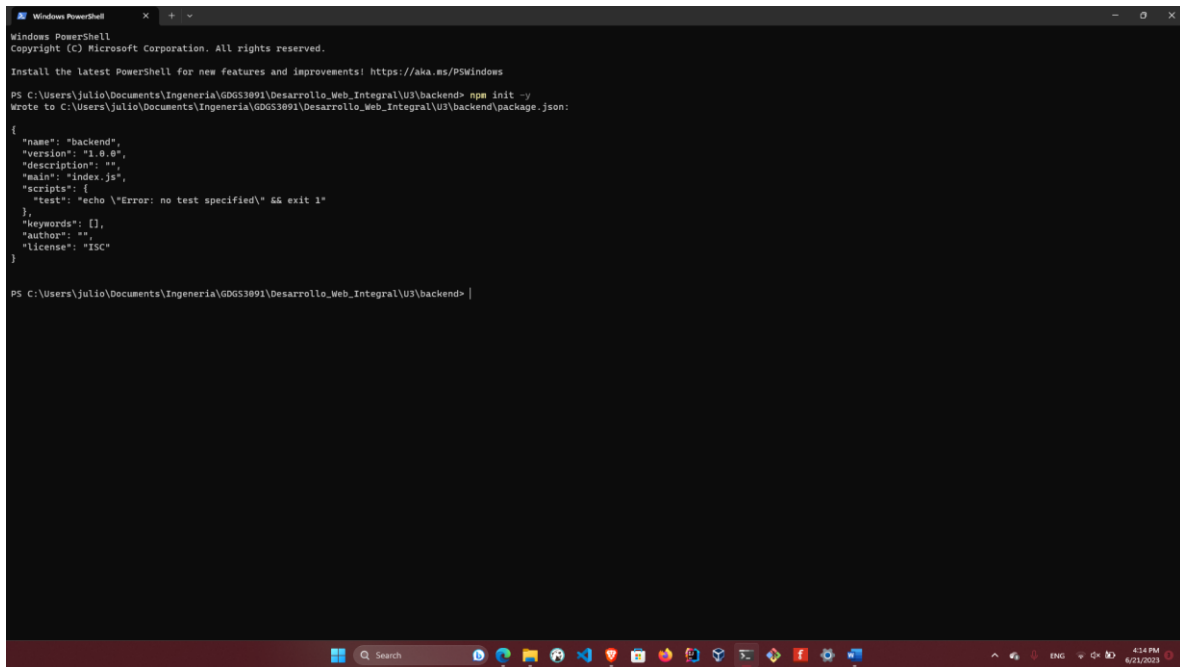


## Iniciando nuestra aplicación en node js



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

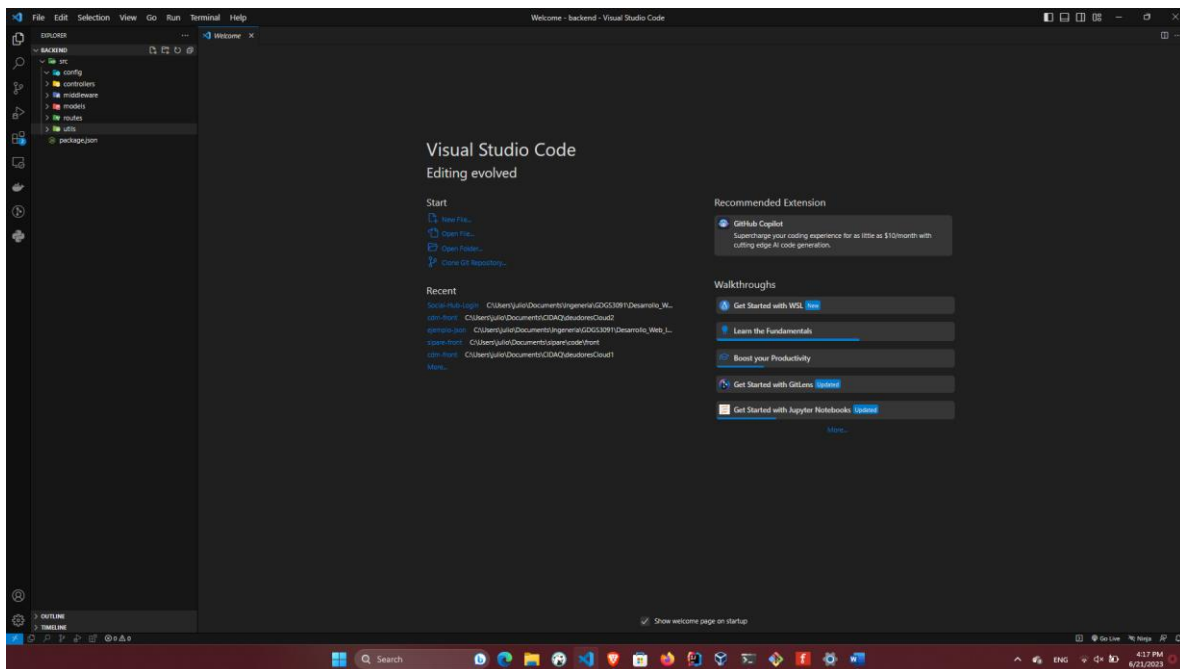
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\julio\Documents\Ingenieria\GDG53891\Desarrollo_Web_Integral\U3\backend> npm init -y
Wrote to C:\Users\julio\Documents\Ingenieria\GDG53891\Desarrollo_Web_Integral\U3\backend\package.json:

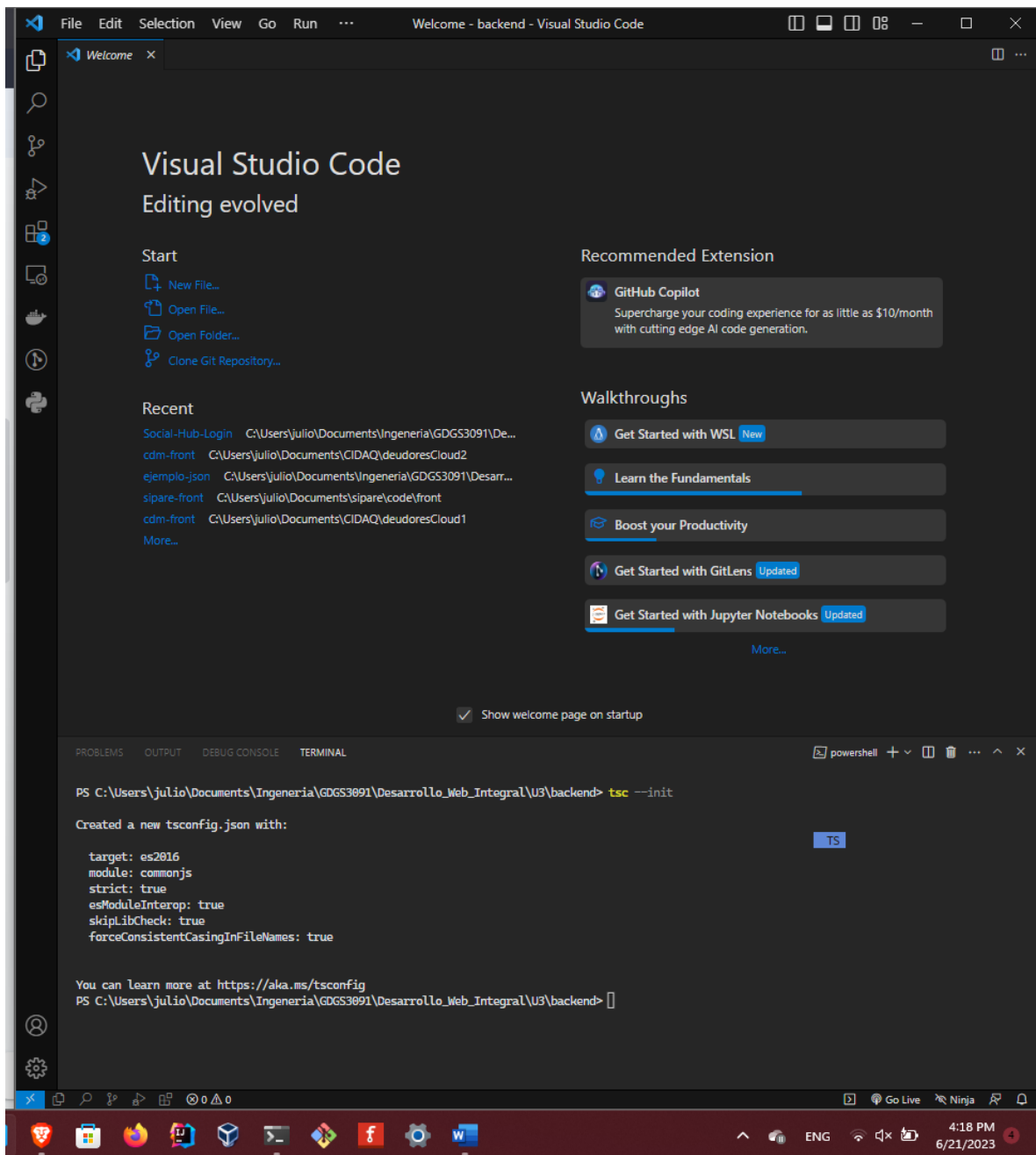
{
  "name": "backend",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}

