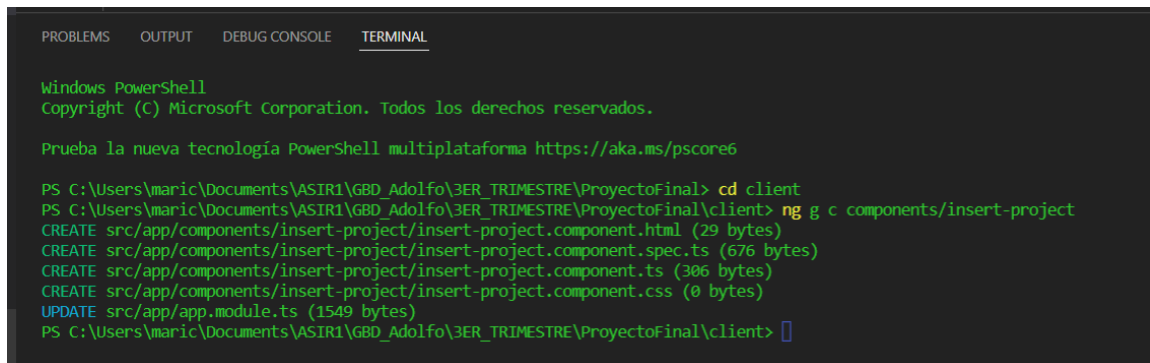


DOCUMENTACIÓN

FRONTEND

1. Creamos un componente mediante el comando: “ng g c carpeta/componente”.



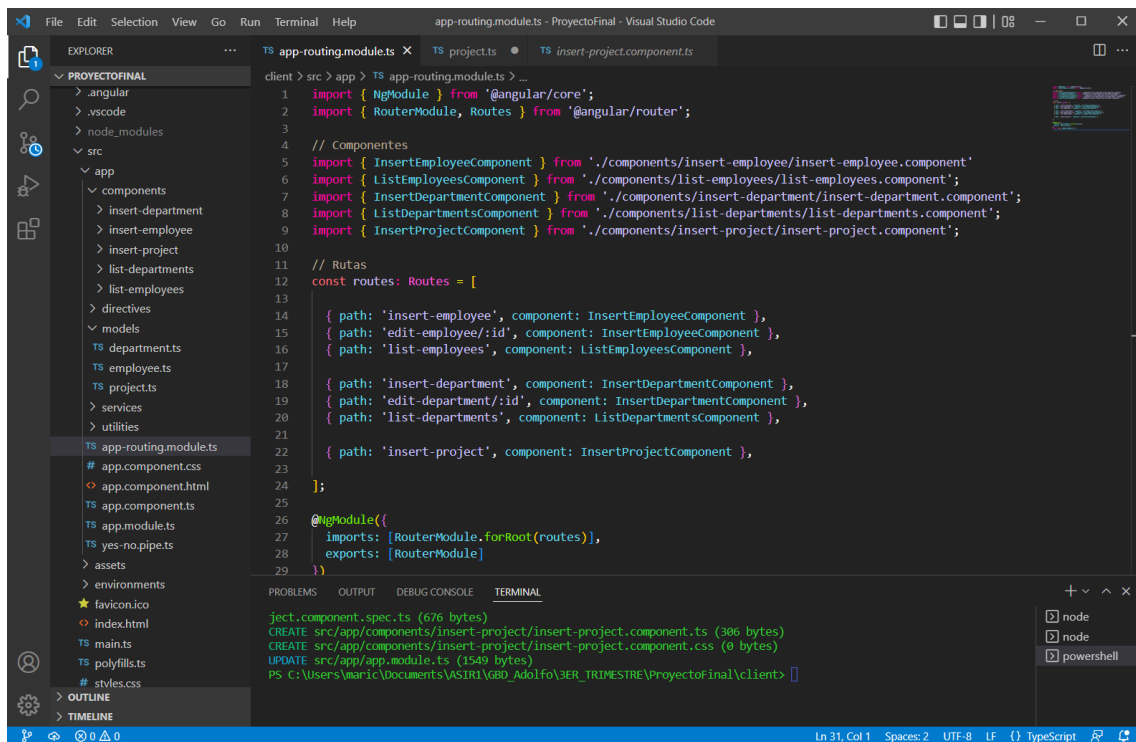
```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Windows PowerShell
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Prueba la nueva tecnología PowerShell multiplataforma https://aka.ms/pscore6

PS C:\Users\maric\Documents\ASIR1\GBD_Adolfo\3ER_TRIMESTRE\ProyectoFinal> cd client
PS C:\Users\maric\Documents\ASIR1\GBD_Adolfo\3ER_TRIMESTRE\ProyectoFinal\client> ng g c components/insert-project
CREATE src/app/components/insert-project/insert-project.component.html (29 bytes)
CREATE src/app/components/insert-project/insert-project.component.spec.ts (676 bytes)
CREATE src/app/components/insert-project/insert-project.component.ts (306 bytes)
CREATE src/app/components/insert-project/insert-project.component.css (0 bytes)
UPDATE src/app/app.module.ts (1549 bytes)
PS C:\Users\maric\Documents\ASIR1\GBD_Adolfo\3ER_TRIMESTRE\ProyectoFinal\client> 
```

