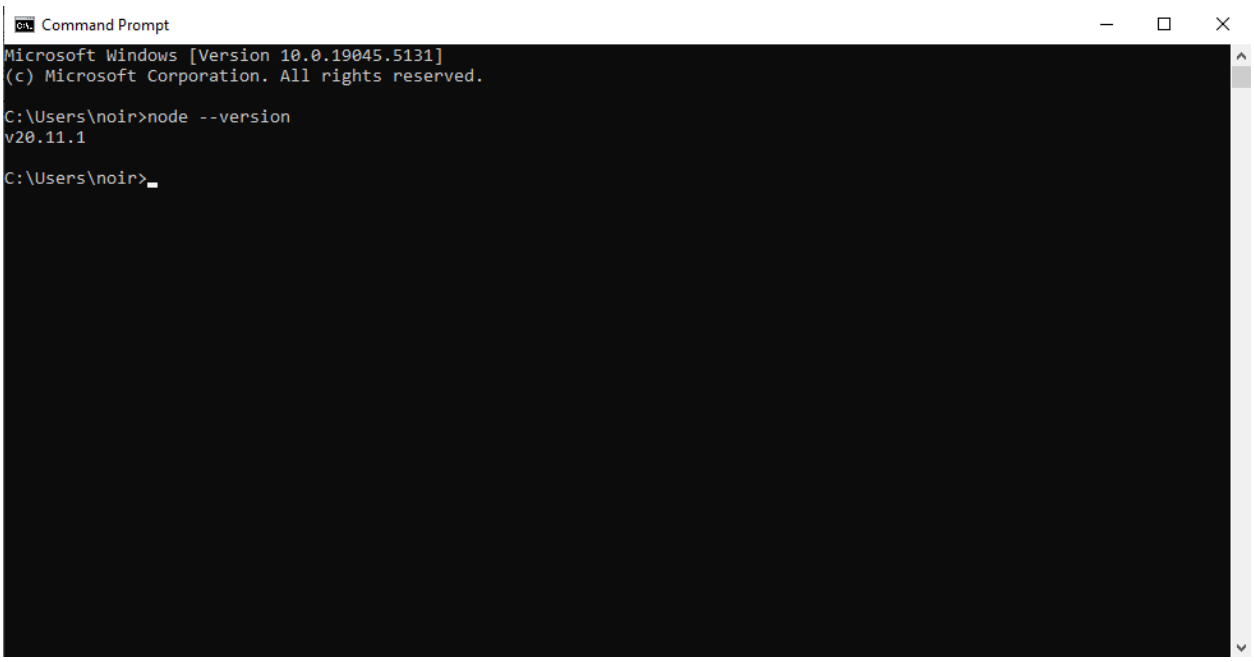
BACKEND

STEP 1.

Download and Install Node.js, prebuilt installer: https://nodejs.org/en/download/prebuilt-installer

STEP 2.

Check if Node.js is installed, by typing “node –version” in cmd.



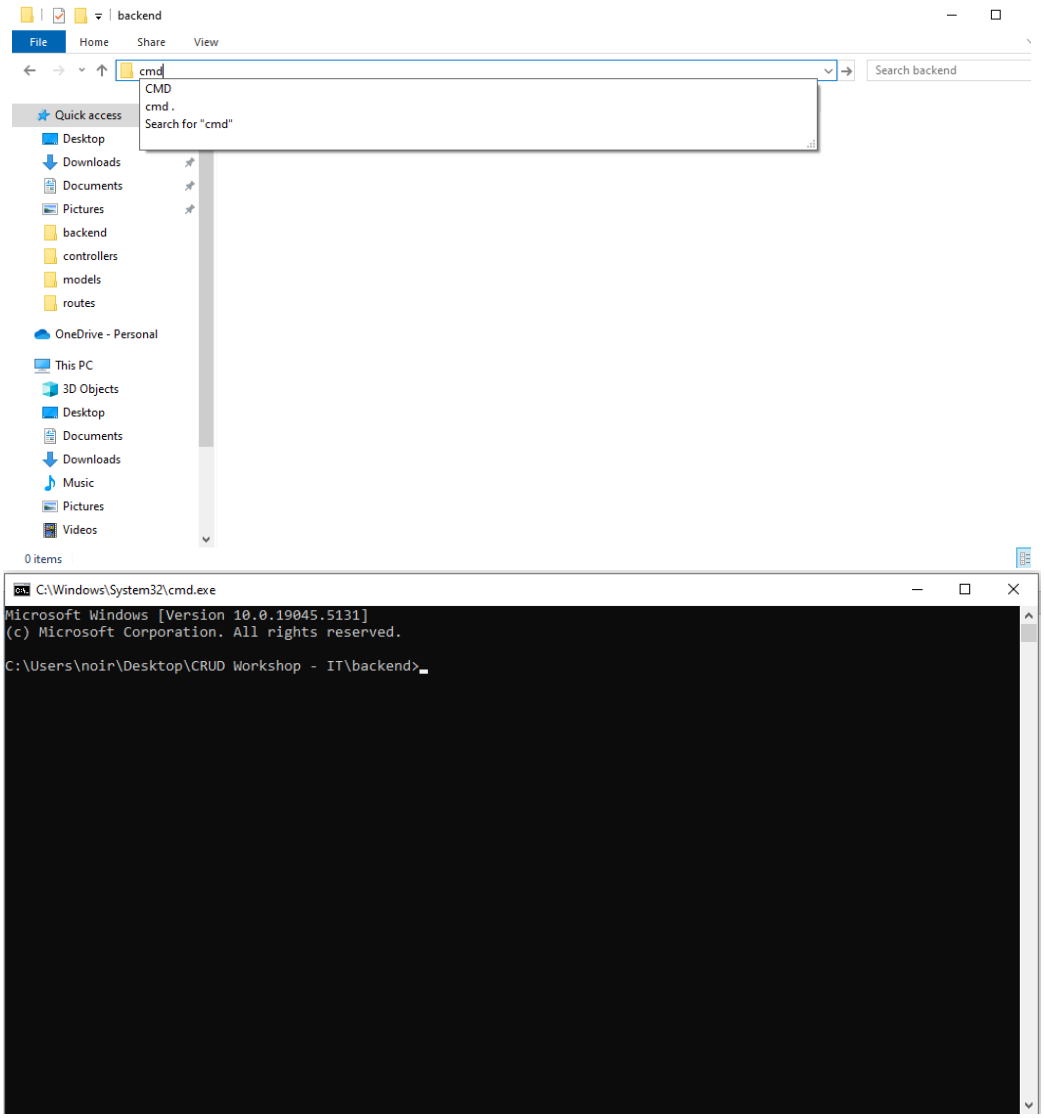
STEP 3.

Create a folder name “BASIC CRUD APP”. Inside the root folder, create another folder named “backend”.

- BASIC CRUD APP
    - backend

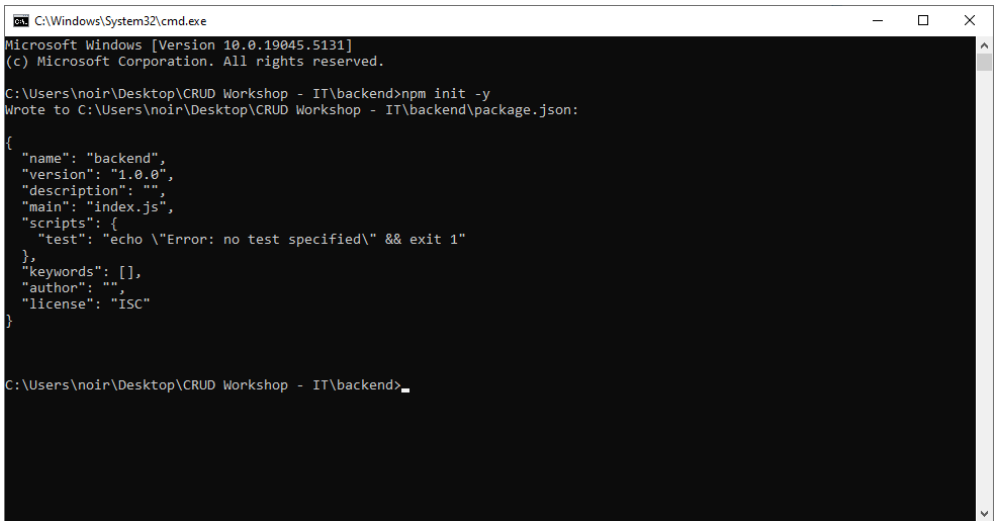
STEP 4.

