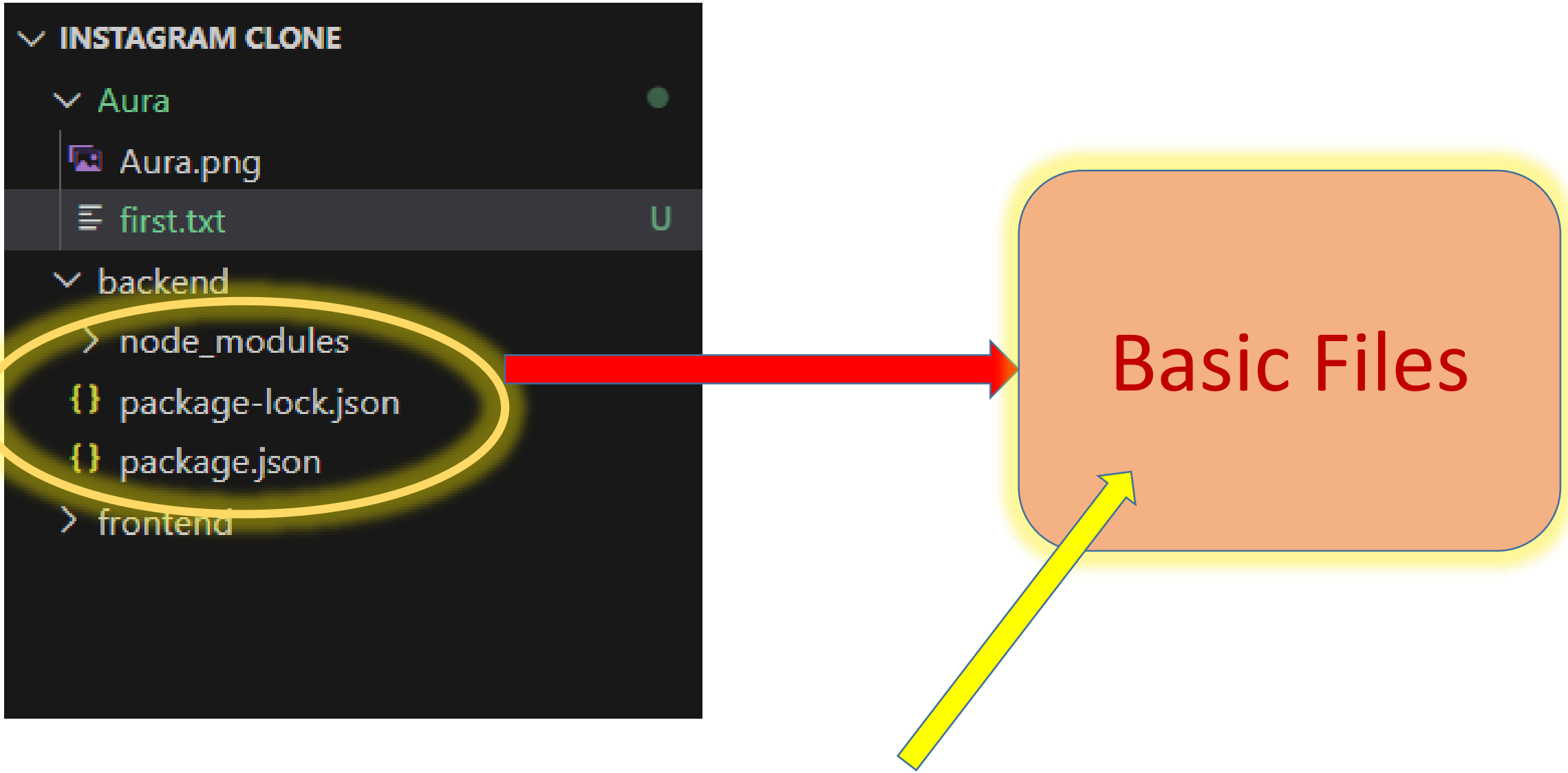
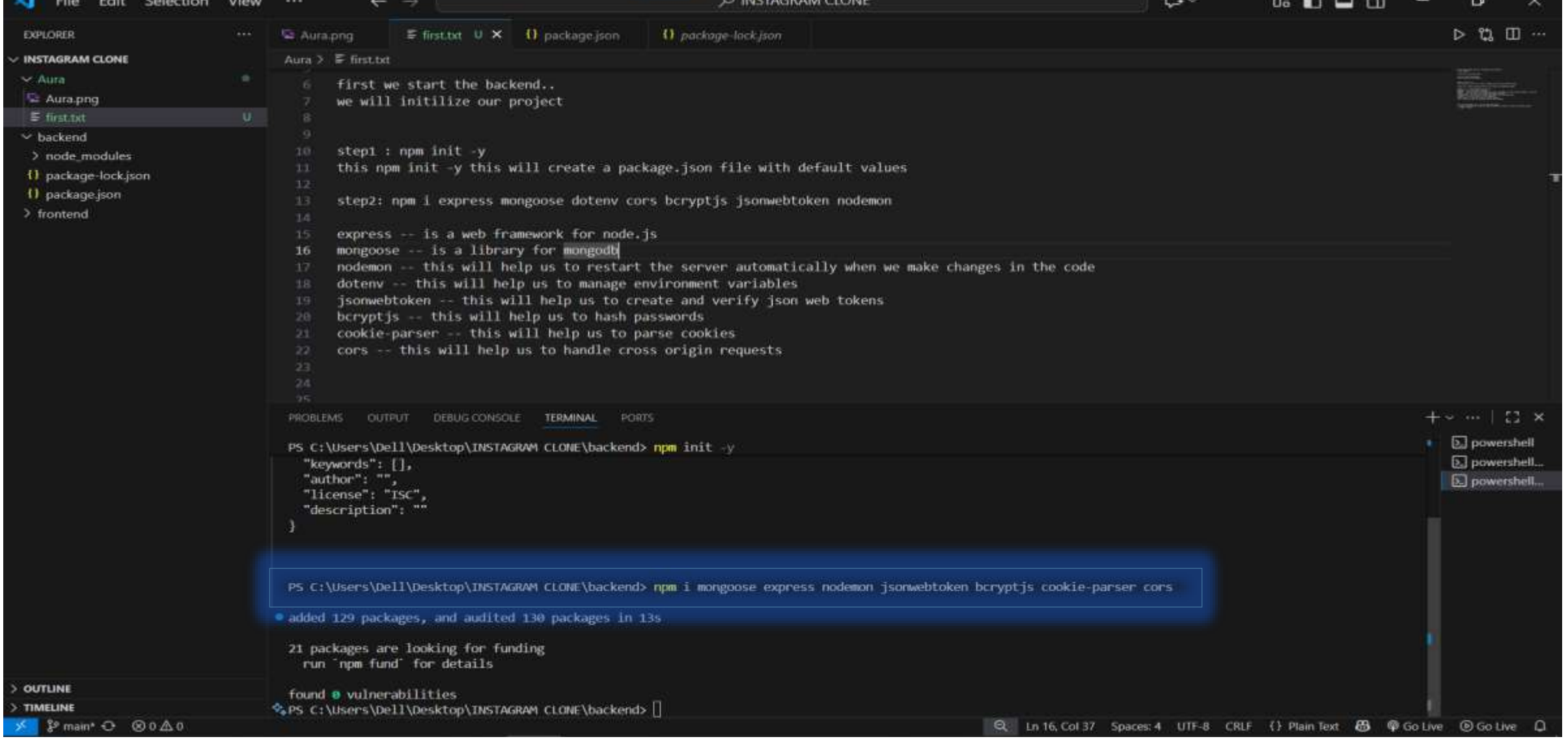
Aura ++



Step1: npm init-y

We initialize the basic package.json file



Step2: npm i express mongoose dotenv cors bcryptjs jsonwebtoken nodemon

- express -- is a web framework for node.js
- mongoose -- is a library for mongodb
- nodemon -- this will help us to restart the server automatically when we make changes in the code
- dotenv -- this will help us to manage environment variables
- jsonwebtoken -- this will help us to create and verify json web tokens
- bcryptjs -- this will help us to hash passwords
- cookie-parser -- this will help us to parse cookies
- cors -- this will help us to handle cross origin requests

also in the package.json -- we will add type:module

--using this we can use import and export statements instead of require and module.exports

---"type": "module",

```
import cors from 'cors';
import connectDB from './utils/db.js';
// import cors from "cors";
```

Like here since we are using type module
So we have to write ./utils/db.js
Else we need to write ./utils/db

Running Nodemon

WHENEVER WE RUN

Npm run dev

Then our server will start

backend > JS index.js > ...

```
1   import express from 'express';
2   // import cors from "cors";
3   // import cookieParser from 'cookie-parser';
4
5   //till now we have intilize the project basic index.js file and run the server
6   const app =  express();
7   const PORT = 5000;
8   app.listen(PORT,()=>{
9       console.log(`server is running on port ${PORT}`);
10  })
```

index.js

BASIC DONE

Cookie parser and url encoded

```
app.use(cookieParser());
//whenever we try to request the token from browser..then we will store the token in the cookie parser

app.use(urlencoded({extended:true}));
//basically this will allow us to parse the incoming requests with urlencoded payloads
//this app.use(urlenconded) --
//this thing will allow the read of data which are sended in browser through post request
//extended:true -- this will allow us to parse nested objects
```

CORS(cross origin resourse sharing)

```
//CORS - cross origin resource sharing
const corsOptions = {
    origin: "http://localhost:5173", // this 5173 is the port where our frontend is running(vite)

    credentials: true, // cookie send hogi agr hm credentails true krdenge
//credentials: true allows cookies and authentication headers
// to be sent and received between frontend and backend.

  };

  app.use(cors(corsOptions));
   //this will allow the cross origin resource sharing
   //frontend and backend can communicate with each other
```

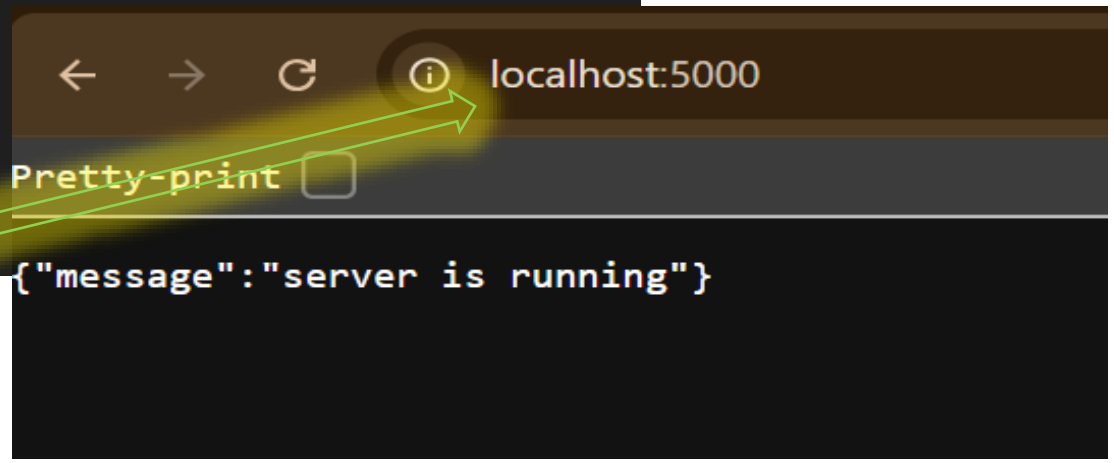
Credentails: true hoge tabhi hm cookie ko send kar payege

by default, browsers restrict cross-origin requests for security reasons. This means your frontend (on port 5173) cannot make requests to your backend (on port 5000) unless CORS is enabled. By using app.use(cors(corsOptions)), you explicitly allow your frontend to communicate with your backend, including sending cookies and credentials.

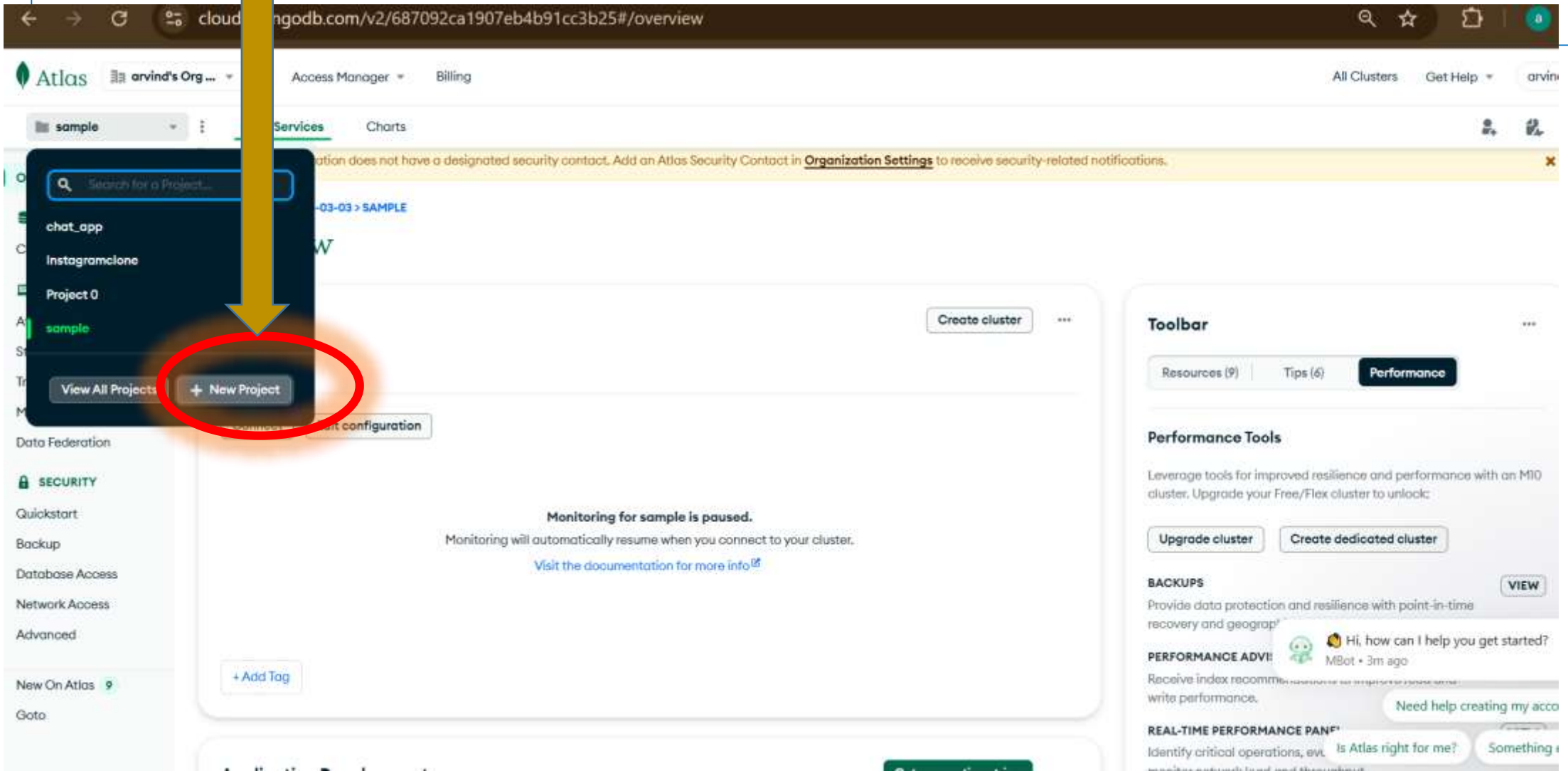
First API

```
app.get("/",(req,res)=>{
    return res.status(200).json({
        message:"server is running"
    })
});
```

```
Node.js v22.16.0
[nodemon] app crashed - waiting for file changes before starting...
[nodemon] restarting due to changes...
[nodemon] starting `node index.js`
server is running on port 5000
```



Mongodb database working

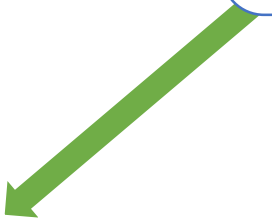


ARVIND'S ORG - 2025-03-03 > PROJECTS

Create a Project

Name Your Project | Add Members

Write name of project



Name Your Project

Project names have to be unique within the organization (and other restrictions).

Aura

Add Tags (Optional)

Use tags to efficiently label and categorize your projects. A project can have a maximum of 50 tags. You can modify tags for the project later. Learn more

Key	Value	Actions
application	sparshsharma	

+ Add tag

1 TAG

Cancel Next

ARVIND'S ORG - 2025-03-03 > PROJECTS

Create a Project

✔ Name Your Project | Add Members

Add Members and Set Permissions

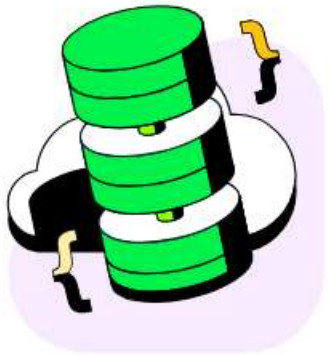
Invite new or existing users via email address...

Give your members access permissions below.

81arvindarora@gmail.com (you) — Project Owner

Back | Cancel | Create Project

Overview



Create a cluster

Choose your cloud provider, region, and specs.

+ Create

Deploy your cluster

Use a template below or set up advanced configuration options. You can also edit these configuration options once the cluster is created.

M10 — $0.08/hour

Dedicated cluster for development environments and low-traffic applications.

STORAGE	RAM	vCPU
10 GB	2 GB	2 vCPUs

Flex — From $0.011/hour, Up to $30/month

For development and testing, with on-demand burst capacity for unpredictable traffic.

STORAGE	RAM	vCPU
5 GB	Shared	Shared

Free

For learning and exploring MongoDB in a cloud environment.

STORAGE	RAM	vCPU
512 MB	Shared	Shared

Configurations

Name
You cannot change the name once the cluster is created.

Cluster0

Provider

aws | Google Cloud | Azure

Region

Mumbai (ap-south-1) ★

★ Recommended ⓘ Low carbon emissions ⓘ

Tag (optional)
Create your first tag to categorize and label your resources; more tags can be added later. Learn more.

application : sparshsharma

Quick setup

- [x] Automate security setup ⓘ
- [ ] Preload sample dataset ⓘ

Hi, how can I help you get
MBot • 29m ago

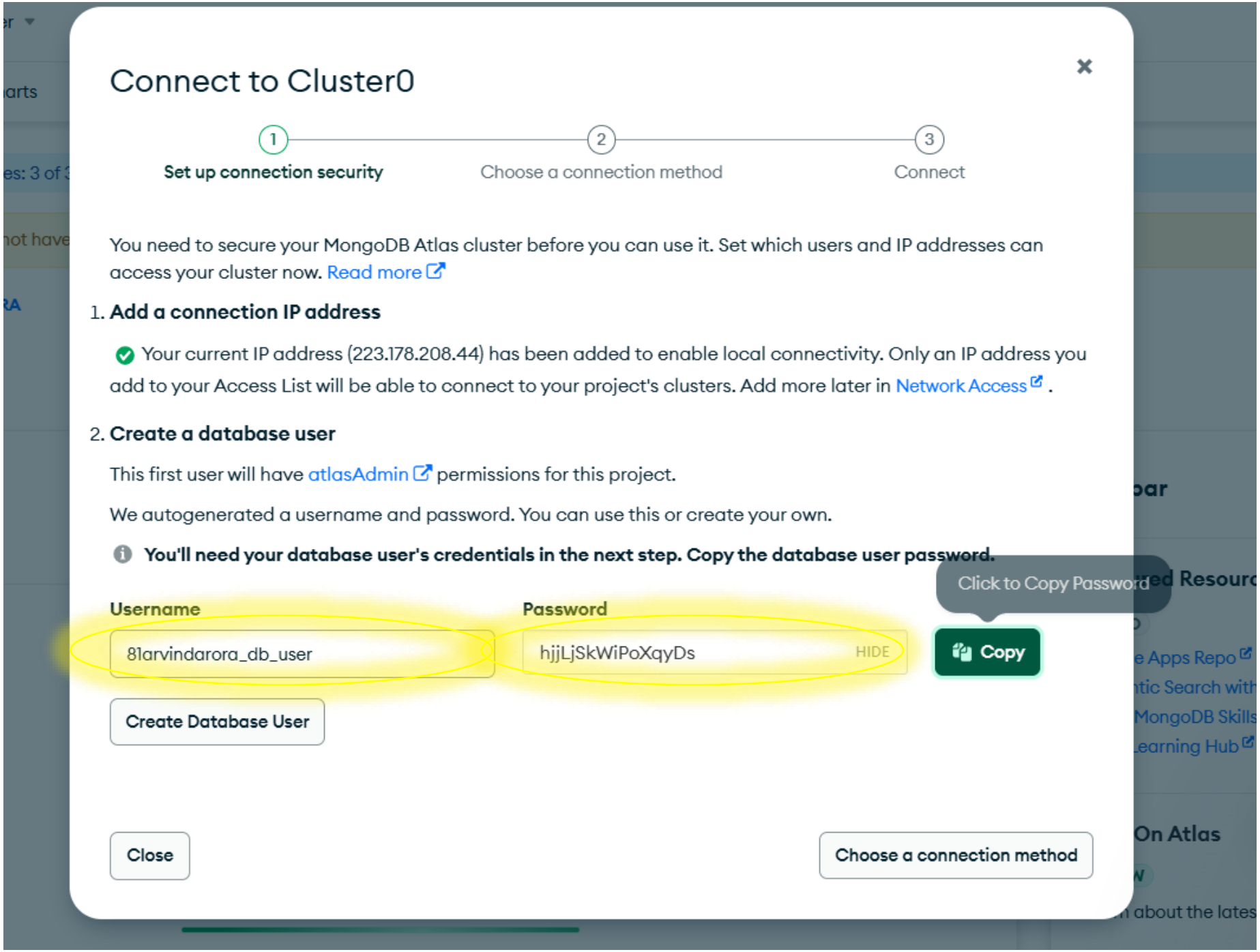
Need help creatin

Is Atlas right for me?

I'll do this later

Go to Advanced Configuration

Create Deployment


Connect to Cluster0
1
Set up connection security
2
Choose a connection method
3
Connect
You need to secure your MongoDB Atlas cluster before you can use it. Set which users and IP addresses can access your cluster now. Read more
1. Add a connection IP address
Your current IP address (223.178.208.44) has been added to enable local connectivity. Only an IP address you add to your Access List will be able to connect to your project's clusters. Add more later in Network Access .
2. Create a database user
This first user will have atlasAdmin permissions for this project.
We autogenerated a username and password. You can use this or create your own.
You'll need your database user's credentials in the next step. Copy the database user password.
Click to Copy Password
Username
Password
81arvindarora_db_user
hjjLjSkWiPoXqyDs
HIDE
Copy
Create Database User
Close
Choose a connection method

Connect to Cluster0

Set up connection security ✓ — Choose a connection method ✓ — 3 Connect

Connecting with MongoDB for VS Code

1. Install MongoDB for VS Code.

In VS Code, open "Extensions" in the left navigation and search for "MongoDB for VS Code." Select the extension and click install.

2. In VS Code, open the Command Palette.

Click on "View" and open "Command Palette."
Search "MongoDB: Connect" on the Command Palette and click on "Connect with Connection String."