2. Asignamos una nueva ruta al componente en el app-routing.module.ts.



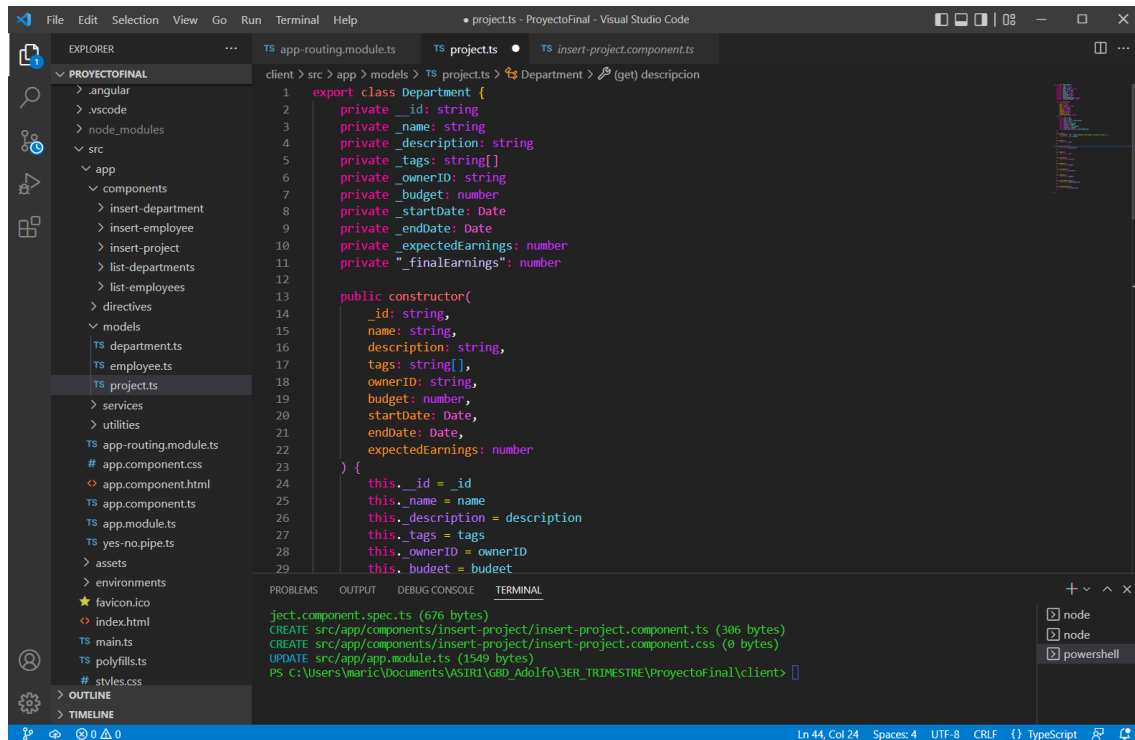
```
File Edit Selection View Go Run Terminal Help
app-routing.module.ts - ProyectoFinal - Visual Studio Code

EXPLORER
PROJECTOFINAL
├── .angular
├── .vscode
├── node_modules
├── src
│   ├── app
│   │   ├── components
│   │   │   ├── insert-department
│   │   │   ├── insert-employee
│   │   │   ├── insert-project
│   │   │   ├── list-departments
│   │   │   ├── list-employees
│   │   │   ├── directives
│   │   ├── models
│   │   ├── department.ts
│   │   ├── employee.ts
│   │   ├── projects
│   │   ├── services
│   │   ├── utilities
│   │   ├── app-routing.module.ts
│   │   ├── app.component.css
│   │   ├── app.component.html
│   │   ├── app.component.ts
│   │   ├── app.module.ts
│   │   ├── yes-no.pipe.ts
│   │   ├── assets
│   │   ├── environments
│   │   ├── favicon.ico
│   │   ├── index.html
│   │   ├── main.ts
│   │   ├── polyfills.ts
│   │   ├── styles.css
│   └── OUTLINE
│   └── TIMELINE
└── TS project.ts
└── TS insert-project.component.ts

client > src > app > TS app-routing.module.ts > ...
1 import { NgModule } from '@angular/core';
2 import { RouterModule, Routes } from '@angular/router';
3
4 // Componentes
5 import { InsertEmployeeComponent } from './components/insert-employee/insert-employee.component';
6 import { ListEmployeesComponent } from './components/list-employees/list-employees.component';
7 import { InsertDepartmentComponent } from './components/insert-department/insert-department.component';
8 import { ListDepartmentsComponent } from './components/list-departments/list-departments.component';
9 import { InsertProjectComponent } from './components/insert-project/insert-project.component';
10
11 // Rutas
12 const routes: Routes = [
13
14   { path: 'insert-employee', component: InsertEmployeeComponent },
15   { path: 'edit-employee/:id', component: InsertEmployeeComponent },
16   { path: 'list-employees', component: ListEmployeesComponent },
17
18   { path: 'insert-department', component: InsertDepartmentComponent },
19   { path: 'edit-department/:id', component: InsertDepartmentComponent },
20   { path: 'list-departments', component: ListDepartmentsComponent },
21
22   { path: 'insert-project', component: InsertProjectComponent },
23
24 ];
25
26 @NgModule({
27   imports: [RouterModule.forRoot(routes)],
28   exports: [RouterModule]
29 })
30 export class AppRoutingModule {}

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
ject.component.spec.ts (676 bytes)
CREATE src/app/components/insert-project/insert-project.component.ts (306 bytes)
CREATE src/app/components/insert-project/insert-project.component.css (0 bytes)
UPDATE src/app/app.module.ts (1549 bytes)
PS C:\Users\maric\Documents\ASIR1\GBD_Adolfo\3ER_TRIMESTRE\ProyectoFinal\client> 
```

3. Creamos un nuevo modelo, que almacenará la clase de dicho elemento.



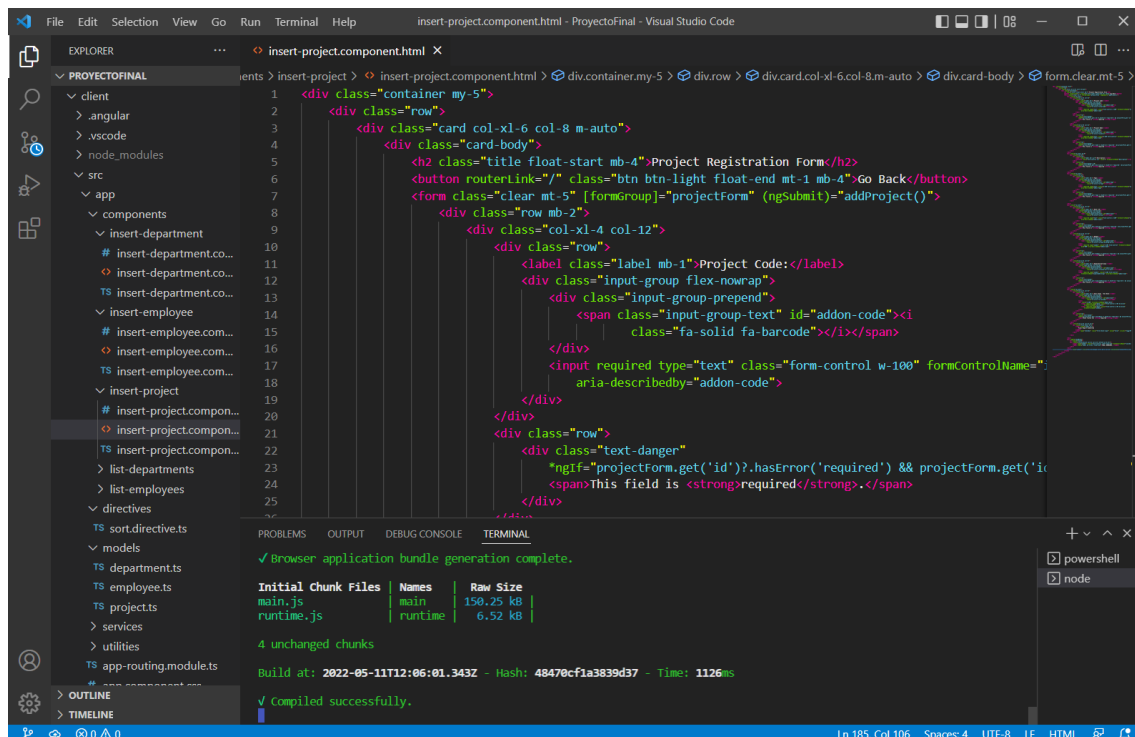
The screenshot shows the Visual Studio Code editor with a project named 'ProjectoFinal'. The Explorer panel on the left shows the file structure, with 'src/app/components' selected. The main editor displays the 'insert-project.component.ts' file, where a new class 'Department' is being created. The class has several private attributes and a public constructor.

```
1 export class Department {
2     private _id: string
3     private _name: string
4     private _description: string
5     private _tags: string[]
6     private _ownerID: string
7     private _budget: number
8     private _startDate: Date
9     private _endDate: Date
10    private _expectedEarnings: number
11    private _finalEarnings: number
12
13    public constructor(
14        _id: string,
15        name: string,
16        description: string,
17        tags: string[],
18        ownerID: string,
19        budget: number,
20        startDate: Date,
21        endDate: Date,
22        expectedEarnings: number
23    ) {
24        this._id = _id
25        this._name = name
26        this._description = description
27        this._tags = tags
28        this._ownerID = ownerID
29        this._budget = budget
30    }
31 }
```

The bottom panel shows the 'TERMINAL' output, which includes the following messages:

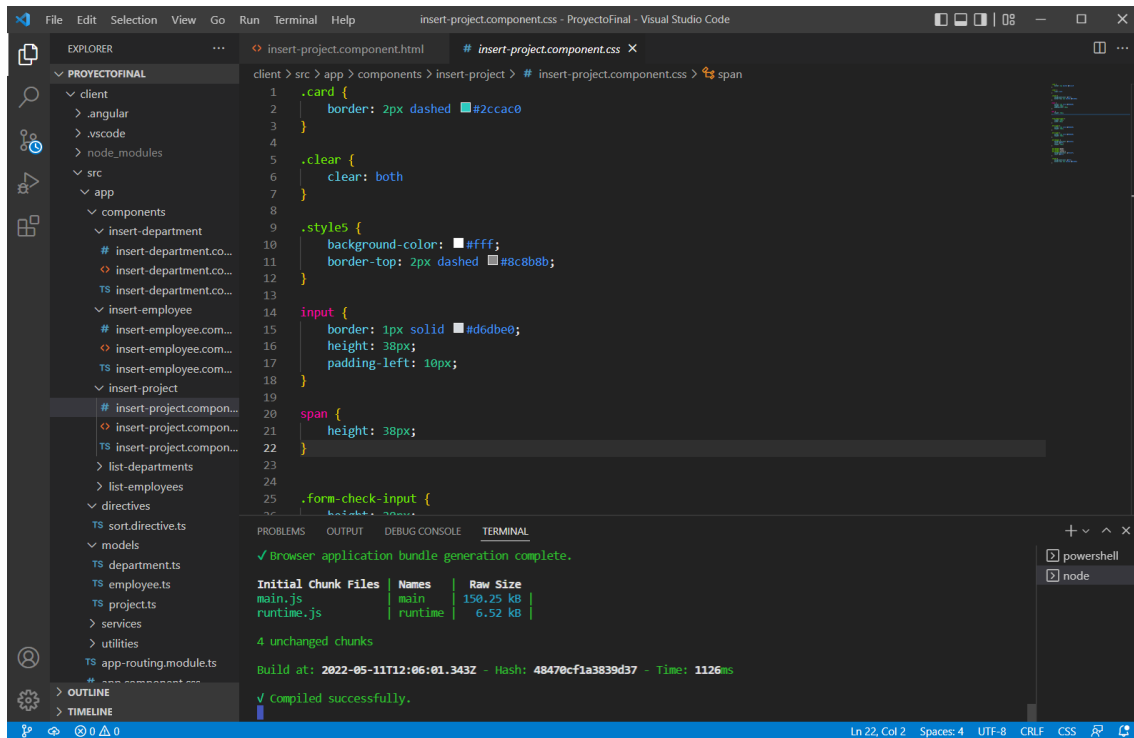
```
ject.component.spec.ts (676 bytes)
CREATE src/app/components/insert-project/insert-project.component.ts (306 bytes)
CREATE src/app/components/insert-project/insert-project.component.css (0 bytes)
UPDATE src/app/app.module.ts (1549 bytes)
PS C:\Users\maric\Documents\VASIRI\GBO_Adofo\3ER_TRIMESTRE\ProjectoFinal\client>
```

4. Configuramos el esqueleto del .html y el .css del componente.



The screenshot shows the Visual Studio Code editor with the 'insert-project.component.html' file open. The HTML structure is defined using Bootstrap classes. The main editor displays the HTML code, which includes a form for project registration. The bottom panel shows the 'TERMINAL' output, which includes the following messages:

```
✓ Browser application bundle generation complete.
Initial Chunk Files | Names | Raw Size
main.js | main | 150.25 kB
runtime.js | runtime | 6.52 kB
4 unchanged chunks
Build at: 2022-05-11T12:06:01.343Z - Hash: 48470cf1a3839d37 - Time: 1126ms
✓ Compiled successfully.
```



Project Registration Form

Go Back

Project Code:

Project Name:

Description:

Tags:

Owner ID:

Budget:

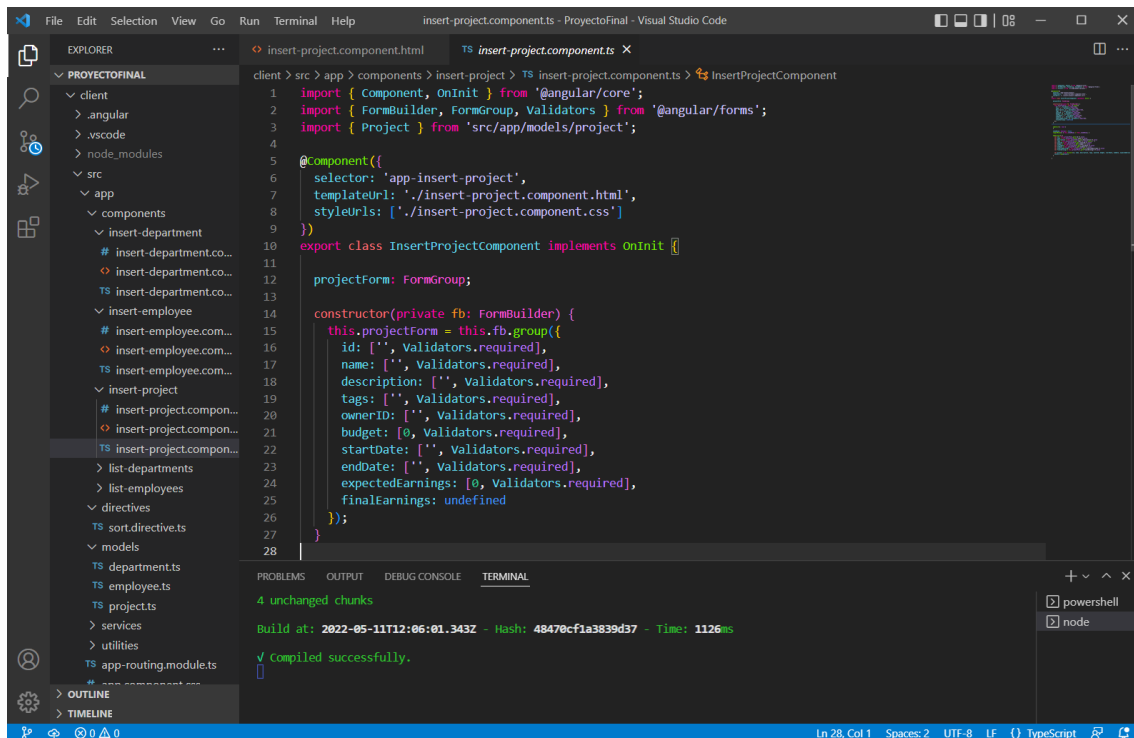
Expected Earnings:

Start Date - End Date:

☐ Final Report Submitted

Submit

5. En el archivo .ts del componente, utilizamos el servicio FormBuilder para realizar un seguimiento del valor y validez de los datos, uniéndolo así de forma directa con los inputs del formulario.



```
client > src > app > components > insert-project > TS insert-project.component.ts > InsertProjectComponent
1 import { Component, OnInit } from '@angular/core';
2 import { FormBuilder, FormGroup, Validators } from '@angular/forms';
3 import { Project } from 'src/app/models/project';
4
5 @Component({
6   selector: 'app-insert-project',
7   templateUrl: './insert-project.component.html',
8   styleUrls: ['./insert-project.component.css']
9 })
10 export class InsertProjectComponent implements OnInit {
11
12   projectForm: FormGroup;
13
14   constructor(private fb: FormBuilder) {
15     this.projectForm = this.fb.group({
16       id: ['', Validators.required],
17       name: ['', Validators.required],
18       description: ['', Validators.required],
19       tags: ['', Validators.required],
20       ownerId: ['', Validators.required],
21       budget: [0, Validators.required],
22       startDate: ['', Validators.required],
23       endDate: ['', Validators.required],
24       expectedEarnings: [0, Validators.required],
25       finalEarnings: undefined
26     });
27   }
28 }
```

