**Step-by-Step Guide**

**✅ Step 1: Initialize the Express App**

bash

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mkdir student-crud-app

cd student-crud-app

npm init -y

npm install express

Create index.js:

js

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const express = require('express');

const app = express();

const PORT = 3000;

// Middleware

app.use(express.json()); // to parse JSON bodies

// Start server

app.listen(PORT, () => {

console.log(`Server running on http://localhost:${PORT}`);

});

**✅ Step 2: Create In-Memory Student Data**

js

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let students = [

{ id: 1, name: 'Alice', age: 20 },

{ id: 2, name: 'Bob', age: 22 }

];

**✅ Step 3: Define REST API Routes (CRUD)**

**🔹 1. GET All Students (Read All)**

js

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app.get('/students', (req, res) => {

res.json(students);

});

**🔹 2. GET a Student by ID (Read One)**

js

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app.get('/students/:id', (req, res) => {

const student = students.find(s => s.id == req.params.id);

if (!student) return res.status(404).json({ error: 'Student not found' });

res.json(student);

});

**🔹 3. POST a New Student (Create)**

js

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app.post('/students', (req, res) => {

const { name, age } = req.body;

const newStudent = {

id: students.length + 1,

name,

age

};

students.push(newStudent);

res.status(201).json(newStudent);

});

**🔹 4. PUT to Update Student (Update)**

js

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app.put('/students/:id', (req, res) => {

const student = students.find(s => s.id == req.params.id);

if (!student) return res.status(404).json({ error: 'Student not found' });

const { name, age } = req.body;

student.name = name || student.name;

student.age = age || student.age;

res.json(student);

});

**🔹 5. DELETE a Student (Delete)**

js

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app.delete('/students/:id', (req, res) => {

students = students.filter(s => s.id != req.params.id);

res.json({ message: 'Student deleted' });

});

**📁 Full index.js Example:**

js

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const express = require('express');

const app = express();

const PORT = 3000;

app.use(express.json());

let students = [

{ id: 1, name: 'Alice', age: 20 },

{ id: 2, name: 'Bob', age: 22 }

];

app.get('/students', (req, res) => res.json(students));

app.get('/students/:id', (req, res) => {

const student = students.find(s => s.id == req.params.id);

if (!student) return res.status(404).json({ error: 'Student not found' });

res.json(student);

});

app.post('/students', (req, res) => {

const { name, age } = req.body;

const newStudent = { id: students.length + 1, name, age };

students.push(newStudent);

res.status(201).json(newStudent);

});

app.put('/students/:id', (req, res) => {

const student = students.find(s => s.id == req.params.id);

if (!student) return res.status(404).json({ error: 'Student not found' });

student.name = req.body.name || student.name;

student.age = req.body.age || student.age;

res.json(student);

});

app.delete('/students/:id', (req, res) => {

students = students.filter(s => s.id != req.params.id);

res.json({ message: 'Student deleted' });

});

app.listen(PORT, () => console.log(`Server running on http://localhost:${PORT}`));

**🧪 How to Test**

You can use tools like:

* [Postman](https://www.postman.com/) or
* curl from terminal

**Examples:**

* GET http://localhost:3000/students
* POST http://localhost:3000/students with JSON body { "name": "Charlie", "age": 21 }
* PUT http://localhost:3000/students/1 to update
* DELETE http://localhost:3000/students/2

**🔥 Next Steps (Optional Enhancements)**

* ✅ Connect to MongoDB using Mongoose
* ✅ Add validation (name required, age must be a number)
* ✅ Separate routes, controllers, and models
* ✅ Build a frontend (HTML/React) to consume this API

Would you like me to extend this example with MongoDB, or add a simple HTML frontend to interact with this Express app?

4o

**You said:**

detailed explanation about testing with postman

**ChatGPT said:**

Absolutely! Here's a **detailed guide on how to test your Express.js REST API using Postman**, with step-by-step instructions for all CRUD operations: **Create, Read, Update, and Delete** student records.

**🧪 What Is Postman?**

**Postman** is a free and powerful tool for testing REST APIs. It allows you to:

* Send requests (GET, POST, PUT, DELETE, etc.)
* Add headers and request bodies
* See responses from the server
* Save and organize test collections

**✅ Setup: What You Need Before Testing**

1. Your Express.js server should be running.  
   For example:

bash

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node index.js

(or npm run dev if using nodemon)

1. Your API endpoint might look like this:

bash

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http://localhost:3000/students

1. You’ve installed Postman on your computer.

**🧪 Testing CRUD Operations with Postman**

**🔹 1. GET All Students**

**Goal**: Retrieve the full list of students.

* **Method**: GET
* **URL**: http://localhost:3000/students

**🧭 Steps:**

1. Open Postman.
2. Create a new request tab.
3. Set **method** to GET.
4. Enter the **URL**: http://localhost:3000/students
5. Click **Send**.

**✅ Response:**

json

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[

{ "id": 1, "name": "Alice", "age": 20 },

{ "id": 2, "name": "Bob", "age": 22 }

]

**🔹 2. GET a Student by ID**

**Goal**: Get details of a single student (e.g., ID = 1)

* **Method**: GET
* **URL**: http://localhost:3000/students/1

**✅ Response:**

json

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{ "id": 1, "name": "Alice", "age": 20 }

If the ID doesn't exist, you’ll get:

json

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{ "error": "Student not found" }

**🔹 3. POST a New Student (Create)**

**Goal**: Add a new student record.

* **Method**: POST
* **URL**: http://localhost:3000/students

**🧭 Steps:**

1. Set method to POST
2. Go to the **Body** tab
3. Select **raw** and choose **JSON** from dropdown
4. Add this JSON:

json

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{

"name": "Charlie",

"age": 21

}

1. Click **Send**

**✅ Response:**

json

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{

"id": 3,

"name": "Charlie",

"age": 21

}

**🔹 4. PUT to Update a Student**

**Goal**: Update an existing student (e.g., ID = 2)

* **Method**: PUT
* **URL**: http://localhost:3000/students/2

**🧭 Steps:**

1. Set method to PUT
2. Go to the **Body** tab > raw > JSON
3. Example:

json

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{

"name": "Bobby",

"age": 23

}

1. Click **Send**

**✅ Response:**

json

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{

"id": 2,

"name": "Bobby",

"age": 23

}

**🔹 5. DELETE a Student**

**Goal**: Delete a student by ID

* **Method**: DELETE
* **URL**: http://localhost:3000/students/1

**✅ Response:**

json

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{ "message": "Student deleted" }

If ID not found:

json

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{ "error": "Student not found" }

**🧰 Bonus: Saving Your Requests**

You can:

* Click **Save** next to each request
* Organize them into **Collections** (e.g., "Student API")