3. Connect to your MongoDB deployment.

Paste your connection string into the Command Palette.

Show Password

```
mongodb+srv://81arvindarora_db_user:hjjLjSkWiPoXqyDs@cluster0.udbefat.mongodb.net/
```

The password for **81arvindarora_db_user** is included in the connection string for your first time setup. **This password will not be available again after exiting this connect flow.**

4. Click "Create New Playground" in MongoDB for VS Code to get started.

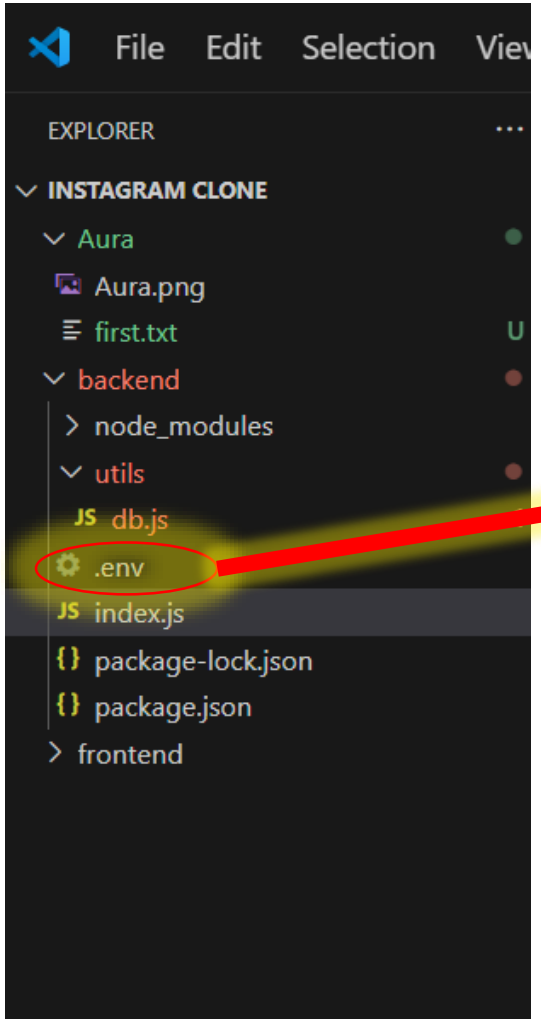
Learn more about Playgrounds

RESOURCES

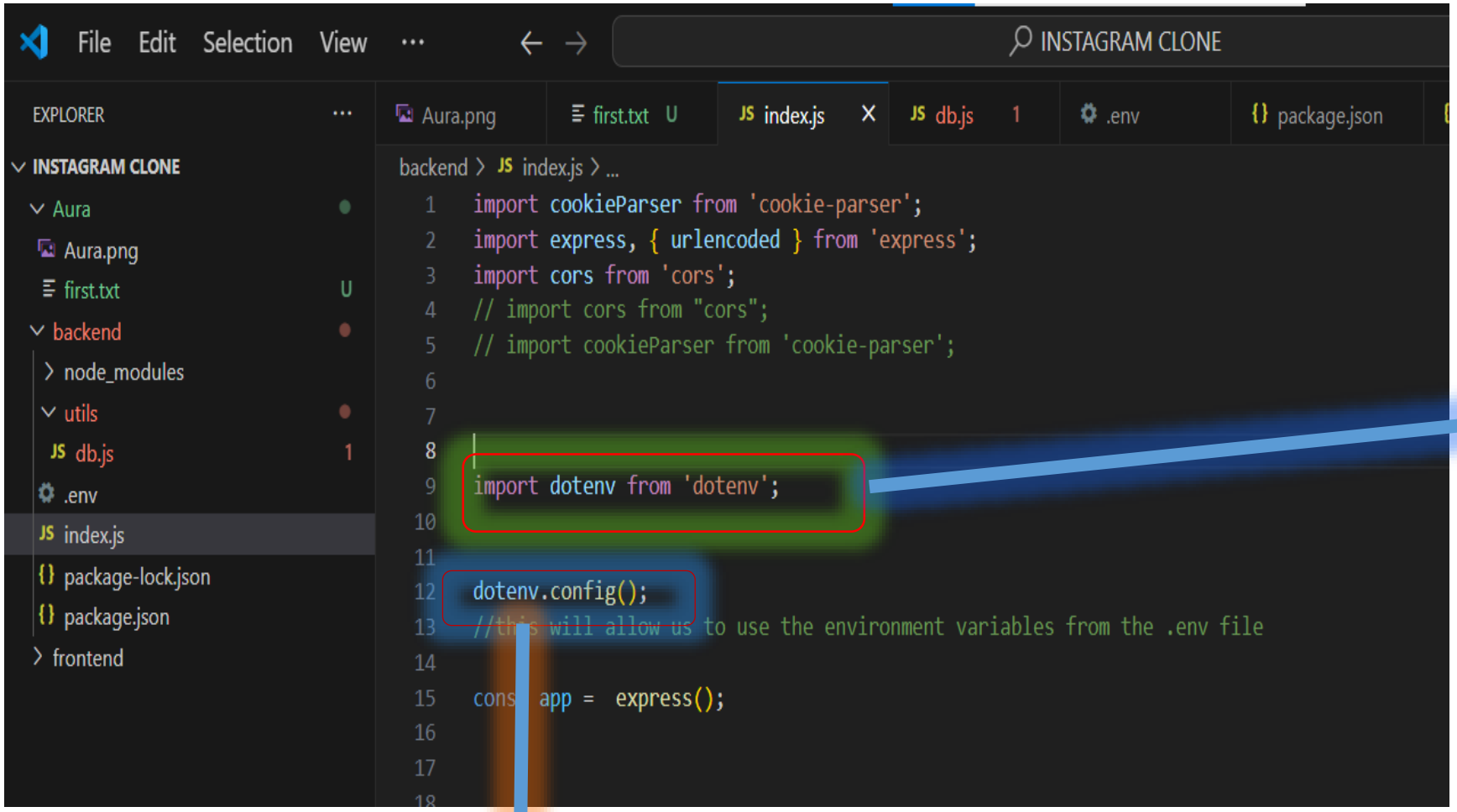
- Connect to MongoDB through VSCode
- Explore your data with playgrounds
- Access your Database Users
- Troubleshoot Connections

We will write This in Environment variables

Creating env file



Npm I dotenv to install it
Then in this folder we can write environment Variables



Here we have imported
the dotenv file
It should be at the top
So that all variables should
Load properly

It will load the environment variables

```
const PORT = process.env.PORT || 5000;
```

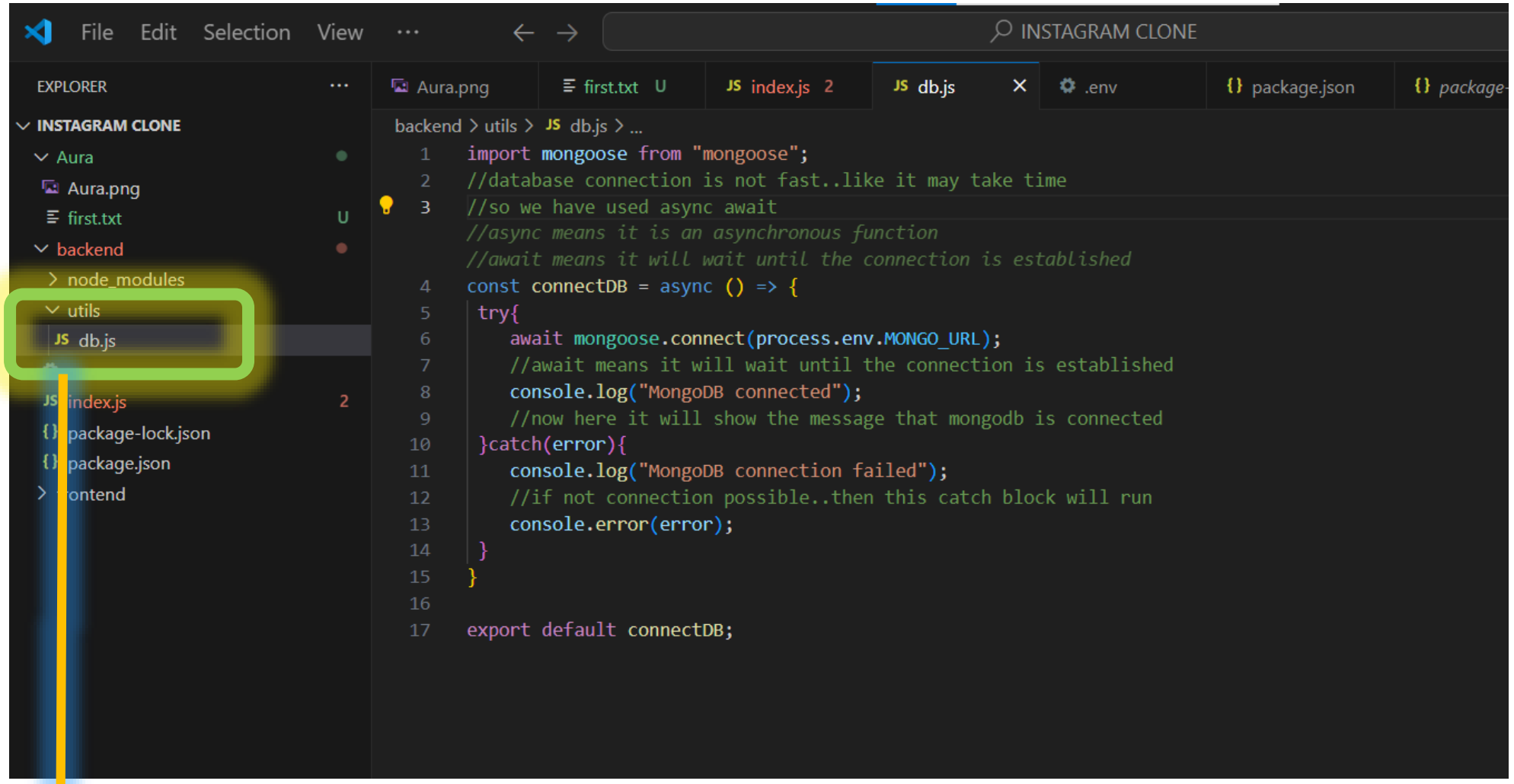
This is the way of accessing the variables of env file…

process.env.variable_name

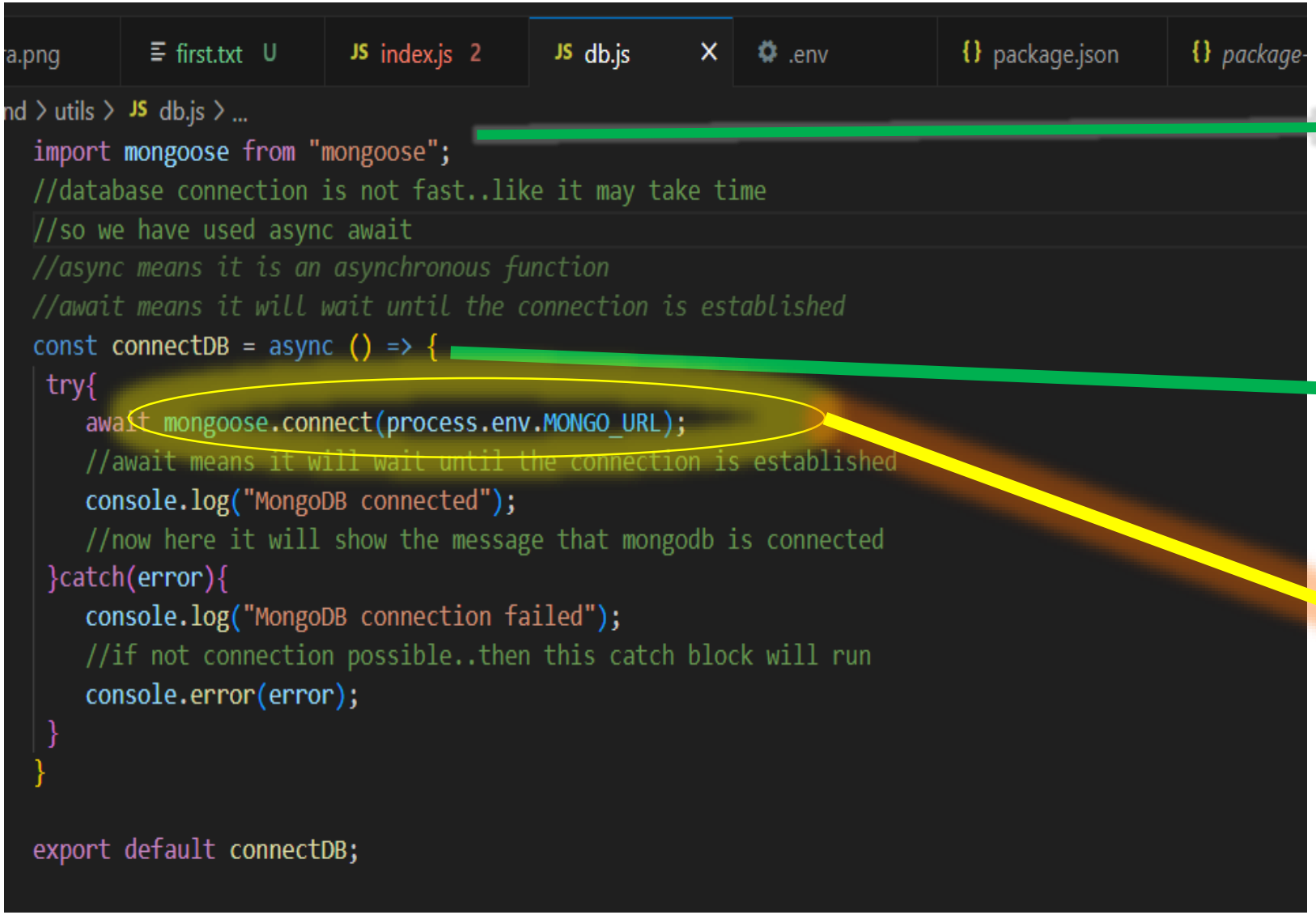
here we have used || means if it is not available

then use 5000

Connecting with database



Creating db.js file inside utils folder



Npm I mongoose

Database connection Takes time..so using async and await

This function will connect To the mongodb using url

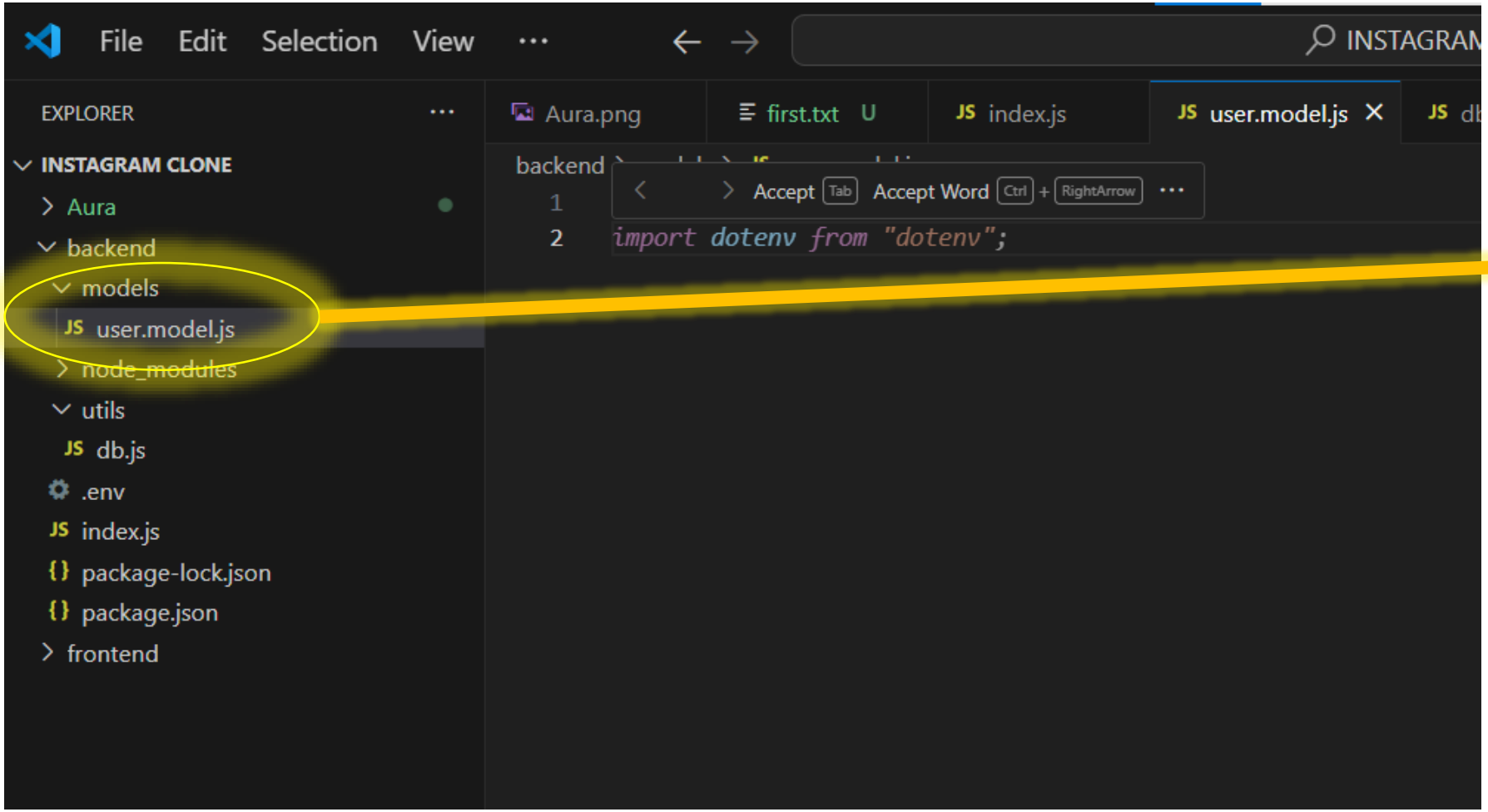
```
53
54
55
56  app.listen(PORT,()=>{
57      connectDB();
58      console.log(`server is running on port ${PORT}`);
59  })
```

As the server is running..
So we will write connect db() there

```
Node.js v22.16.0
[nodemon] app crashed - waiting for file changes before starting...
[nodemon] restarting due to changes...
[nodemon] starting `node index.js`
[nodemon] restarting due to changes...
[nodemon] starting `node index.js`
[dotenv@17.2.2] injecting env (2) from .env -- tip: 📡 auto-backup env with Radar: https://dotenvx.com/radar
server is running on port 5000
MongoDB connected
```

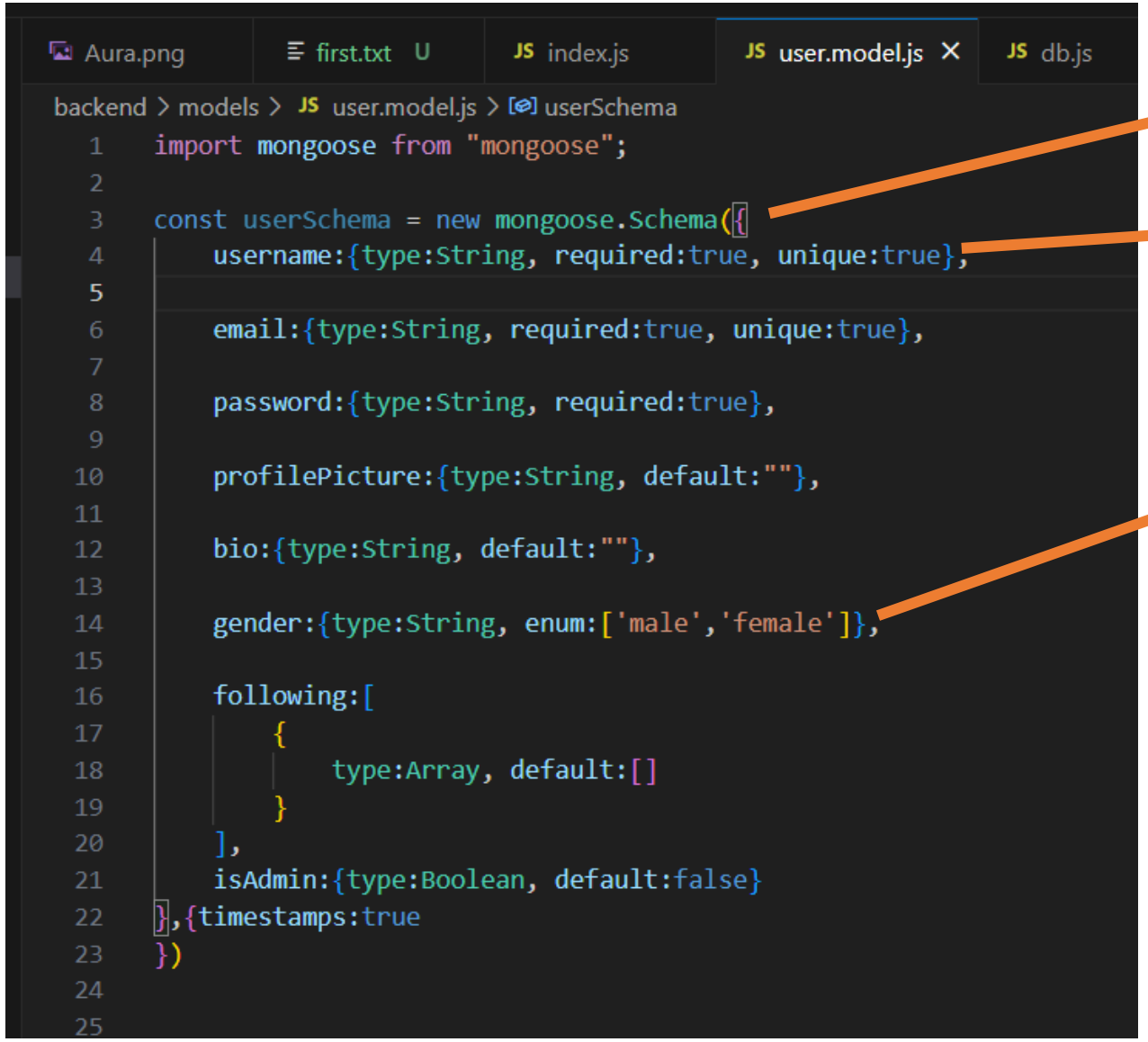
Ln 57, Col 1

Now we will create models and schema for db



Creating Models Folder to create User.model.js Schemas

Creating the userSchema



Creating the user Schema
With new mongoose.Schema

This is the username

Here we have used enum
Basically gender me 2 values
Rakhege..and user choose from it