Access the backend folder, in the path field type “cmd”, then hit enter



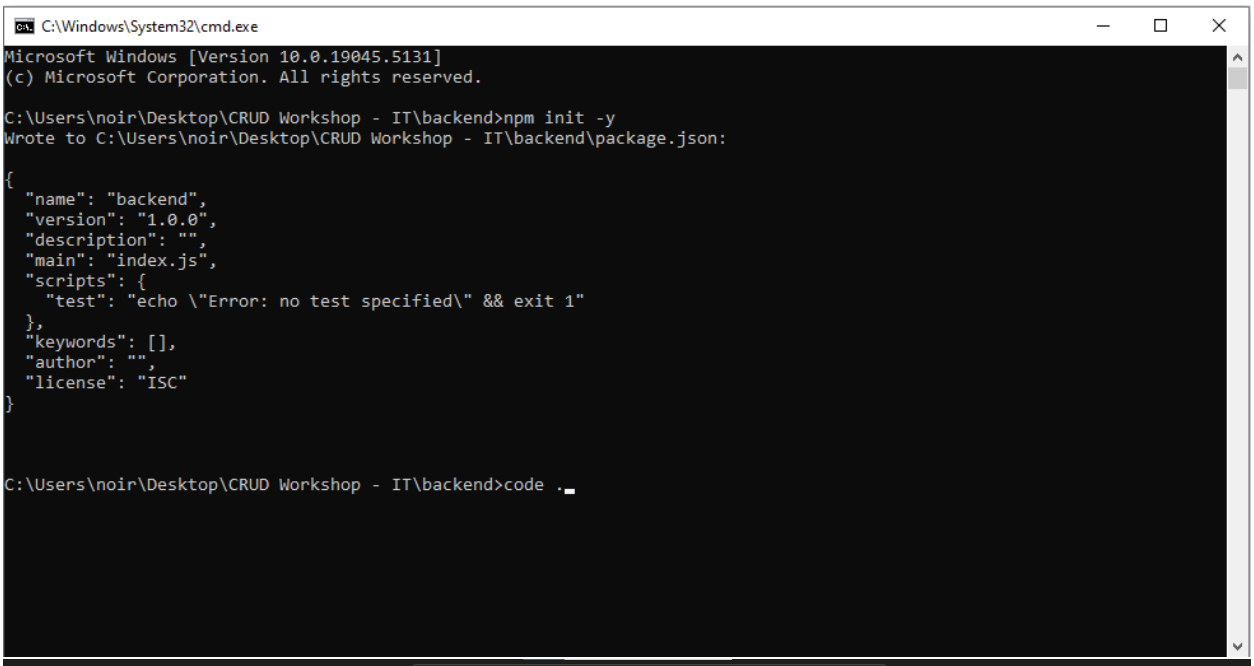
STEP 5.

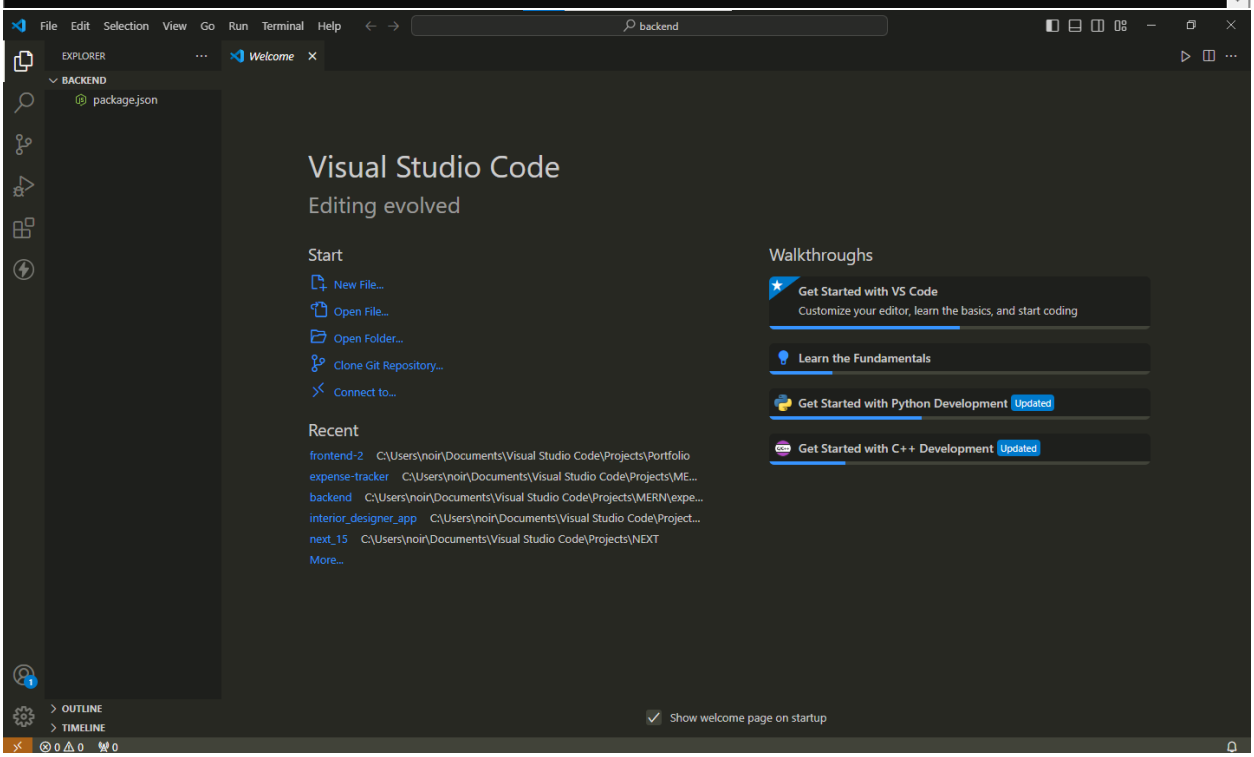
In the cmd, type “npm init -y”, then hit enter.



STEP 6

In the cmd, type “code .”, then hit enter, it should the VS Code Editor.





STEP 7.

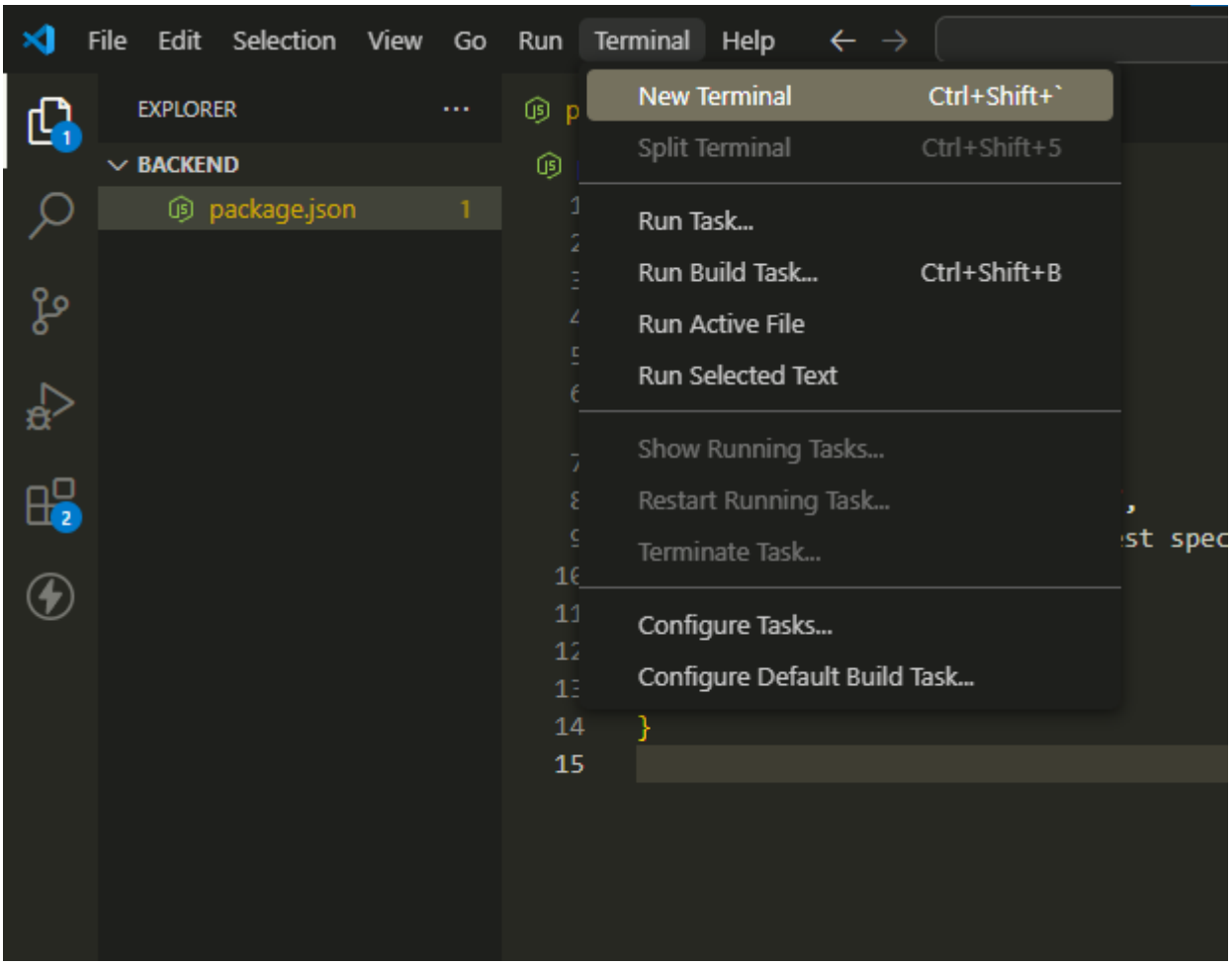
In the explorer section, click the “package.json”, then add this code block:

```
{
  "name": "backend",
  "version": "1.0.0",
  "description": "",
```

```
  "type": "module",
  "main": "server.js",
  "scripts": {
    "start": "nodemon server.js",
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}
```

STEP 8.