PS C:\Users\julio\Documents\Ingenieria\GDG53891\Desarrollo_Web_Integral\U3\backend> |
```

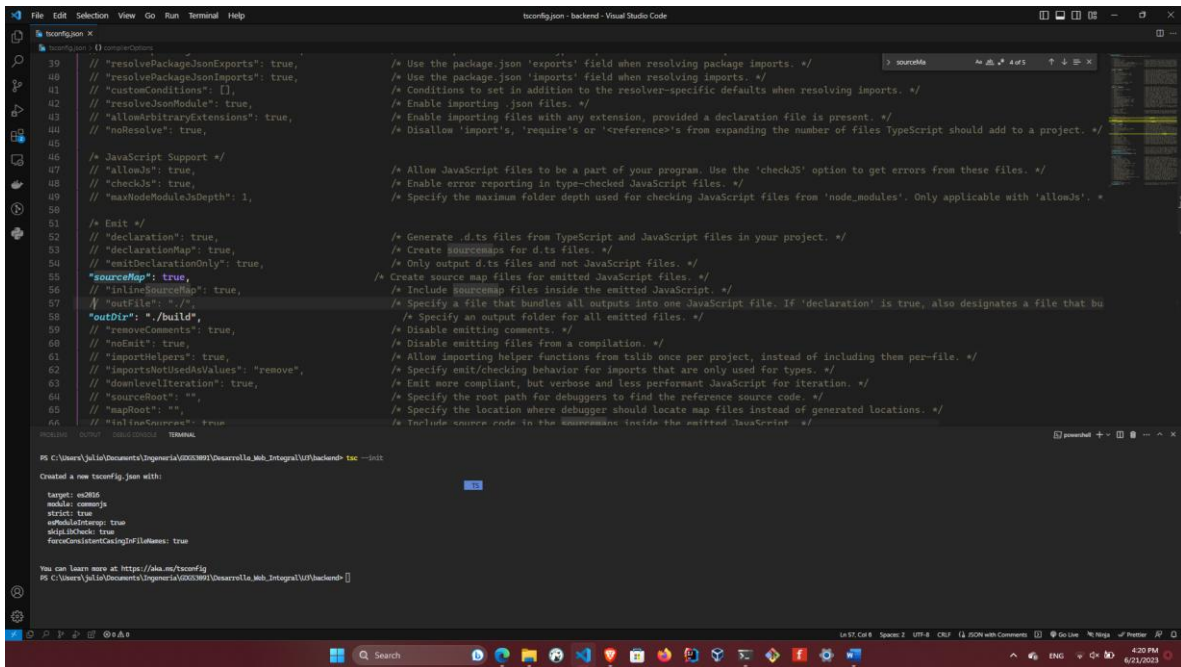
## Implementando nuestro directorios para el proyecto



## Creación del tsconfig.json



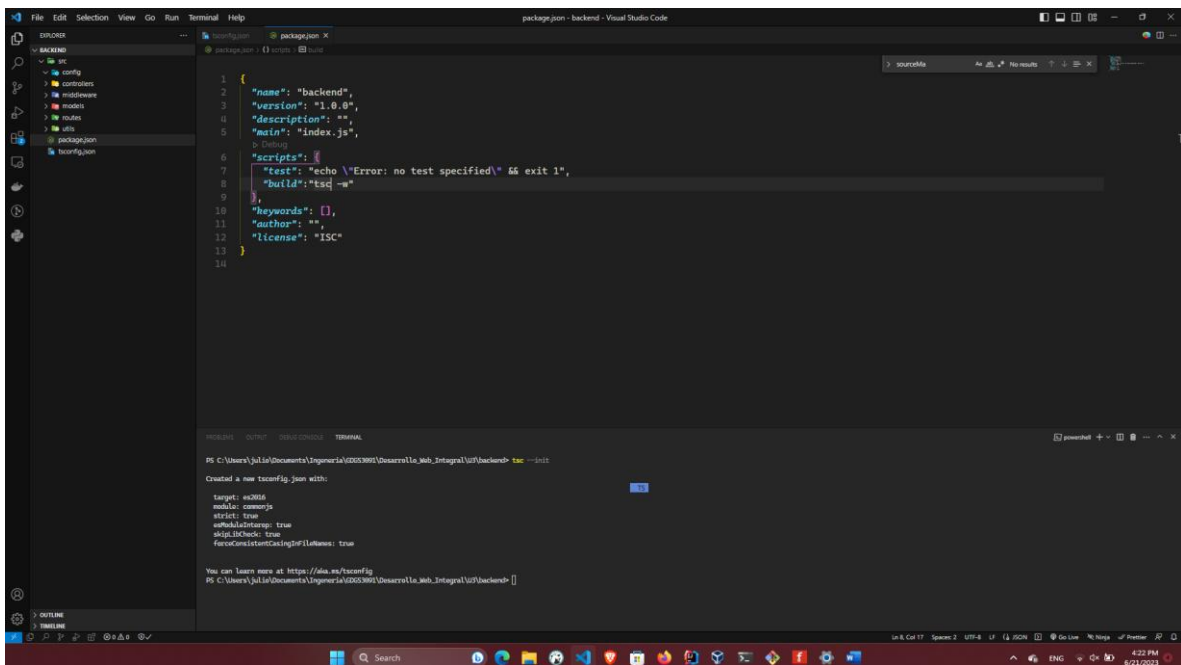
Poniendo la ruta para que al momento de mandarlo a produccion lo pase a javascript



```
tsconfig.json
39 // "resolvePackageJsonExports": true, // Use the package.json 'exports' field when resolving package imports. */
40 // "resolvePackageJsonImports": true, // Use the package.json 'imports' field when resolving imports. */
41 // "customConditions": [], // Conditions to set in addition to the resolver-specific defaults when resolving imports. */
42 // "resolveJsonModule": true, // Enable importing .json files. */
43 // "allowArbitraryExtensions": true, // Enable importing files with any extension, provided a declaration file is present. */
44 // "noResolve": true, // Disallow 'import's, 'require's or 'reference's from expanding the number of files TypeScript should add to a project. */
45
46 /* JavaScript Support */
47 // "allowJs": true, // Allow JavaScript files to be a part of your program. Use the 'checkJS' option to get errors from these files. */
48 // "checkJs": true, // Enable error reporting in type-checked JavaScript files. */
49 // "maxNodeModuleJsDepth": 1, // Specify the maximum folder depth used for checking JavaScript files from 'node_modules'. Only applicable with 'allowJs'. */
50
51 /* Emit */
52 // "declaration": true, // Generate .d.ts files from TypeScript and JavaScript files in your project. */
53 // "declarationMap": true, // Create sourcemaps for d.ts files. */
54 // "emitDeclarationOnly": true, // Only output d.ts files and not JavaScript files. */
55 // "sourceMap": true, // Create source map files for emitted JavaScript files. */
56 // "inlineSourceMap": true, // Include sourcemap files inside the emitted JavaScript. */
57 // "outDir": "./build", // Specify a file that bundles all outputs into one JavaScript file. If 'declaration' is true, also designates a file that bu
58 // "removeComments": true, // Specify no output folder for all emitted files. */
59 // "noEmit": true, // Disable emitting comments. */
60 // "importHelpers": true, // Allow importing helper functions from tslib once per project, instead of including them per-file. */
61 // "importsNotUsedAsValues": "remove", // Specify emit/checking behavior for imports that are only used for types. */
62 // "downlevelIteration": true, // Emit more compliant, but verbose and less performant JavaScript for iteration. */
63 // "sourceRoot": "", // Specify the root path for debuggers to find the reference source code. */
64 // "mapRoot": "", // Specify the location where debugger should locate map files instead of generated locations. */
65 // "inlineSourceMap": true, // Embed source code in the sourcemaps inside the emitted JavaScript. */
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```
PS C:\Users\julia\Documents\Ingenieria\G0033091\Desarrollo_Mob_Integral\UI\backend> tsc --init
Created a new tsconfig.json with:
{
  "target": "es2016",
  "module": "commonjs",
  "strict": true,
  "esModuleInterop": true,
  "skipLibCheck": true,
  "forceConsistentCasingInFileNames": true
}
You can learn more at https://aka.ms/tsconfig
PS C:\Users\julia\Documents\Ingenieria\G0033091\Desarrollo_Mob_Integral\UI\backend>
```

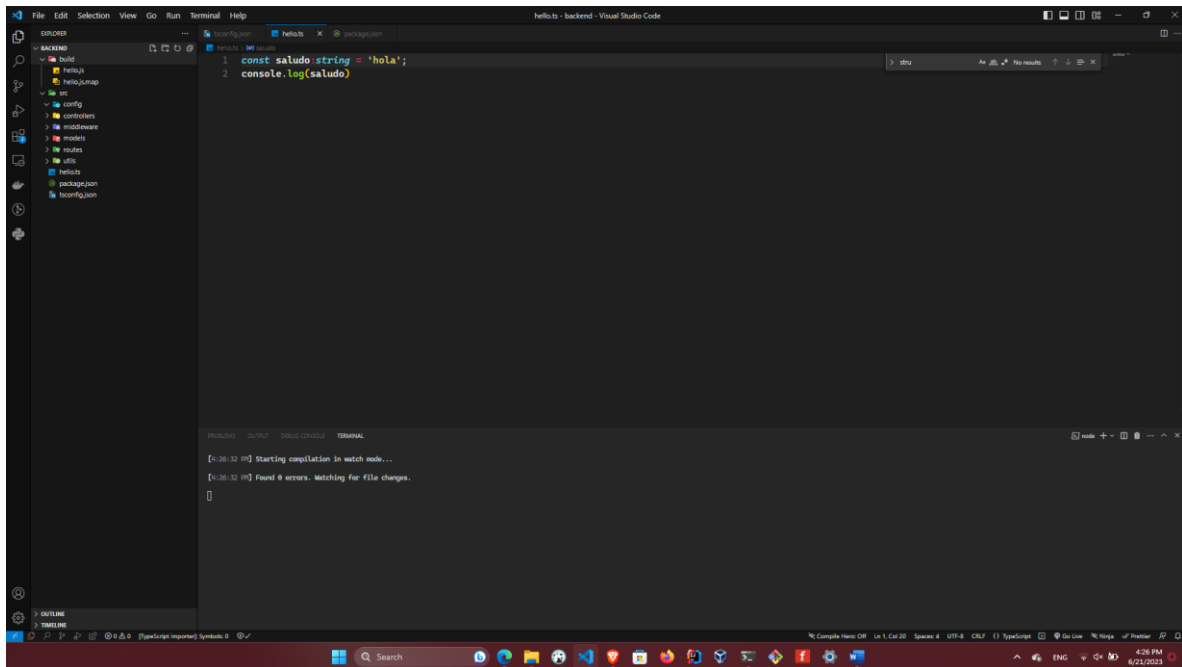
Poniendo el comando para observar los cambios



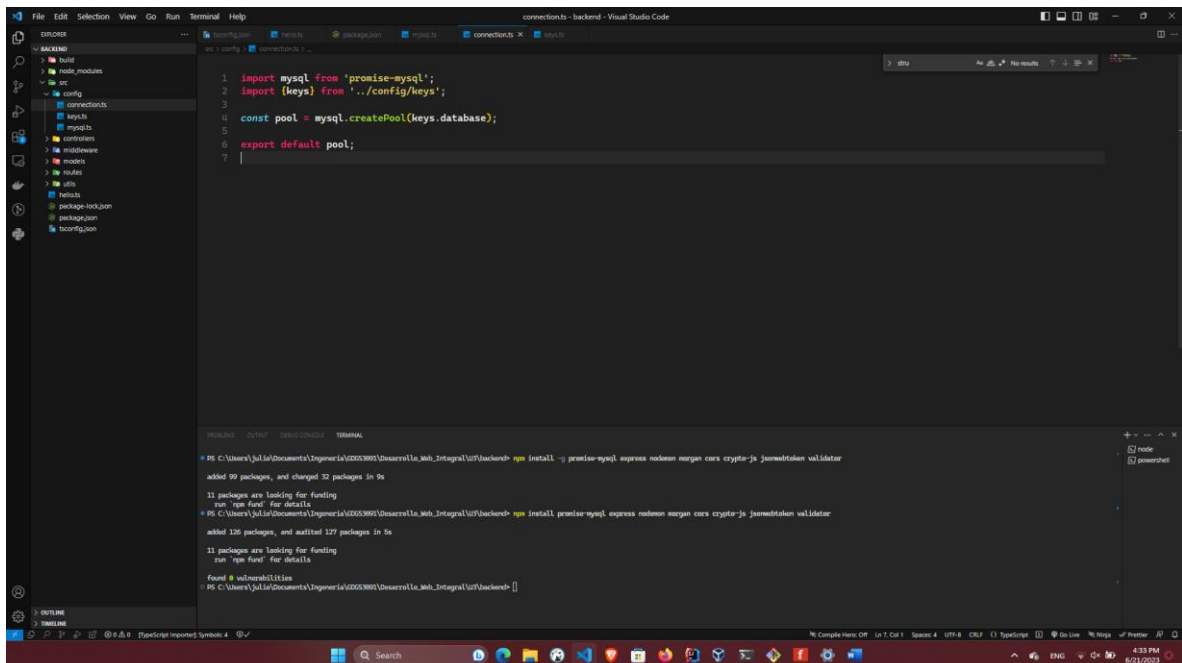
```
package.json
1 {
2   "name": "backend",
3   "version": "1.0.0",
4   "description": "",
5   "main": "index.js",
6   "scripts": {
7     "test": "echo \\Error: no test specified\\ && exit 1",
8     "build": "tsc -m"
9   },
10  "keywords": [],
11  "author": "",
12  "license": "ISC"
13 }
14
```