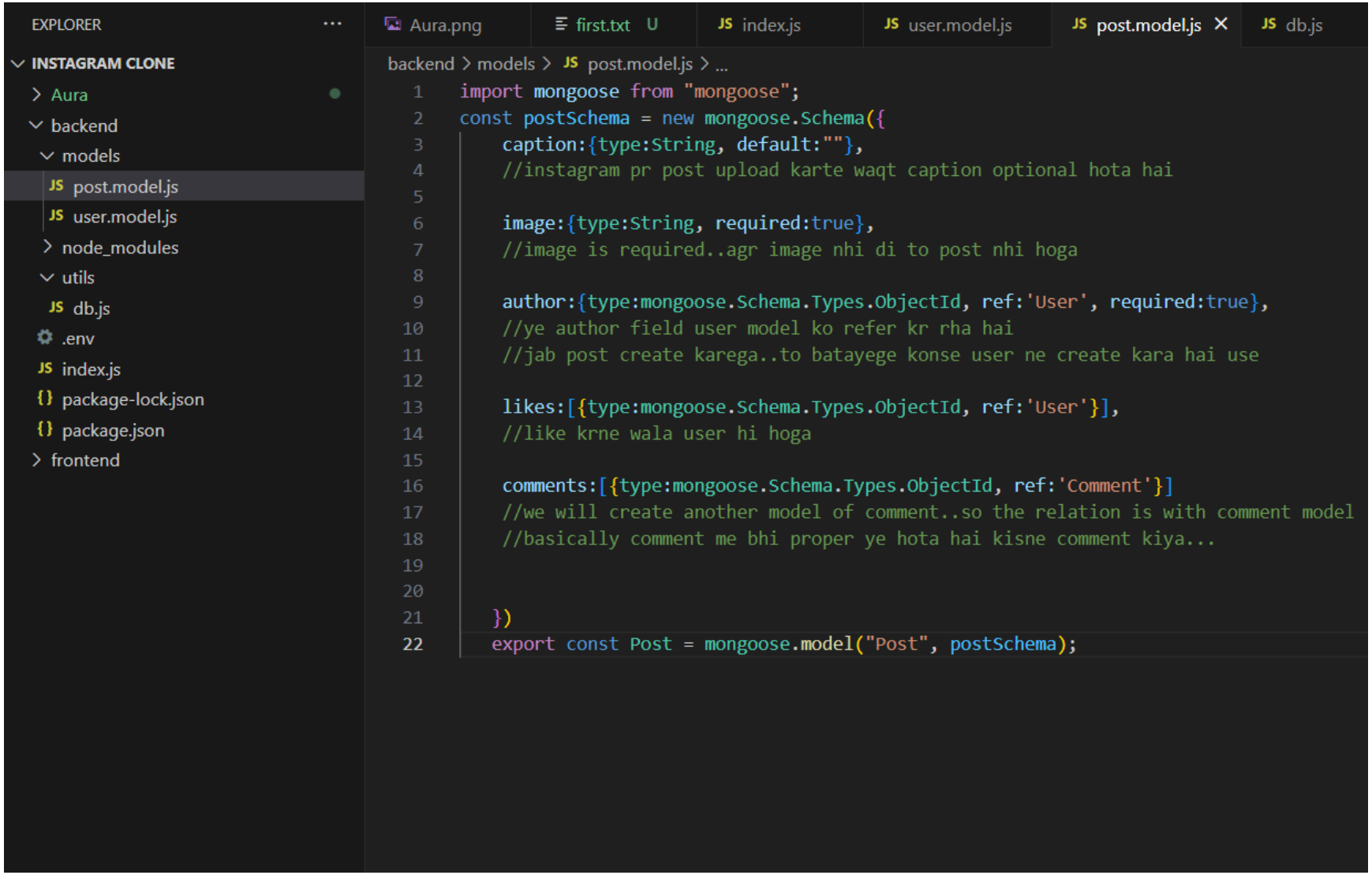
```
11
12      bio:{type:String, default:""},
13
14      gender:{type:String, enum:['male','female']},
15
16     followers:{type:mongoose.Schema.Types.ObjectId, ref:'User'},
17   //ye jo followers hai..wo user model ko hi refer kr rhe hai
18
19   //this mongoose.Schema.Types.ObjectId is used to create a referenc
20   // another document in a different collection
21
22   //this User is the name of the model we are referencing
23
24     following:{type:mongoose.Schema.Types.ObjectId, ref:'User'},
25
26     posts:[{type:mongoose.Schema.Types.ObjectId, ref:'Post'}],
27     //we will create a schema of post..so the relation is with post
28
29     bookmarks:[{type:mongoose.Schema.Types.ObjectId, ref:'Post'}],
30
31
32
33   },{timestamps:true});
34   //timestamps:true -- this will automatically create the createdAt
35
36   export const User = mongoose.model("User", userSchema);
37
38
```

This mongoose.Schema.Types.ObjectId
This is used to create the relation with Another document…
Basically uski id k through create karega

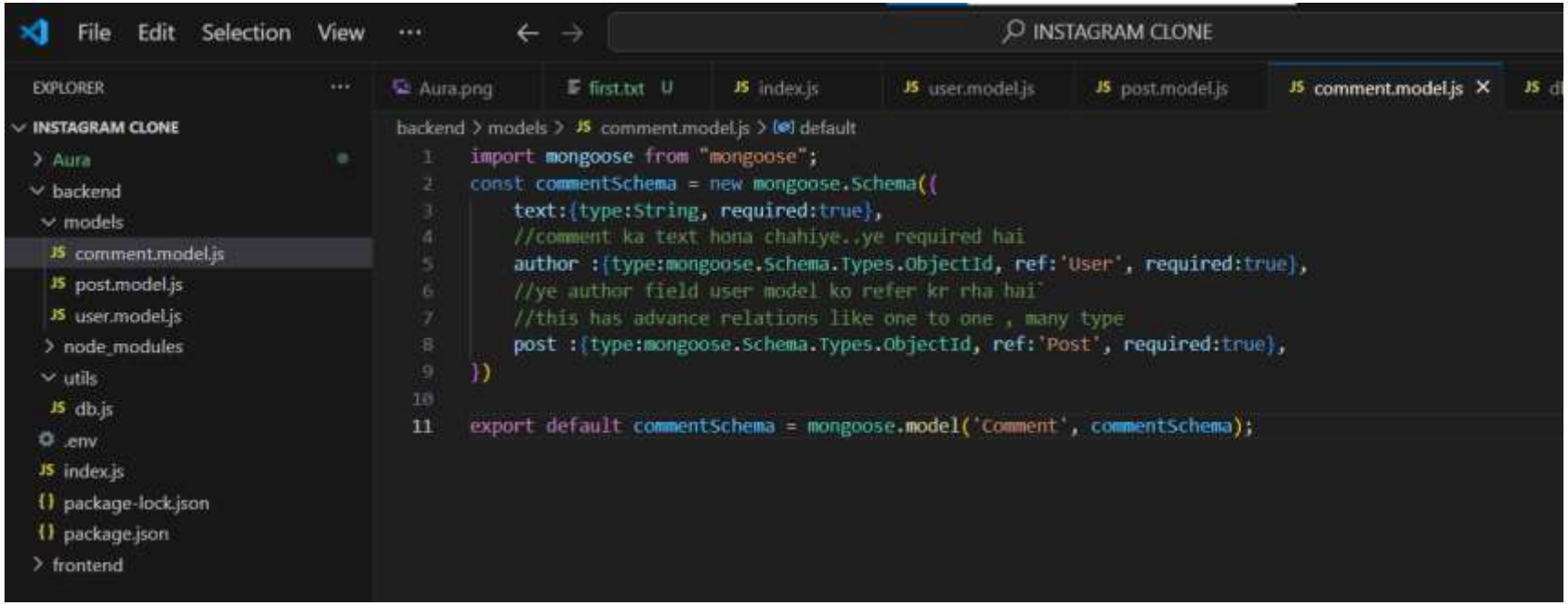
This timestamps:true ye basically mongodb me createdAt and updatedAt filed create karega
Jissme hame pata lag jayega kab user aaya tha

This will create user model and export it and We can perform crud opertaions on that user model

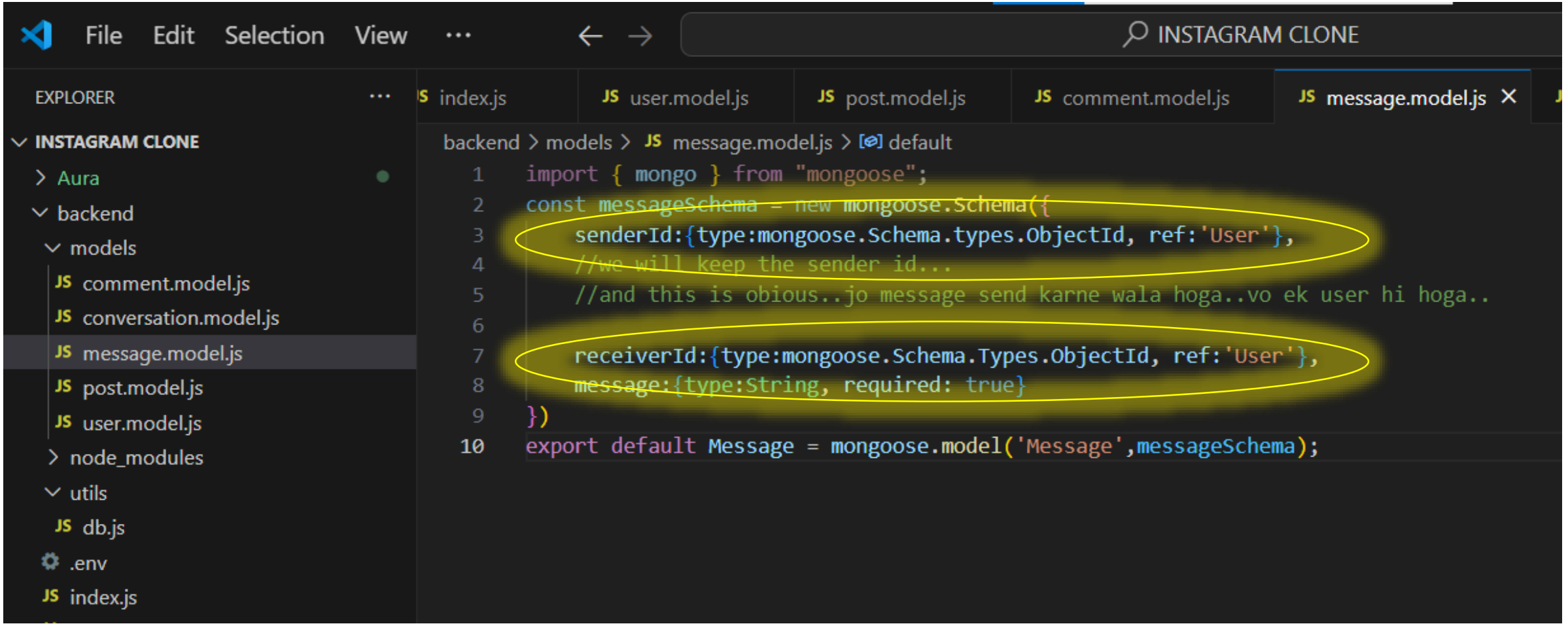
Creating post.model.js Schema



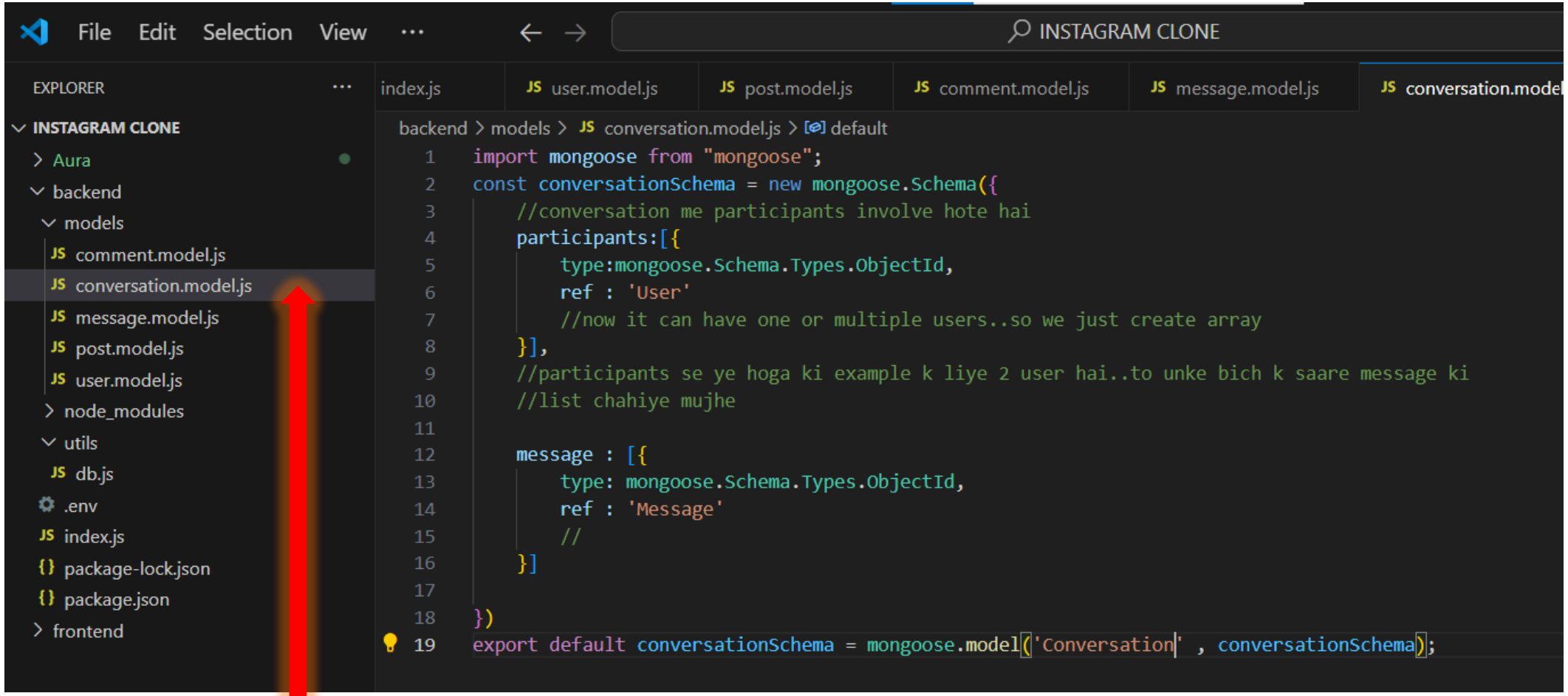
Creating comment Schema



- Now till now we have developed basic social media model
- Now we are developing chat model
- Which has two schemas
- Kisne message kiya aur kya kya baate chal rahi hai



Now we have created Message model which has sender id , receiver id and message



Now this we have created conversation model

Now till now the database work is done

- //now we are creating controllers folder

- First we are creating the register function in which the user register

```
import { User, User } from "../models/user.model";

export const regiser = async (req , res)=>{
    try{
        //register karne ke liye username , email and password
        const {username, email, password} = req.body;
        //req.body.. jb bhi ham form sumbit krte hai..
        //to us data ko ham req.body se retrieve kar sakte hai


        //this below if statement to check that the user has properly entered details or not
        if(!username || !email || !password){
            //this means error
            return res.status(401).json({
                message:"Something is missing",
                success:false,
            })
        }
```

Req.body – when we do form submission
Then the data is in req …
We can also destructure it with
Req.body.username

This is the default thing..
basically
We are checking whether we have
Received the username , password
And email properly or not

```
//now we will check if the user has already registered or not
const user = await User.findOne({email});
//this findOne method will check that the user exist in database or not

if(user){
    return res.status(401).json({
        message:"The email already exist... Try with Different Email",
        success: false, //kaam abhi bhi pura nahi hua
    })
}
```

findOne
This will check if email exist in the
Mongodb or not

Bcrypt --- Hashing Password

```
import bcrypt from "bcryptjs";
```

Npm I bcrypt

```
const hashedPassword = await bcrypt.hash(password,10);
const User = await User.create({
    username,
    password : hashedPassword, //now we need to hash password using bcrypt

    email,
    //here we need to enter those filed which are necessary (required : true)
});
```

bcrypt.hash(password, 10) takes the plain password and a "salt rounds" value (10 here).

Salt rounds" means how many times bcrypt will process the password to make the hash stronger. More rounds = more secure, but slower.

Bcrypt – compare method

```
const isPasswordMatch = await bcrypt.compare(password,user.password);
//this method will compare the password enter by the user in the database
```

This method will simply check the password which the user has entered Equals to the available password in the database or not

Token

- After checking that the user is authenticated or not
- // now we generate tokens
- Token is stored in cookie…until the user is logged in the site
- The token is stored in cookie…
- Basically cookie me token agar store hai..to user logged in hai

- Token has a time limit – after that ..we will again log in the user

Token

This will create a signed token

```
const token = await jwt.sign({userId: user._id}, process.env.SECRET_KEY,{expiresIn:'1d'});
```

Payload : it stores the user Unique id in token

process.env.SECRET_KEY is the secret key used to sign (encrypt) the token.
Only your server should know this key.

process.env.SECRET_KEY is the secret key used to sign (encrypt) the token.
Only your server should know this key.

```
return res.cookie("token", token,{
    httpOnly:true,
    samesite:'strict',
    maxAge: 24 * 60 * 60 * 1000, //
    //this maxage is in milliseconds
    //24 hours * 60 minutes * 60 sec
    //this will not allow the client
    //this is for security purpose

}).json({
    message:`Login Successful ${user
    success:true,
    user
});
```

res.cookie("token", token, {...}) sets a cookie named "token" with the JWT value.

httpOnly: true means JavaScript running in the browser cannot access this cookie (for security).

samesite: 'strict' helps prevent CSRF attacks by only sending the cookie for same-site requests.

```
user = {
    _id: user._id,
    username: user.username,
    email: user.email,
    profilePicture: user.profilePicture,
    bio: user.bio,
    followers: user.followers,
    following: user.following,
    posts: user.posts,
}
```

Logout

simply set empty token ,
maxage = 0

```
export const logout = (req,res)=>{
    try{

        //logout is simply..we just simply delete the token from the cookie..
        //just replace it with empty string
        return res.cookie("token","",{maxAge:0}).json({
            message:"Logged out successfully",
            success:true,
        })
    }catch(error){
        console.log(error);
    }
}
```

getProfile function

```
//instagram pr get profile wala bhi page hota hai
export const getProfile = async(req,res)=>{
    try{
        const userId = req.params.userId;
        const user = await User.findById(userId);
        if(!user){
            return res.status(404).json({
                message:"User not found",
                success:false,
            })
        }
        return res.status(200).json({
            message:"User profile fetched successfully",
            success:true,
            user
        })
    }
    catch(error){
        console.log(error);
    }
}
```

Middleware to check authentication

```
const isAuthenticated = async (req , res , next) =>{
    try{
        const token = req.cookie.token; //req.coookie ke andar token hota hai

        //first we check if the user is authenticated or not...
        if(!token)return res.status(401).json({
            message:"User not authenticated",
            success: false,
        });

        //now we have finded the user
        //we will verify again with the secret key in our environemnt variables

        const decode  = await jwt.verify(token,process.env.SECRET_KEY);
        //now from here it will verify

        if(!decode){
            return res.status(401).json({
                message:"User not authenticated",
                success: false;
            })
        }

        //now till now the token is decoded..verified

        req.id = decode.userId;

        next();

    }
    catch(error){
        console.log(error);
    }
}
```

it tries to get token from the cookie send by the client
Cookie k andar token hoga

It verifies the token using your secret key. If the token is valid, it decodes the payload (which contains user info).

If the token is valid, it adds the user's ID from the token to the request object, so you can use it in the next middleware or route handler.

It will push to next middleware

Cloudinary

backend > utils > JS cloudinary.js > ...

```
1   import {v1 as cloudinary} from 'cloudinary';
2   import dotenv from 'dotenv';
3   dotenv.config();

    // Configure Cloudinary with your credentials
4   cloudinary.config({
5     cloud_name: process.env.CLOUDINARY_CLOUD_NAME,
6     api_key: process.env.CLOUDINARY_API_KEY,
7     api_secret: process.env.CLOUDINARY_API_SECRET
8   });
9
10  export default cloudinary;
11
```

import {v1 as cloudinary} from 'cloudinary';
Imports the v1 API from the
cloudinary package and
renames it to cloudinary for use in your code.

this will config the cloudinary with the credentials from the .env file

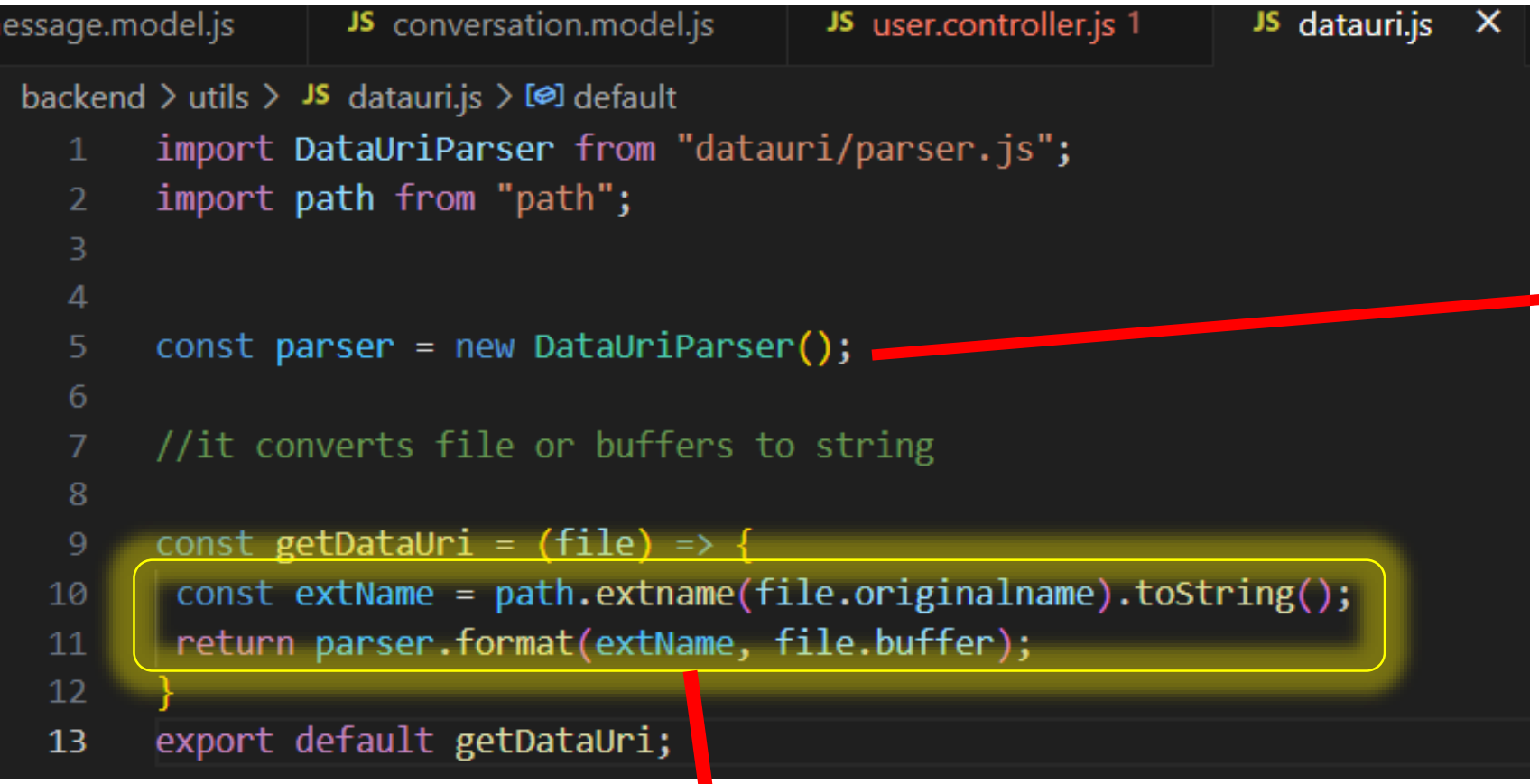
datauri

```
import DataUriParser from "datauri/parser.js";
```

npm I datauri parser

A Data URI is a way to embed file data (like images or documents) directly in a string, usually for use in HTML, CSS, or when uploading files to cloud services.