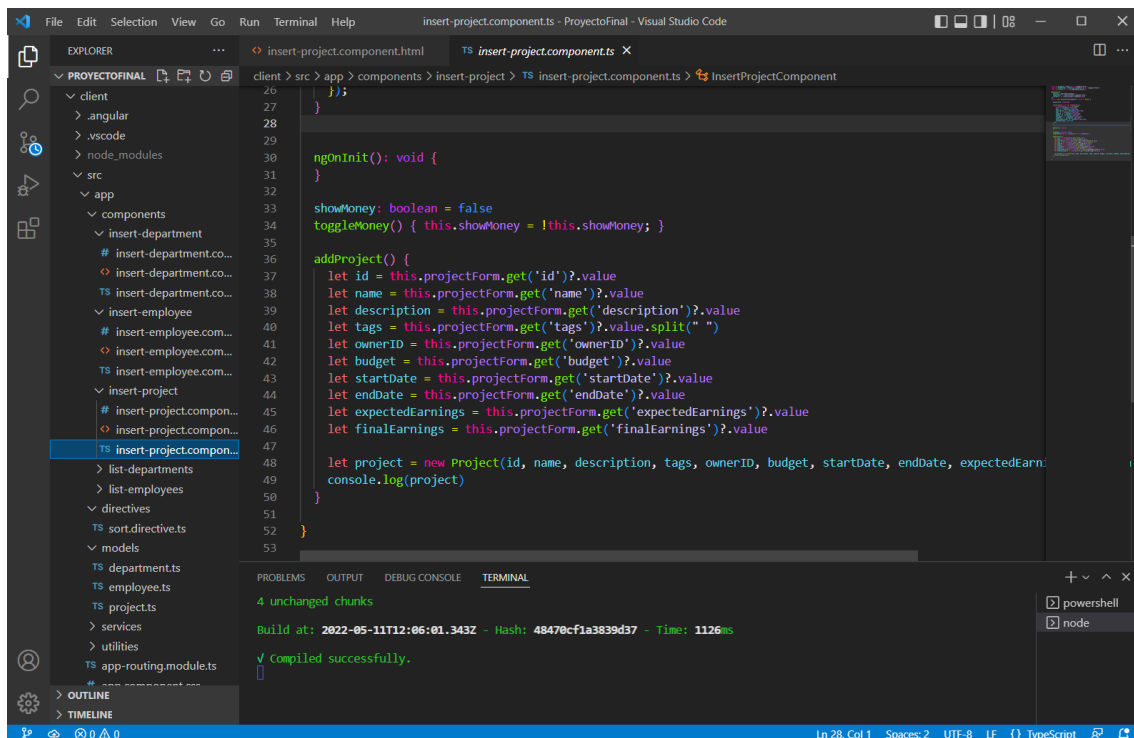
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

4 unchanged chunks

Build at: 2022-05-11T12:06:01.343Z - Hash: 48470cf1a3839d37 - Time: 1126ms

✓ Compiled successfully.

6. En ese mismo archivo, también dejaremos preparado el objeto (con su respectiva clase) que enviaremos al backend una vez haber pulsado el botón Submit.



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```

7. De igual forma, para la tabla que mostrará los datos de la base de datos generaremos un nuevo componente, y le asignaremos un ruta en el componente `app-routing.module.ts`.

The image shows a screenshot of the Visual Studio Code editor interface. The top bar displays the standard menu (File, Edit, Selection, View, Go, Run, Terminal, Help) and the current file path: `app-routing.modules.ts - Visual Studio Code`.

The left sidebar contains the Explorer view, showing the project structure:

- PROJECTOFINAL
 - client
 - .angular
 - .vscode
 - node_modules
 - src
 - app
 - components
 - insert-department
 - insert-employee
 - insert-project
 - list-departments
 - list-employees
 - list-projects
 - directives
 - sort.directives
 - models
 - departments
 - employee.ts
 - projects
 - services
 - utilities
 - TS app-routing.modules.ts (selected)
 - # app.component.css
 - app.component.html
 - app.components.ts
 - app.module.ts
 - yes-no.pipe.ts
 - assets
 - environments
 - favicon.ico
 - OUTLINE
 - TIMELINE

The main editor area displays the content of `list-projects.component.html` and `TS app-routing.modules.ts`. The code is as follows:

```
list-projects.component.html
TS app-routing.modules.ts
client > src > app > TS app-routing.modules.ts > @ routes
1 import { NgModule } from '@angular/core';
2 import { RouterModule, Routes } from '@angular/router';
3
4 // Componentes
5 import { InsertEmployeeComponent } from './components/insert-employee/insert-employee.component'
6 import { ListEmployeesComponent } from './components/list-employees/list-employees.component';
7 import { InsertDepartmentComponent } from './components/insert-department/insert-department.component';
8 import { ListDepartmentsComponent } from './components/list-departments/list-departments.component';
9 import { InsertProjectComponent } from './components/insert-project/insert-project.component';
10 import { ListProjectsComponent } from './components/list-projects/list-projects.component';
11
12 // Rutas
13 const routes: Routes = [
14
15   { path: 'insert-employee', component: InsertEmployeeComponent },
16   { path: 'edit-employee/:id', component: InsertEmployeeComponent },
17   { path: 'list-employees', component: ListEmployeesComponent },
18
19   { path: 'insert-department', component: InsertDepartmentComponent },
20   { path: 'edit-department/:id', component: InsertDepartmentComponent },
21   { path: 'list-departments', component: ListDepartmentsComponent },
22
23   { path: 'insert-project', component: InsertProjectComponent },
24   { path: 'list-projects', component: ListProjectsComponent },
25
26 ];
27
28 @NgModule({
29
30 })
31 export class AppRoutingModule { }
32
33 export const routingModules: AppRoutingModule = new AppRoutingModule({
34   routes
35 });
36
37 export { AppRoutingModule };
```

The bottom panel shows the PROBLEMS, OUTPUT, DEBUG CONSOLE, and TERMINAL tabs. The TERMINAL tab is active, displaying the following commands and output:

```
PS C:\Users\maric\Documents\VASIRI\GBO Adolfo\3ER TRIMESTRE\Projectofinal> cd client
PS C:\Users\maric\Documents\VASIRI\GBO Adolfo\3ER TRIMESTRE\Projectofinal\client> ng g c components/list-projects
CREATE src/app/components/list-projects/list-projects.component.html (28 bytes)
CREATE src/app/components/list-projects/list-projects.component.spec.ts (669 bytes)
CREATE src/app/components/list-projects/list-projects.component.ts (302 bytes)
CREATE src/app/components/list-projects/list-projects.component.css (0 bytes)
UPDATE src/app/app.module.ts (1738 bytes)
PS C:\Users\maric\Documents\VASIRI\GBO Adolfo\3ER TRIMESTRE\Projectofinal\client>
```

The status bar at the bottom indicates the current file is `Ln 25, Col 1`, with `Spaces: 2`, `UTF-8` encoding, `LF` line endings, and the file type is `TypeScript`.