Go to terminal, then click new terminal.

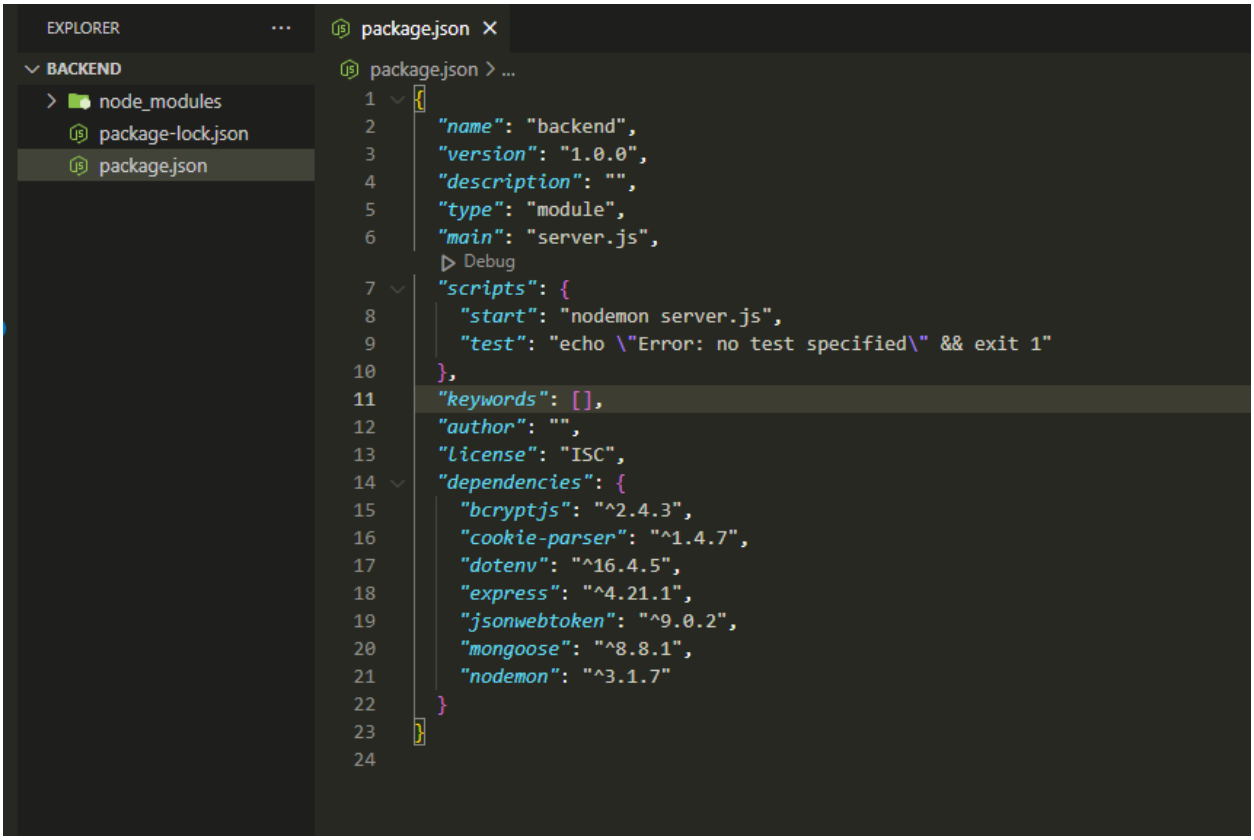


STEP 9.

Install the required depencies by hitting enter.

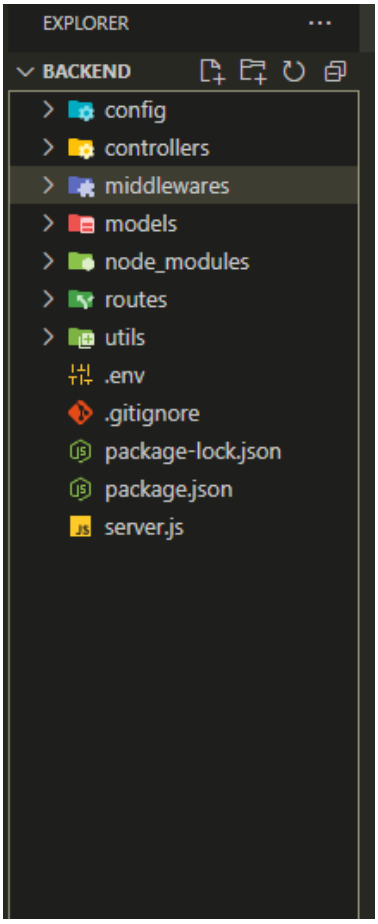
```
npm install nodemon express mongoose dotenv multer
```

Your “package.json” should have the dependencies installed.



STEP 10.

In the explorer section, create a new file name “server.js”, “.env”, and “.gitignore”. Also create folders, “config”, “controllers”, “routes”, “models”, and “middlewares”



STEP 11.

Click the ".env" and add this port:

```
PORT=5000
```

Crtl + s to save

STEP 12.