For example, it can turn an image file into a string like:
...



Create instance

The datauri parser (often used via the datauri or datauri/parser npm package) is a utility that converts files or buffers into Data URI format. A Data URI is a way to embed file data (like images or documents) directly in a string, usually for use in HTML, CSS, or when uploading files to cloud services.

For example, it can turn an image file into a string like:

...

EditProfile – Cloudinary and dataUri

```
export const editProfile = async(req,res)=>{
    try{
        const userId = req.id;
        //now here we will set up the cloudinary
        const {bio,gender}= req.body;
        const profilePicture = req.file;
         let cloudResponse;

        if(profilePicture){
        const dataUri = getDataUri(profilePicture);
        cloudResponse = await cloudinary.uploader.upload(dataUri);
        }

        const user = await User.findById(userId);
        if(!user){
            return res.status(404).json({
                message:"User not found",
                success:false,
            })
        }
        if(bio)user.bio = bio;
        if(gender)user.gender = gender;
        if(cloudResponse){
            user.profilePicture = cloudResponse.secure_url;
        }
        await user.save();
        return res.status(200).json({
            message:"Profile updated successfully",
            success:true,
            user
        })
    }
```

DataUri se profile picture ko string me Convert kiya

This is the way of uploading in cloudinary

cloudResponse.secure_url contains the direct, secure (https) link to the image you just uploaded to Cloudinary.
user.profilePicture = cloudResponse.secure_url saves this URL in the user's profile in your database

If the User update any field..
So It will update that in database

getSuggestedUser

```
//now instagram also has the feature of suggesting people..so let us build that
export const getSuggestedUsers = async(req,res)=>{
    try{
        const SuggestedUsers = await User.find({_id:{$ne:req.id}}).select("-password").limit(10);

        if(!SuggestedUsers){
            return res.status(404).json({
                message:"No user found",
                success:false,
            })
        };
        return res.status(200).json({
            message:"Suggested users fetched successfully",
            success:true,
            user: SuggestedUsers,
        })
    }
    catch(error){
        console.log(error);
    }
}
```

This will make sure that only 10 suggested user is shown

This will simply remove the password field (for safety)

It will find the id of the user from database which is not equals to admin id

Follow or unfollow function

```
export const followOrUnfollowUser = async(req,res)=>{
    try{
        const followkarnewala = req.id; //logged in user //ye authenticated user
        const jiskofollowkruga = req.params.id; //the user to be followed or unfo

        if(followkarnewala === jiskofollowkruga){
            return res.status(400).json({
                message:"You cannot follow/unfollow yourself(Self obssessed)",
                success:false,
            })
        }

        const user = await User.findById(followkarnewala); //this is me .//the us
        const targetUser = await User.findById(jiskofollowkruga); //this is the u

        //now we will need to check for error
        if(!user){
            return res.status(404).json({
                message:"User not found",
                success:false,
            })
        }

        if(!user || !targetUser){
            return res.status(404).json({
                message:"User not found",
                success:false,
            })
        }
```

This is authenticated user id ..
For example my(admin) id

This is the id of the person whom I Will follow , and will be received in params

Now I will find the id in Mongodb database

Again doing the same

```
        const isFollowing = user.following.includes(jiskofollowkruga);
        //like if i follow someone..then it will add in my following array
        //agar follow kar rakha hai..to true return kardega
        //if follow kar rakha hai..to unfollow kardega

        if(isFollowing){
            //unfollow
          await Promise.all([
                User.updateOne({_id: followkarnewala}, {$pull: {following: jiskofollowkruga}}),
//user k andar jo uska following array hai..usme jisko follow karna hai..uska id push kardega

                User.updateOne({_id: jiskofollowkruga}, {$pull: {followers: followkarnewala}})
                //now jisko mene follow kara hai..uske followers array ko bhi update karna hai
            ]);

            return res.status(200).json({
                message:"Unfollowed successfully",
                success:true,
            })
        }
        else{
            await Promise.all([
                User.updateOne({_id: followkarnewala}, {$push: {following: jiskofollowkruga}}),
//user k andar jo uska following array hai..usme jisko follow karna hai..uska id push kardega

                User.updateOne({_id: jiskofollowkruga}, {$push: {followers: followkarnewala}})
                //now jisko mene follow kara hai..uske followers array ko bhi update karna hai
            ]);

            return res.status(200).json({
                message: "Followed successfully",
                success: true,
            })
        }

    }
```

it runs multiple database updates in parallel using Promise.all:

Add

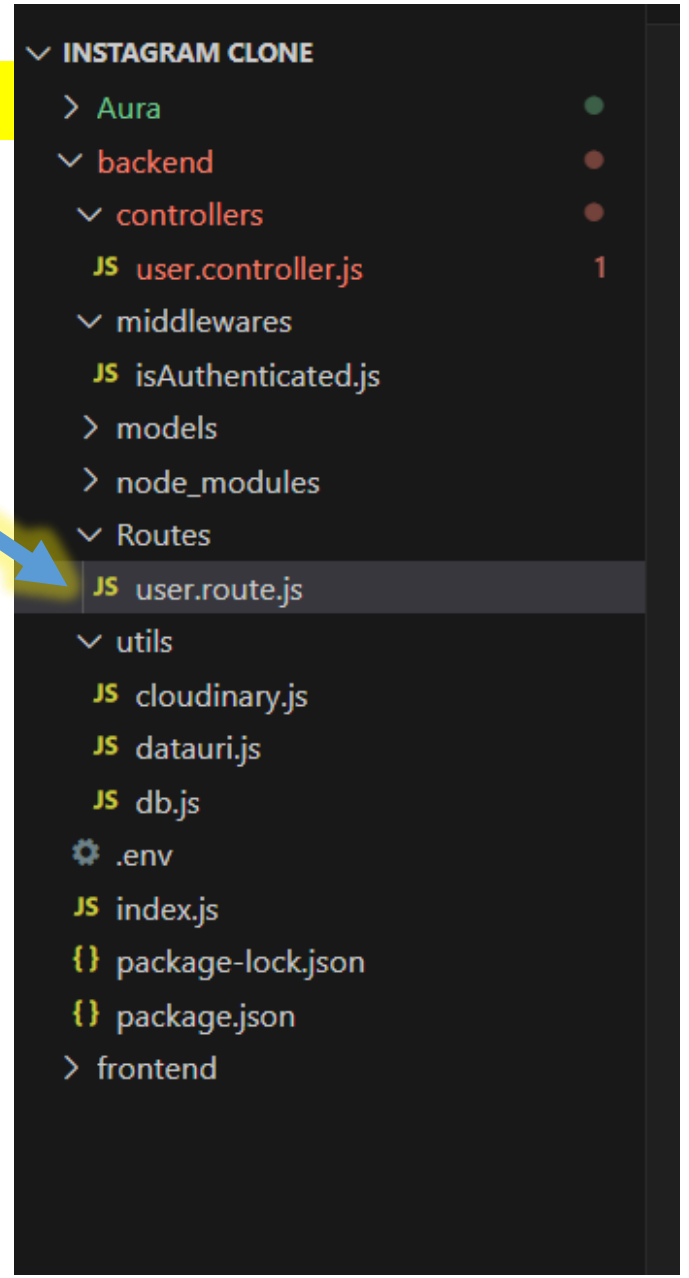
Removes the logged-in user's ID from the target user's followers array.

Routes

Now after making the folder structure..we are making a new folder for defining the routes

```
import express from "express";
import {register, login, getUser, updateUser, followAndUnfollow, getProfile, editProfile, getSuggestedUsers} from "../controllers/user.contro
import isAuthenticated from "../middlewares/isAuthenticated.js";
const upload = require("../middlewares/multer.js");

const router = express.Router();

router.route("/register").post(register);

router.route("/login").post(login);

router.route("/logout").get(logout);

router.route("/:id/profile").get(isAuthenticated,getProfile);

router.route("/profile/edit").post(isAuthenticated,upload.single("profilePicture"),editProfile);

router.route("/suggested").get(isAuthenticated,getSuggestedUsers);

router.route("/followorunfollow/:id").post(isAuthenticated,followAndUnfollow);

export default router;
```

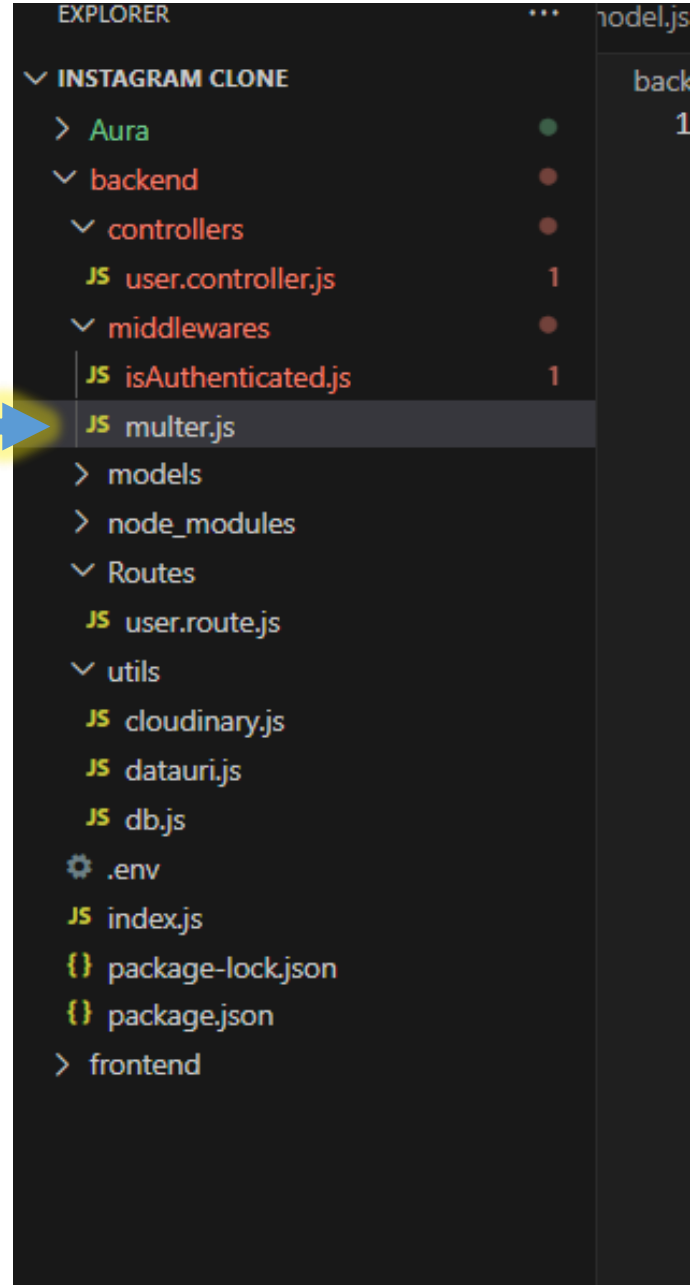
multer



Multer

npm I multer

```
PS C:\Users\Dell\Desktop\INSTAGRAM CLONE> cd backend
PS C:\Users\Dell\Desktop\INSTAGRAM CLONE\backend> npm i multer

added 17 packages, and audited 155 packages in 3s

23 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
PS C:\Users\Dell\Desktop\INSTAGRAM CLONE\backend>
```



Multer

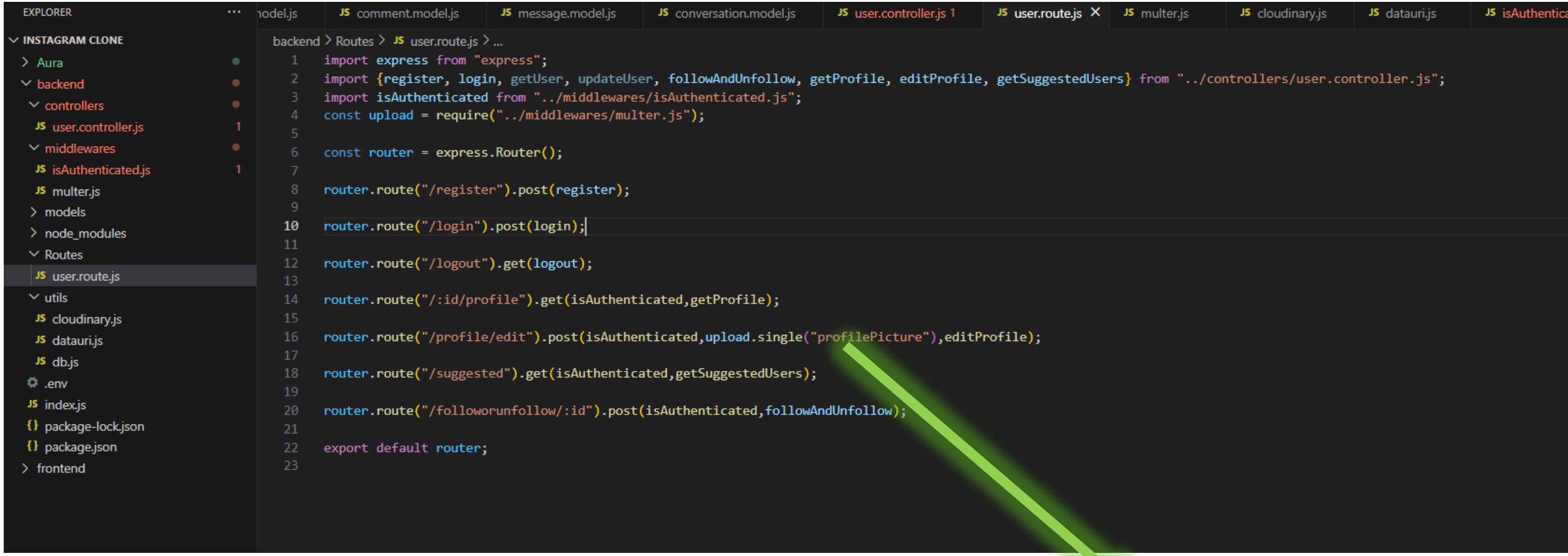
backend > middlewares > JS multer.js > default

```
1  import multer from "multer";
2  const upload = multer({
3      storage: multer.memoryStorage(),
4  })
5  export default upload;
```

storage: multer.memoryStorage() tells multer to store uploaded files in memory as Buffer objects (not on disk).

Exports the configured upload middleware so you can use it in your routes to handle file uploads.

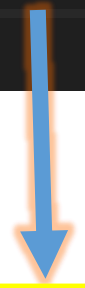
Here we have created the routers



Creating First API

```
import userRoute from "./Routes/user.route.js";
```

```
app.use("/api/v1/user",userRoute);
```

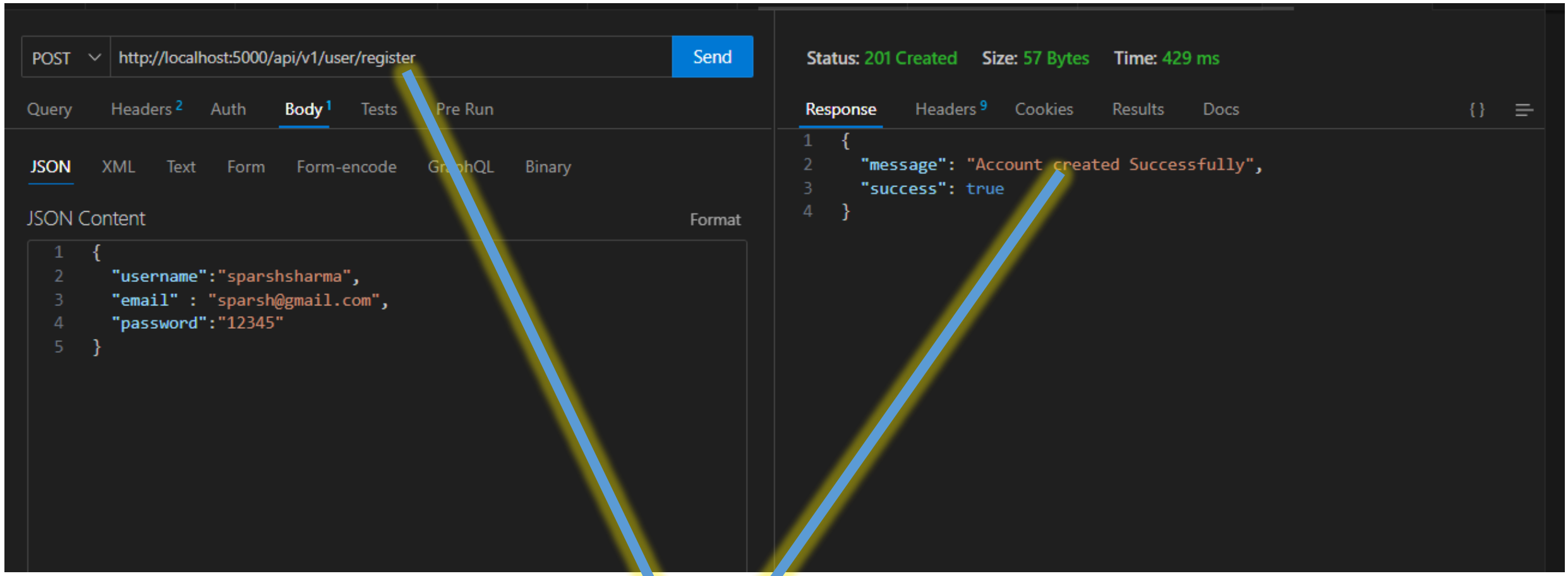


means that all routes defined in userRoute will be accessible under the path /api/v1/user

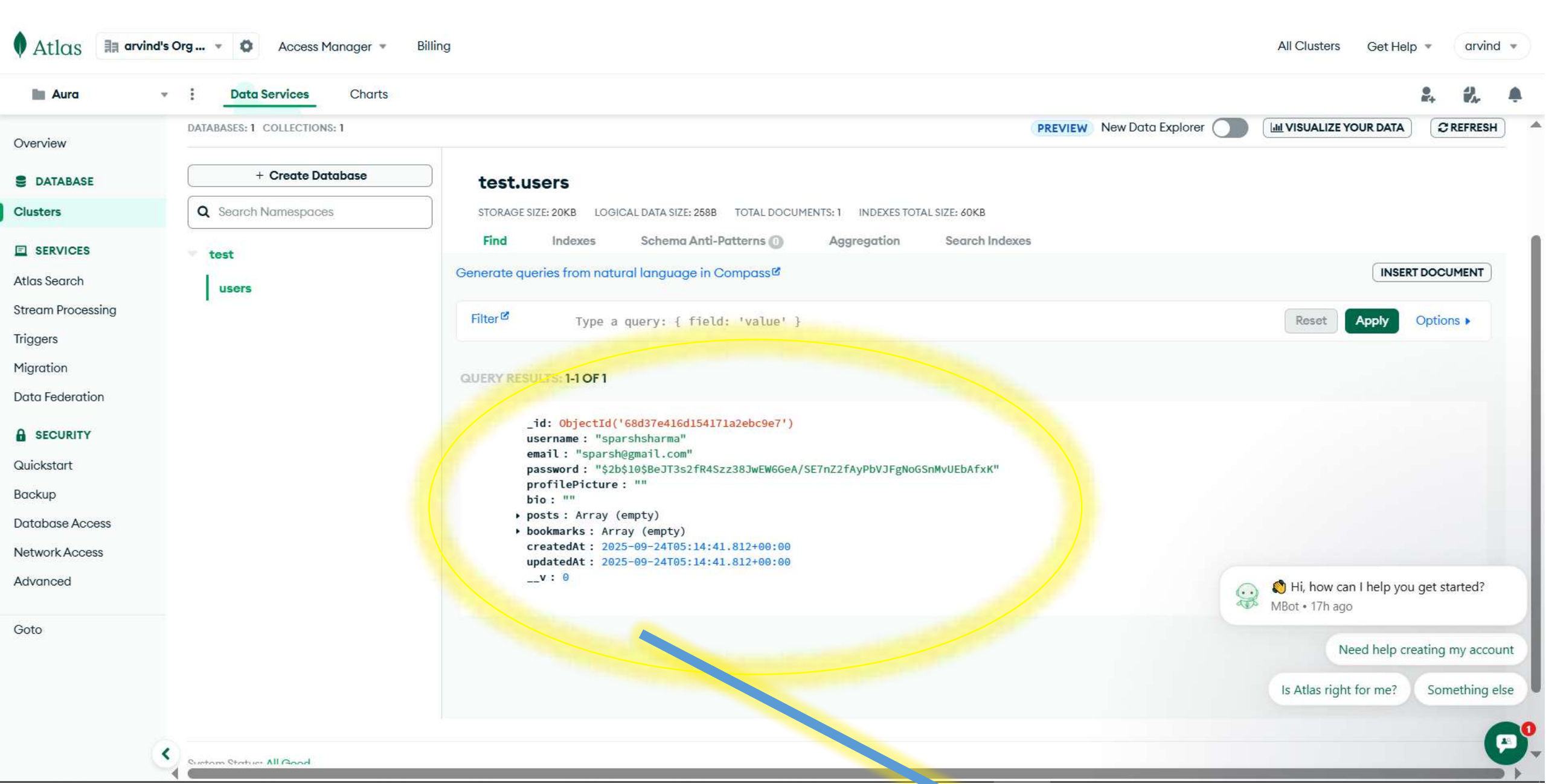
if userRoute has a route for /login, it will be available at /api/v1/user/login.