8. Definiremos un .html provisional para el componente con datos en el propio archivo

The image shows a VS Code editor interface with a React project. The Explorer sidebar on the left displays a file tree with folders like client, src, app, components, and insert-department. The main editor displays the HTML code for a project registration form, which includes a title, a 'Go Back' button, a 'Clear' button, and an 'Add' button. The code uses Tailwind CSS classes and Angular directives like routerLink and ngSubmit. The bottom status bar shows the file is in the 'main' workspace, and the terminal output indicates a successful build.

New Project

Project Register

Go Back

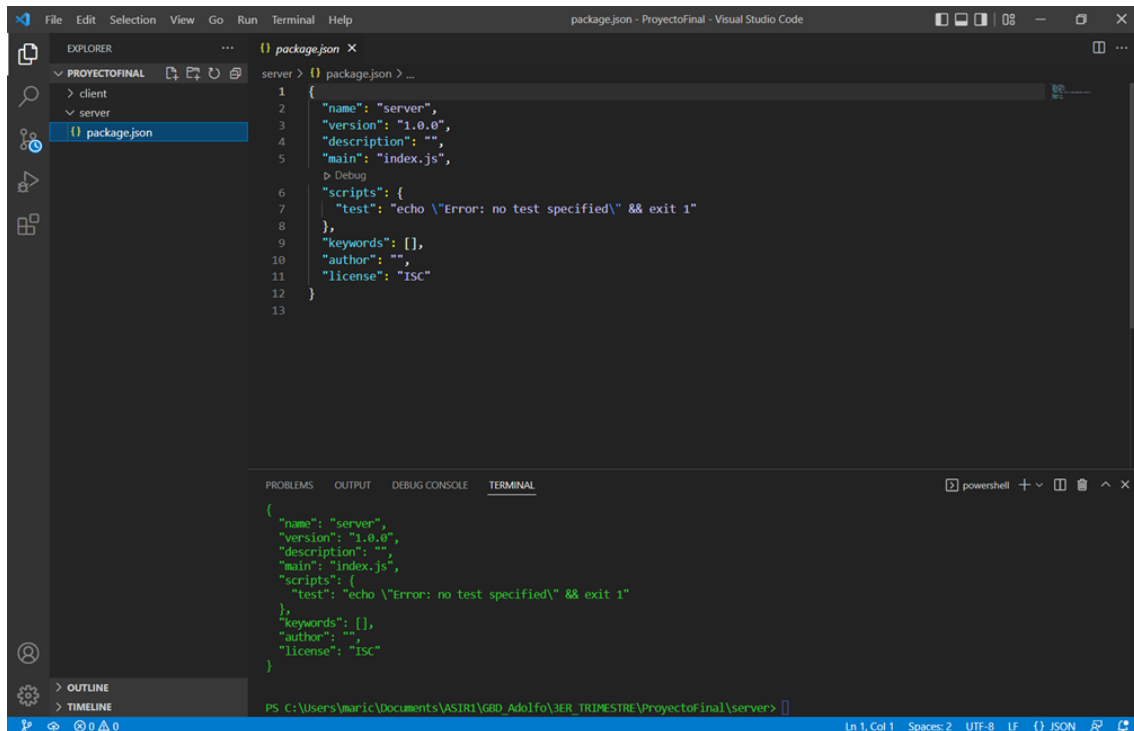
☒ Description ☒ Owner ☒ Start Date ☒ End Date ☒ Budget ☒ Expected Earnings ☒ Final Earnings

ID	Name	Owner	Start Date	End Date	Budget	Expected Earnings	Final Earnings	
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BACKEND

1. En una nueva carpeta a la que llamaremos “SERVER”, inicializamos nuestro proyecto mediante el comando: `npm init -y`.

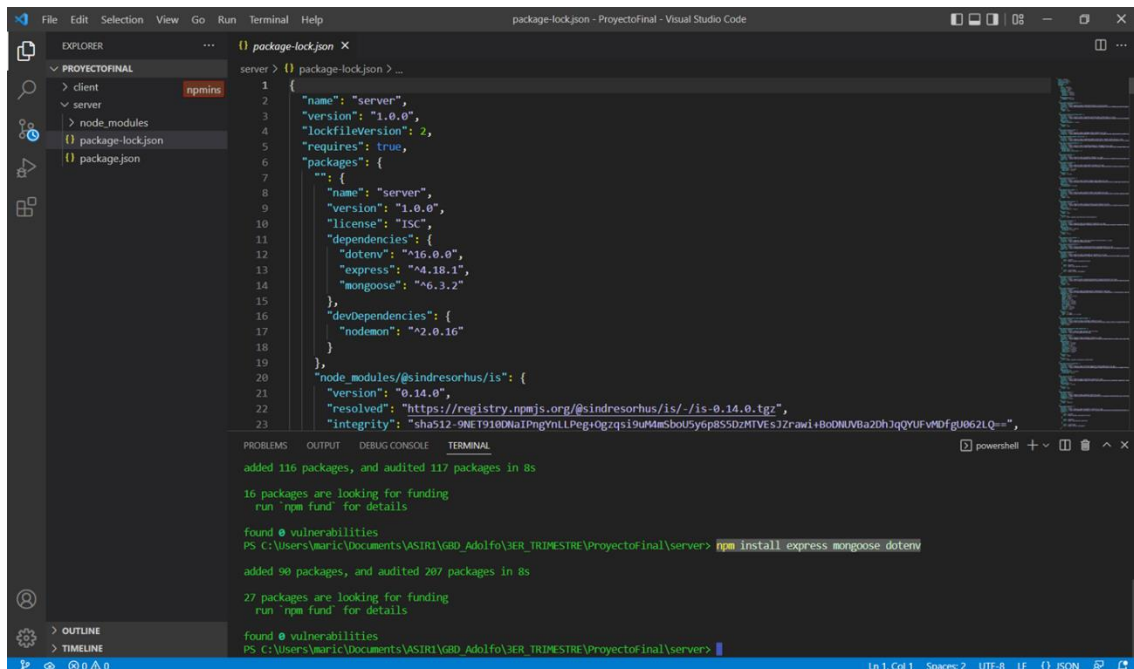


The screenshot shows the Visual Studio Code interface with a file explorer on the left showing a project structure with 'client' and 'server' folders. The 'server' folder is selected, and the 'package.json' file is open in the editor. The file contains the following JSON:

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

The terminal at the bottom shows the command `PS C:\Users\maric\Documents\ASIR1\GBD_Adolfo\3ER_TRIMESTRE\ProyectoFinal\server>` and the status bar indicates the file is a JSON document.