Click the ".gitignore" and add this statement:

```
.env
```

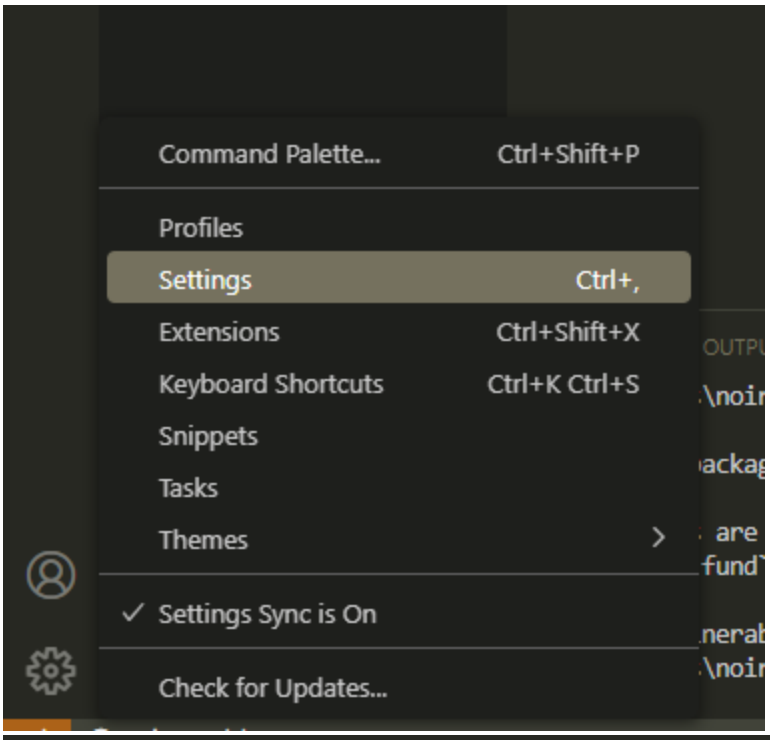
Crtl + s to save

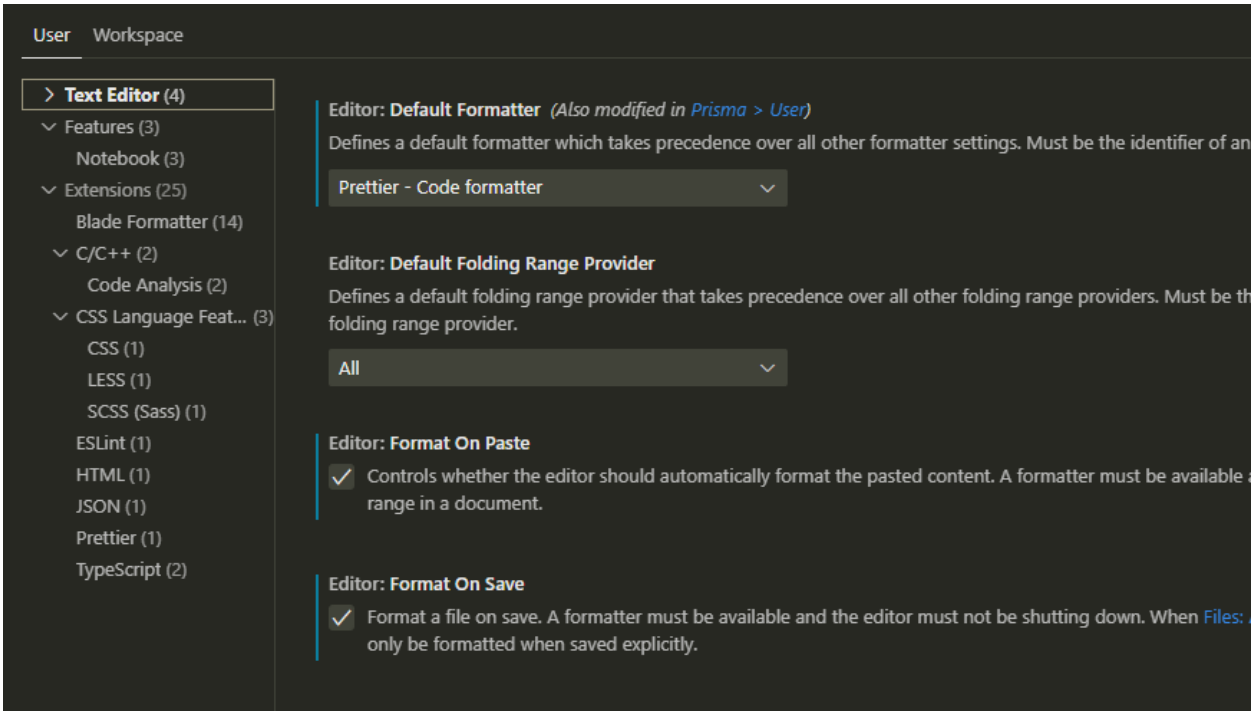
STEP 13. (Optional)

Click the "Extensions tab", then install "material icon" and "prettier code formatter".

STEP 13.1. (Optional)

In the settings, type "formatter". Click the Text Editor. Set the default formatter to "Prettier – Code Formatter", and check "Format on Paste" and Format on Save"





STEP 14.

Click the “server.js”, then add this code block:

```
import express from "express";
import dotenv from "dotenv";
```

```
dotenv.config();

const app = express();

// Middlewares
app.use(express.json());
app.use(express.urlencoded({ extended: true }));

// Listen
const port = process.env.PORT || 4000;
app.listen(port, () => console.log(`Server is running on port ${port}`));
```

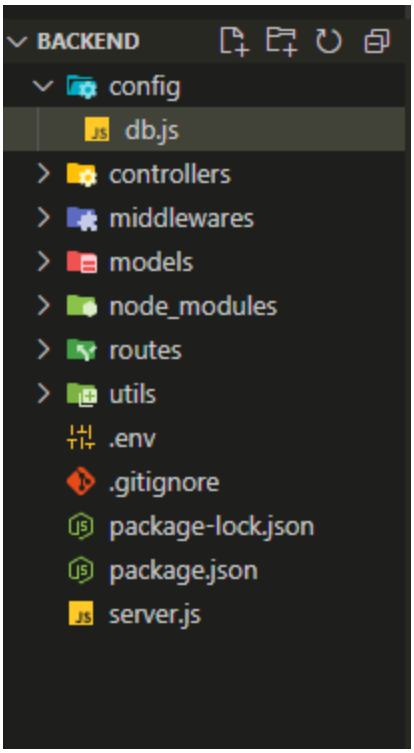
CTRL + s to save. In the terminal, type “npm start” then hit enter.

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

found 0 vulnerabilities
PS C:\Users\noir\Desktop\CRUD Workshop - IT\backend> npm start

> backend@1.0.0 start
> nodemon server.js

[nodemon] 3.1.7
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): *.*
[nodemon] watching extensions: js,mjs,cjs,json
[nodemon] starting `node server.js`
Server is running on port 5000
```

Good job you have created a server.

STEP 15. Create a mongo db connection.

In the explorer, creater a file named “db.js” under the “config” folder.



Click the “db.js”, then add this code block:

```
import mongoose from "mongoose";

const connectDB = async () => {
  try {
    await mongoose.connect(process.env.MONGO_URI);
    console.log(`MongoDB is Connected: ${mongoose.connection.host}`);
  } catch (error) {
    console.log(`Error: ${error.message}`);
    process.exit(1);
  }
};