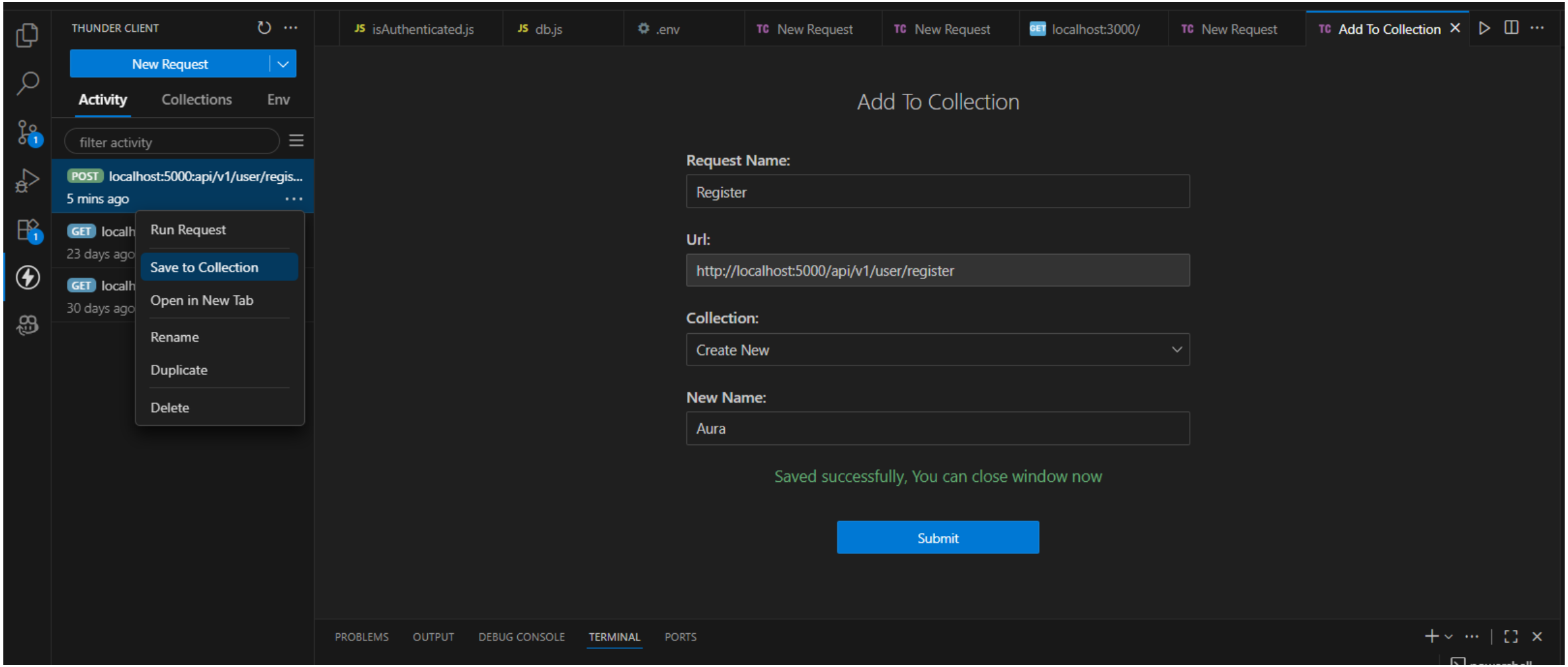
http://localhost:8000/api/v1/user/regiser

ThunderClient– Testing the api

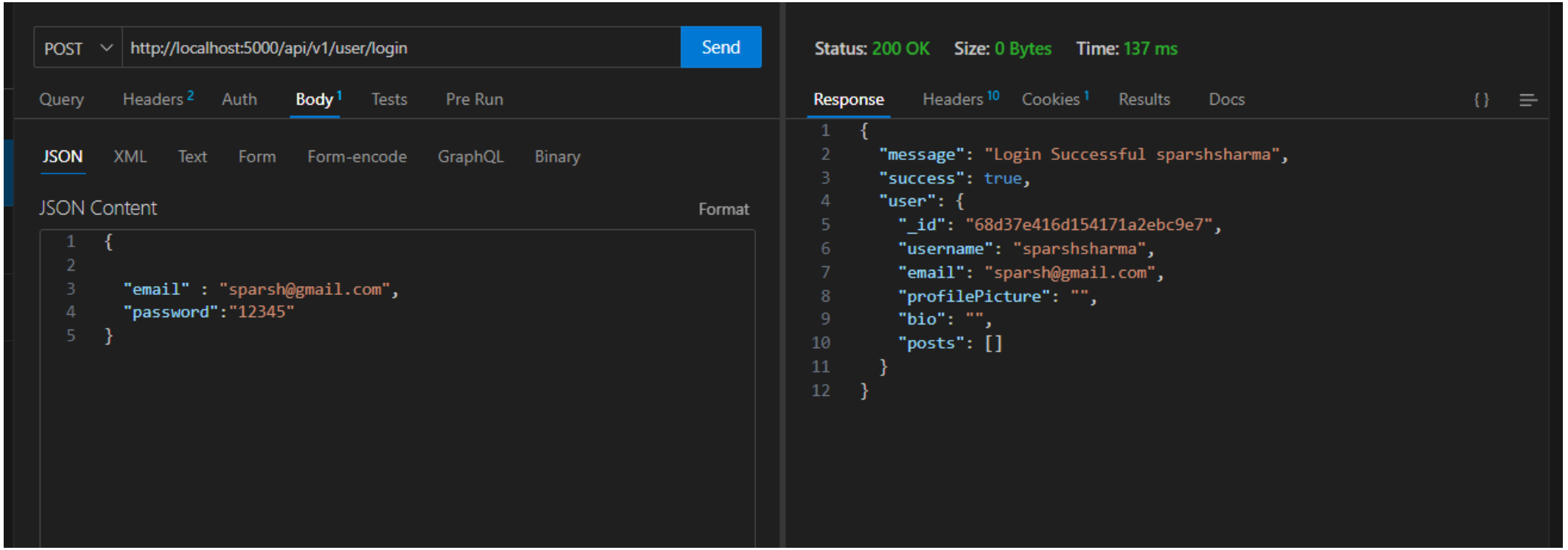


Register api working

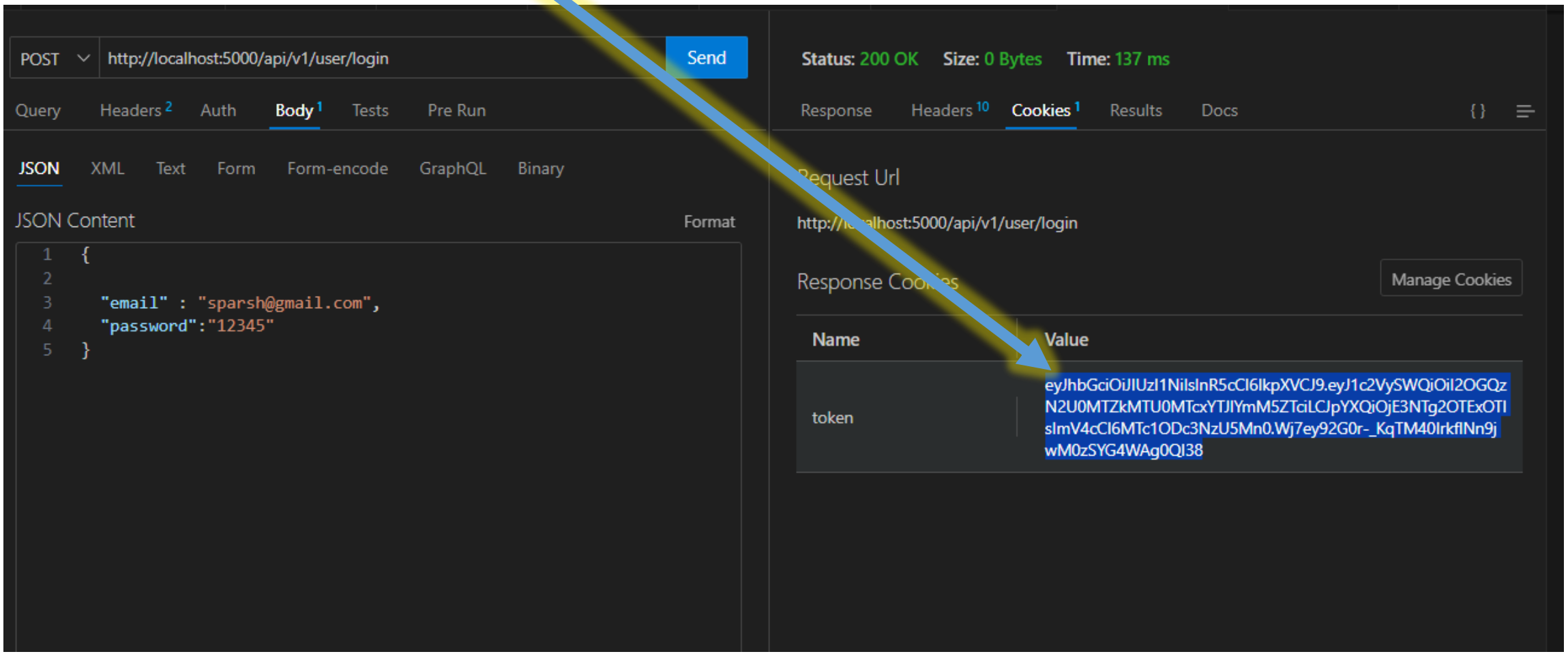

Atlas
arvind's Org ...
Access Manager
Billing
All Clusters
Get Help
arvind
Aura
Data Services
Charts
DATABASES: 1 COLLECTIONS: 1
PREVIEW
New Data Explorer
VISUALIZE YOUR DATA
REFRESH
Overview
DATABASE
Clusters
SERVICES
Atlas Search
Stream Processing
Triggers
Migration
Data Federation
SECURITY
Quickstart
Backup
Database Access
Network Access
Advanced
Goto
+ Create Database
Search Namespaces
test
users
test.users
STORAGE SIZE: 20KB
LOGICAL DATA SIZE: 258B
TOTAL DOCUMENTS: 1
INDEXES TOTAL SIZE: 60KB
Find
Indexes
Schema Anti-Patterns
Aggregation
Search Indexes
Generate queries from natural language in Compass
INSERT DOCUMENT
Filter
Type a query: { field: 'value' }
Reset
Apply
Options
QUERY RESULTS: 1-1 OF 1
_id: ObjectId('68d37e416d154171a2ebc9e7')
username : "sparshsharma"
email : "sparsh@gmail.com"
password : "$2b$10$BeJT3s2fR4Szz38JwEW6GeA/SE7nZ2fAyPbVJFgNoGSnMvUEbAfxK"
profilePicture : ""
bio : ""
posts : Array (empty)
bookmarks : Array (empty)
createdAt : 2025-09-24T05:14:41.812+00:00
updatedAt : 2025-09-24T05:14:41.812+00:00
__v : 0
Hi, how can I help you get started?
MBot • 17h ago
Need help creating my account
Is Atlas right for me?
Something else
Data updating


THUNDER CLIENT
New Request
Activity
Collections
Env
filter activity
POST localhost:5000:api/v1/user/regis...
5 mins ago
GET localh
23 days ago
GET localh
30 days ago
Run Request
Save to Collection
Open in New Tab
Rename
Duplicate
Delete
isAuthenticated.js
db.js
.env
New Request
New Request
localhost:3000/
New Request
Add To Collection
Add To Collection
Request Name:
Register
Url:
http://localhost:5000/api/v1/user/register
Collection:
Create New
New Name:
Aura
Saved successfully, You can close window now
Submit
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS

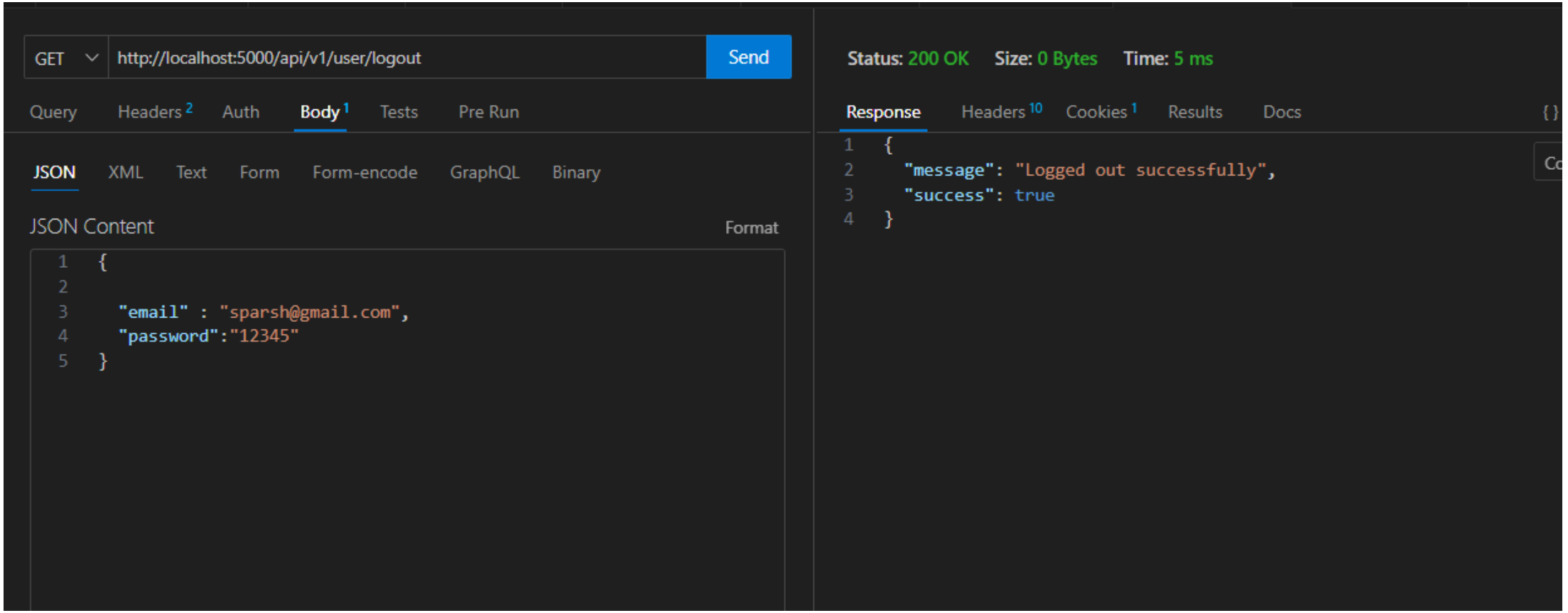
Login api testing



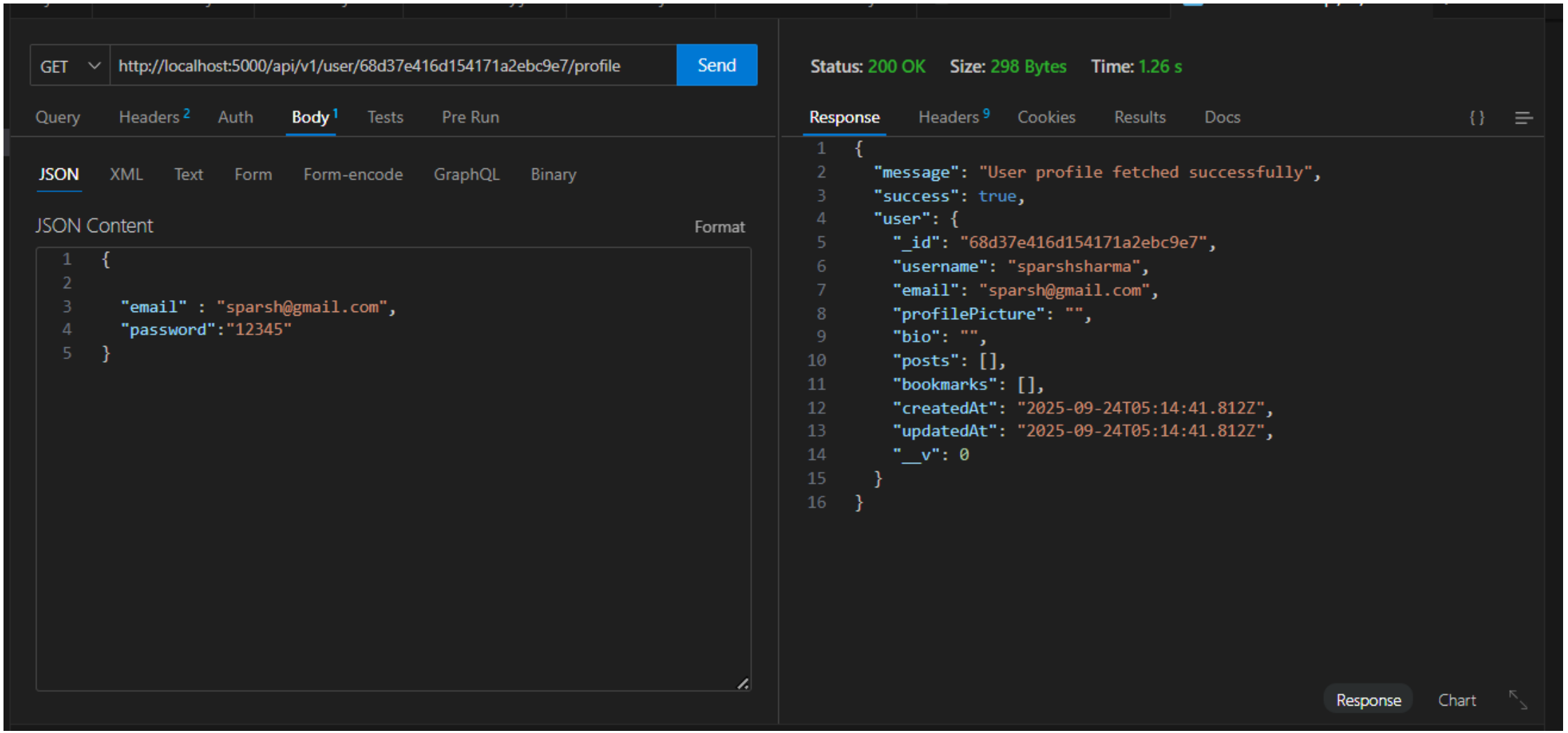
token


POST
http://localhost:5000/api/v1/user/login
Send
Query
Headers 2
Auth
Body 1
Tests
Pre Run
JSON
XML
Text
Form
Form-encode
GraphQL
Binary
JSON Content
Format
{
"email" : "sparsh@gmail.com",
"password":"12345"
}
Status: 200 OK
Size: 0 Bytes
Time: 137 ms
Response
Headers 10
Cookies 1
Results
Docs
Request Url
http://localhost:5000/api/v1/user/login
Response Cookies
Manage Cookies
Name
Value
token
eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VySWQiOiI2OGQzN2U0MTZkMTU0MTcxYTJlYmM5ZTciLCJpYXQiOjE3NTg2OTExOTIsImV4cCI6MTc1ODc3NzU5Mn0.Wj7ey92G0r-_KqTM40IrkfINn9jwM0zSYG4WAg0QI38

