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# EXP-11

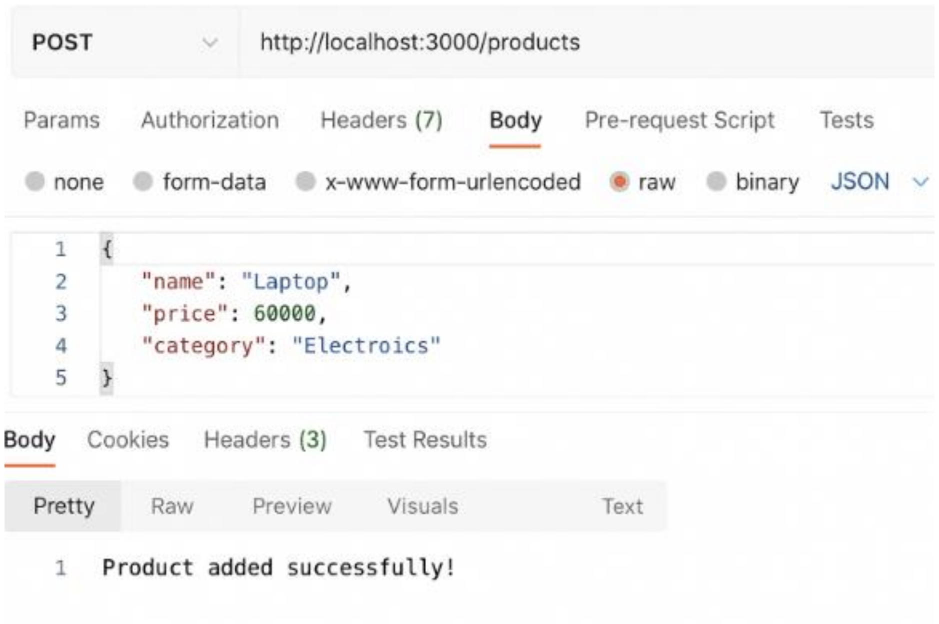
- **AIM:-** To implement Create, Read, Update, and Delete (CRUD) operations for a product database using Mongoose (an ODM for MongoDB) in a Node.js environment.
- **THEORY:-**
- Mongoose:An Object Data Modeling (ODM) library for MongoDB and Node.js.
  - ➢ Provides schema-based data modeling.
  - ➢ Simplifies validation, type casting, and query building.
- CRUD Operations:
  - ➢ Create: Add new documents (products) into the database.
  - ➢ Read: Retrieve product details from the database.
  - ➢ Update: Modify existing product details.
  - ➢ Delete: Remove product data from the database.
- Schema & Model in Mongoose:
  - ➢ Schema defines the structure of documents.
  - ➢ Model provides an interface to interact with MongoDB collections.
- **CODE:-**

```
const express = require('express');
const mongoose = require('mongoose');
const bodyParser = require('body-parser');


const app = express();
app.use(bodyParser.json());


// MongoDB connection
mongoose.connect("mongodb://127.0.0.1:27017/productDB", {
   useNewUrlParser: true,
   useUnifiedTopology: true
}).then(() => console.log("✅ Connected to MongoDB"))
 .catch(err => console.log(err));
```

```
// Schema definition
const productSchema = new mongoose.Schema({
   name: String,
   price: Number,
   category: String
});

// Model
const Product = mongoose.model("Product", productSchema);

// --- CRUD APIs ---

// Create (POST)
app.post('/products', async (req, res) => {
   const product = new Product(req.body);
   await product.save();
   res.send("Product added successfully!");
});

// Read (GET)
app.get('/products', async (req, res) => {
   const products = await Product.find();
   res.json(products);
});

// Update (PUT)
```

```
app.put('/products/:id', async (req, res) => {
    await Product.findByIdAndUpdate(req.params.id, req.body);
    res.send("Product updated successfully!");
});

// Delete (DELETE)
app.delete('/products/:id', async (req, res) => {
    await Product.findByIdAndDelete(req.params.id);
    res.send("Product deleted successfully!");
});

// Server listen
app.listen(3000, () => console.log("🚀 Server running on port 3000"));
```

- **<u>OUTPUT: -</u>**



POST http://localhost:3000/products

```
{
    "name": "Laptop",
    "price": 60000,
    "category": "Electroics"
}
```

```
Product added successfully!
```

- **<u>LEARNING OUTCOMES:</u>-**
  - ✓ Understood CRUD operations in a NoSQL database using Mongoose.
  - ✓ Learned how to define a Mongoose schema and model.
  - ✓ Practiced building a RESTful API with Express.js.
  - ✓ Learned how to interact with MongoDB using Mongoose queries.

- ✓ Gained hands-on experience in server-side programming for database operations.