export default connectDB;
```

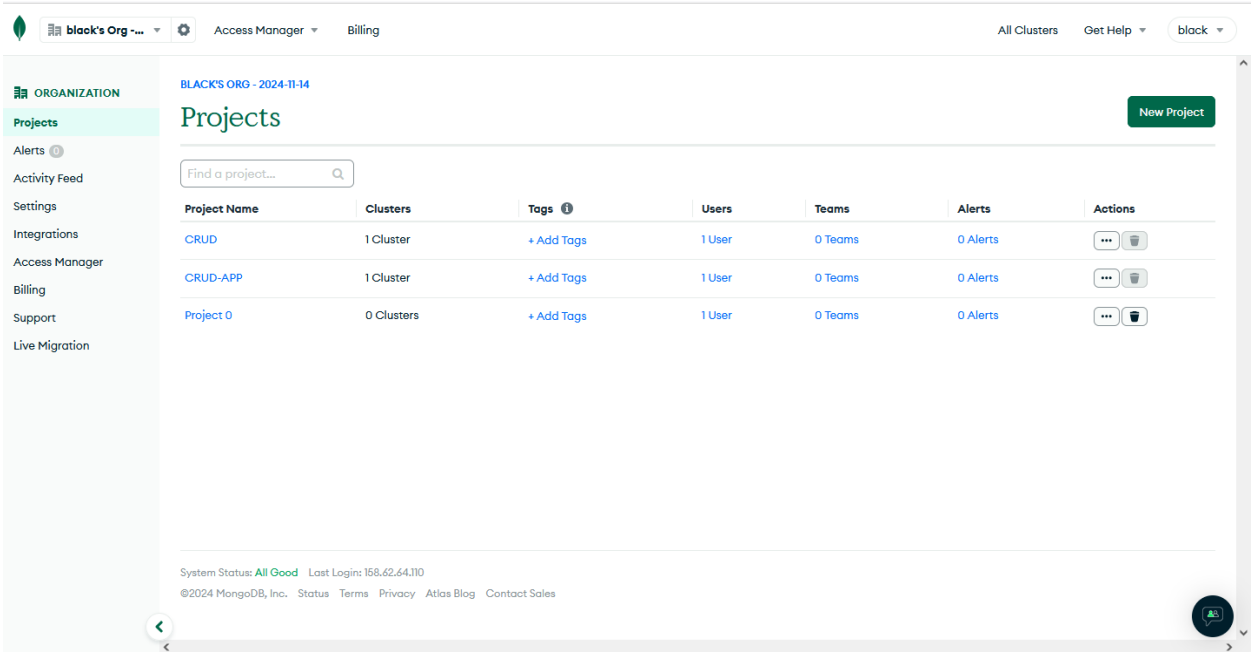
CRTL + S to save.

STEP 16. Create a mongo db account

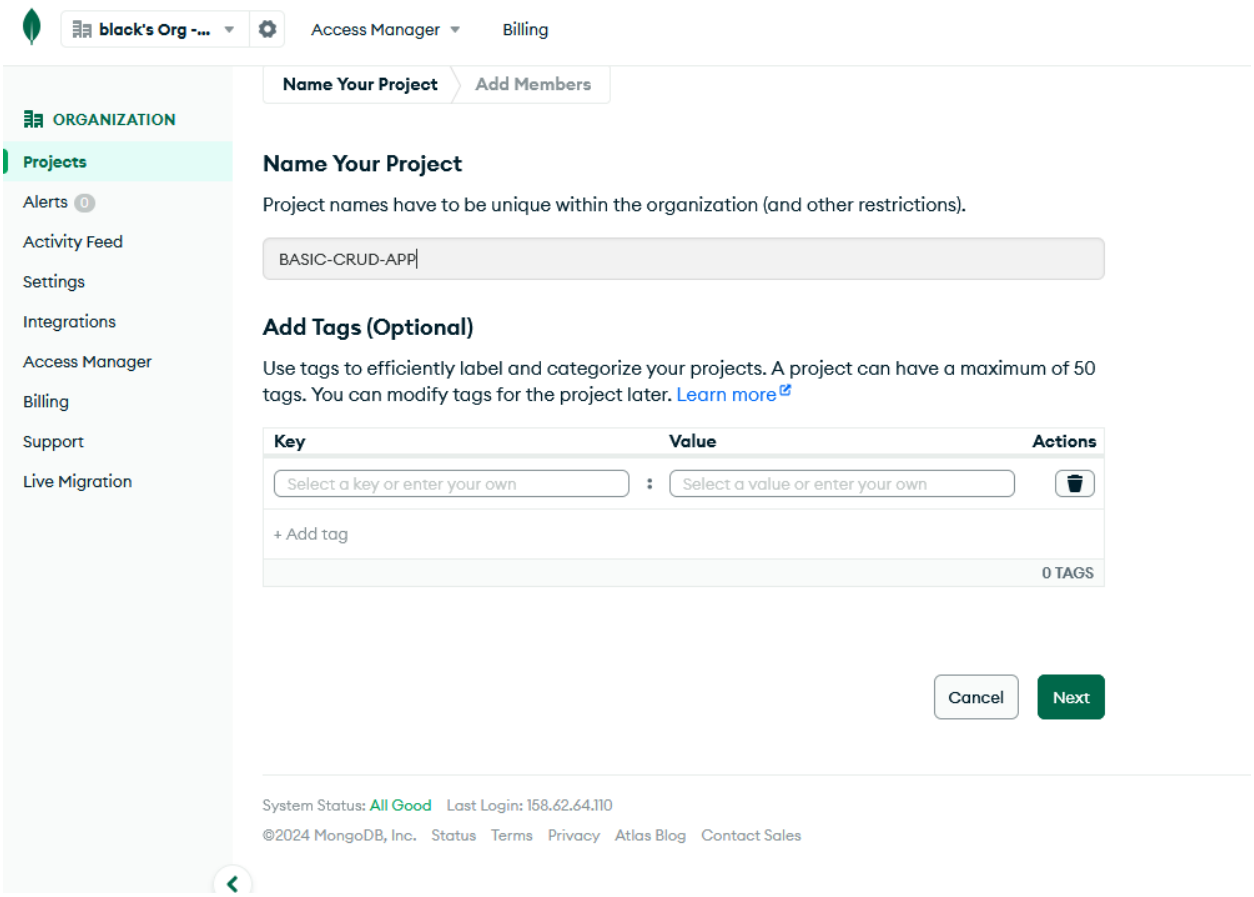
Sign in to MongoDB Atlas:
https://account.mongodb.com/account/login?n=https%3A%2F%2Fcloud.mongodb.com%2Fv2%2F65f6b51c49a07b25297e2fd4&nextHash=%23clusters&signedOut=true

Use google account to sign in.

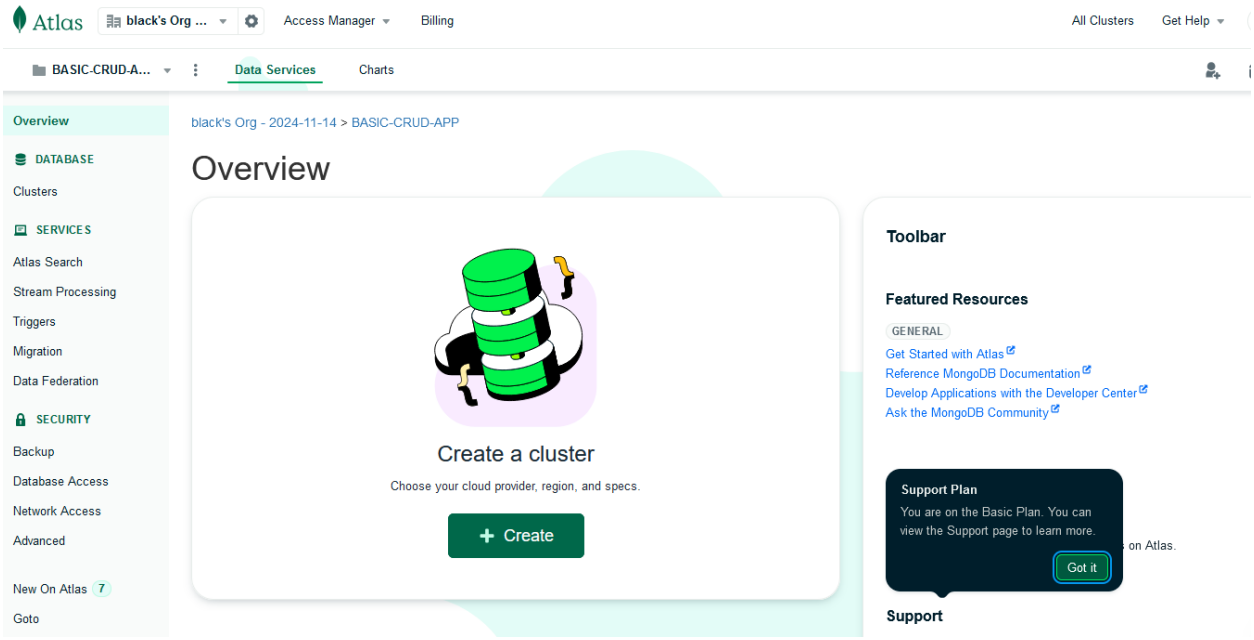
After Signing in. Create a new project.



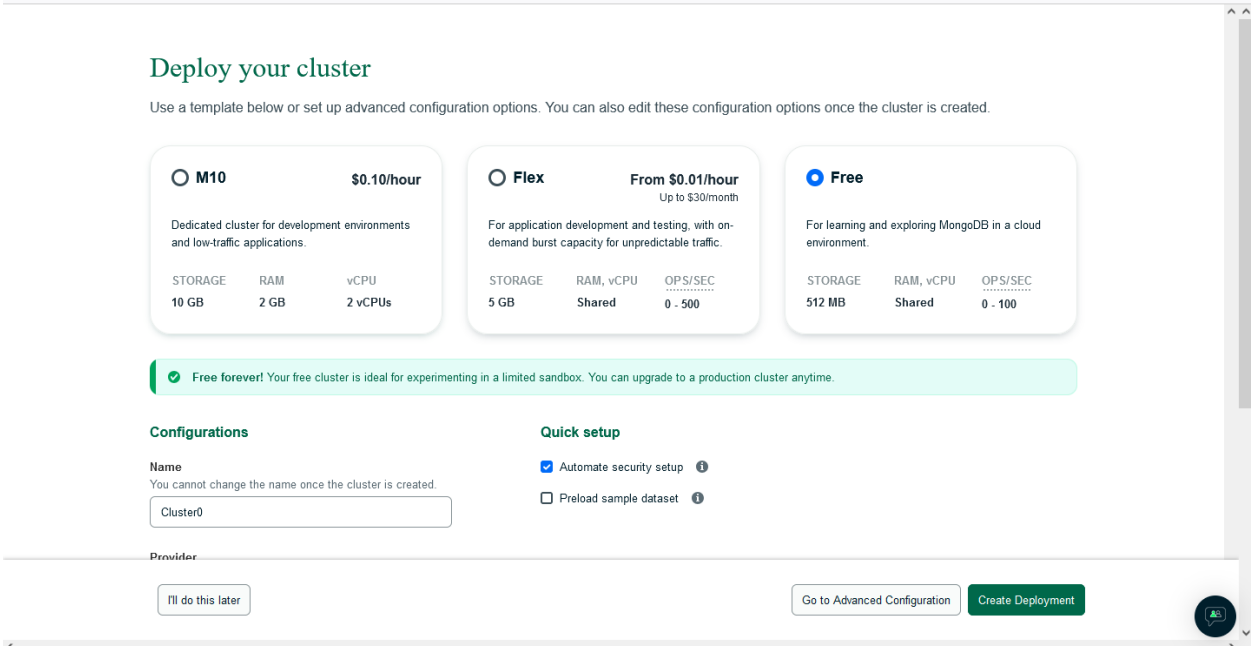
Name the project. Then next and create project.



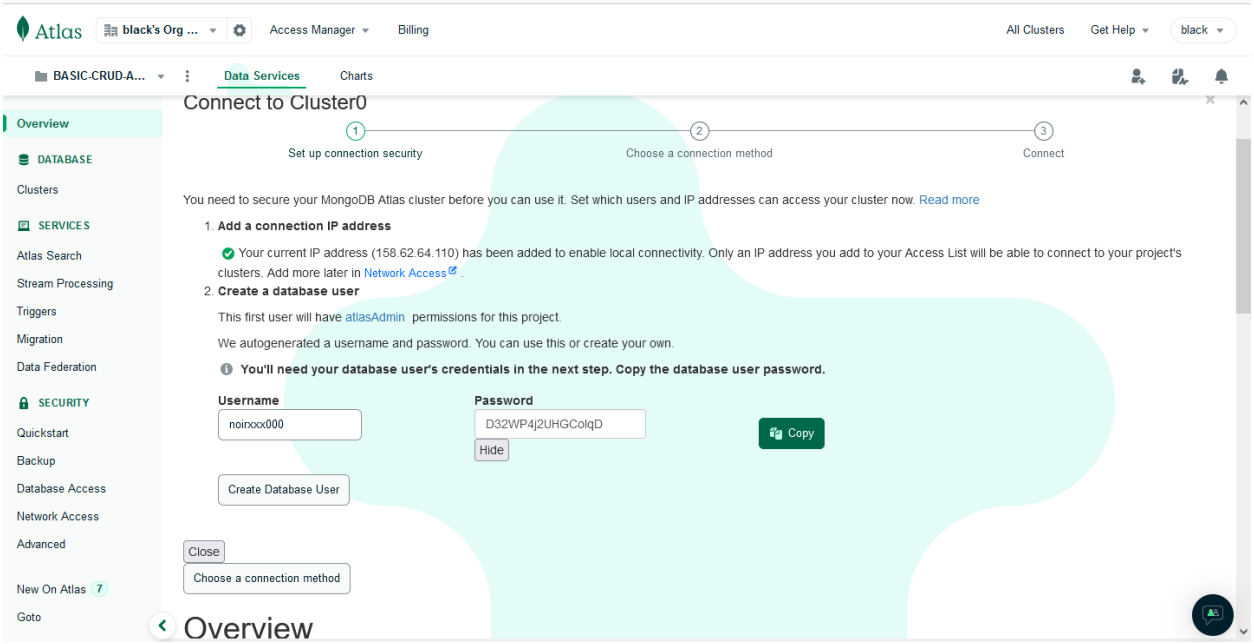
After creating, create a cluster.



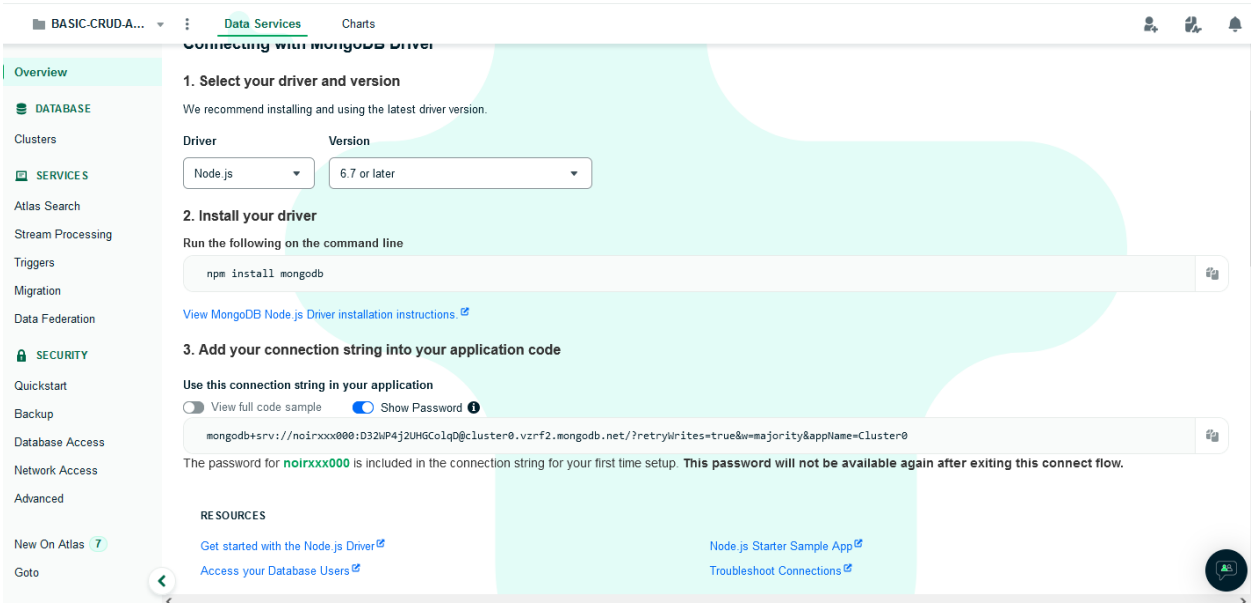
Choose the free tier, then create deployment



Copy the password and paste on a notepad. After that “create database user”



After creating, choose connection, then select “driver”. Copy the connection string then paste it on “.env” file.