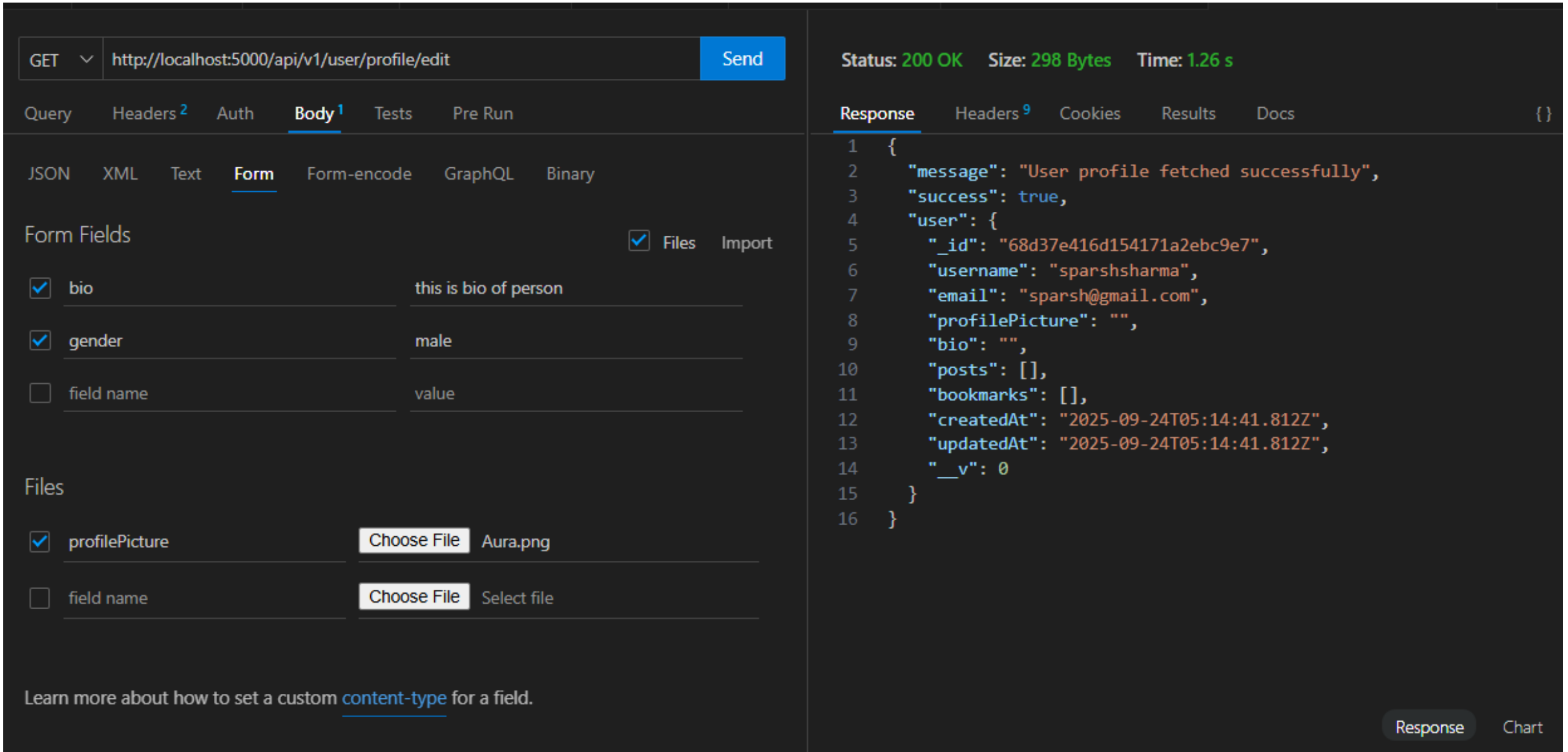
Logout api testing

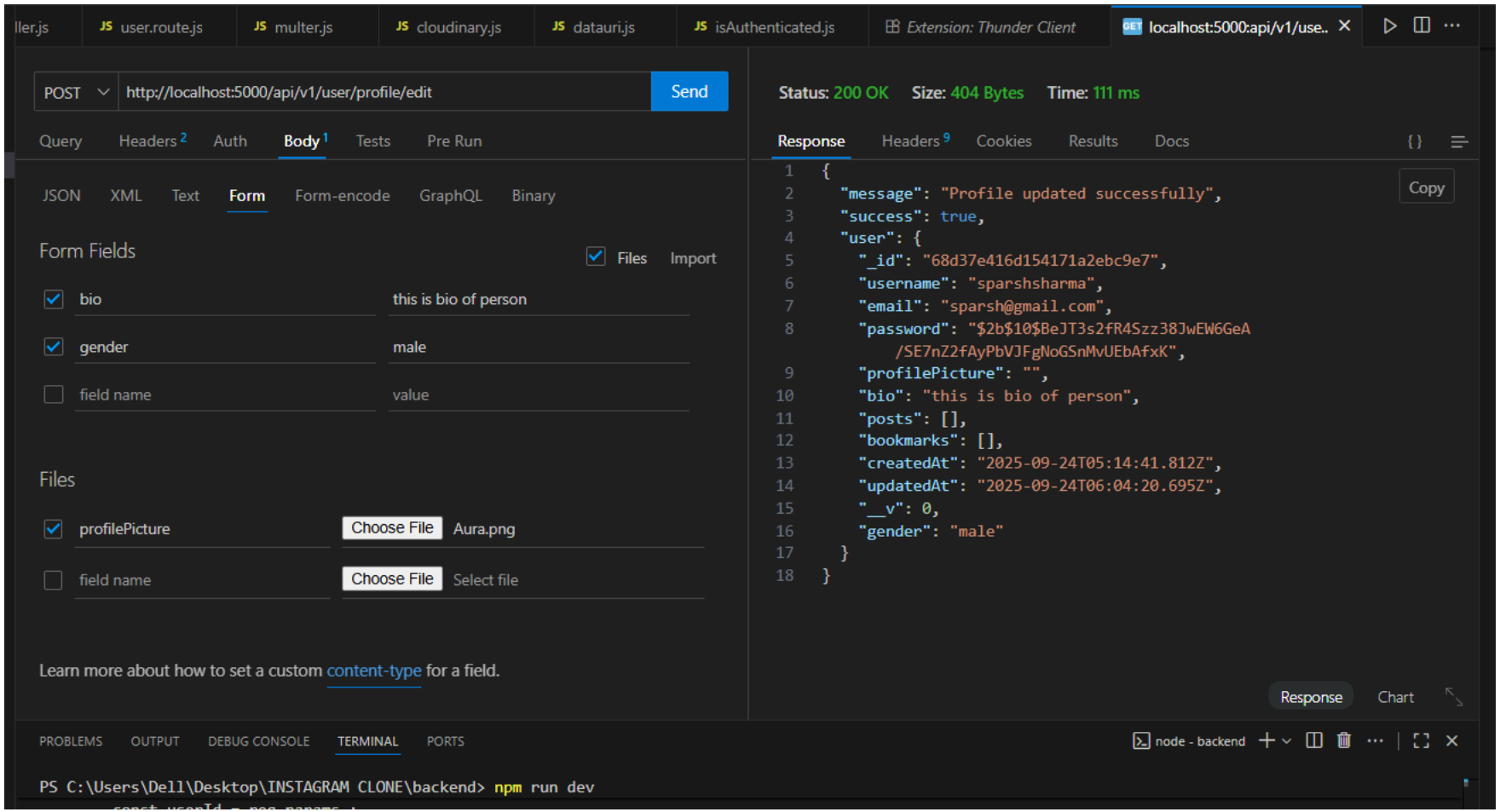


Getting the user details using id

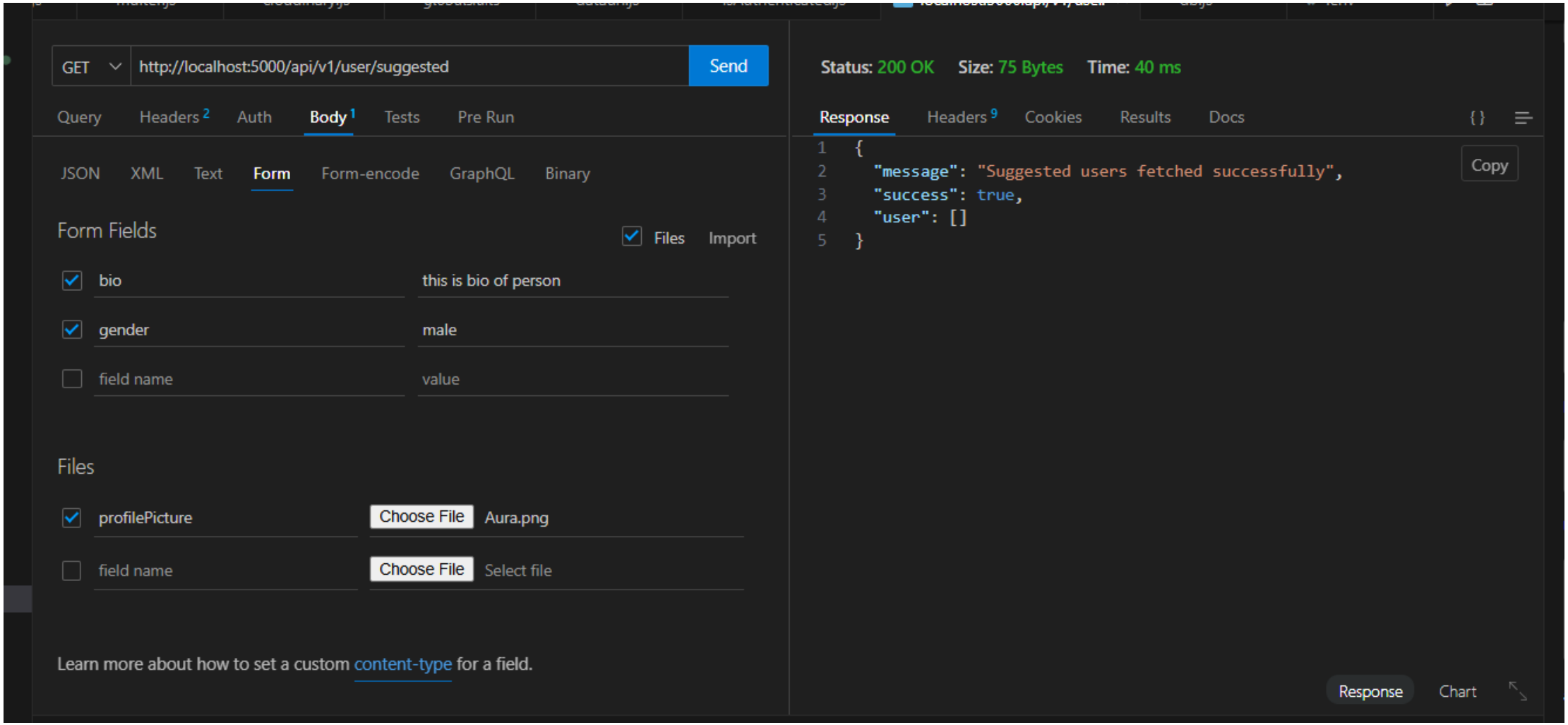


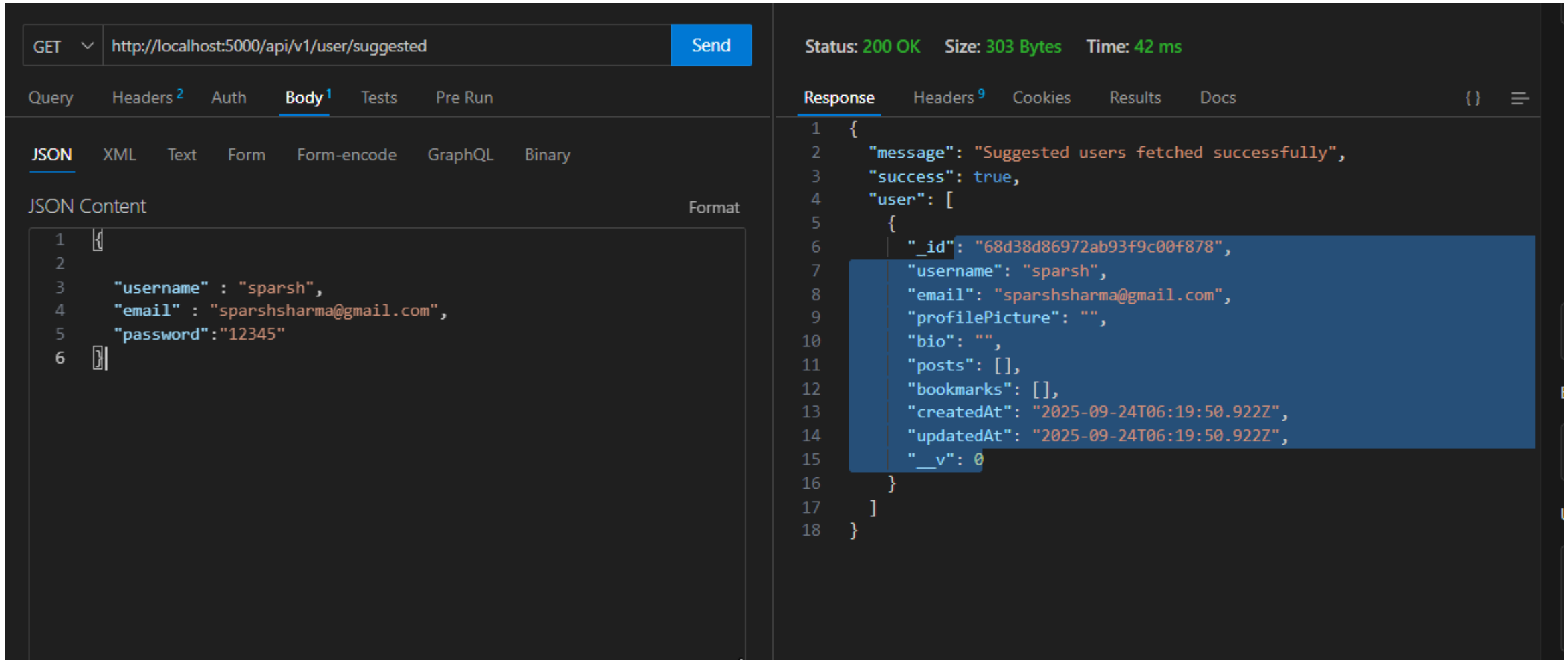
Edit profile api testing with sending data



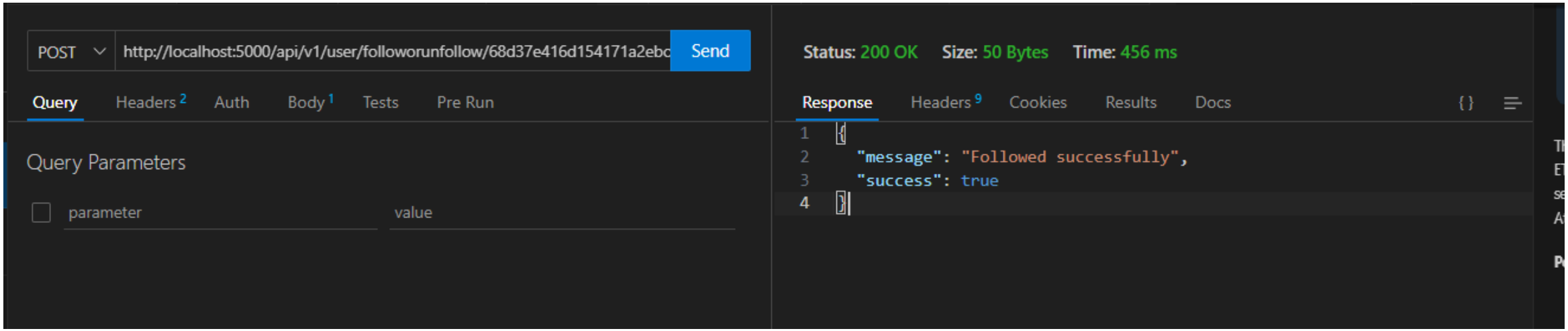

ller.js
user.route.js
multer.js
cloudinary.js
datauri.js
isAuthenticated.js
Extension: Thunder Client
localhost:5000:api/v1/use..
POST
http://localhost:5000/api/v1/user/profile/edit
Send
Query
Headers 2
Auth
Body 1
Tests
Pre Run
JSON
XML
Text
Form
Form-encode
GraphQL
Binary
Form Fields
Files
Import
bio
this is bio of person
gender
male
field name
value
Files
profilePicture
Choose File
Aura.png
field name
Choose File
Select file
Learn more about how to set a custom content-type for a field.
Status: 200 OK
Size: 404 Bytes
Time: 111 ms
Response
Headers 9
Cookies
Results
Docs
Copy
{
"message": "Profile updated successfully",
"success": true,
"user": {
"_id": "68d37e416d154171a2ebc9e7",
"username": "sparshsharma",
"email": "sparsh@gmail.com",
"password": "$2b$10$BeJT3s2fR4Szz38JwEW6GeA
/SE7nZ2fAyPbVJFgNoGSnMvUEbAfxK",
"profilePicture": "",
"bio": "this is bio of person",
"posts": [],
"bookmarks": [],
"createdAt": "2025-09-24T05:14:41.812Z",
"updatedAt": "2025-09-24T06:04:20.695Z",
"__v": 0,
"gender": "male"
}
}
Response
Chart
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
node - backend
PS C:\Users\Dell\Desktop\INSTAGRAM CLONE\backend> npm run dev

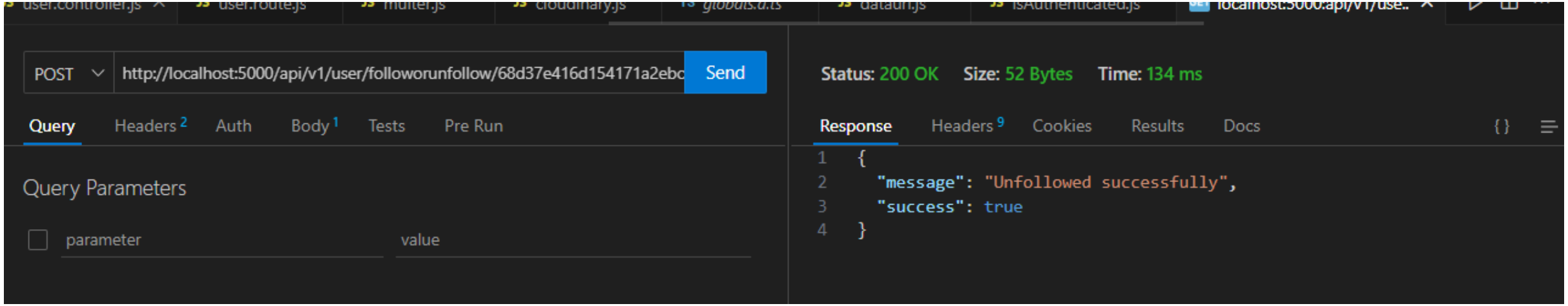
Suggested api testing




GET
http://localhost:5000/api/v1/user/suggested
Send
Query
Headers 2
Auth
Body 1
Tests
Pre Run
JSON
XML
Text
Form
Form-encode
GraphQL
Binary
JSON Content
Format
{
"username" : "sparsh",
"email" : "sparshsharma@gmail.com",
"password":"12345"
}
Status: 200 OK
Size: 303 Bytes
Time: 42 ms
Response
Headers 9
Cookies
Results
Docs
{ }
{
"message": "Suggested users fetched successfully",
"success": true,
"user": [
{
"_id": "68d38d86972ab93f9c00f878",
"username": "sparsh",
"email": "sparshsharma@gmail.com",
"profilePicture": "",
"bio": "",
"posts": [],
"bookmarks": [],
"createdAt": "2025-09-24T06:19:50.922Z",
"updatedAt": "2025-09-24T06:19:50.922Z",
"__v": 0
}
]
}

Follow and unfollow api testing





Now till now we have build and tested the api

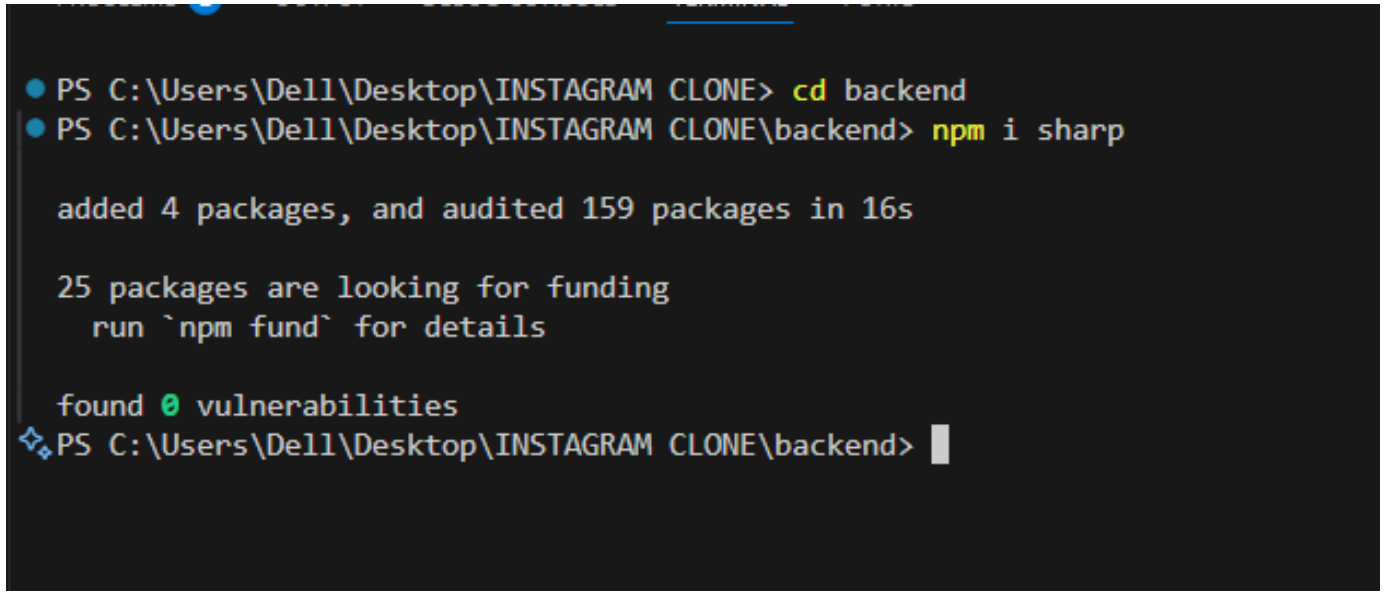
now we are building the image uploader

Sharp

```
import sharp from sharp;
```

Sometimes the images which we upload..its quality is too high
So in order to optimize it ..we will have to use sharp --- a library

npm i sharp



Now we are building post model using sharp, and more

```
edit Aa
```

```
import sharp from sharp;
import Post from '../models/post.model.js';
import { v2 as cloudinary } from 'cloudinary';
import { User } from '../models/user.model.js';

export const addNewPost = async (req, res) => {
    try{
        const {caption} = req.body;
        const image = req.file;

        const authorId = req.id; //jo log in user hoga uski id
        if(!image){
            return res.status(400).json({
                message:"image is required",
                success:false,
            })
        }
        //now image upload
        //we have to you multer

        //sometimes image quality and size is very large --- so we use npm sharp
        //inside sharp..we have to pass the buffer value of the image
        const optimizedImage = await sharp(image.buffer)
        .resize({width:800, height:800,fit:'inside'}).jpeg({quality:80}).toBuffer();

        //now we have to convert this buffer to datauri
        const fileUri = `${optimizedImage.toString('base64')}`;

        const cloudResponse = await cloudinary.uploader.upload(fileUri);
        //ye cloudResponse ke andar hume url milega

        const post = await Post.create({
            caption,
            image:cloudResponse.secure_url,
            author : authorId,
        })

        //now jaise hi koi naya user koi nayi post create karga..so we need to push that also
        const user = await User.findById(authorId);
        if(user){
            user.posts.push(post._id);
            await user.save();
        }
```

```
        //sometimes image quality and size is very large --- so we use npm sharp
        //inside sharp..we have to pass the buffer value of the image
        const optimizedImage = await sharp(image.buffer)
        .resize({width:800, height:800,fit:'inside'}).jpeg({quality:80}).toBuffer();

        //now we have to convert this buffer to datauri
        const fileUri = `${optimizedImage.toString('base64')}`;

        const cloudResponse = await cloudinary.uploader.upload(fileUri);
        //ye cloudResponse ke andar hume url milega

        const post = await Post.create({
            caption,
            image:cloudResponse.secure_url,
            author : authorId,
        })

        //now jaise hi koi naya user koi nayi post create karga..so we need to push that also
        const user = await User.findById(authorId);
        if(user){
            user.posts.push(post._id);
            await user.save();
        }


        await post.populate({path: 'author', select:'-password '});

        //now we need to do populate..
        //populate is a method in mongodb with which using the id we can get the complete details of the user

        return res.status(201).json({
            message:"Post created successfully",
            success:true,
            post,
        })
    }
    catch(error){
        console.log(error);
        return res.status(500).json({
            message: "Internal server error",
            success: false,
        })
    }
```

Adding new post function

```
export const addNewPost = async (req, res) => {
    try{
        const {caption} = req.body;
        const image = req.file;

        const authorId = req.id;
        if(!image){
            return res.status(400).json({
                message:"image is required",
                success:false,
            })
        }

        const optimizedImage = await sharp(image.buffer)
        .resize({width:800, height:800,fit:'inside'}).jpeg({quality:80}).toBuffer();
```

req → contains incoming request data (like body, files, headers, etc.)
res → used to send a response back to the client.

req.file → is set by **Multer**, which handles file uploads.

sharp(image.buffer)
it takes the image file's buffer(binary data)

.toBuffer()
returns the optimized image as a buffer again (for upload)


```
        const fileUri = `${optimizedImage.toString('base64')}`;
```

Converts the binary image buffer into a **Base64 string**.

```
const cloudResponse = await cloudinary.uploader.upload(fileUri);
```

Uploads the image to **Cloudinary** (an image hosting service).

```
const post = await Post.create({
    caption,
    image:cloudResponse.secure_url,
    author : authorId,
})
```

```
import mongoose from "mongoose";
const postSchema = new mongoose.Schema({
   caption:{type:String, default:""},
   image:{type:String, required:true},
   author:{type:mongoose.Schema.Types.ObjectId, ref:'User', required:true},
   likes:[{type:mongoose.Schema.Types.ObjectId, ref:'User'}],
   comments:[{type:mongoose.Schema.Types.ObjectId, ref:'Comment'}]

  }, { timestamps: true })
  export const Post = mongoose.model("Post", postSchema);
```

HTTPS link to the uploaded image on Cloudinary
storing that **image URL** in the database

```
const {user} = useSelector(store=>store.auth);
```

```
const {posts} = useSelector(store=>store.post);
```

```
const user = await User.findById(authorId);
if(user){
    user.posts.push(post._id);
    await user.save();
}
```

Finds the user who created the post using their ID (authorID)
authorID comes from req.id

Saves the updated user document back to MongoDB

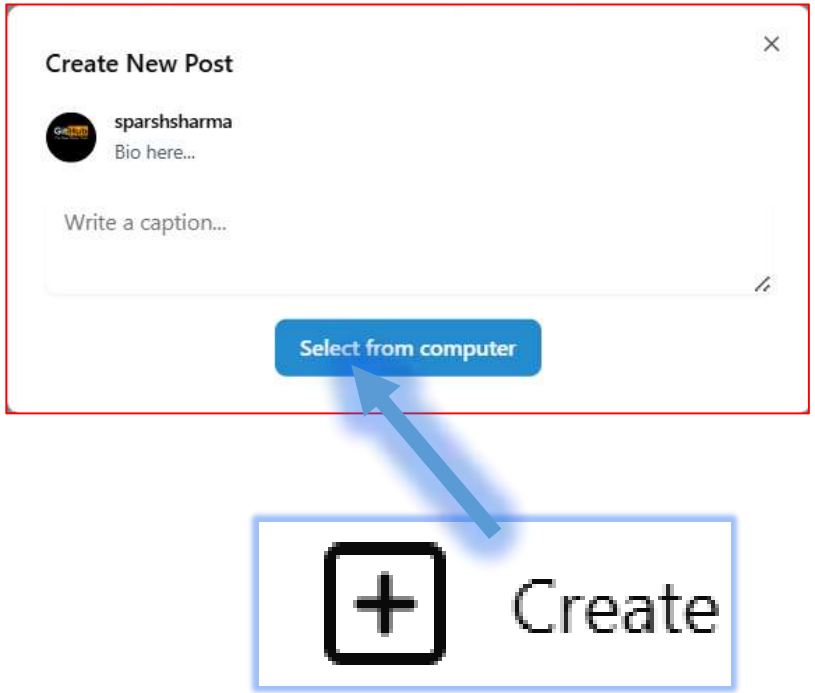
Adds the newly created post's ID to the user's posts array
In User model, there's a posts field that stores an array of post IDs
This will creates a **reference** between the user and their posts

```
await post.populate({path: 'author', select:'-password '});
```