```
PS C:\Users\julia\Documents\Ingenieria\G0033091\Desarrollo_Mob_Integral\UI\backend> tsc --init
Created a new tsconfig.json with:
{
  "target": "es2016",
  "module": "commonjs",
  "strict": true,
  "esModuleInterop": true,
  "skipLibCheck": true,
  "forceConsistentCasingInFileNames": true
}
You can learn more at https://aka.ms/tsconfig
PS C:\Users\julia\Documents\Ingenieria\G0033091\Desarrollo_Mob_Integral\UI\backend>
```

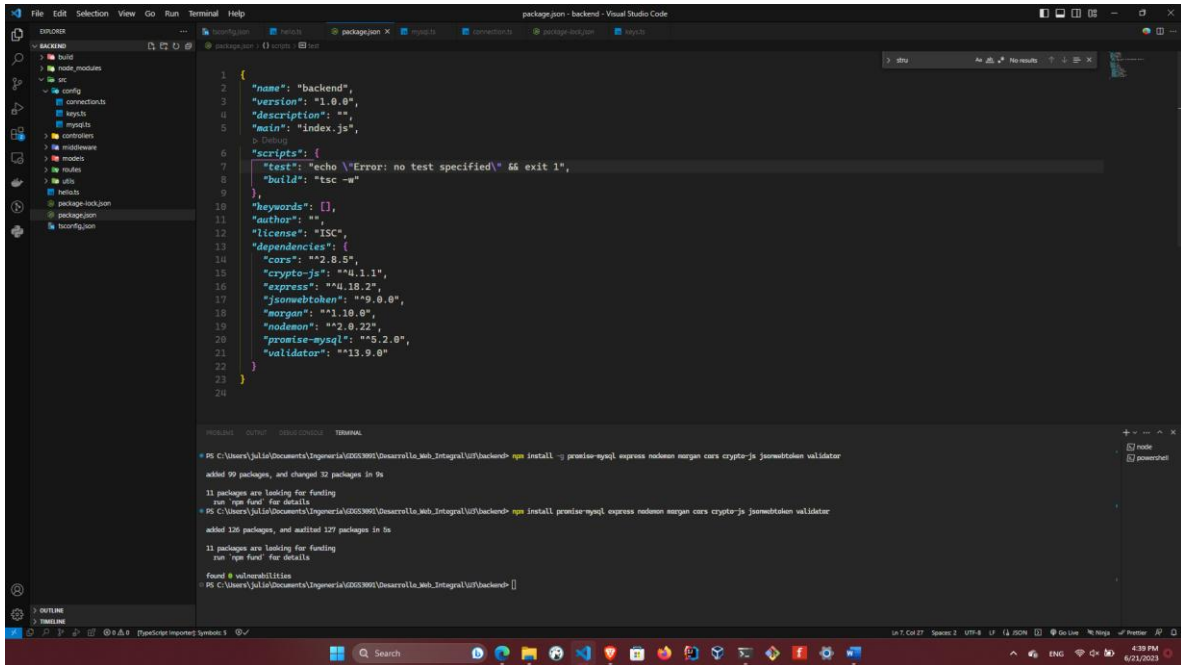
Mandando un saludo, se creó la carpeta build



Instalando dependencias



## Dependencias instaladas



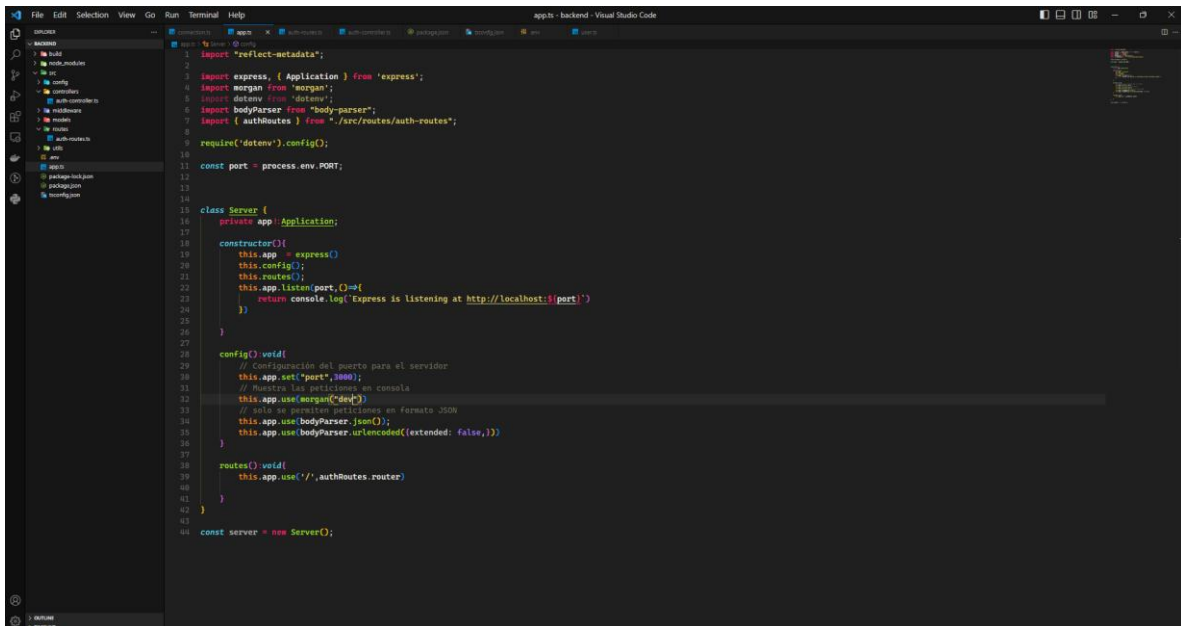
The screenshot shows the Visual Studio Code interface with the `package.json` file open in the editor. The file contains the following content:

```
1 {
2   "name": "backend",
3   "version": "1.0.0",
4   "description": "",
5   "main": "index.js",
6   "scripts": {
7     "test": "echo \\Error: no test specified\\ && exit 1",
8     "build": "tsc -w"
9   },
10  "keywords": [],
11  "author": "",
12  "license": "ISC",
13  "dependencies": {
14    "cors": "^2.8.5",
15    "crypto-js": "^4.1.1",
16    "express": "^4.18.2",
17    "jsonwebtoken": "^9.0.0",
18    "morgan": "^1.10.0",
19    "nodemon": "^2.0.22",
20    "promise-mysql": "^5.2.0",
21    "validator": "^13.9.0"
22  }
23 }
```

The terminal at the bottom shows the output of the `npm install` command:

```
PS C:\Users\julia\Documents\Ingenieria\UDOS3601\Desarrollo_Mob_Integral\backend> npm install --save-dev express nodemon morgan cors crypto-js jsonwebtoken validator
added 99 packages, and changed 12 packages in its
11 packages are looking for funding
  run `npm fund` for details
PS C:\Users\julia\Documents\Ingenieria\UDOS3601\Desarrollo_Mob_Integral\backend> npm install promise-mysql express nodemon morgan cors crypto-js jsonwebtoken validator
added 126 packages, and audited 127 packages in 1s
11 packages are looking for funding
  run `npm fund` for details
found 0 vulnerabilities
PS C:\Users\julia\Documents\Ingenieria\UDOS3601\Desarrollo_Mob_Integral\backend>
```

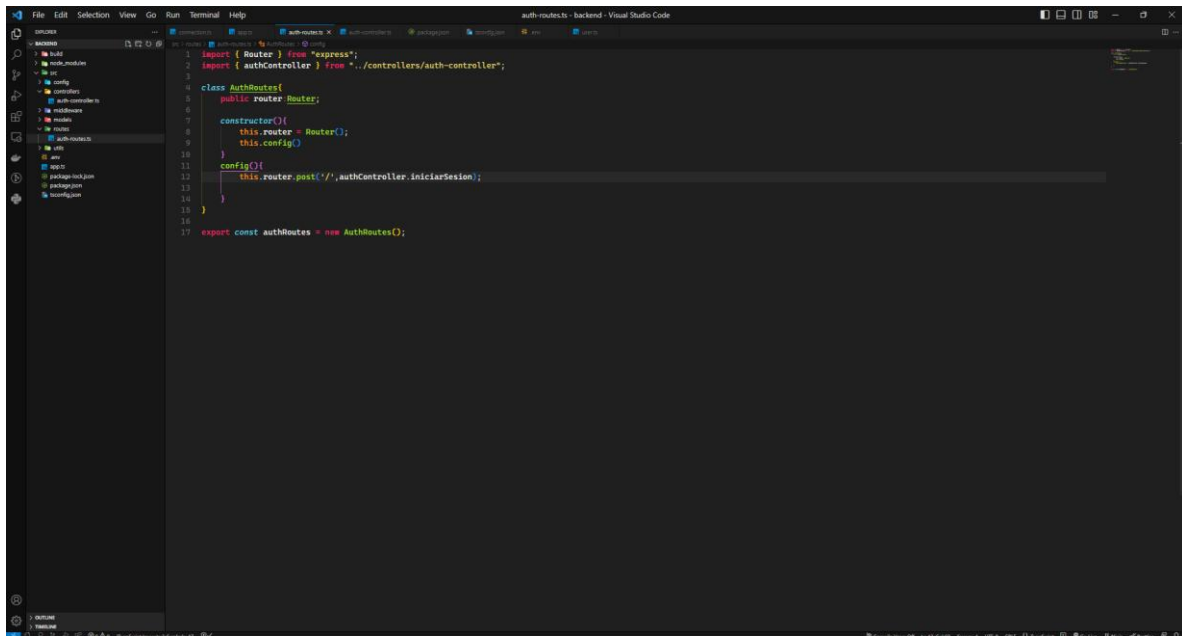
## Configuramos nuestro index.ts



The screenshot shows the Visual Studio Code interface with the `index.ts` file open in the editor. The file contains the following TypeScript code:

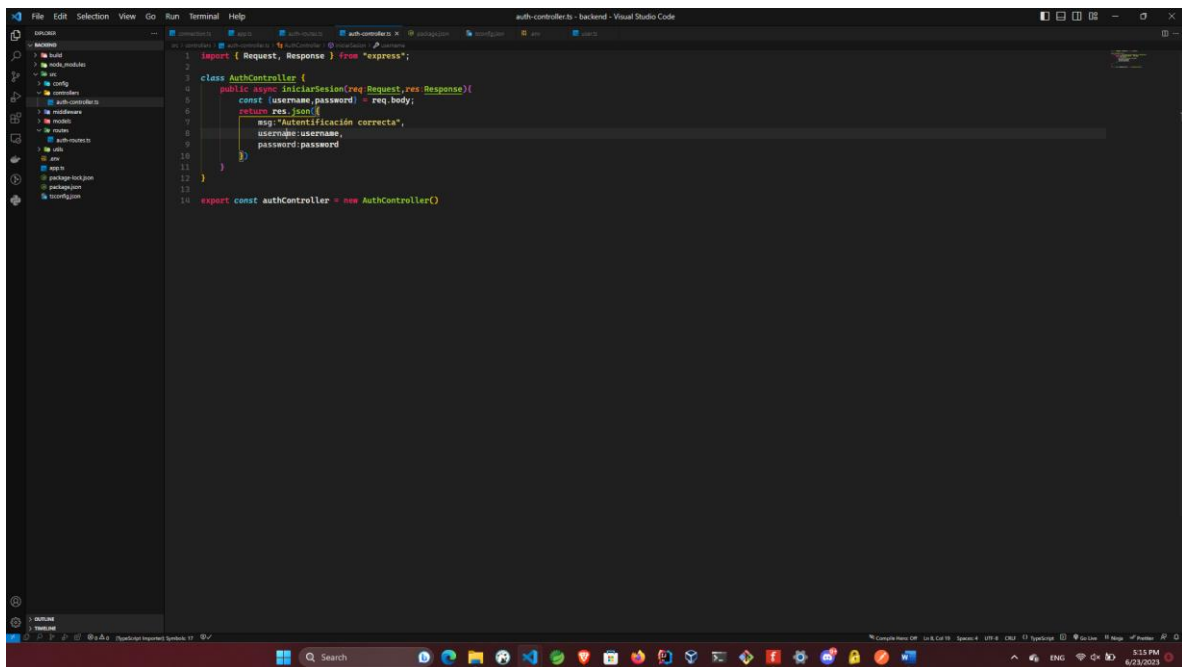
```
1 import {reflectMetadata} from 'reflect-metadata';
2
3 import express, {Application} from 'express';
4 import morgan from 'morgan';
5 import {createMiddleware} from 'express-middleware';
6 import bodyParser from 'body-parser';
7 import {authRoutes} from './src/routes/auth-routes';
8
9 require('dotenv').config();
10
11 const port = process.env.PORT;
12
13
14
15
16 class Server {
17   private app: Application;
18
19   constructor() {
20     this.app = express();
21     this.config();
22     this.routes();
23     this.app.listen(port, () => {
24       console.log(`Express is listening at http://localhost:${port}`);
25     });
26   }
27
28   config() {
29     // Configuración del puerto para el servidor
30     this.app.set('port', 3000);
31     // Mostrar las peticiones en consola
32     this.app.use(morgan('dev'));
33     // solo se permiten peticiones en formato JSON
34     this.app.use(bodyParser.json());
35     this.app.use(bodyParser.urlencoded({extended: false}));
36   }
37
38   routes() {
39     this.app.use('/', authRoutes.router);
40   }
41 }
42
43 const server = new Server();
```

Creamos nuestro archivo de rutas para definir las



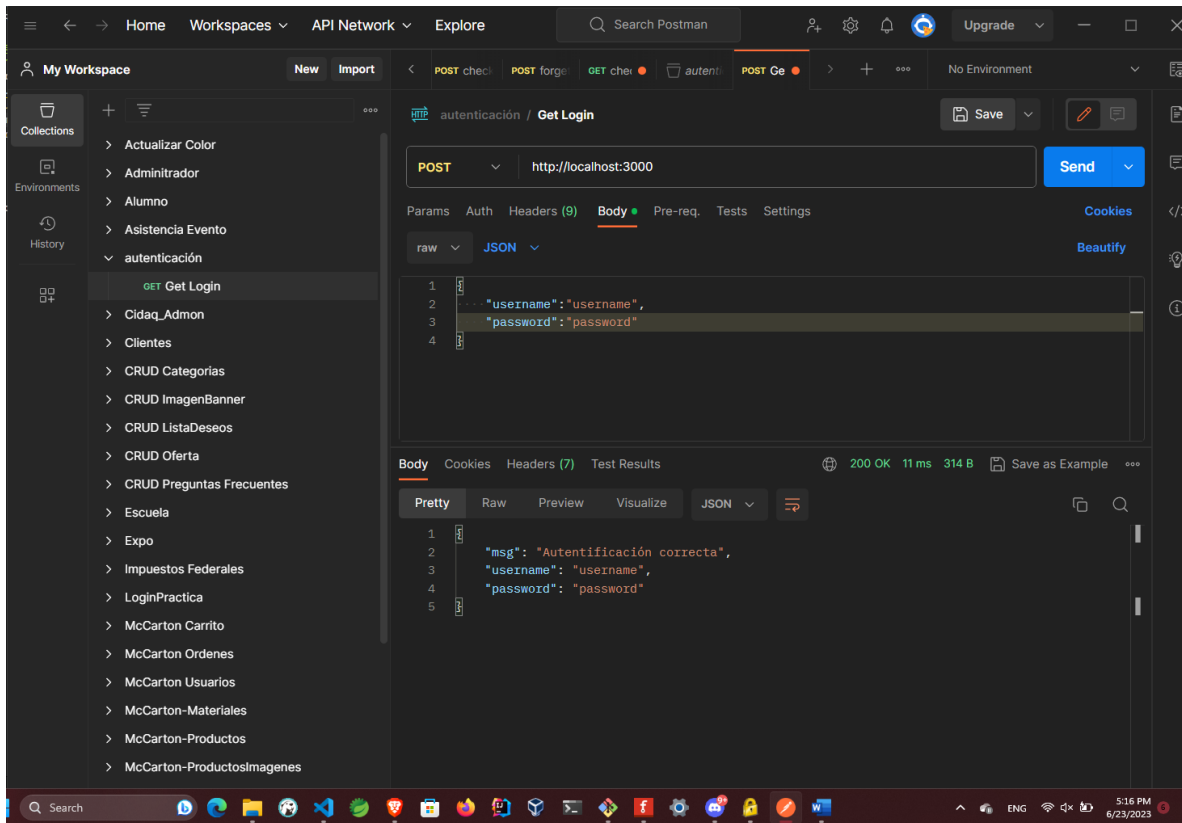
```
1 import { Router } from "express";
2 import { AuthController } from "../controllers/auth-controller";
3
4 class AuthRoutes {
5   public router: Router;
6
7   constructor() {
8     this.router = Router();
9     this.config();
10  }
11
12   config() {
13     this.router.post("/", authController.iniciarSesion);
14   }
15 }
16
17 export const authRoutes = new AuthRoutes();
```

Creamos el método iniciar sesión

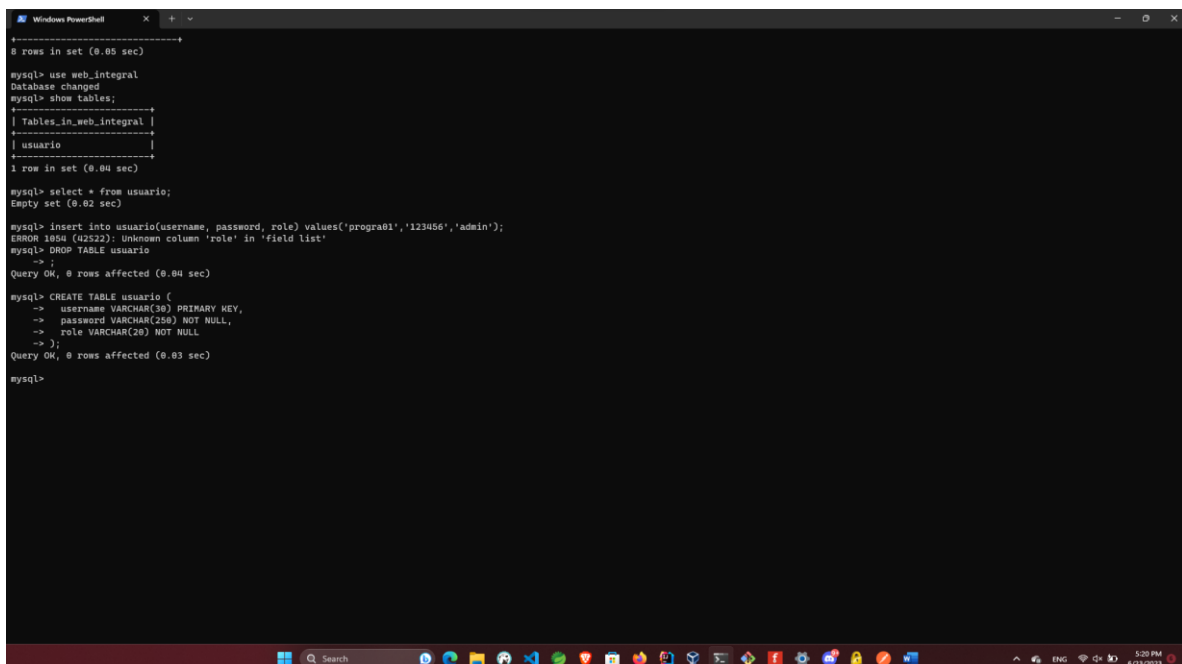


```
1 import { Request, Response } from "express";
2
3 class AuthController {
4   public async iniciarSesion(req: Request, res: Response) {
5     const { username, password } = req.body;
6     return res.json({
7       msg: "Autenticación correcta",
8       usuario: username,
9       password: password
10     });
11   }
12 }
13
14 export const authController = new AuthController();
```

Verificamos la petición de postman



Creamos la tabla



Insertamos el usuario

```
Windows PowerShell

8 rows in set (0.05 sec)

mysql> use web_integral
Database changed
mysql> show tables;
+-----+
| Tables_in_web_integral |
+-----+
| usuario                 |
+-----+
1 row in set (0.04 sec)

mysql> select * from usuario;
Empty set (0.02 sec)

mysql> insert into usuario(username, password, role) values('progra01','123456','admin');
ERROR 1054 (42S22): Unknown column 'role' in 'field list'
mysql> DROP TABLE usuario;
-> ;
Query OK, 0 rows affected (0.04 sec)

mysql> CREATE TABLE usuario (
  ->   username VARCHAR(30) PRIMARY KEY,
  ->   password VARCHAR(256) NOT NULL,
  ->   role VARCHAR(20) NOT NULL
  -> );
Query OK, 0 rows affected (0.03 sec)

mysql> insert into usuario(username, password, role) values('progra01','123456','admin');
Query OK, 1 row affected (0.02 sec)

mysql> ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password BY 'root';
Query OK, 0 rows affected, 1 warning (0.03 sec)

mysql>
```

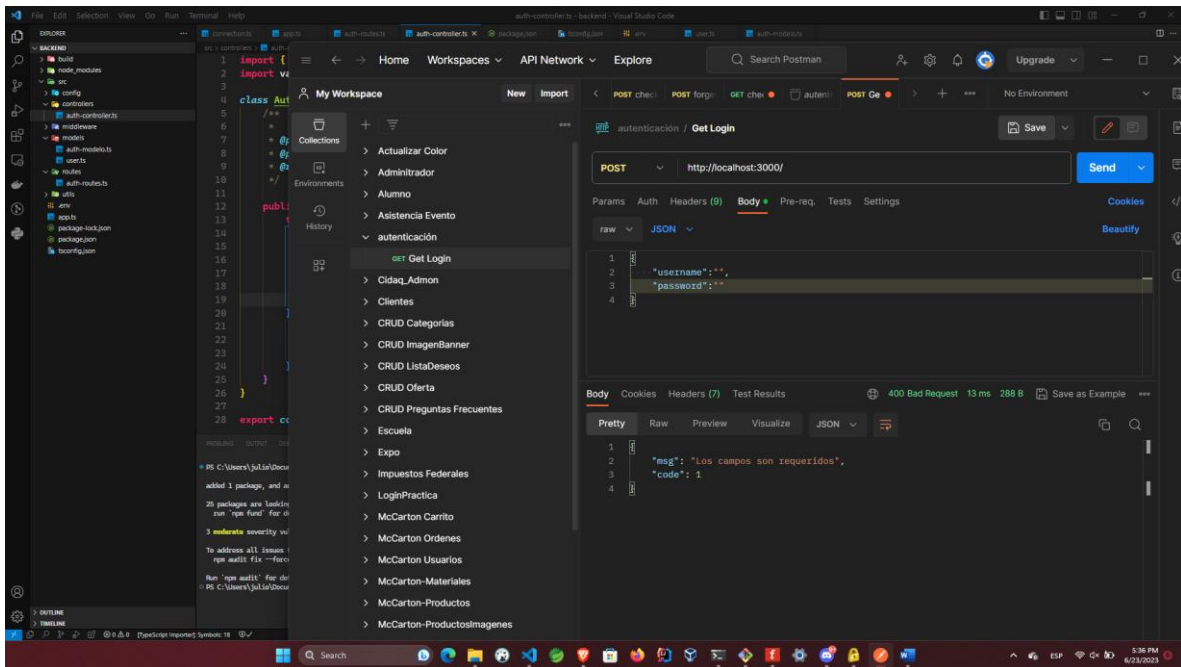
Modificando el auth-controller para validación de entradas