2. Instalamos las dependencias de nodemon, express, mongoose y dotenv.



The screenshot shows the Visual Studio Code interface with the 'package-lock.json' file open in the editor. The file contains the following JSON:

```
1 {
2   "name": "server",
3   "version": "1.0.0",
4   "lockfileVersion": 2,
5   "requires": true,
6   "packages": {
7     "": {
8       "name": "server",
9       "version": "1.0.0",
10      "license": "ISC",
11      "dependencies": {
12        "dotenv": "^16.0.0",
13        "express": "^4.18.1",
14        "mongoose": "^6.3.2"
15      },
16      "devDependencies": {
17        "nodemon": "^2.0.16"
18      }
19    },
20    "node_modules/@sindresorhus/is": {
21      "version": "0.14.0",
22      "resolved": "https://registry.npmjs.org/@sindresorhus/is/-/is-0.14.0.tgz",
23      "integrity": "sha512-9NE19H/19Rbq8G3eJkPq2U79vPdXMNVQOyXt3YU4j8FqYU6WwZpXgJhK89Uz/8IEY67udHVvOZ40wY="
24    }
25  }
26 }
```

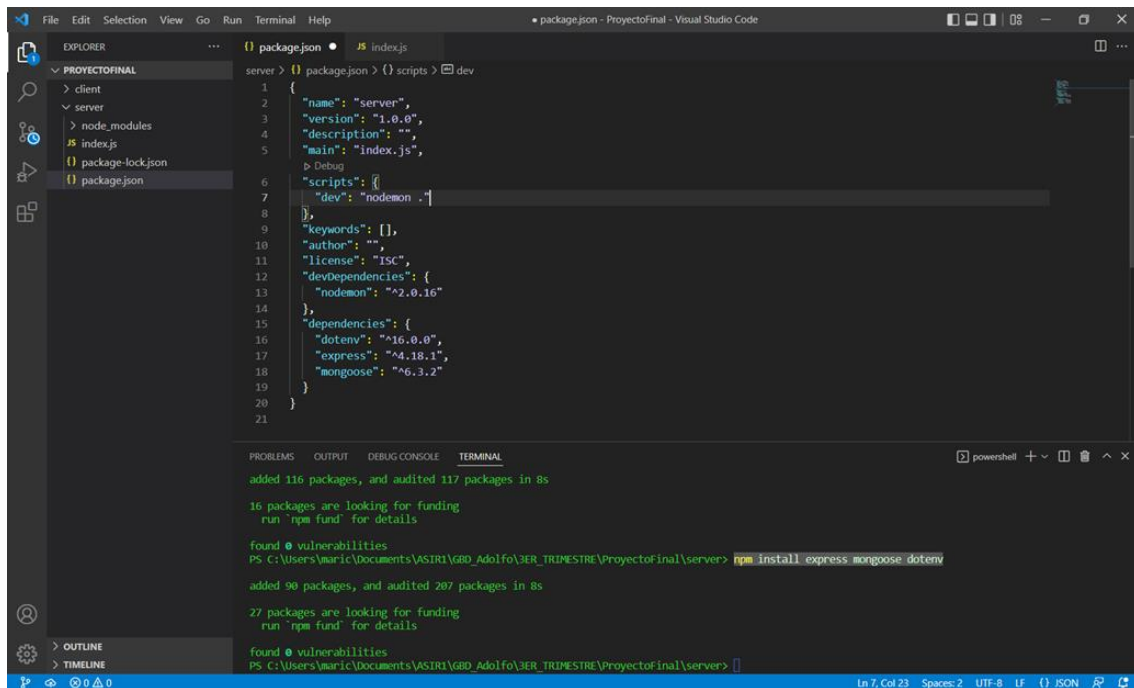
The terminal at the bottom shows the command `PS C:\Users\maric\Documents\ASIR1\GBD_Adolfo\3ER_TRIMESTRE\ProyectoFinal\server> npm install express mongoose dotenv` and the output:

```
added 116 packages, and audited 117 packages in 8s
16 packages are looking for funding
run 'npm fund' for details

found 0 vulnerabilities
PS C:\Users\maric\Documents\ASIR1\GBD_Adolfo\3ER_TRIMESTRE\ProyectoFinal\server>
```

The status bar indicates the file is a JSON document.

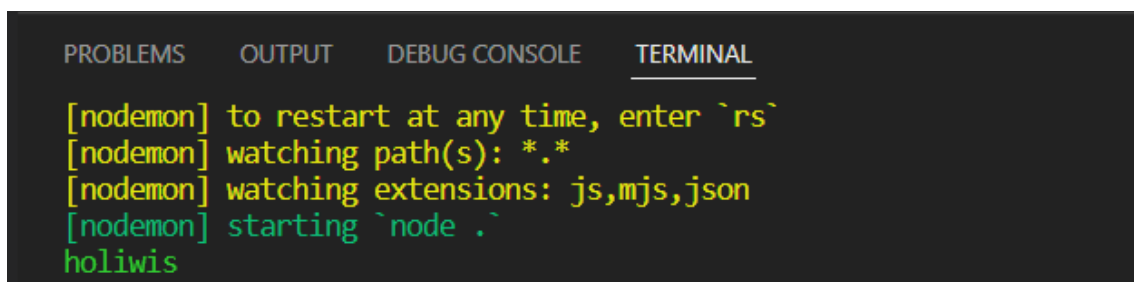
3. Creamos el index .js y añadimos el script para poner en marcha el backend (npm run dev).



The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows the project structure with 'server' > 'index.js' selected. The main editor displays the 'package.json' file for the 'server' directory. The file contains the following JSON:

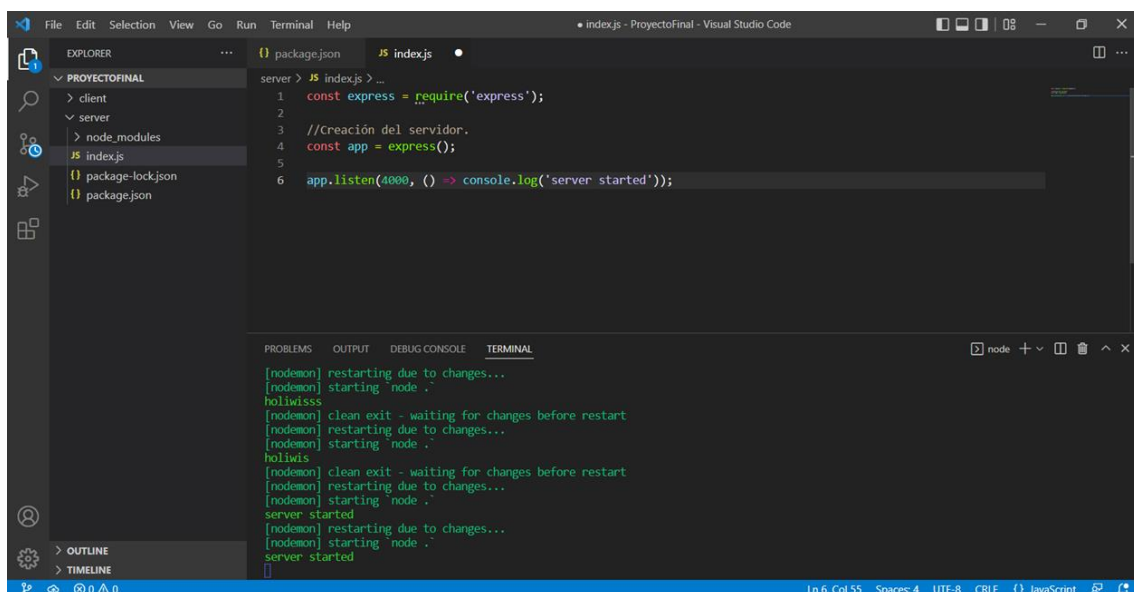
```
1 {
2   "name": "server",
3   "version": "1.0.0",
4   "description": "",
5   "main": "index.js",
6   "scripts": {
7     "dev": "nodemon ."
8   },
9   "keywords": [],
10  "author": "",
11  "license": "ISC",
12  "devDependencies": {
13    "nodemon": "^2.0.16"
14  },
15  "dependencies": {
16    "dotenv": "^16.0.0",
17    "express": "^4.18.1",
18    "mongoose": "^6.3.2"
19  }
20 }
```

The Terminal panel at the bottom shows the output of running 'npm install express mongoose dotenv' in the 'server' directory. It reports that 90 packages were added and 207 packages were audited. The status bar at the bottom indicates 'Ln 7, Col 23'.