This populate will allow to return all the fields

```
return res.status(201).json({
    message:"Post created successfully",
    success:true,
    post,
})
```

This means that the post is created




```
const {user} = useSelector(store=>store.auth);

const {posts} = useSelector(store=>store.post);
```

Each user has a posts array containing all their post IDs

When we highlight a post..then its username and other things are shown..so this is for that

```
export const getAllPosts = async (req, res) => {
    try{
        //this is nested populate

        const posts = await Post.find().sort({createdAt: -1}).populate({path:'author', select:'-password'})//we want username and pro
       .populate({path:'author', select:'username, profilePicture'})
       .populate({
        path:'comments',
        sort: {createdAt: -1},
        populate:{
            path:'author',
            select:'username profilePicture'
        }
       });
        //ye -1 isliye kr rhe hai..taaki latest post sabse upar aaye
        //populate is used to get the complete details of the user using the id

        return res.status(200).json({
            message:"Posts fetched successfully",
            success:true,
            posts,
        })
    }
    catch(error){
        console.log(error);
        return res.status(500).json({
            message: "Internal server error",
            success: false,
        })
    }
}
```

Updated version of getAllPosts

```
export const getAllPosts = async (req, res) => {
    try {

  const viewerId = req.id || null;

    const [publicUserIds, privateFollowedUserIds] = await Promise.all([
        User.find({ isPrivate: false }).distinct('_id'),

        viewerId ? User.find({ isPrivate: true, followers: viewerId }).distinct('_id') : Promise.resolve([]),
    ]);
```

Gets the logged-in user's ID from the JWT token
If no user is logged in , viewerId is null

Runs two queries simultaneously

Gives all the public user IDs

Finds all users who have isPrivate: false – means public account
.distinct('_id') – returns only the unique _id field values from the user

Finds private users where the current viewer is in their followers array
Only runs if user is logged in (viewerId exists)

This … is called spread operator

```
const allowedAuthorIds = [
    ...publicUserIds,
    ...(viewerId ? [viewerId] : []),
    ...privateFollowedUserIds,
];
```

Ids of all the public users

If user is logged in viewerId exist else it is null

Conditional Spread

Ids of all the private users who are in follow array

```
const posts = await Post.find({ author: { $in: allowedAuthorIds } })
```

Similar to
SELECT * FROM posts WHERE author

Finds posts where the author matches ANY ID in the allowedAuthorIds

```
  .sort({ createdAt: -1 })
  .populate({ path: 'author', select: 'username profilePicture isPrivate' })
  .populate({
      path: 'comments',
      sort: { createdAt: -1 },
      populate: {
          path: 'author',
          select: 'username profilePicture'
      }
  });
```

createdAt: -1 = **Descending order** (newest to oldest)

path: 'author' – means populate author field

select: 'username profilePicture isPrivate' → means only return these fields (and not things like password or email).

```
return res.status(200).json({
    message: "Posts fetched successfully",
    success: true,
    posts,
});
```

Nested populate
1.path: 'comments' – Populate the comments array
2. Sort : {createdAt: -1} – sort comments newest first
3.Populate : {path : 'author'} – for each comments also populate its author

JSON response back to the frontend with the fetched posts data.

getUserPost

Finds ALL posts where the author matches the specific user ID

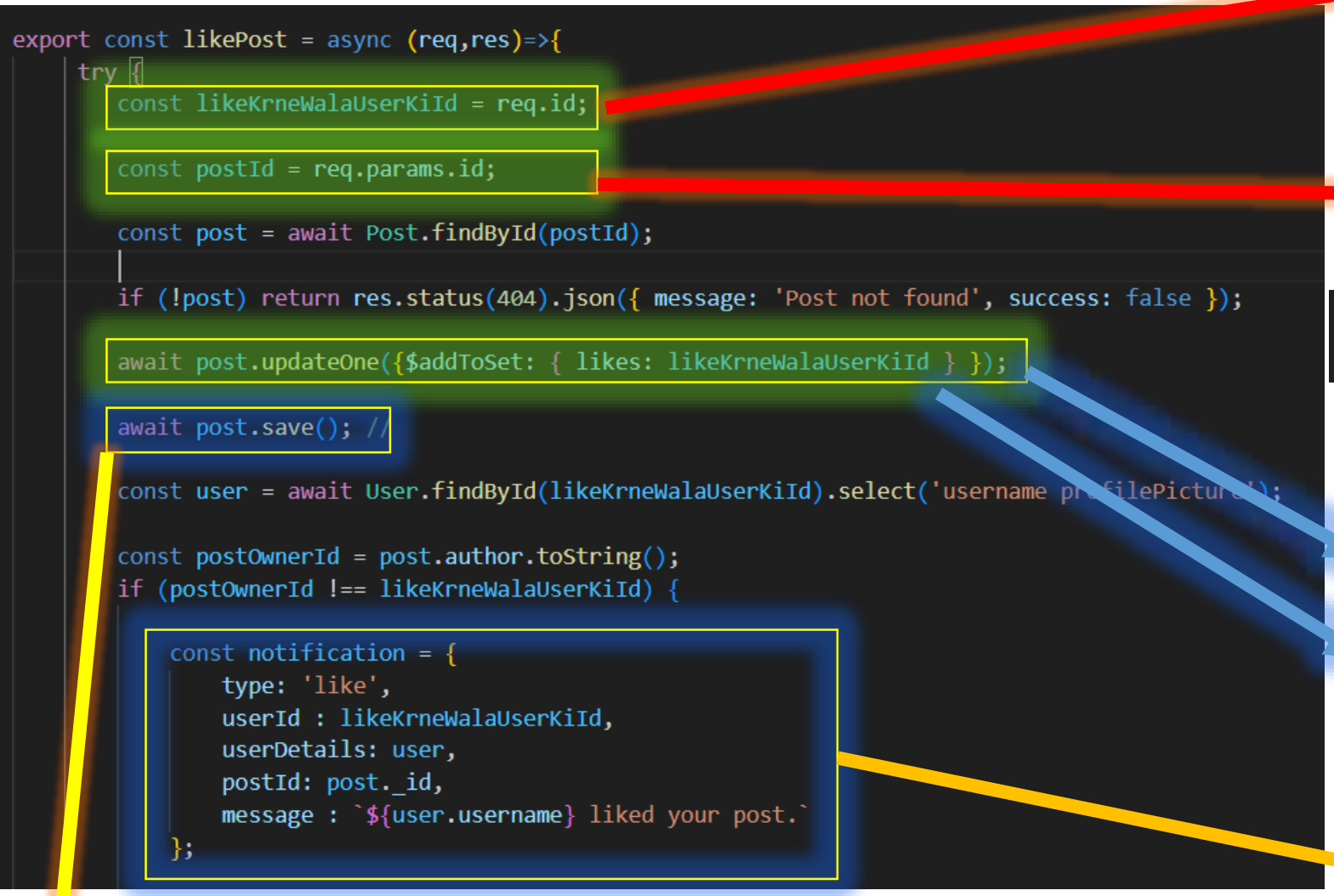
Sorts posts by creation date, newest first

```
//now this below one is for getting all the post of the user who is logged in
export const getUserPost = async (req, res) => {
    try {
        const authorId = req.id;

        const posts = await Post.find({ author: authorId }).sort({ createdAt: -1 }).populate({
            path: 'author',
            select: 'username, profilePicture'
        }).populate({
            path: 'comments',
            sort: { createdAt: -1 },
            populate: {
                path: 'author',
                select: 'username, profilePicture'
            }
        });
        return res.status(200).json({
            posts,
            success: true
        })
    } catch (error) {
        console.log(error);
    }
};
```

```
// Before populate:
author: "user123"

// After populate:
author: {
    _id: "user123",
    username: "john_doe",
    profilePicture: "profile_url"
}
```

sends a **JSON response** back to the frontend with the user's posts data.

likepost



`req.id` comes from JWT authentication middleware (who is liking)

`req.params.id` comes from the URL like

```
const [liked, setLiked] =
useState(post.likes.includes(user?._id) || false);
```

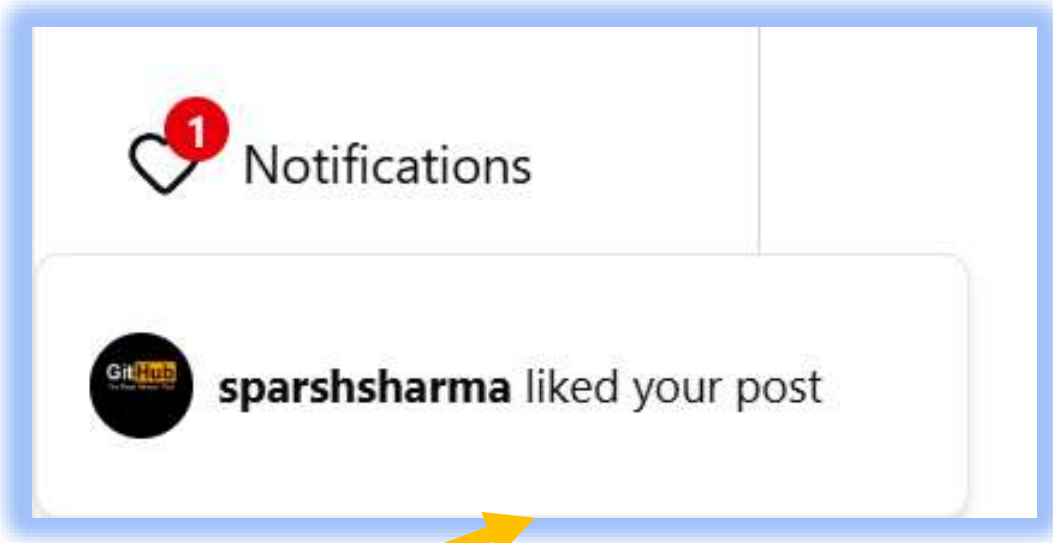
Adds user ID to the likes array ONLY if it's not already there

Prevents duplicates: Same user can't like the same post twice
Like HashSet in Java: No duplicate values allowed

Creates notification object to send on socketio

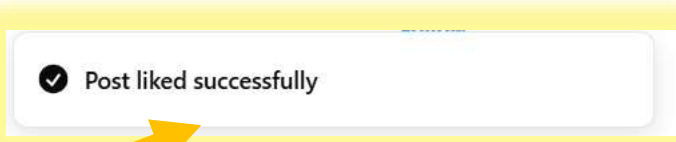
Save it to database

```
export const getReceiverSocketId = (receiverId) => userSocketMap[receiverId];

io.on('connection', (socket) => {
    const userId = socket.handshake.query.userId;
    if (userId) {
        userSocketMap[userId] = socket.id;
    }

    io.emit('getOnlineUsers', Object.keys(userSocketMap));

    socket.on('disconnect', () => {
        if (userId) {
            delete userSocketMap[userId];
        }
        io.emit('getOnlineUsers', Object.keys(userSocketMap));
    });
});
```




```
    const postOwnerSocketId = getReceiverSocketId(postOwnerId);
    if (postOwnerSocketId) {
        io.to(postOwnerSocketId).emit('notification', notification);
    }
}
```

Finds the post owner's active socket connection
Sends real-time notification (like Instagram's instant notifications)




```
return res.status(200).json({ message: 'Post liked successfully', success: true });
```

dislikePost

`req.id` comes from JWT authentication middleware (who is liking)

`req.params.id` comes from the URL like

Removes the user's ID from the post's likes array (unlike/dislike functionality)

```
//the logic of both is same...bs hame push ki jagah pull krna padega
export const dislikePost = async (req,res)=>{
    try{
        const likeKrneWalaUserKiId = req.id;
        const postId = req.params.id;
        const post = await Post.findById(postId);
        if (!post) return res.status(404).json({ message: 'Post not found', success: false });

        // dilike logic started
        await post.updateOne({ $pull: { likes: likeKrneWalaUserKiId } });
        await post.save();

        // socketio ko frontend k baad banege...

        return res.status(200).json({ message: 'Post disliked successfully', success: true });
    }catch(error){
        return res.status(500).json({message:'Internal server error', success:false});
    }

}
```

```
const [liked, setLiked] = useState(post.likes.includes(user?._id) || false);
```

removing the like from post

addComment

`req.params.id` can be manipulated by user (URL parameter)
`req.id` is secure (comes from verified JWT token)

```
export const addComment = async (req,res) =>{
    try {
        const postId = req.params.id;
        const commentKrneWalaUserKiId = req.id;

        const {text} = req.body; //message -- req.body se aayega

        const post = await Post.findById(postId);

        if(!text)return res.status(400).json({message:'text is required', success:false});

        const comment = await Comment.create({
            text,
            author:commentKrneWalaUserKiId,
            post:postId
        })

        await comment.populate({
            path:'author',
            select:"username profilePicture"
        });

        post.comments.push(comment._id);
        await post.save();
```

Creates and saves a new comment to the database

It contains the comment from req.body

The ID of the user who wrote the comment

The ID of the post being commented on

```
const {posts} = useSelector(store=>store.post);
```

Adds comment ID to post's array

Save to database

Getting coments of post

```
export const getCommentsOfPost = async (req,res) => {
    try {
        const postId = req.params.id;
        const comments = await Comment.find({post:postId}).populate('author', 'username profilePicture');
        if(!comments) return res.status(404).json({message:'No comments found for this post', success:false});
        return res.status(200).json({success:true,comments});
    } catch (error) {
        console.log(error);
        return res.status(500).json({message:'Internal server error', success:f
    }
};
```

Extracts the post ID from the URL parameters
Example URL: `GET /api/v1/post/67890/comments` → `postId = "67890"`

Finds all comments where the post field matches the given `postId`

What Frontend Receives:


```
{
  "success": true,
  "comments": [
    {
      "_id": "comment123",
      "text": "Amazing photo!",
      "post": "post456",
      "author": {
        "_id": "user789",
        "username": "john_doe",
        "profilePicture": "https://cloudina
      },
      "createdAt": "2025-10-05T12:00:00Z"
    },
```


It fetches all comments for a given post and replaces each comment's author ID with the author's details (username and profilePicture) from the User collection.

DeletePost

```
export const deletePost = async (req, res) => {
  try {
    const postId = req.params.id;
    const authorId = req.id;

    const post = await Post.findById(postId);
    if (!post) return res.status(404).json({ message: 'Post not found', success: false });
    const SPECIAL_USER_ID = process.env.SPECIAL_USER_ID;

    if (
      post.author.toString() !== authorId &&
      authorId !== process.env.SPECIAL_USER_ID
    ) {
      return res.status(403).json({ message: 'Forbidden', success: false });
    }

    await Post.findByIdAndDelete(postId);
    let user = await User.findById(authorId);
    if (user) {
      user.posts = user.posts.filter(id => id.toString() !== postId);
      await user.save();
    }

    await Comment.deleteMany({ post: postId });

    return res.status(200).json({
      success: true,
      message: 'Post deleted'
    });
```

`req.params.id` can be manipulated by user (URL parameter)
`req.id` is secure (comes from verified JWT token)

Finds the post in database by ID

`post.author.toString() !== authorId` → checks if the person making the request is **not the post's author.**

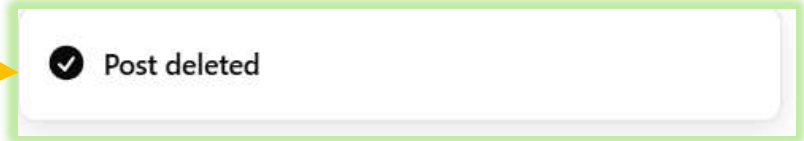
`authorId !== process.env.SPECIAL_USER_ID` → checks if that person is also **not a special admin user** (whose ID is stored in environment variables).

Example:

```
// Before: user.posts = ["post1", "post2", "post3"]
// After:  user.posts = ["post1", "post3"]  // post2 removed
```

It cleans the user's post list so that the deleted post ID is no longer linked to them

Delete associated comments



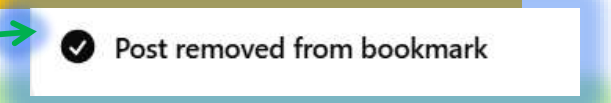
This is the bookmark post logic

```
export const bookmarkPost = async (req,res) => {
    try {
        const postId = req.params.id;
        const authorId = req.id;

        const post = await Post.findById(postId);
        if(!post) return res.status(404).json({message:'Post not found', success:false});

        const user = await User.findById(authorId);

        if(user.bookmarks.includes(post._id)){
            await user.updateOne({$pull:{bookmarks:post._id}});
            await user.save();
            return res.status(200).json({type:'unsaved', message:'Post removed from bookmark', success:true});
        }else{
            await user.updateOne({$addToSet:{bookmarks:post._id}});
            await user.save();
            return res.status(200).json({type:'saved', message:'Post bookmarked', succe
        }

    } catch (error) {
        console.log(error);
    }
}
```

`req.params.id` can be manipulated by user (URL parameter)
`req.id` is secure (comes from verified JWT token)

Checks if the post is **already bookmarked** by the user

Removes ($pull) that post ID from the user's bookmarks array, then saves.

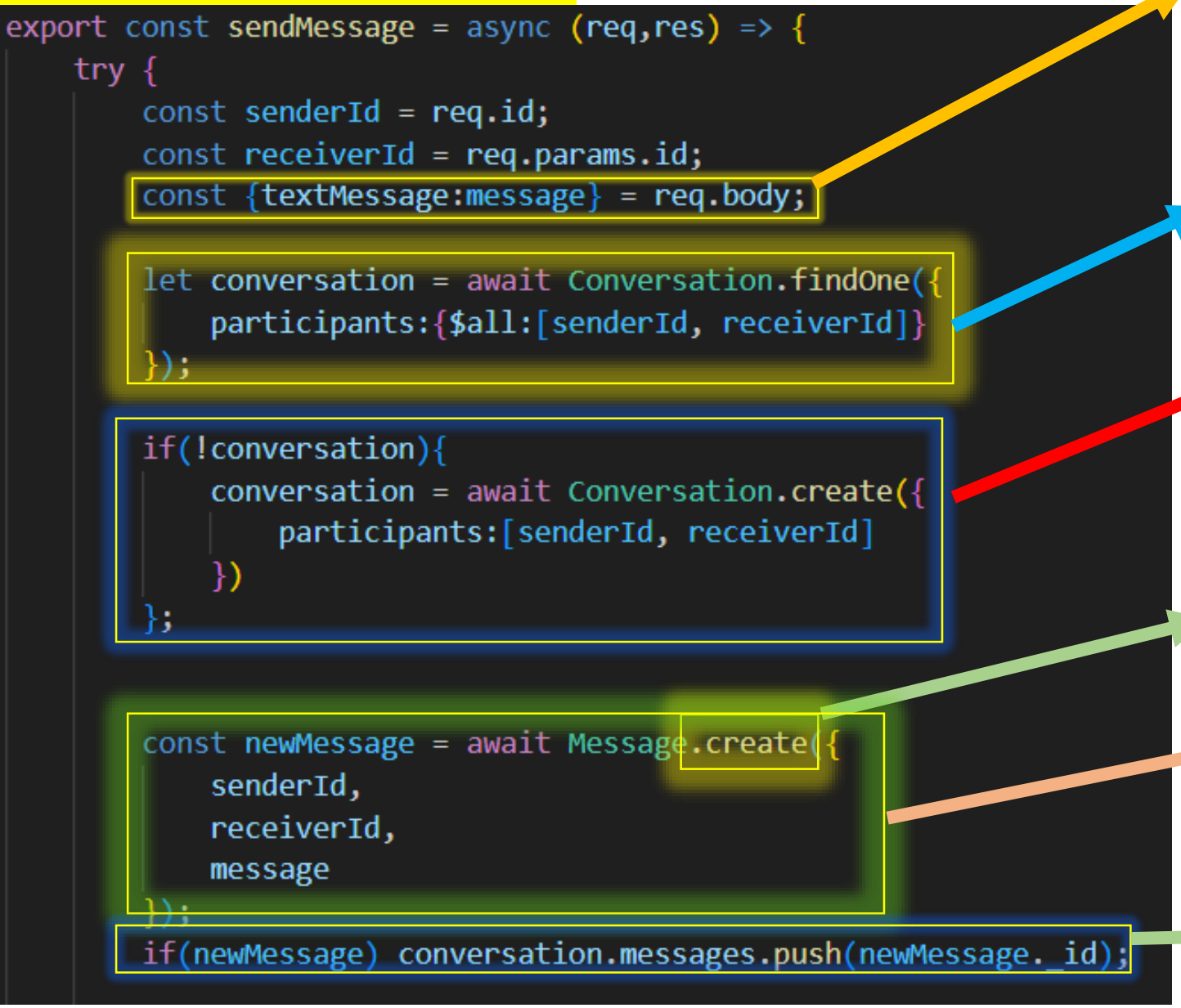


If the post is not bookmarked

→ Adds ($addToSet) the post ID to the bookmarks array (ensures no duplicates), then saves.

error

sendMessage



{textMessage:message}: Destructures message text from request body and renames it to message

Find all conversations between sender and receiver

First-time chat: Creates new conversation if none exists
Participants array: Stores both user IDs
Auto-initialization: Sets up conversation infrastructure

Saves message to database

Creates (and saves) a new Message document containing the sender, receiver and message text.