```
auth-controller.ts - Visual Studio Code

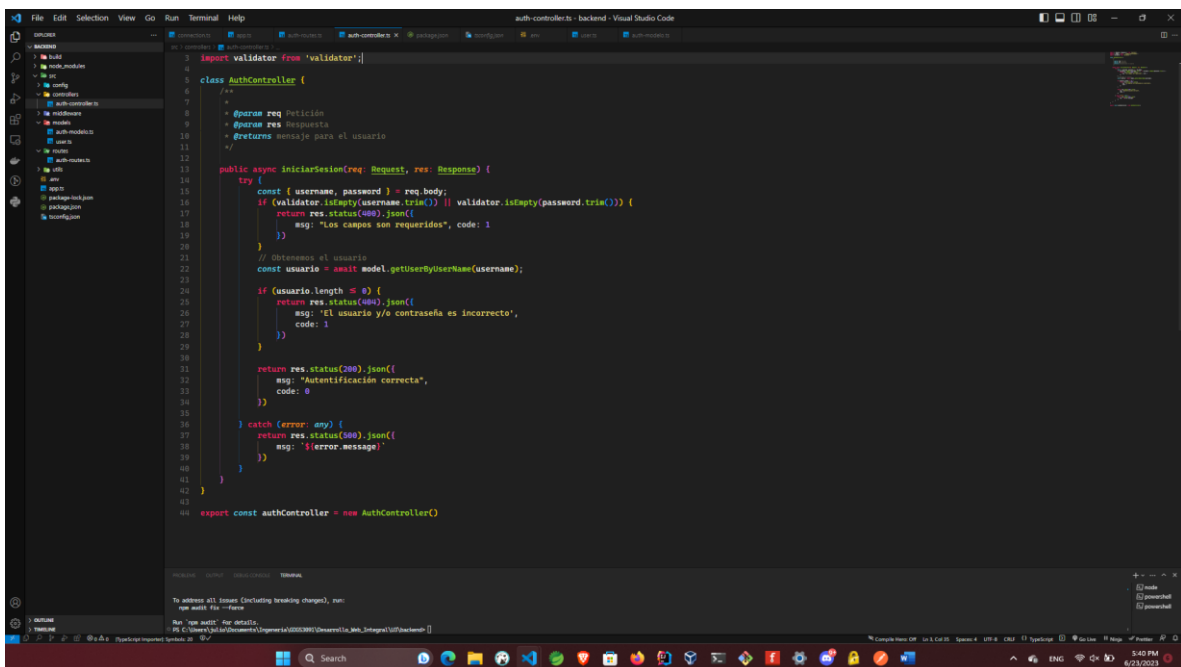
1 import { Request, Response } from "express";
2 import validator from "validator";
3
4 class AuthController {
5   /**
6    *
7    * @param req Petición
8    * @param res Respuesta
9    * @returns mensaje para el usuario
10   */
11
12   public async iniciarSesion(req: Request, res: Response) {
13     try {
14       const { username, password } = req.body;
15       if (validator.isEmpty(username.trim()) || validator.isEmpty(password.trim())) {
16         return res.status(400).json({
17           msg: "Los campos son requeridos", code: 1
18         });
19       }
20     } catch (error: any) {
21       return res.status(500).json({
22         msg: `${error.message}`
23       });
24     }
25   }
26 }
27
28 export const authController = new AuthController();
```



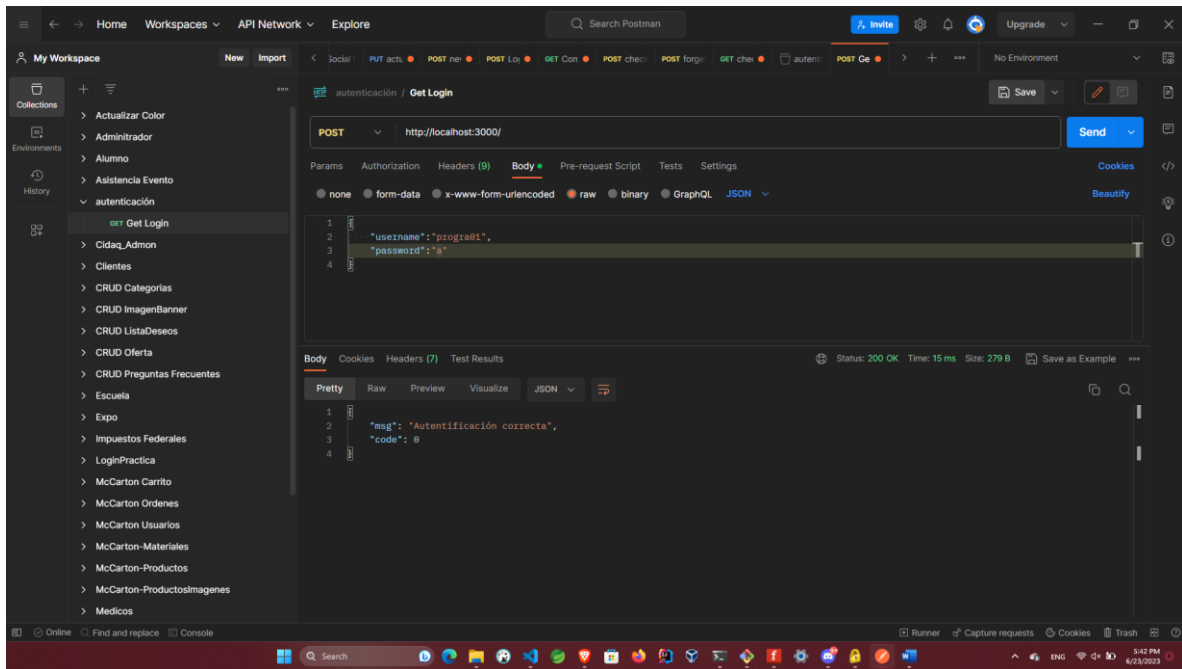
## Validación de entrada



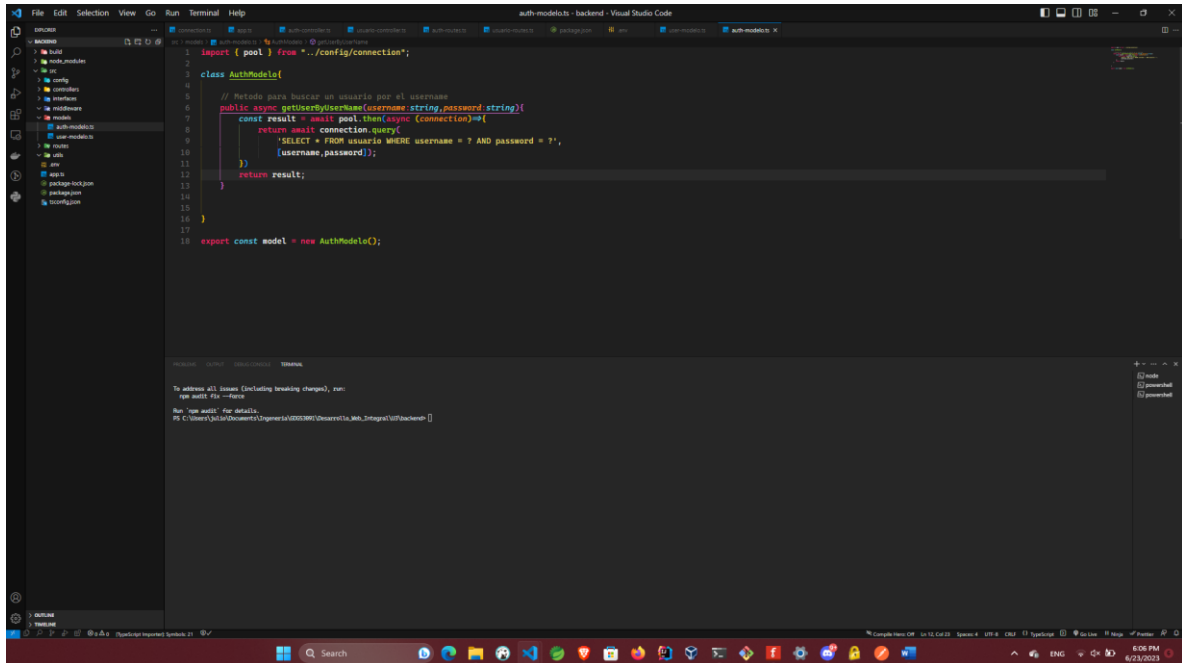
## Agregando Autenticación y verificando si existe



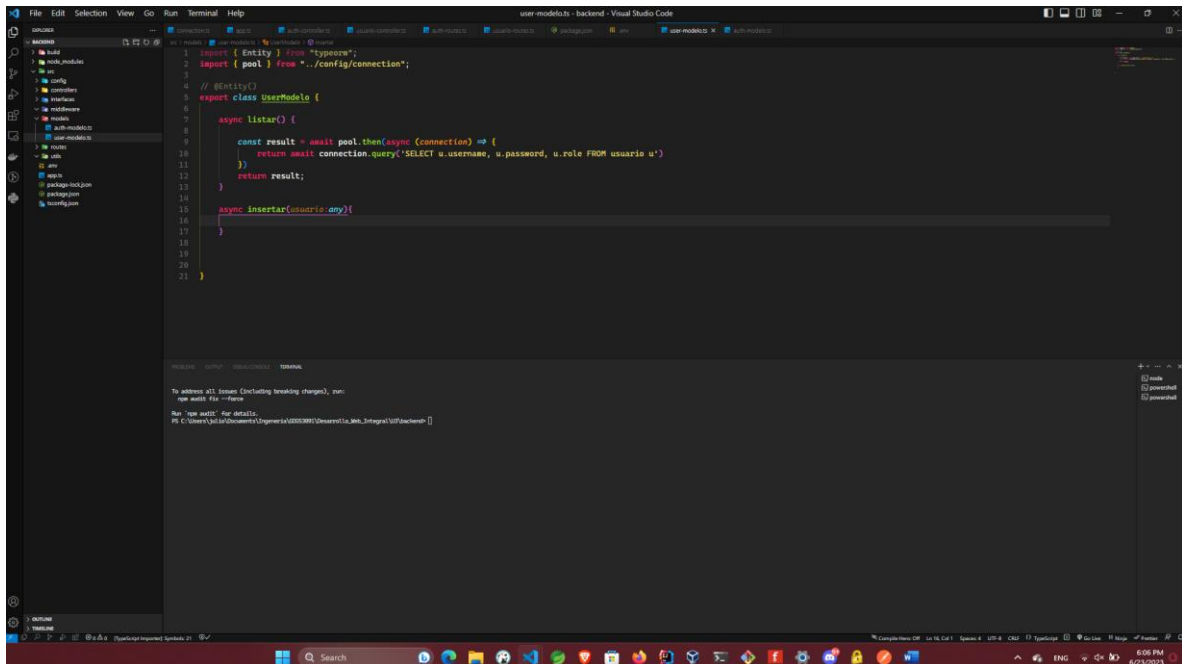
## Verificación de inicio de sesión



## Modificando la consulta para que valide el username y el password



## Creamos el user modelo



The screenshot shows the Visual Studio Code editor with the file `user-models-backend.js` open. The code defines a `UserModel` class that inherits from `Entity`. It includes a `listar` method that queries a database for users and an `insertar` method for inserting new users. The file explorer on the left shows the project structure, and the terminal at the bottom displays instructions for running the application.

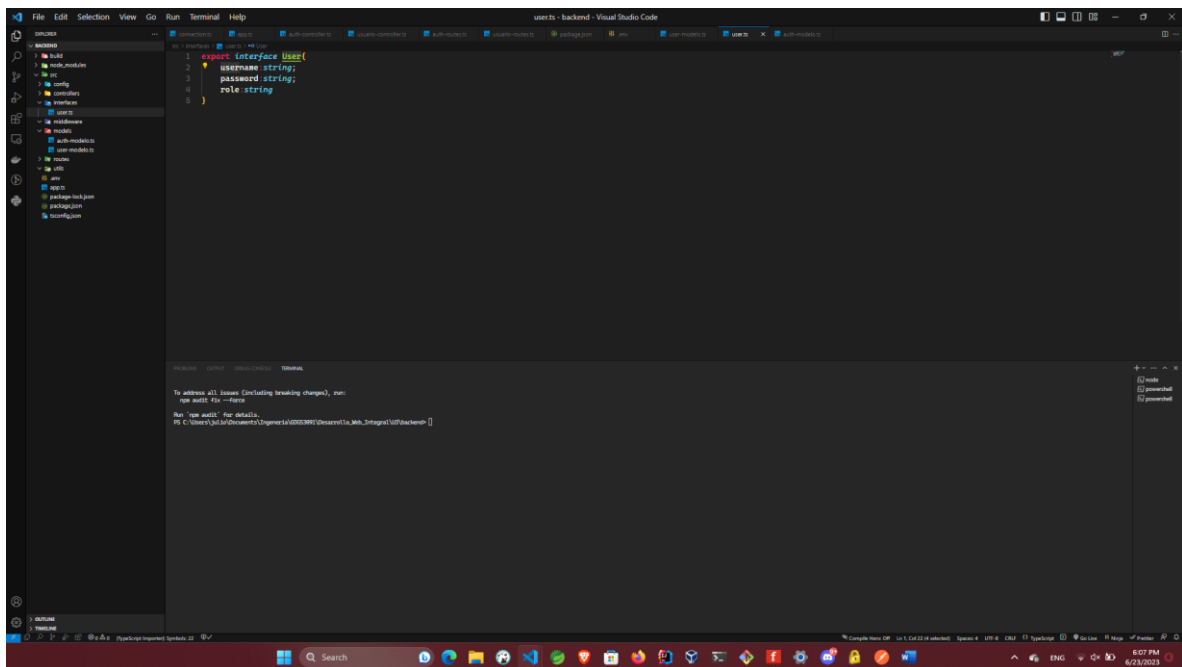
```
1 import { Entity } from "typeorm";
2 import { pool } from "../config/connection";
3
4 // @Entity()
5 export class UserModel {
6
7     async listar() {
8
9         const result = await pool.then(async (connection) => {
10             return await connection.query("SELECT u.username, u.password, u.role FROM usuarios u");
11         });
12         return result;
13     }
14
15     async insertar(usuario:any){
16
17     }
18
19
20
21 }
```

Terminal output:

```
To address all issues (including breaking changes), run:
npm audit fix --force

Run "npm audit" for details.
PS C:\Users\j\Documents\Programas\2023\2023\Usuarios\src\backends\user-models-backend>
```

## Creando interface del usuario para el tipado



The screenshot shows the Visual Studio Code editor with the file `users.ts` open. The code defines a `User` interface with properties for `username`, `password`, and `role`. The file explorer on the left shows the project structure, and the terminal at the bottom displays instructions for running the application.

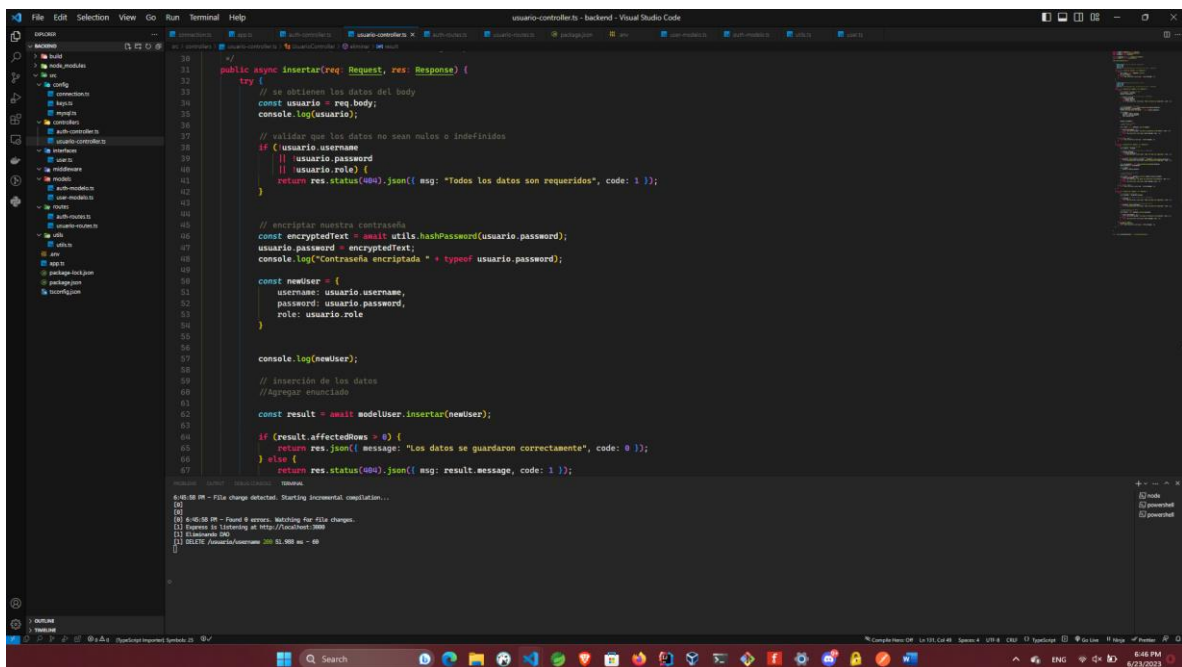
```
1 export interface User {
2     username: string;
3     password: string;
4     role: string;
5 }
```

Terminal output:

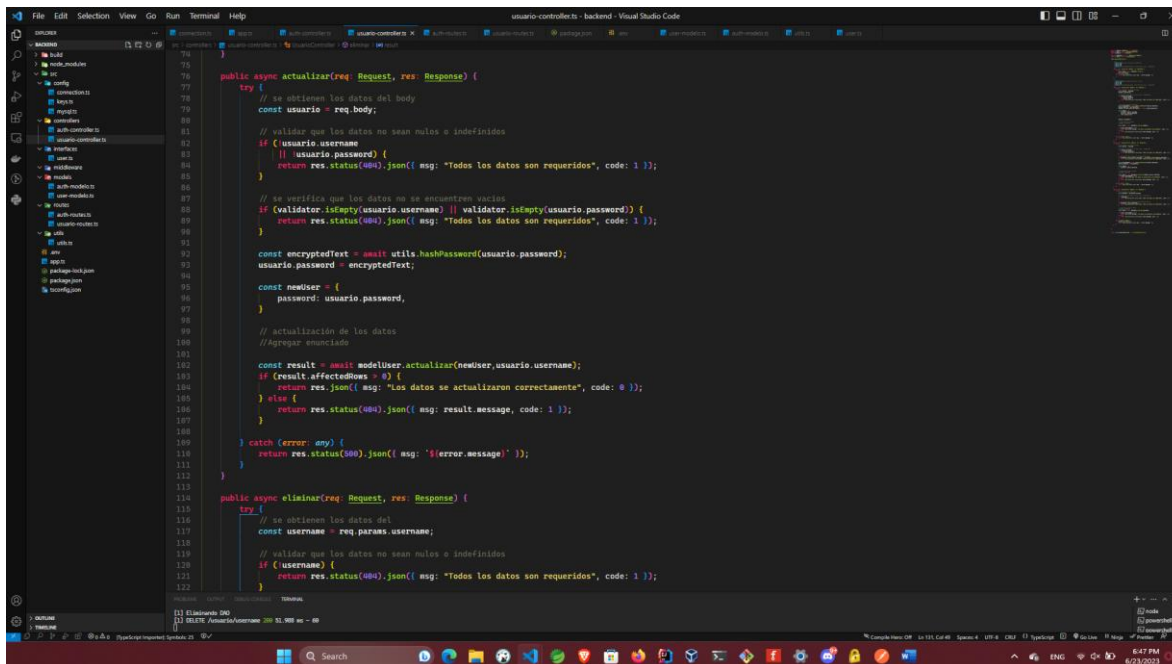
```
To address all issues (including breaking changes), run:
npm audit fix --force

Run "npm audit" for details.
PS C:\Users\j\Documents\Programas\2023\2023\Usuarios\src\backends\user-models-backend>
```

## Listar



## Actualizar



The screenshot shows a Visual Studio Code editor with a file explorer on the left displaying a project structure for 'usuario-controller'. The main editor window shows the 'actualizar' method in 'usuario.controllers.js'. The code is as follows:

```
public async actualizar(req: Request, res: Response) {
  try {
    // se obtienen los datos del body
    const usuario = req.body;

    // validar que los datos no sean nulos o indefinidos
    if (!usuario.username || !usuario.password) {
      return res.status(400).json({ msg: "Todos los datos son requeridos", code: 1 });
    }

    // se verifica que los datos no se encuentren vacios
    if (validator.isEmpty(usuario.username) || validator.isEmpty(usuario.password)) {
      return res.status(400).json({ msg: "Todos los datos son requeridos", code: 1 });
    }

    const encryptedText = await utils.hashPassword(usuario.password);
    usuario.password = encryptedText;