```env
PORT=5000
MONGO_URI=mongodb+srv://noirxxx000:D32WP4j2UHGColqD@cluster0.vzrf2.mongodb.net/?retryWrites=true&w=majority&appName=Cluster0
```

CRTL + S to save

STEP 17.

Click the “server.js”, import the connectDB from db.js, and add the connectDB under “app”

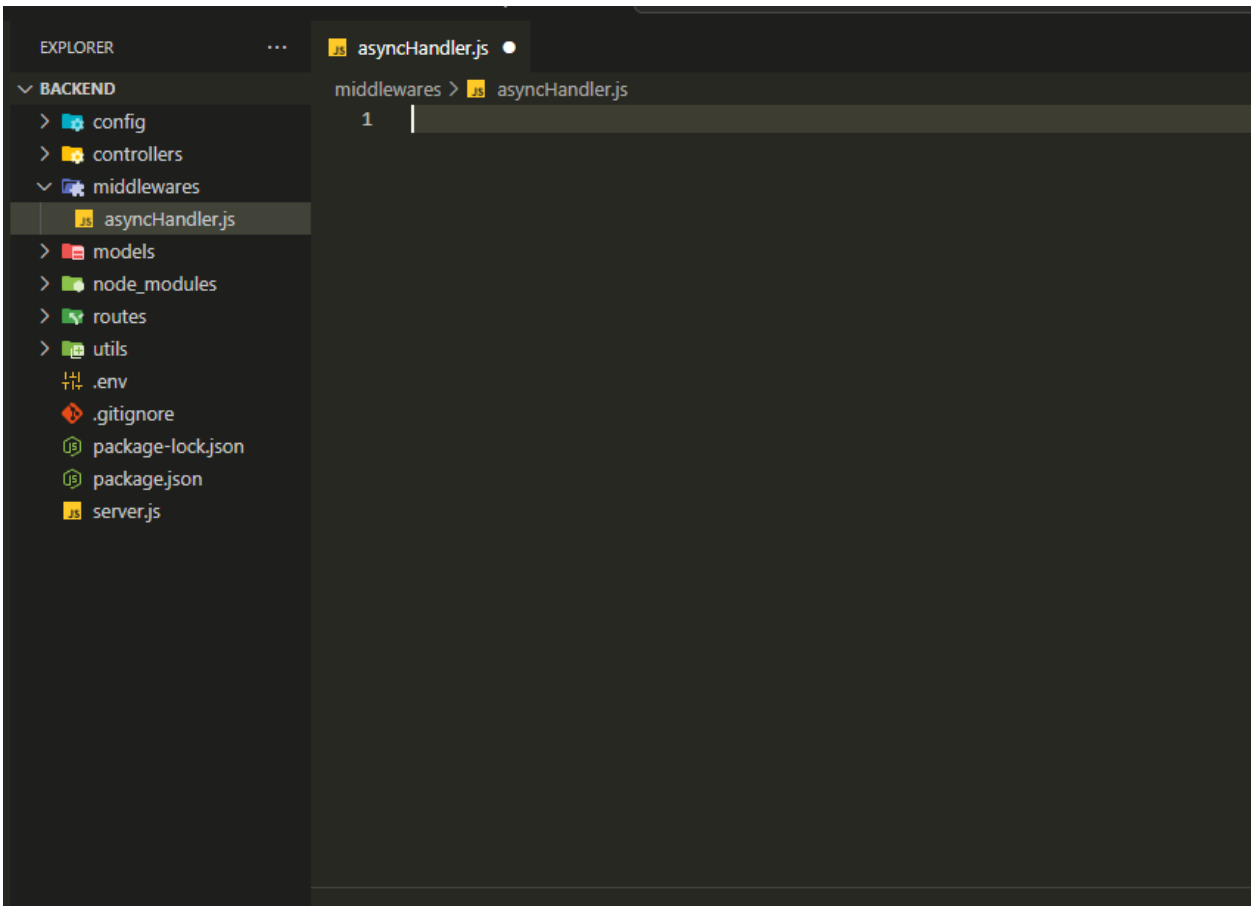
```server.js
import express from "express";
import cookieParser from "cookie-parser";
import dotenv from "dotenv";

import connectDB from "./config/db.js";

dotenv.config();

const app = express();

// Database
connectDB();

// Middlewares
app.use(express.json());
app.use(cookieParser());
app.use(express.urlencoded({ extended: true }));

// Listen
const port = process.env.PORT || 4000;
app.listen(port, () => console.log(`Server is running on port ${port}`));
```

CRTL + S to save. Then restart the server. It should display like this

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS                                node

Terminate batch job (Y/N)? y
PS C:\Users\noir\Desktop\CRUD Workshop - IT\backend> npm start

> backend@1.0.0 start
> nodemon server.js

[nodemon] 3.1.7
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): *.*
[nodemon] watching extensions: js,mjs,cjs,json
[nodemon] starting `node server.js`
Server is running on port 5000
MongoDB is Connected: cluster0-shard-00-00.vzrf2.mongodb.net
```

STEP 19.