If message creation succeeded, push the message's _id into the conversation's messages array (linking the message to the conversation).

```
await Promise.all([conversation.save(),newMessage.save()])
```

Saves both document

```
const receiverSocketId = getReceiverSocketId(receiverId);
if (receiverSocketId) {
    io.to(receiverSocketId).emit('newMessage', newMessage);
```

`getReceiverSocketId()`: Maps user ID to their active socket connection
Online check: Only proceeds if receiver is currently online
Returns: Socket ID or `null` if user offline

Targets specific user's socket

Complete message object with all data

Complete message object with all data

```
try {
    const sender = await User.findById(senderId)
    .select('username profilePicture');

    const messageNotification = {
        type: 'message',
        userId: senderId,
        userDetails: sender,
        text: message,
        conversationId: conversation._id,
    };
    io.to(receiverSocketId).emit('messageNotification', messageNotification);
} catch (e) {
}
```

User details, message text, conversation reference

Emit a messageNotification to the receiver.

```
    return res.status(201).json({
        success:true, newMessage})
```

Frontend can update UI immediately

getMessage function

```
export const getMessage = async (req,res) => {
    try {
```

```
const senderId = req.id;
const receiverId = req.params.id;
```

`req.params.id` can be manipulated by user (URL parameter)
`req.id` is secure (comes from verified JWT token)

```
const conversation = await Conversation.findOne({
    participants:{$all: [senderId, receiverId]}
}).populate('messages');
```

```
// If senderId = "507f1f77bcf86cd799439011"
// If receiverId = "507f1f77bcf86cd799439012"

// This will find a conversation where participants array contains BOTH IDs:
// ✅ Matches: { participants: ["507f1f77bcf86cd799439011", "507f1f77bcf86cd799439012"] }
// ✅ Matches: { participants: ["507f1f77bcf86cd799439012", "507f1f77bcf86cd799439011"] }
// ❌ Won't match: { participants: ["507f1f77bcf86cd799439011"] } // Only one participant
// ❌ Won't match: { participants: ["507f1f77bcf86cd799439011", "someOtherId"] } // Wrong
```

MongoDB Array Operator that matches documents where an array field contains **ALL** the specified elements
Order doesn't matter - `[user1, user2]` matches `[user2, user1]`
Must contain both - won't match if only one participant exists

```
}).populate('messages');
```

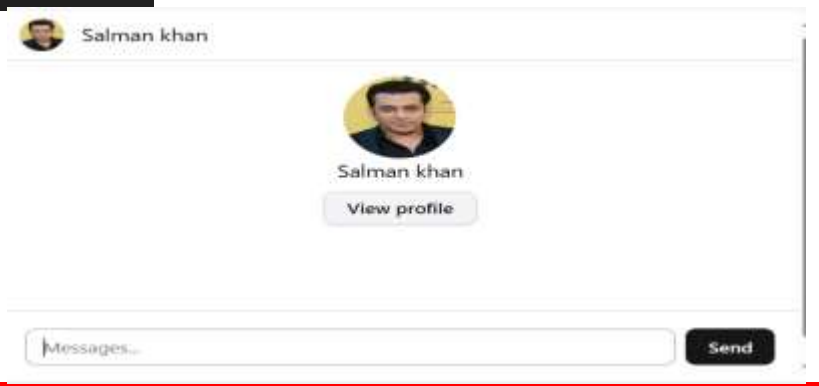
After populate:

```
// Conversation document looks like this:
{
  _id: "...",
  participants: ["user1Id", "user2Id"],
  messages: [  // Full message objects
    {
      _id: "msg1Id",
      senderId: "user1Id",
      receiverId: "user2Id",
      message: "Hello!",
      createdAt: "2024-01-01T10:00:00Z"
    },
    {
      _id: "msg2Id",
      senderId: "user2Id",
      receiverId: "user1Id",
      message: "Hi there!",
      createdAt: "2024-01-01T10:05:00Z"
    }
  ]
}
```

Before populate:

```
// Conversation document looks like this:
{
  _id: "...",
  participants: ["user1Id", "user2Id"],
  messages: ["msg1Id", "msg2Id", "msg3Id"] // Just IDs
}
```

```
if(!conversation) return res.status(200)
    .json({success:true, messages:[]});
```



If no messages are there ..it returns a empty array

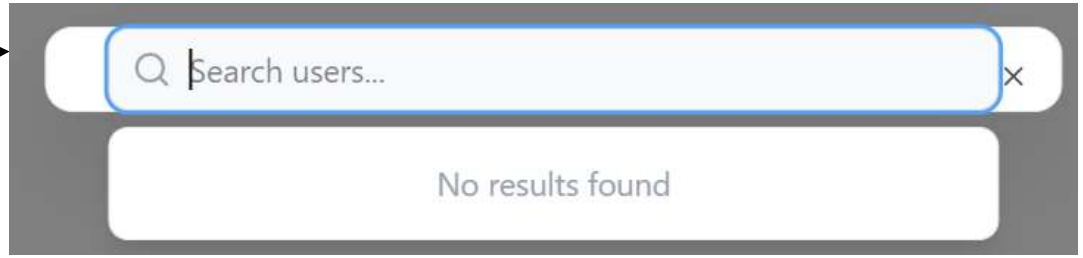
```
return res.status(200)
.json({success:true, messages:conversation?.messages});
```

Return the messages

```
} catch (error) {
    console.log(error);
}
```

Else throw error

SearchUser function




```
export const searchUsers = async(req,res)=>{
    try{
        const { query } = req.query; //get search query from URL parameters
        const currentUserId = req.id; //logged in user id

        if(!query || query.trim() === ''){
            return res.status(400).json({
                message: "Search query is required",
                success: false,
            })
        }
  const users = await User.find({
    _id: { $ne: currentUserId },
    username: { $regex: query, $options: 'i' }
  })
  .select('-password')
  .limit(20)
  .sort({ username: 1 });

return res.status(200).json({
    message: "Search results fetched successfully",
    success: true,
    users,
    totalResults: users.length
})
```

Prevents users from finding themselves in search results

$regex: MongoDB regular expression operator for pattern matching
query: The search term entered by user (e.g., "john")
$options: 'i': Case-insensitive flag

Exclude password field from results

Show only 20 users

Sort by username in ascending order (A-Z)

Database Search:

```
// MongoDB will look for:
{
  _id: { $ne: "507f1f77bcf86cd799439011" },
  username: { $regex: "john", $options: 'i' }
}
```

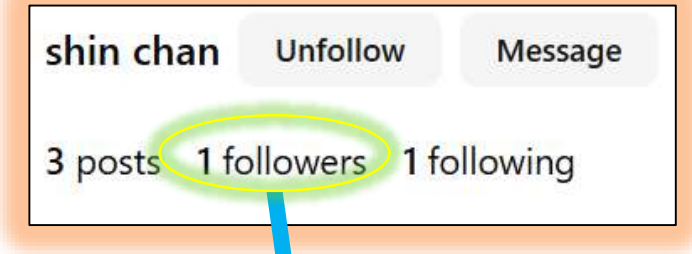
seeFollowers

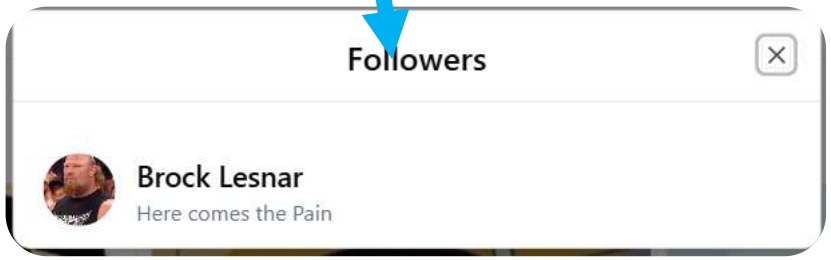
```
export const seeFollowers = async(req,res)=>{
    try{
        const userId = req.params.id;
```

```
const user = await User.findById(userId)
    .select("followers")
    .populate({ path: 'followers', select: 'username profilePicture bio' });
```

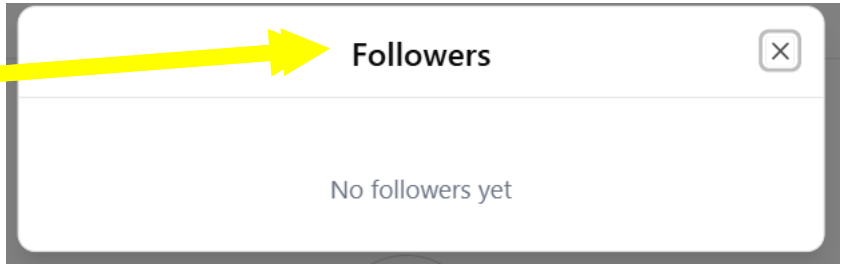
```
if(!user){
    return res.status(404).json({
        message:"User not found",
        success:false,
    })
}
```

```
        return res.status(200).json({
            message:"Followers fetched successfully",
            success:true,
            followers: user.followers || [],
        })
    }
    catch(error){
        console.log(error);
        return res.status(500).json({
            message:"Internal server error",
            success:false,
        })
    }
}
```





This fetches a user's **followers list**, and for each follower, you get **their username, profile picture, and bio**.

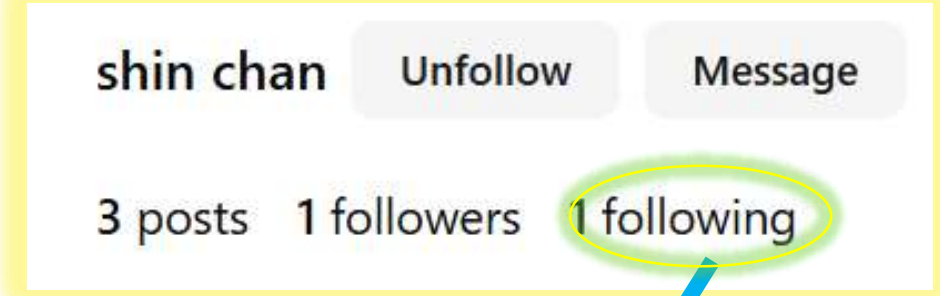


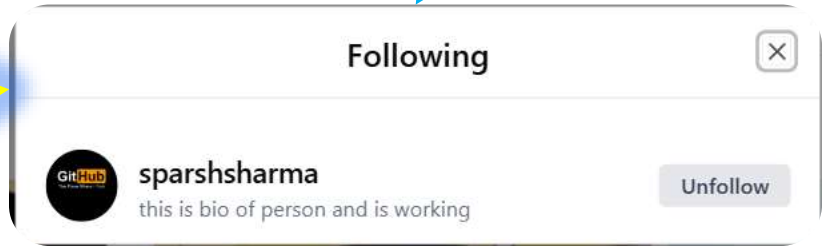

```
followers:[{type:mongoose.Schema.Types.ObjectId, ref:'User'}],
```

seeFollowing

```
export const seeFollowing = async(req,res)=>{
    try{
  const userId = req.params.id;
  const user = await User.findById(userId)
      .select("following")
      .populate({ path: 'following',
          select: 'username profilePicture bio' });
  if(!user){
      return res.status(404).json({
          message:"User not found",
          success:false,
      })
  }
return res.status(200).json({
    message:"Following fetched successfully",
    success:true,
    following: user.following || [],
})
catch(error){
    console.log(error);
    return res.status(500).json({
        message:"Internal server error",
        success:false,
    })
}
```

It gets a user's **following list** along with each followed user's **basic info** (username, picture, bio).






```
following:[{type:mongoose.Schema.Types.ObjectId, ref:'User'}],
```

removeUser

This function is used by owner only

```
export const removeUser = async (req, res) => {
    try {
        const SPECIAL_USER_ID = process.env.SPECIAL_USER_ID;
        const currentUserId = req.id;
        const userIdToRemove = req.params.id;

        if (currentUserId !== SPECIAL_USER_ID) {
            return res.status(403)
            .json({ message: 'Forbidden', success: false });
        }

        const user = await User.findById(userIdToRemove);
        if (!user) {
            return res.status(404)
            .json({ message: 'User not found', success: false });
        }

        await Post.deleteMany({ author: userIdToRemove });

        await Comment.deleteMany({ author: userIdToRemove });

        await User.findByIdAndDelete(userIdToRemove);

        await User.updateMany(
            { followers: userIdToRemove },
            { $pull: { followers: userIdToRemove } }
        );
        await User.updateMany(
            { following: userIdToRemove },
            { $pull: { following: userIdToRemove } }
        );
```

owner

Check if the user is owner or not

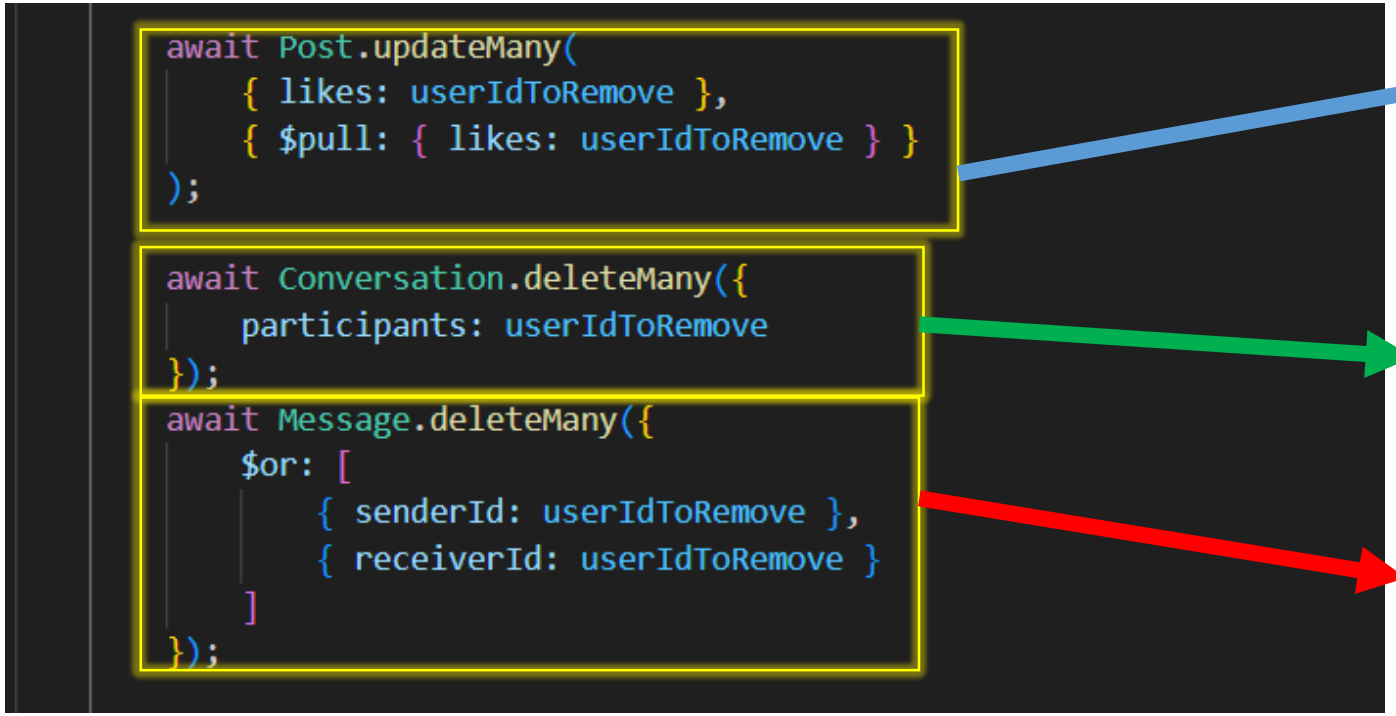
Remove all posts create by the user

Delete all comments made by user

Finally remove the account of user

Removing user from others' followers list

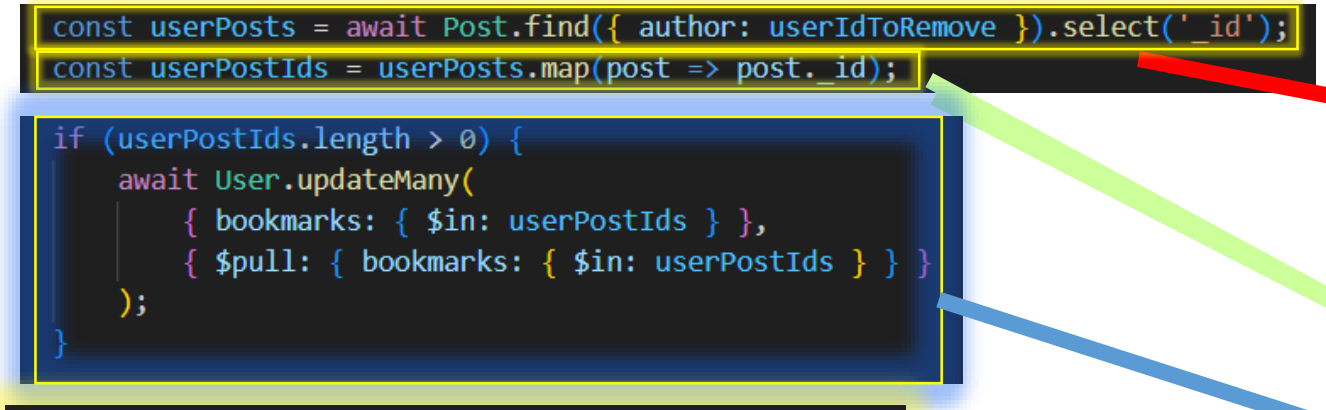
Removing user from others' following list



Finds all posts where this user's ID exists in the likes array.
$pull removes their ID from each post's likes.

Deletes every conversation document where this user was one of the participants.

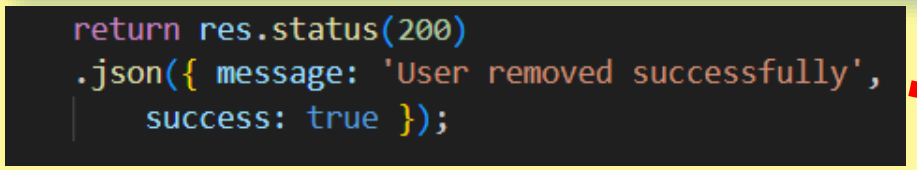
$or condition matches messages where the user was **either the sender or receiver**.
deleteMany removes all such messages.



Finds all posts where author matches the userIdRemove
.select('id') means only fetch the _id field of each post(no captions, images)
✓ **Result:** an array of post objects like:

Creates a simple array of post IDs:

Remove those posts from everyone's bookmarks



Users removed…

Mongodb Transaction session

All or nothing

A **MongoDB Transaction Session** is a way to group multiple database operations together so they either **ALL succeed** or **ALL fail** as a single unit. It's like a safety net for your data integrity.

Real Example - Your `removeUser` Function:

Without Transactions (Current Implementation):

```
// ❌ PROBLEM: If any operation fails, you get partial deletion
await Post.deleteMany({ author: userIdToRemove }); // ✅ Succeeds
await Comment.deleteMany({ author: userIdToRemove }); // ❌ Fails
await User.findByIdAndDelete(userIdToRemove); // ❌ Never executes

// Result: Posts deleted but user still exists! 😱
```

Basic Transaction Structure:

```
import mongoose from 'mongoose';

const session = await mongoose.startSession(); // Create session
session.startTransaction(); // Begin transaction

try {
    // Your database operations here (with session)
    await User.create([{ name: "John" }], { session });
    await Post.create([{ title: "Hello" }], { session });

    await session.commitTransaction(); // Save all changes
    console.log("Transaction successful!");

} catch (error) {
    await session.abortTransaction(); // Undo all changes
    console.log("Transaction failed, all changes rolled back");
    throw error;

} finally {
    session.endSession(); // Clean up
}
```

RemoveUser with mongodb transaction session

```
export const removeUser = async (req, res) => {
    const session = await mongoose.startSession();
    session.startTransaction();
    try {
        const SPECIAL_USER_ID = process.env.SPECIAL_USER_ID;
        const currentUserId = req.id; // logged-in user's id
        const userIdToRemove = req.params.id; // user to be removed
        if (currentUserId !== SPECIAL_USER_ID) {
            await session.abortTransaction();
            return res.status(403)
            .json({ message: 'Forbidden', success: false });
        }
        const user = await User.findById(userIdToRemove).session(session);
        if (!user) {
            await session.abortTransaction();
            return res.status(404)
            .json({ message: 'User not found', success: false });
        }
        const userPosts = await Post.find({ author: userIdToRemove })
        .select('_id').session(session);
        const userPostIds = userPosts.map(post => post._id);

        await Promise.all([
            Post.deleteMany({ author: userIdToRemove }, { session }),
            Comment.deleteMany({ author: userIdToRemove }, { session }),
            User.updateMany(
                { followers: userIdToRemove },
                { $pull: { followers: userIdToRemove } },
                { session }
            ),
            User.updateMany(
                { following: userIdToRemove },
                { $pull: { following: userIdToRemove } },
                { session }
            ),
            Post.updateMany(
                { likes: userIdToRemove },
                { $pull: { likes: userIdToRemove } },
                { session }
            ),
            Conversation.deleteMany(
                { participants: userIdToRemove },
                { session }
            ),
            Message.deleteMany(
                {
                    $or: [
                        { senderId: userIdToRemove },
                        { receiverId: userIdToRemove }
                    ]
                },
                { session }
            )
        ]);
        if (userPostIds.length > 0) {
            await User.updateMany(
                { bookmarks: { $in: userPostIds } },
                { $pull: { bookmarks: { $in: userPostIds } } },
                { session }
            );
        }
        await User.findByIdAndDelete(userIdToRemove, { session });
        await session.commitTransaction();
        return res.status(200).json({
            message: 'User and all associated data removed successfully',
            success: true
        });

    } catch (error) {
        await session.abortTransaction();
        console.log('Error in removeUser:', error);
        return res.status(500).json({
            message: 'Failed to remove user. All operations have been rolled back.',
            success: false
        });
    } finally {
        session.endSession();
    }
};
```

Message.route.js

```
app.use("/api/v1/message",messageRoute);
```

backend > Routes > message.route.js > default

```
1  import express from "express";
2  import isAuthenticated from "../middlewares/isAuthenticated.js";
3  import upload from "../middlewares/multer.js";
4  import { getMessage, sendMessage } from "../controllers/message.controller.js";
5
6  const router = express.Router();
7
8  router.route('/send/:id').post(isAuthenticated, sendMessage);
9  router.route('/all/:id').get(isAuthenticated, getMessage);
10
11 export default router;
```

Post routes

```
import express from "express";
import isAuthenticated from "../middlewares/isAuthenticated.js";
import upload from "../middlewares/multer.js";
import { addComment, addNewPost, bookmarkPost, deletePost, dislikePost, getAllPosts,
    getCommentsOfPost, getUserPost, likePost } from "../controllers/post.controller.js";

const router = express.Router();

router.route("/addpost").post(isAuthenticated, upload.single('image'), addNewPost);
//authenticated user hi post kar sakta hai  --- single image hi upload kar sakte hai

router.route("/all").get(isAuthenticated,getAllPosts);

router.route("/userpost/all").get(isAuthenticated, getUserPost);

router.route("/:id/like").get(isAuthenticated, likePost);

router.route("/:id/dislike").get(isAuthenticated, dislikePost);

router.route("/:id/comment").post(isAuthenticated, addComment);

router.route("/:id/comment/all").post(isAuthenticated, getCommentsOfPost);

router.route("/delete/:id").delete(isAuthenticated, deletePost);

router.route("/:id/bookmark").get(isAuthenticated, bookmarkPost);

export default router;
```

User routes

```
import express from "express";
import { editProfile, followOrUnfollowUser, getProfile, getSuggestedUsers, login,
    logout, register, searchUsers, seeFollowers,
    seeFollowing, removeUser } from "../controllers/user.controller.js";

import isAuthenticated from "../middlewares/isAuthenticated.js";

import upload from "../middlewares/multer.js";

const router = express.Router();

router.route("/register").post(register);

router.route("/login").post(login);

router.route("/logout").get(logout);


router.route("/:id/profile").get(isAuthenticated,getProfile);

router.route("/profile/edit").post(isAuthenticated,upload.single("profilePhoto"),editProfile);

router.route("/suggested").get(isAuthenticated,getSuggestedUsers);

router.route("/:id/followers").get(isAuthenticated,seeFollowers);
router.route("/:id/following").get(isAuthenticated,seeFollowing);

router.route("/search").get(isAuthenticated,searchUsers);

router.route("/followorunfollow/:id").post(isAuthenticated,followOrUnfollowUser);

router.delete('/remove/:id', isAuthenticated, removeUser);
```

Then we will populate to get the details of post

```
//we want information about the post on the basis of its id
const populatedPosts = await Promise.all(
    user.posts.map( async (postId) => {
        const post = await Post.findById(postId);
        if(post.author.equals(user._id)){
            return post;
        }
        return null;
    })
)
//post array ke andar user ki saari post hai
```