This screenshot shows the 'TERMINAL' tab in VS Code. It displays the output of running 'npm run dev' in the 'server' directory. The output shows 'nodemon' starting the application and watching for changes. The status bar at the bottom indicates 'Ln 7, Col 23'.

4. Creamos del servidor y definimos el puerto que utilizará, en nuestro caso el 4000.

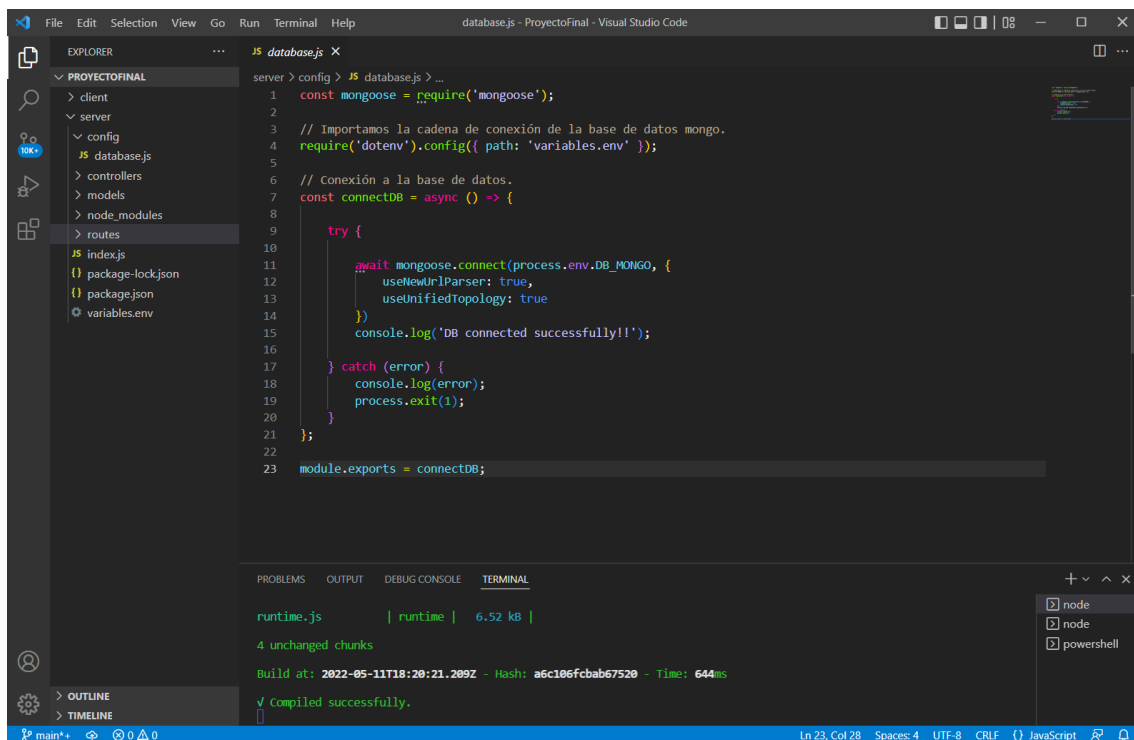


The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows the project structure with 'server' > 'index.js' selected. The main editor displays the 'index.js' file for the 'server' directory. The file contains the following JavaScript code:

```
1 const express = require('express');
2
3 //Creación del servidor.
4 const app = express();
5
6 app.listen(4000, () => console.log('server started'));
```

The Terminal panel at the bottom shows the output of running 'npm run dev' in the 'server' directory. It shows 'nodemon' restarting the application due to changes. The status bar at the bottom indicates 'Ln 6, Col 55'.

5. En una nueva carpeta “config”, configuraremos la conexión a la base de datos. Para ello, también crearemos un variable de entorno con nuestra conexión a MongoDB, desde donde la exportaremos hasta nuestro database.js.



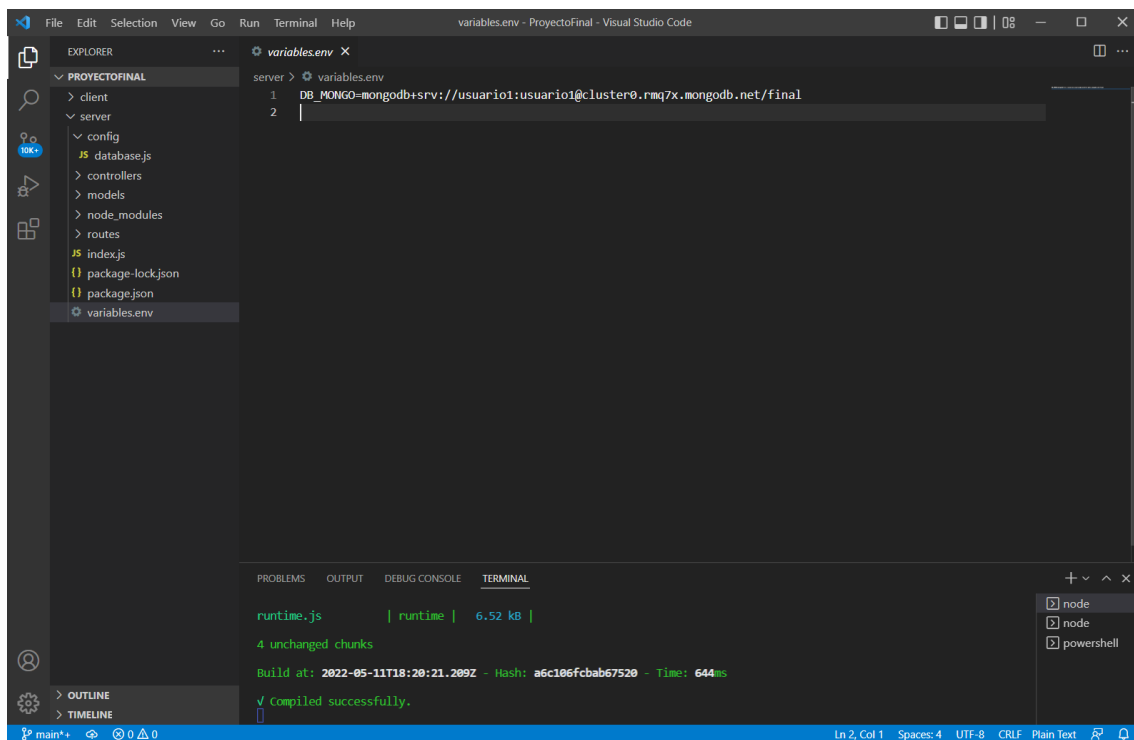
```
server > config > JS database.js > ...
1  const mongoose = require('mongoose');
2
3  // Importamos la cadena de conexión de la base de datos mongo.
4  require('dotenv').config({ path: 'variables.env' });
5
6  // Conexión a la base de datos.
7  const connectDB = async () => {
8
9      try {
10
11          await mongoose.connect(process.env.DB_MONGO, {
12              useNewUrlParser: true,
13              useUnifiedTopology: true
14          });
15          console.log('DB connected successfully!!');
16
17      } catch (error) {
18          console.log(error);
19          process.exit(1);
20      }
21  };
22
23  module.exports = connectDB;
```

runtime.js | runtime | 6.52 kB |

4 unchanged chunks

Build at: 2022-05-11T18:20:21.209Z - Hash: a6c106fcba67520 - Time: 644ms

✓ Compiled successfully.



```
server > variables.env
1  DB_MONGO=mongodb+srv://usuario1:usuario1@cluster0.rm7x.mongodb.net/final
2
```