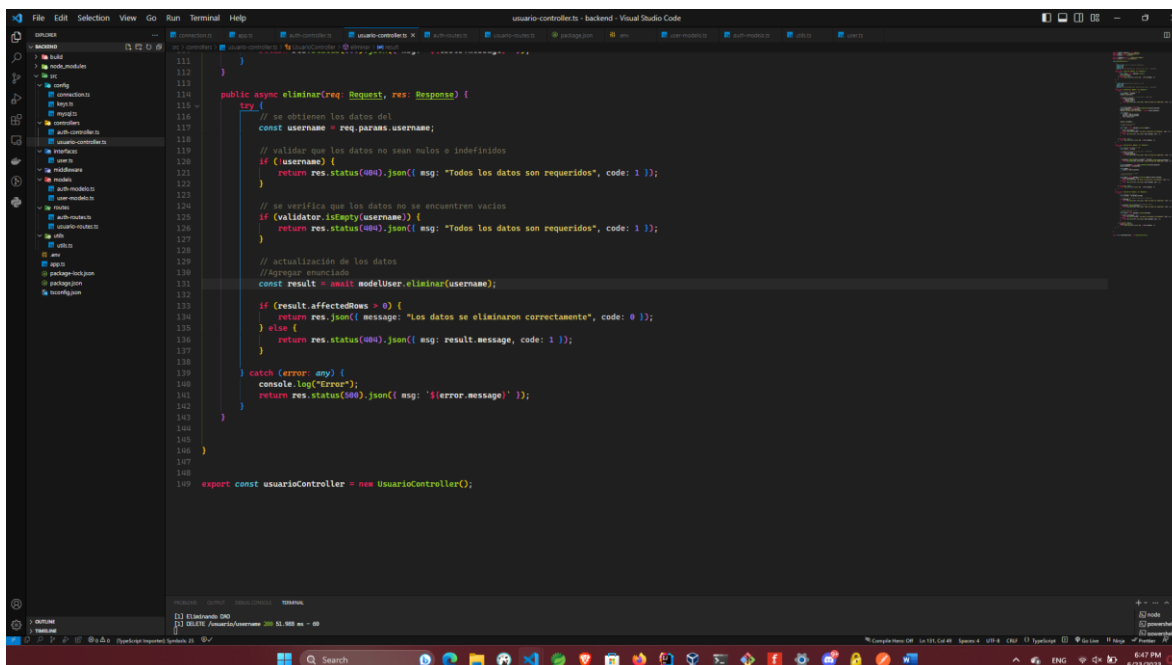
    const newUser = {
      password: usuario.password,
    };

    // actualización de los datos
    //Agregar enunciado
    const result = await modelUser.actualizar(newUser, usuario.username);
    if (result.affectedRows > 0) {
      return res.json({ msg: "Los datos se actualizaron correctamente", code: 0 });
    } else {
      return res.status(400).json({ msg: result.message, code: 1 });
    }
  } catch (error: any) {
    return res.status(500).json({ msg: `${error.message}` });
  }
}

public async eliminar(req: Request, res: Response) {
  try {
    // se obtienen los datos del
    const username = req.params.username;

    // validar que los datos no sean nulos o indefinidos
    if (!username) {
      return res.status(400).json({ msg: "Todos los datos son requeridos", code: 1 });
    }
  }
}
```

## Eliminar



The screenshot shows a Visual Studio Code editor with a file explorer on the left displaying a project structure for 'usuario-controller'. The main editor window shows the 'eliminar' method in 'usuario.controllers.js'. The code is as follows:

```
public async eliminar(req: Request, res: Response) {
  try {
    // se obtienen los datos del
    const username = req.params.username;

    // validar que los datos no sean nulos o indefinidos
    if (!username) {
      return res.status(400).json({ msg: "Todos los datos son requeridos", code: 1 });
    }

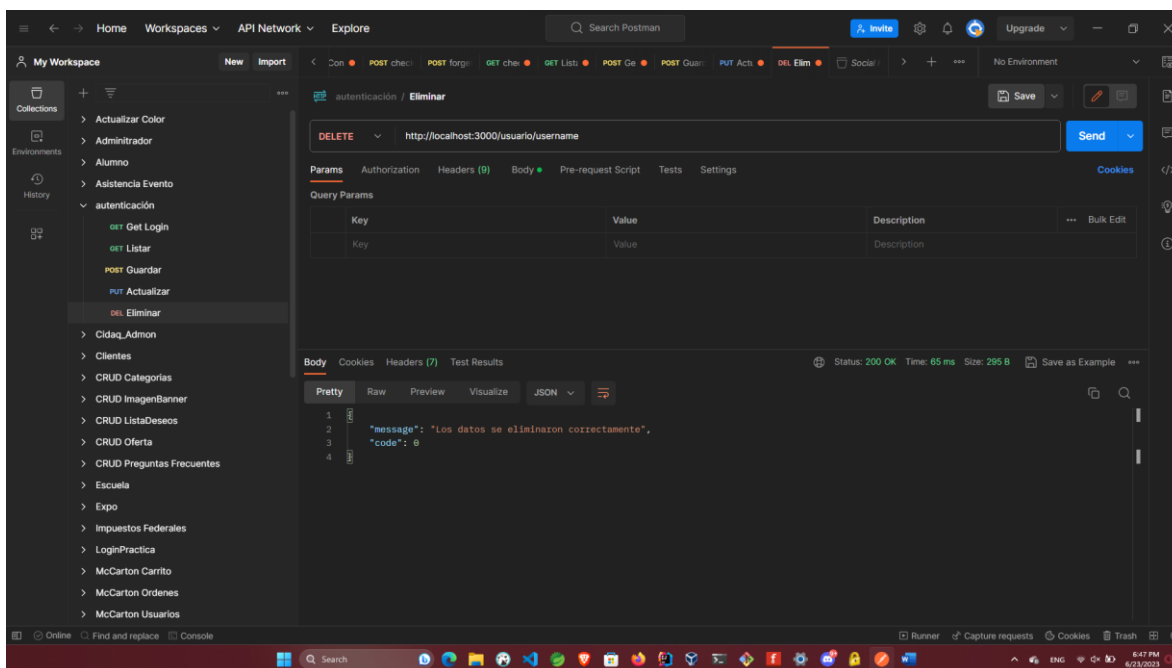
    // se verifica que los datos no se encuentren vacios
    if (validator.isEmpty(username)) {
      return res.status(400).json({ msg: "Todos los datos son requeridos", code: 1 });
    }

    // actualización de los datos
    //Agregar enunciado
    const result = await modelUser.eliminar(username);

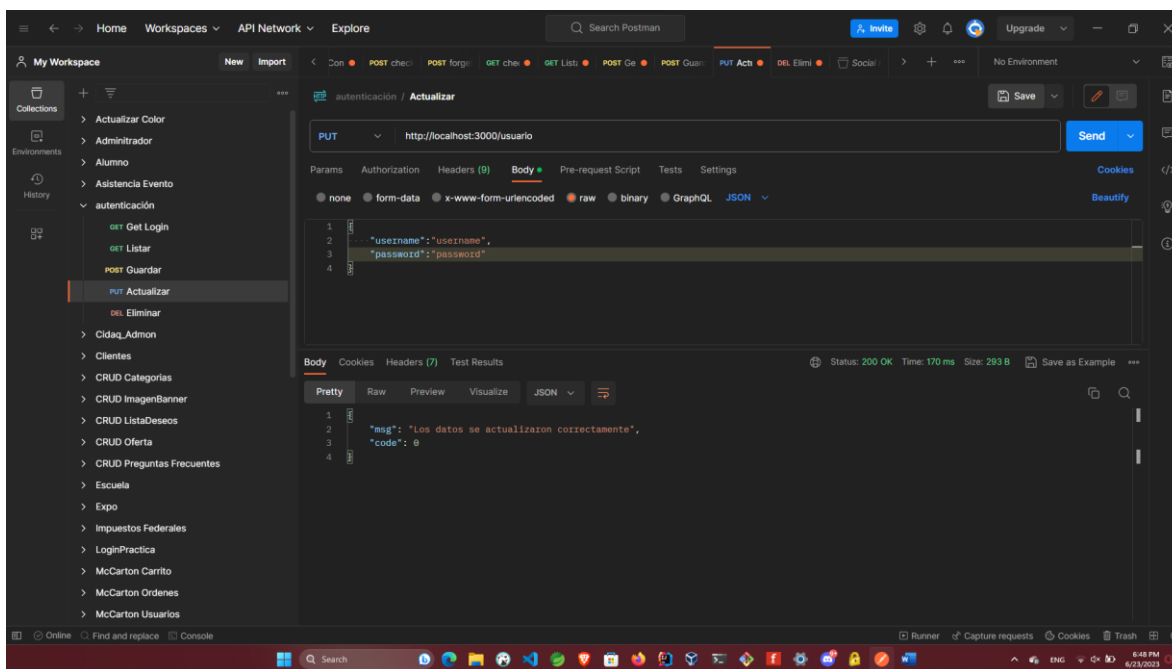
    if (result.affectedRows > 0) {
      return res.json({ message: "Los datos se eliminaron correctamente", code: 0 });
    } else {
      return res.status(400).json({ msg: result.message, code: 1 });
    }
  } catch (error: any) {
    console.log("Error");
    return res.status(500).json({ msg: `${error.message}` });
  }
}