Create a file named “asycnHandler.js” under the “middlewares” folder



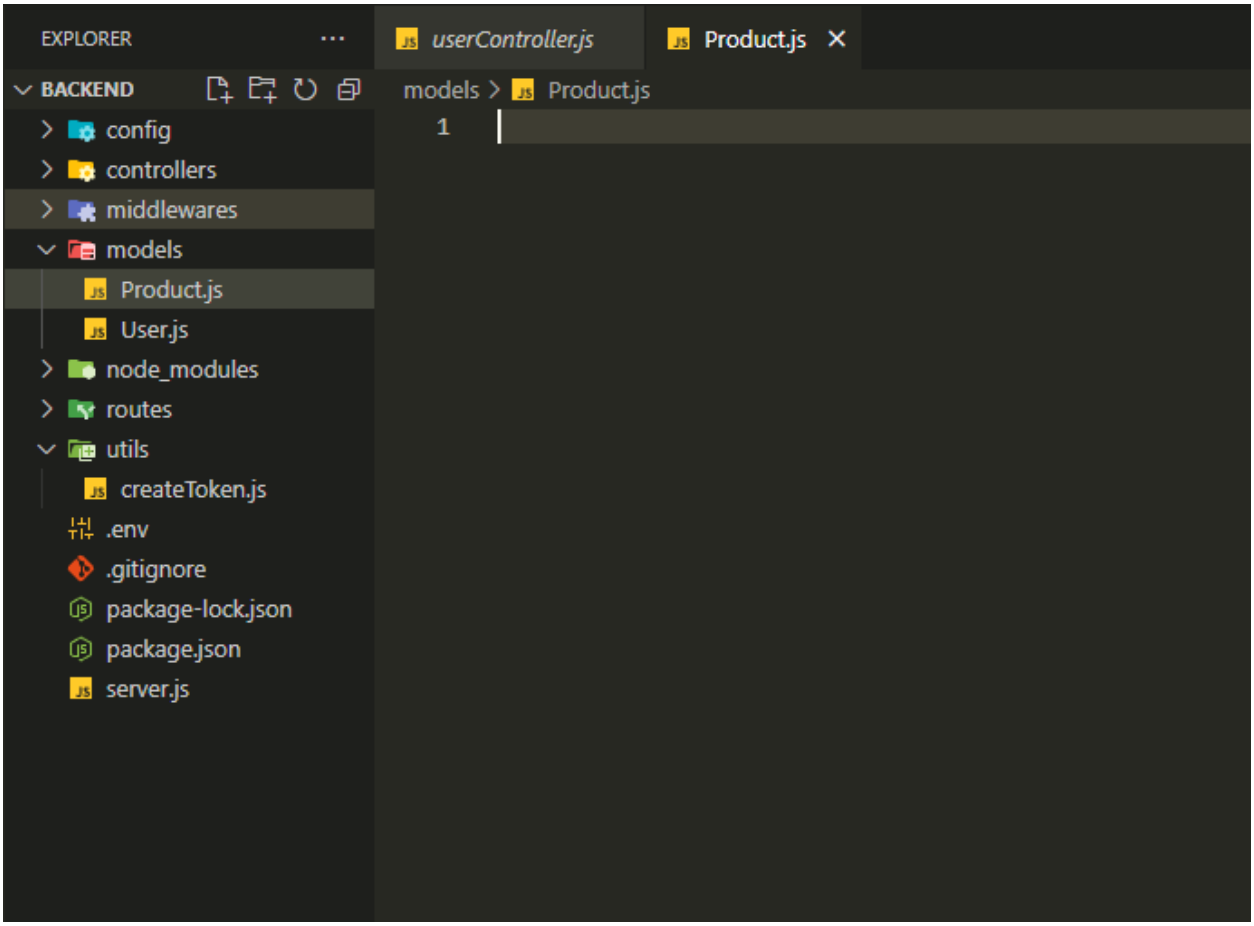
Add this code block:

```
const asyncHandler = (fn) => (req, res, next) => {
  Promise.resolve(fn(req, res, next)).catch((err) => {
    res.status(500).json({ message: err.message });
  });
};
```

```
export default asyncHandler;
```

STEP 26:

In the editor, create a file named “Product.js” under the models forler.



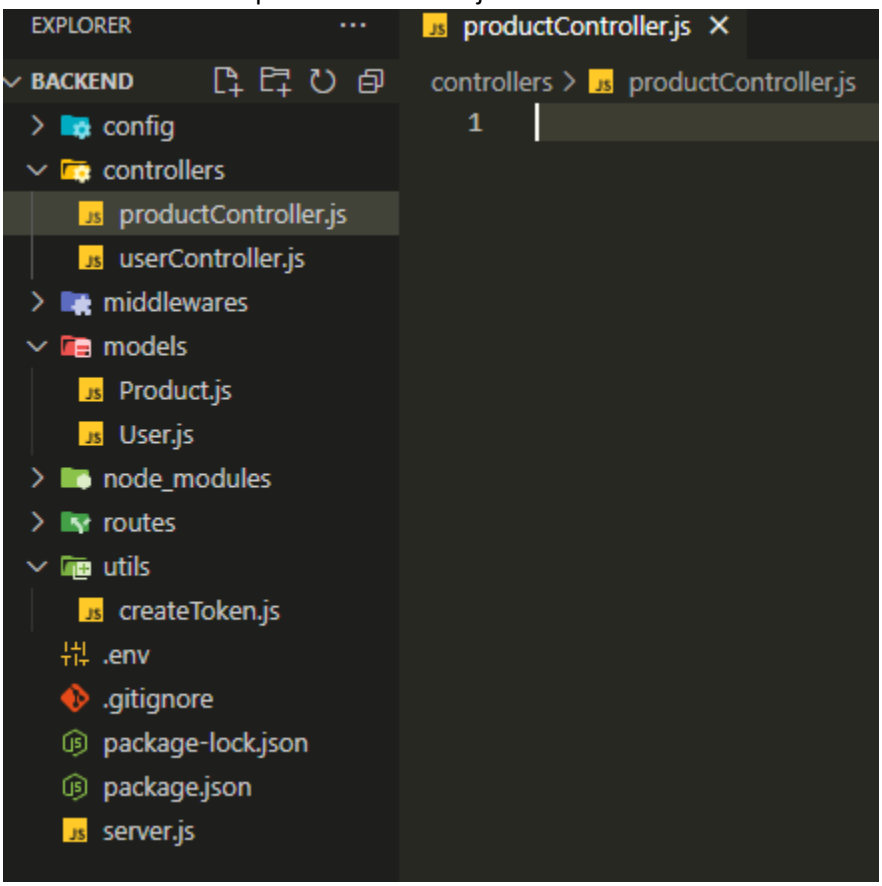
Add this code block:

```
import mongoose from "mongoose";

const productSchema = new mongoose.Schema(
  {
    productName: {
      type: String,
      required: true,
    },
    price: {
      type: Number,
      required: true,
```

```
      min: 0,
    },
    description: {
      type: String,
      required: true,
      trim: true,
    },
    image: {
      type: String,
      required: true,
    },
  },
  {
    timestamps: true,
  }
);

const Product = mongoose.model("Product", productSchema);
export default Product;
```

STEP 27:

Create a file named “productController.js” under the “controllers” folder.



