'),
    cors = require('cors'),
    mongoose = require('mongoose');

mongoose.connect("mongodb://localhost:27017/vuenodedb").then(
  () => {console.log('Database connection is successful') },
  err => { console.log('Error when connecting to the database'+ err)}
);

const app = express();
app.use(express.static('public'));
app.use(bodyParser.json());
app.use(cors());

var port = process.env.PORT || 4000;

app.listen( ()=>{
  console.log('Listening on port ' + port);
});
```

You need to install **MongoDB** database system on your development machine.

Creating the Mongoose Model(s): Todo

Create a models folder inside your project and add a `Todo.js` file with the following content:

```
const mongoose = require('mongoose');

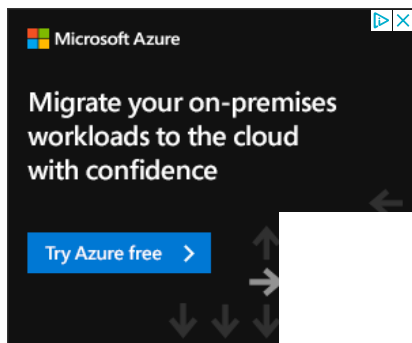
const TodoSchema = mongoose.Schema({
  name: String
}, {
  timestamps: true
});

module.exports = mongoose.model('Todo', TodoSchema);
```

Our `Todo` model is very simple as it only contains a `name` field of type `String`. We have also set `timestamps` to `true` which automatically adds two new fields: `createdAt` and `updatedAt` to the schema.

Creating Express Routes

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Next, let's instantiate an Express router:

```
var router = express.Router();
```

Creating a Todo: Express.js POST Route Example

Now let's add a POST route that handles HTTP POST requests. In the same file add the following code:

```
...
router.route('/create').post((req, res) => {
  var todo = new Todo(req.body);
  todo.save().then( todo => {
    res.status(200).json({'message': 'Todo successfully added '});
  })
  .catch(err => {
    res.status(400).send("Error when saving to database");
  });
});
```

Getting Todos: Express.js GET Route Example

Next, let's add a GET route that handles HTTP GET requests. Add the following code:

```
router.route('/todos').get((req, res) => {
  Todo.find((err, todos) =>{
    if(err){
      console.log(err);
    }
    else {
      res.json(todos);
    }
  });
});
```

Getting a Todo by Id: Express.js GET by Id Route Example

```
router.route('/todos/:id').get((req, res) => {
  var id = req.params.id;
  Todo.findById(id, (err, todo) =>{
    res.json(todo);
  });
});
```

Updating a Todo by Id: Express.js PUT Route Example

```
router.route('/todos/:id').put((req, res) => {
  Todo.findById(req.params.id, (err, todo) => {
    if (!todo)
      return next(new Error('Error getting the todo!'));
    else {
      todo.name = req.body.name;
      todo.save().then( todo => {
        res.json('Todo updated successfully');
      })
      .catch(err => {
        res.status(400).send("Error when updating the todo");
      });
    }
  });
});
```

Deleting a Todo by Id: Express.js DELETE Route Example

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```
});
});
```

Starting your Express.js API Back-End

```
node server.js
```

You should have the following output in the terminal:

```
Listening on port 4000
```

Installing Vue CLI v3


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We'll use the Vue CLI to generate the Vue front-end application. Let's start by installing the Vue CLI if you have not done so yet using the following command:

```
npm install --global @vue/cli
```

Generating a Vue Application Using Vue CLI v3

Let's now generate a new Vue application inside our project's root folder

```
$ vue create frontend
```

Next navigate inside your `frontend` folder and install **Axios** by running the following command:


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```
$ npm install --save axios
```

Axios is a Promise based HTTP client that we'll be using to make HTTP calls from our Vue front-end application to our Express.js REST API backend running at `http://localhost:4000` with CORS enabled.

Creating Vue Components

Inside `frontend/src/components` add two Vue components:

- `CreateTodo.vue` : for creating todos.
- `ListTodo.vue` : for displaying fetched todos.

Creating a Todo

Open `components/CreateTodo.vue` and add the following content:

```
<template>
<div id="container" class="container">
```

```
<div class="row">
```

```
<div class="col-sm-8 offset-sm-2">
<div class="alert alert-warning" v-show="showError" >
<button type="button" class="close" @click="hideMessage()">X</button>
<strong>Error!</strong>
</div>
<h1>Create a Todo</h1>
```