export const usuarioController = new UsuarioController();
```

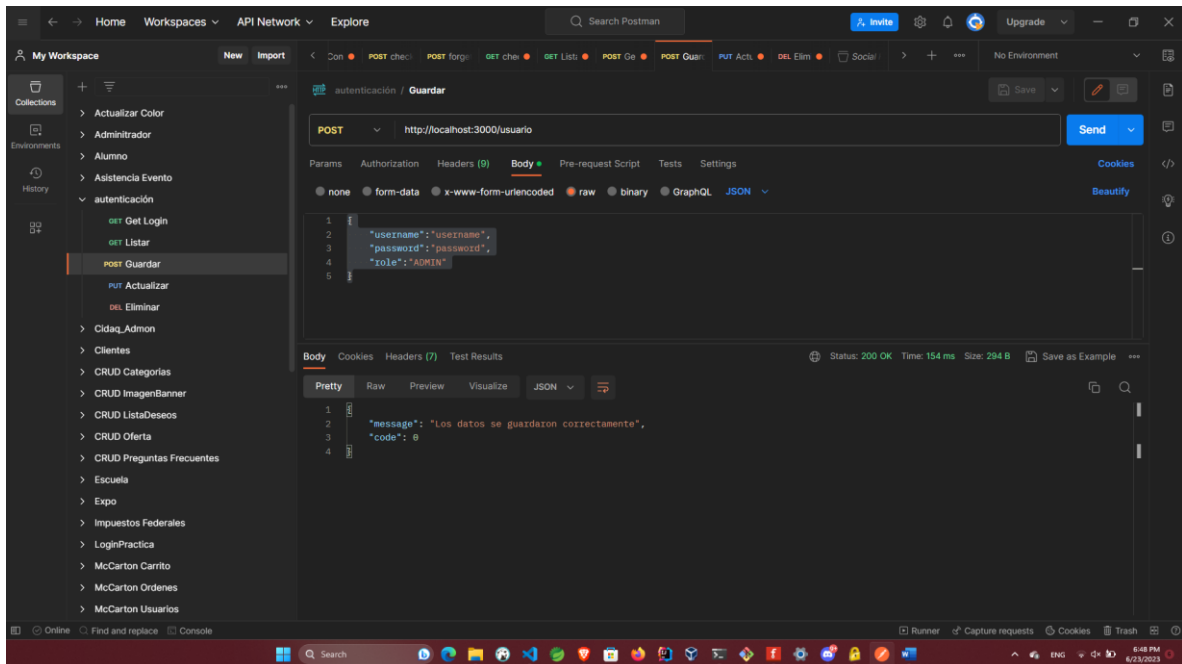
## Verificando funcionalidad en eliminar



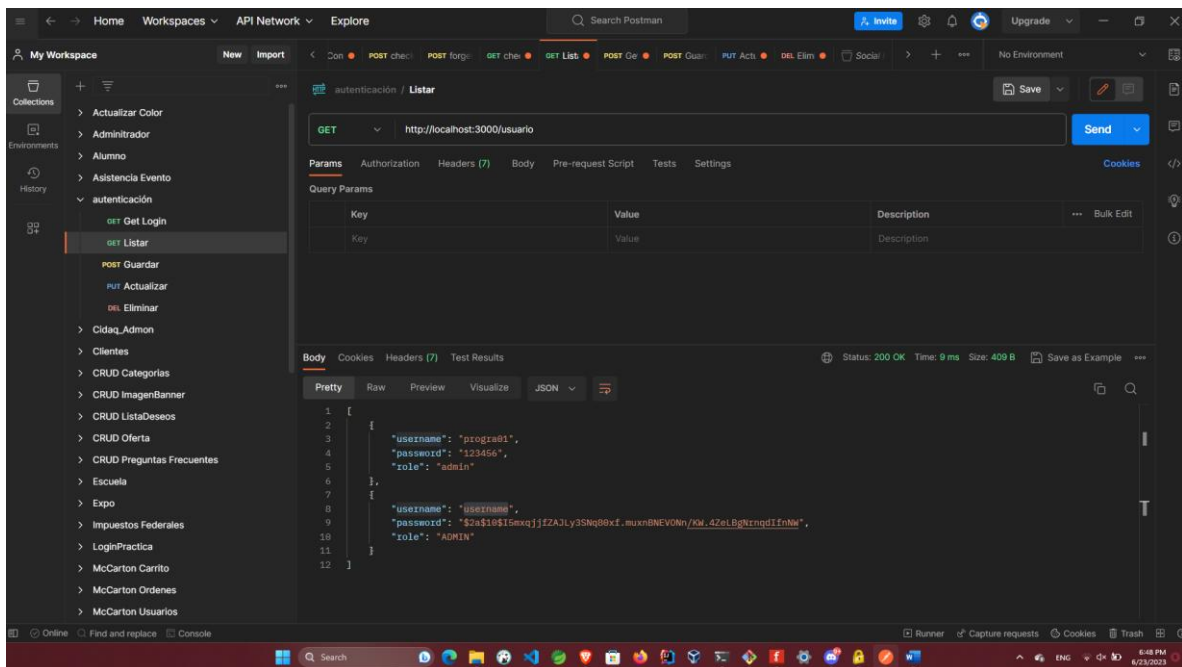
## Verificando en actualizar



## Verificando en guardar

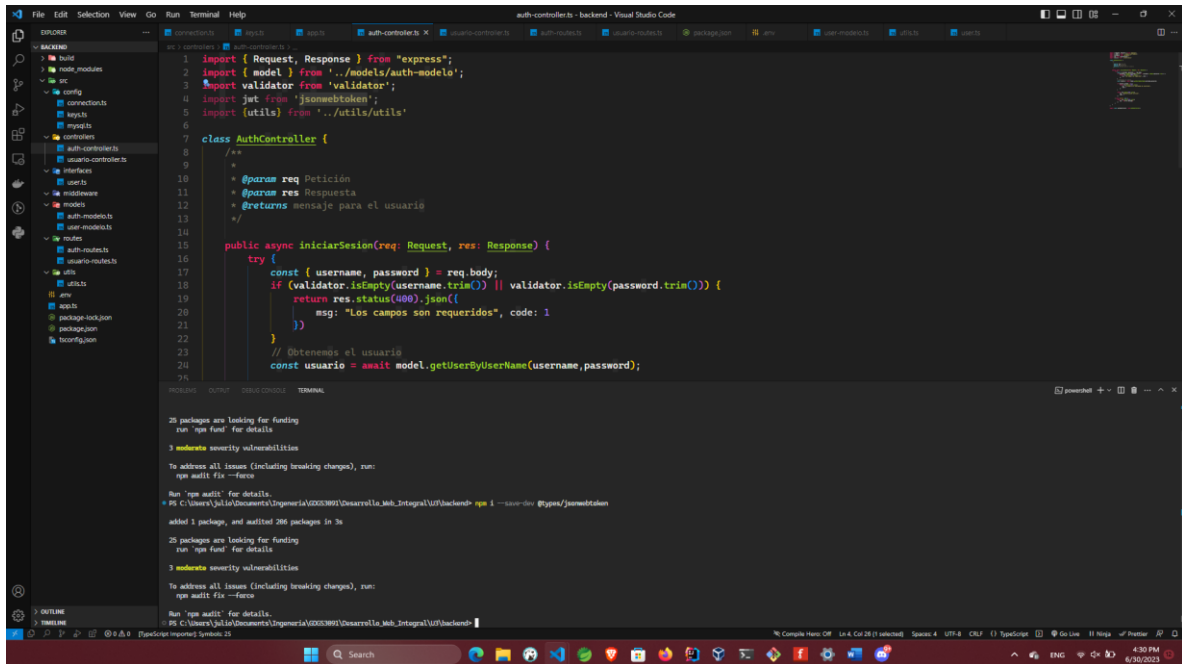


## Verificando Listar



Json web token

Instalamos las dependencias con los tipos de la misma libreria



```
1 import { Request, Response } from "express";
2 import { model } from "../models/auth-models";
3 import validator from "validator";
4 import jwt from "jsonwebtoken";
5 import { utils } from "../utils/utils";

7 class AuthController {
8   /**
9    *
10    * @param req Petición
11    * @param res Respuesta
12    * @returns mensaje para el usuario
13    */
14
15   public async iniciarSesion(req: Request, res: Response) {
16     try {
17       const { username, password } = req.body;
18       if (validator.isEmpty(username.trim()) || validator.isEmpty(password.trim())) {
19         return res.status(400).json({
20           msg: "Los campos son requeridos", code: 1
21         });
22       }
23       // Obtenemos el usuario
24       const usuario = await model.getUserByUsername(username, password);
25     } catch (error) {
26       console.log(error);
27     }
28   }
29 }
```

25 packages are looking for funding  
run 'npm fund' for details

3 moderate severity vulnerabilities

To address all issues (including breaking changes), run:  
npm audit fix --force

Run 'npm audit' for details.

PS C:\Users\juli\Documents\Ingenieria\UD03\0801\Desarrollo\_Mob\_Integral\UI\backend> npm i --save-dev @types/jsonwebtoken

added 1 package, and audited 268 packages in 3s

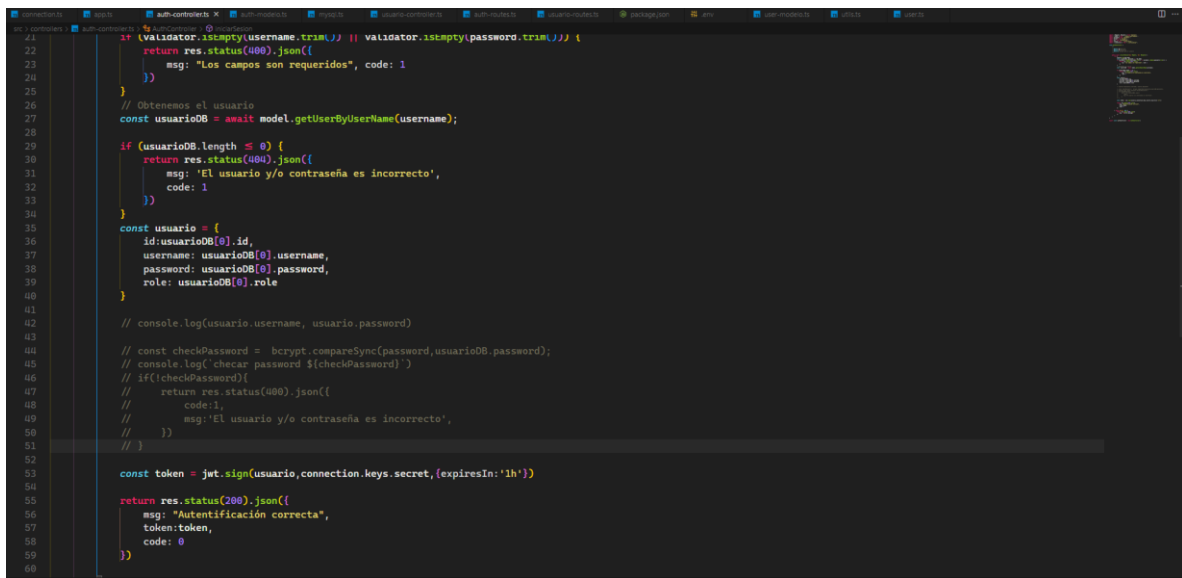
25 packages are looking for funding  
run 'npm fund' for details

3 moderate severity vulnerabilities

To address all issues (including breaking changes), run:  
npm audit fix --force

Run 'npm audit' for details.

Enviamos el token



```
22 if (validator.isEmpty(username.trim()) || validator.isEmpty(password.trim())) {
23   return res.status(400).json({
24     msg: "Los campos son requeridos", code: 1
25   });
26 }
27 // Obtenemos el usuario
28 const usuarioDB = await model.getUserByUsername(username);
29
30 if (usuarioDB.length <= 0) {
31   return res.status(400).json({
32     msg: "El usuario y/o contraseña es incorrecto",
33     code: 1
34   });
35 }
36 const usuario = {
37   id: usuarioDB[0].id,
38   username: usuarioDB[0].username,
39   password: usuarioDB[0].password,
40   role: usuarioDB[0].role
41 };
42 // console.log(usuario.username, usuario.password)
43
44 // const checkPassword = bcrypt.compareSync(password, usuarioDB.password);
45 // console.log('check password', checkPassword);
46 // if (checkPassword) {
47 //   return res.status(200).json({
48 //     code: 1,
49 //     msg: "El usuario y/o contraseña es incorrecto",
50 //   });
51 // }
52
53 const token = jwt.sign(usuario, connection.keys.secret, { expiresIn: '1h' });
54
55 return res.status(200).json({
56   msg: "Autenticación correcta",
57   token: token,
58   code: 0
59 });
60 }
```



## Probando con Postman

The screenshot shows the Postman interface for a POST request to `http://localhost:3000/`. The request body is a JSON object with `username: "nuevo"` and `password: "nuevo"`. The response status is `200 OK` with a time of `95 ms` and a size of `584 B`. The response body is a JSON object with `msg: "Autenticación correcta"`, a long `token`, and `code: 0`.

**Request:**

```
POST http://localhost:3000/

{
  "username": "nuevo",
  "password": "nuevo"
}
```

**Response:**

```
{
  "msg": "Autenticación correcta",
  "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VybmFtZSI6Im51ZXZvIiwicGFzc3dvcmQIOiIkdMmEkMTAKSmI4R0ZkRXZJRW9TS0I2ZWZySExxZUdXTi5TdUppMnB1N2ttbDZvbmtpUWouLk1jeVJaLzIiLCJyb2xIIjo1OURNSU41LlCjpYXQ10jE200gxNjY1ODYsImV4cCI6MTY4ODE3MDE4Nn0.p145ke_ghSEbgWdClYaP2yxAm5fexG3MV1vWefu0SqI",
  "code": 0
}
```