Add this code block:

```
import Product from "../models/Product.js";
import asyncHandler from "../middlewares/asyncHandler.js";

export const createProduct = asyncHandler(async (req, res) => {
  try {
    const { productName, price, description } = req.body;
    const image = req.file ? req.file.path : null; // Get the image path from
multer

    const newProduct = new Product({
      productName,
      price,
      description,
      image, // Save the image path to the product model
    });

    const savedProduct = await newProduct.save();
    res.status(201).json({
      message: "Product created successfully",
```

```
      savedProduct,
    });
  } catch (error) {
    console.log(error);
    res.status(400).json({ message: "Error creating a product", error });
  }
});

export const updateProduct = asyncHandler(async (req, res) => {
  try {
    const { productId } = req.params;
    const updates = req.body;

    if (req.file) {
      updates.image = req.file.path; // Add the new image path if an image is
uploaded
    }

    const product = await Product.findByIdAndUpdate(productId, updates, {
      new: true,
    });

    if (!product) {
      return res.status(400).json({ message: "Product not found" });
    }

    res.status(200).json(product);
  } catch (error) {
    res.status(400).json({ message: "Error updating product", error });
  }
});

export const getAllProducts = asyncHandler(async (req, res) => {
  try {
    const products = await Product.find();
    res.status(200).json(products);
  } catch (error) {
    res.status(400).json({ message: "Error fetching products", error });
  }
});

export const getProductById = asyncHandler(async (req, res) => {
  try {
    const { productId } = req.params;
    const product = await Product.findById(productId);
```

```
    if (!product) {
      return res.status(400).json({ message: "Product not found" });
    }

    res.status(200).json(product);
  } catch (error) {
    res.status(400).json({ message: "Error fetching product", error });
  }
});

export const deleteProduct = asyncHandler(async (req, res) => {
  try {
    const { productId } = req.params;
    const result = await Product.deleteOne({ _id: productId });

    if (result.deletedCount == 0) {
      return res.status(400).json({ message: "Product not found" });
    }

    res.status(200).json({ message: "Product deleted successfully" });
  } catch (error) {
    res.status(400).json({ message: "Error deleting product", error });
  }
});
```

STEP 28: create a file name “upload.js” under the middlewares forlder

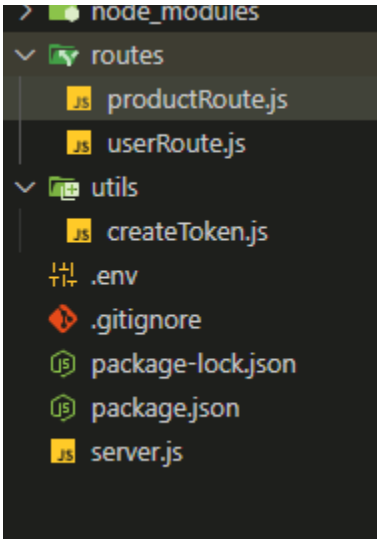
Add this code block:

```
import multer from "multer";
import path from "path";

// Define where the images will be stored and their file naming convention
const storage = multer.diskStorage({
  destination: (req, file, cb) => {
    cb(null, "uploads/"); // Specify the 'uploads' folder for storing images
  },
  filename: (req, file, cb) => {
    cb(null, `${Date.now()}_${file.originalname}`); // Use timestamp to prevent
filename collisions
  },
});
```

```
// File filter for image files only
const fileFilter = (req, file, cb) => {
  const allowedTypes = /jpeg|jpg|png|gif/;
  const extname = allowedTypes.test(
    path.extname(file.originalname).toLowerCase()
  );
  const mimetype = allowedTypes.test(file.mimetype);

  if (extname && mimetype) {
    return cb(null, true);
  } else {
    cb(new Error("Only image files are allowed"), false);
  }
};

const upload = multer({
  storage: storage,
  fileFilter: fileFilter,
});

export default upload;
```

STEP 29:

Create a file named “productRoute.js” under the “routes” folder.



Add this code block:

```
import express from "express";
```

```
import {
  createProduct,
  getAllProducts,
  getProductById,
  updateProduct,
  deleteProduct,
} from "../controllers/productController.js";
import upload from "../middlewares/upload.js"; // Import multer configuration

const router = express.Router();

// Route to create a new product with image upload
router.route("/").post(upload.single("image"), createProduct);

// Route to fetch all products
router.route("/").get(getAllProducts);

// Route to fetch, update or delete a single product by ID
router
  .route("/:productId")
  .get(getProductById)
  .put(upload.single("image"), updateProduct) // Handle image upload during
update
  .delete(deleteProduct);

export default router;
```

STEP 30:

Click the “server.js”, and then add this statement

```
import path from "path";
import { fileURLToPath } from "url";

import productRoutes from "./routes/productRoute.js"
```

```
app.use("/api/products", productRoutes);

// Serve images from the "uploads" folder
const __filename = fileURLToPath(import.meta.url); // Get the current file URL
const __dirname = path.dirname(__filename); // Get the directory name
app.use("/uploads", express.static(path.join(__dirname, "uploads")));
```

server.js > ...

```javascript
import express from "express";
import dotenv from "dotenv";
import path from "path";
import { fileURLToPath } from "url"; // Import fileURLToPath for handling URL paths

import connectDB from "./config/db.js";
import productRoutes from "./routes/productRoute.js";

dotenv.config();

const app = express();

// Database
connectDB();

// Middlewares
app.use(express.json());
app.use(express.urlencoded({ extended: true }));

// APIs
app.use("/api/products", productRoutes);

// Serve images from the "uploads" folder
const __filename = fileURLToPath(import.meta.url); // Get the current file URL
const __dirname = path.dirname(__filename); // Get the directory name
app.use("/uploads", express.static(path.join(__dirname, "uploads")));

// Listen
const port = process.env.PORT || 5000;
app.listen(port, () => console.log(`Server is running on port ${port}`));
```

STEP 31:

Open Postman, and TEST the APIs

“/create”

POST localhost:5000/api/prod | POST localhost:4000/api/user

localhost:5000/api/products/create

POST localhost:5000/api/products/create

Params | Authorization | Headers (9) | Body | Pre-request Script | Tests | Settings

none | form-data | x-www-form-urlencoded | raw | binary | JSON

```
{
    "productName": "Ipad Pro Air",
    "price": "80000",
    "description": "Best Ipad of the year"
}
```

Body | Cookies (1) | Headers (7) | Test Results

Pretty | Raw | Preview | Visualize | JSON

```
{
    "message": "Product created successfully",
    "savedProduct": {
        "productName": "Ipad Pro Air",
        "price": 80000,
        "description": "Best Ipad of the year",
        "user": "6738c7243b4106c362068b00",
        "_id": "673939c0bdf9962f3f6a3f2b",
        "createdAt": "2024-11-17T00:33:04.224Z",
        "updatedAt": "2024-11-17T00:33:04.224Z",
        "__v": 0
    }
}
```

Get all products - “/”

GET localhost:5000/api/products/

Params Authorization Headers (9) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary JSON

```
{
    "productName": "Ipad Pro Air",
    "price": "80000",
    "description": "Best Ipad of the year"
}
```

Body Cookies (1) Headers (7) Test Results Status: 200 OK Time: 174 ms

Pretty Raw Preview Visualize JSON


```
[
    {
        "_id": "6739393bbdf9962f3f6a3f27",
        "productName": "Ipad Pro Max",
        "price": 90000,
        "description": "Best Ipad of the year",
        "user": "6738c7243b4106c362068b00",
        "createdAt": "2024-11-17T00:30:51.694Z",
        "updatedAt": "2024-11-17T00:30:51.694Z",
        "__v": 0
    },
    {
        "_id": "673939c0bdf9962f3f6a3f2b",
```


Get product by ID – “/:productId”

localhost:5000/api/products/6739393bbdf9962f3f6a3f27

GET localhost:5000/api/products/6739393bbdf9962f3f6a3f27

Params Authorization Headers (9) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary JSON

```
{
    "productName": "Ipad Pro Air",
    "price": "80000",
    "description": "Best Ipad of the year"
}
```

Body Cookies (1) Headers (7) Test Results

Pretty Raw Preview Visualize JSON

```
{
    "_id": "6739393bbdf9962f3f6a3f27",
    "productName": "Ipad Pro Max",
    "price": 90000,
    "description": "Best Ipad of the year",
    "user": "6738c7243b4106c362068b00",
    "createdAt": "2024-11-17T00:30:51.694Z",
    "updatedAt": "2024-11-17T00:30:51.694Z",
    "__v": 0
}
```

Update product by Id – “/productId"

localhost:5000/api/products/6739393bbdf9962f3f6a3f27

PUT localhost:5000/api/products/6739393bbdf9962f3f6a3f27

Params Authorization Headers (9) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary JSON

```
{
    "productName": "Samsung S2",
    "price": "80000",
    "description": "Best phone of the year"
}
```

Body Cookies (1) Headers (7) Test Results Status: 200 OK Time: 184 m

Pretty Raw Preview Visualize JSON


```
{
    "_id": "6739393bbdf9962f3f6a3f27",
    "productName": "Samsung S2",
    "price": 80000,
    "description": "Best phone of the year",
    "user": "6738c7243b4106c362068b00",
    "createdAt": "2024-11-17T00:30:51.694Z",
    "updatedAt": "2024-11-17T00:36:12.246Z",
    "__v": 0
}
```


Delete product by Id – “/productId"

localhost:5000/api/products/6739393bbdf9962f3f6a3f27

DELETE localhost:5000/api/products/6739393bbdf9962f3f6a3f27

Params Authorization Headers (9) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary JSON

```
1 {
2     "productName": "Samsung S2",
3     "price": "80000",
4     "description": "Best phone of the year"
5 }
```

Body Cookies (1) Headers (7) Test Results Status: 200 OK

Pretty Raw Preview Visualize JSON

```
1 {
2     "message": "Product deleted successfully"
3 }
```

CONGRATULATIONS YOU HAVE FINISHED THE BACKEND PART. !!! JAOY PA FRONTEND