```
<div class="info-form">
```

```
<form>
```

```
<div class="form-group">
```

```
<label for="name">Todo name</label>
```

```
<input v-model="todo.name" type="text" class="form-control" id="name" aria-describedby="nameHelp" placeholder="Enter Name">
```

```
<small id="nameHelp" class="form-text text-muted">Enter your todo's name</small>
```

```
</div>
```

```
</form>
```

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```
<button class="btn btn-primary" @click="newTodo()" >New.</button>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
</template>
```

```
<script>
```

```
import {APIService} from '../APIService';
```

```
const apiService = new APIService();
```

```
export default {
```

```
name: 'CreateTodo',
```

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```
components: {
```

```
},
```

```
data() {
```

```
  return {
```

```
    showError: false,
```

```
    todo: {}
```

```
  };
```

```
},
```

```
methods: {
```

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```
  createTodo(){
```

```
    apiService.createTodo(this.todo).then((result)=>{
```

```
      console.log(result);
```

```
      if(result.status === 201){
```

```
        this.todo = result.data;
```

```
      }
```

```
    }, (error)=>{
```

```
      this.showError = true;
```

```
    });
```

```
  },
```

```
  updateTodo(){
```

```
    apiService.updateTodo(this.todo).then((result)=>{
```

```
      console.log(result);
```

```
    }, (error)=>{
```

```
      this.showError = true;
```

```
    });
```

```
  },
```

```
  newTodo(){
```

```
    this.todo = {};
```

```
  }
```

```
},
```

```
mounted() {
```

```
  if(this.$route.params.pk){
```

```
    apiService.getTodo(this.$route.params.pk).then((todo)=>{
```

```
      this.todo = todo;
```

```
    })
```

```
  }
```

```
},
```

```
}
```

```
</script>
```

```
<style scoped>
```

```
.aform{
```


```
margin-left: auto;
```

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
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Listing Todos

Open `components/ListTodo.vue` and add the following content:

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```
<template>
<div>
<h1>Todos ()</h1>
<table class="table table-bordered table-hover">
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Actions</th>
</tr>
</thead>
<tbody>

<tr v-for="todo in todos" @click="selectTodo(todo)">

<th></th>

<td></td>

<td>
<button class="btn btn-danger" @click="deleteTodo(todo)"> X</button>
<a class="btn btn-primary" v-bind:href="'/todo-update/' + todo.id"> &#9998; </a>
</td>
</tr>
</tbody>
</table>
</div>
</template>
<script>
import {APIService} from '../APIService';
const API_URL = 'http://localhost:4000';

const apiService = new APIService();

export default {

name: 'ListTodo',

components: {

},

data() {

return {

todos: [],
numberOfTodos:0
};


```

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```

getTodos(){
  apiService.getTodos().then((data) => {

    this.todos = data.data;
    this.numberOfProducts = data.count;

  });
},
deleteTodo(todo){

  apiService.deleteTodo(todo).then((r)=>{

    if(r.status === 204)
    {

      alert("Todo deleted");

      this.$router.go()

    }

  })

  mounted() {

    this.getTodos();

  },

}

</script>

<style scoped>

.list-horizontal li {

  display:inline-block;

}

.list-horizontal li:before {

  content: '\00a0\2022\00a0\00a0';

  color:#999;

  color:rgba(0,0,0,0.5);

  font-size:11px;

}

.list-horizontal li:first-child:before {

  content: '';

```

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Adding the API Service

```
import axios from 'axios';
const API_URL = 'http://localhost:8000';

export class APIService{

  constructor(){
  }

  getTodos() {

    const url = `${API_URL}/api/todos/`;
    return axios.get(url).then(response => response.data);
  }

  getTodo(pk) {

    const url = `${API_URL}/api/todos/${pk}`;

    return axios.get(url).then(response => response.data);
  }

  deleteTodo(todo){

    const url = `${API_URL}/api/todos/${todo.pk}`;
    return axios.delete(url);
  }

  createTodo(todo){
    const url = `${API_URL}/api/todos/`;
    return axios.post(url, todo);
  }

  updateTodo(todo){
    const url = `${API_URL}/api/todos/${todo.pk}`;
    return axios.put(url, todo);
  }
}
```

Conclusion

In this tutorial, we've created a CRUD application with Node.js and Vue which consumes a REST API created with Express.

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