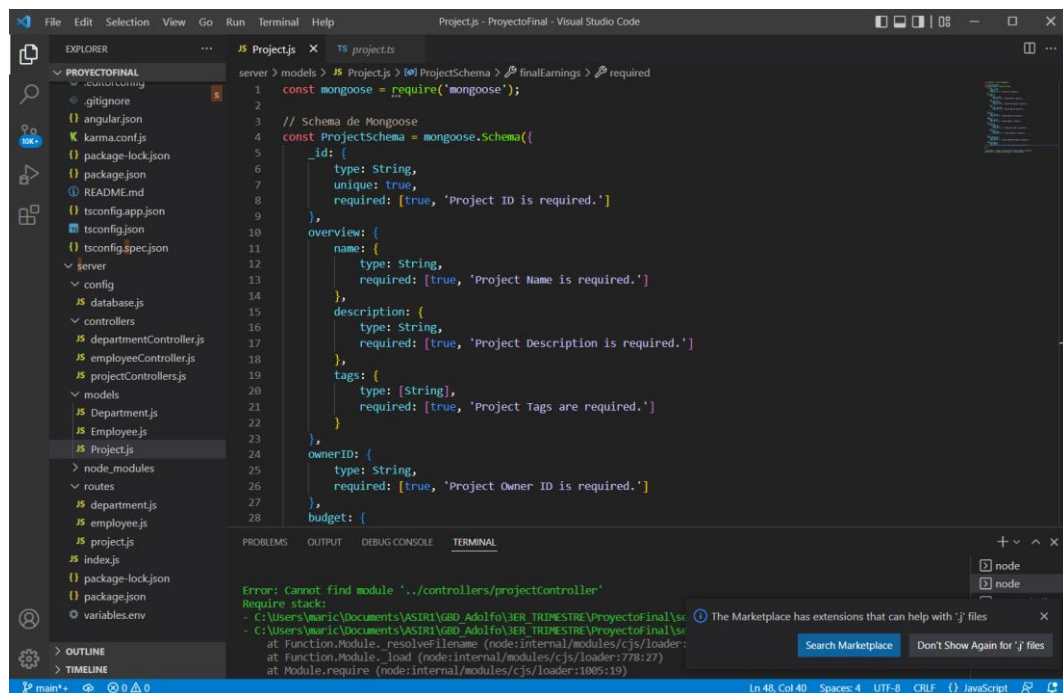
runtime.js | runtime | 6.52 kB |

4 unchanged chunks

Build at: 2022-05-11T18:20:21.209Z - Hash: a6c106fcba67520 - Time: 644ms

✓ Compiled successfully.

6. En una carpeta “models”, creamos el modelo del objeto con el que vamos a trabajar. La constante almacenará tanto la información de la colección como el schema del mismo.

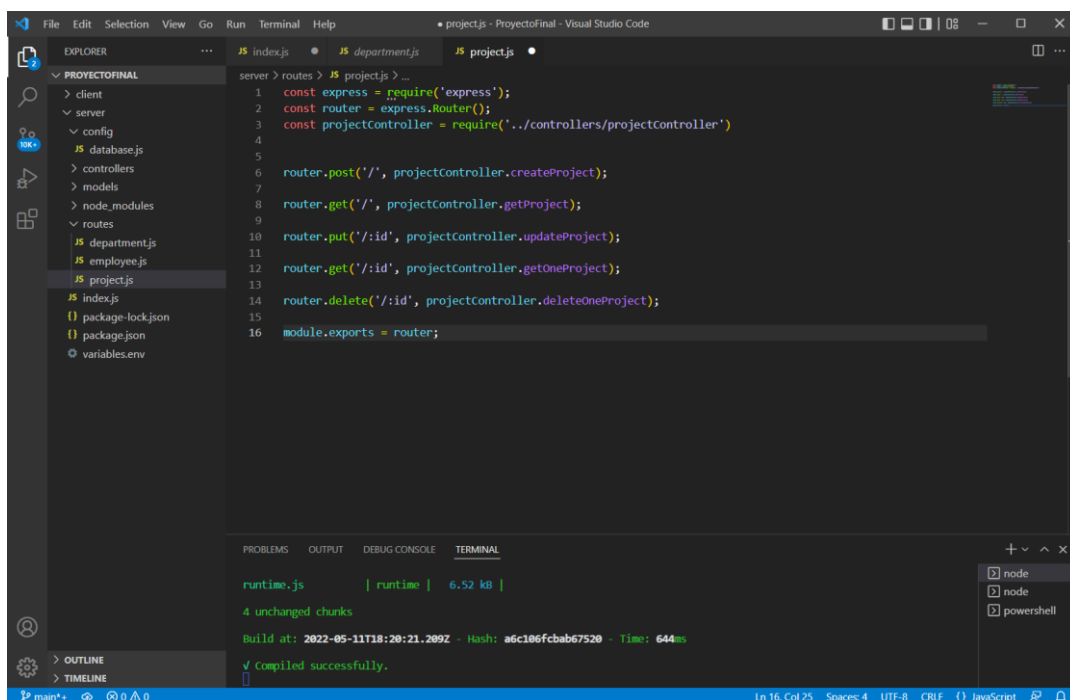


The screenshot shows the Visual Studio Code interface with the Explorer panel on the left displaying the project structure. The 'models' directory is selected, and the 'ProjectSchema.js' file is open in the editor. The code defines a Mongoose schema for a project, including fields for 'id', 'overview', 'description', 'tags', 'ownerID', and 'budget'. The 'id' field is a string, unique, and required. The 'overview' field is an object with a 'name' field (string, required). The 'description' field is a string, required. The 'tags' field is an array of strings, required. The 'ownerID' field is a string, required. The 'budget' field is an object. The 'required' property is set to true for the 'id', 'description', 'tags', and 'ownerID' fields. The 'required' property is set to false for the 'overview' and 'budget' fields. The 'required' property is set to true for the 'id', 'description', 'tags', and 'ownerID' fields. The 'required' property is set to false for the 'overview' and 'budget' fields. The 'required' property is set to true for the 'id', 'description', 'tags', and 'ownerID' fields. The 'required' property is set to false for the 'overview' and 'budget' fields.

```
1 const mongoose = require('mongoose');
2
3 // Schema de Mongoose
4 const ProjectSchema = mongoose.Schema({
5   id: {
6     type: String,
7     unique: true,
8     required: [true, 'Project ID is required.'],
9   },
10  overview: {
11    name: {
12      type: String,
13      required: [true, 'Project Name is required.'],
14    },
15    description: {
16      type: String,
17      required: [true, 'Project Description is required.'],
18    },
19    tags: {
20      type: [String],
21      required: [true, 'Project Tags are required.'],
22    },
23  },
24  ownerID: {
25    type: String,
26    required: [true, 'Project Owner ID is required.'],
27  },
28  budget: {
```

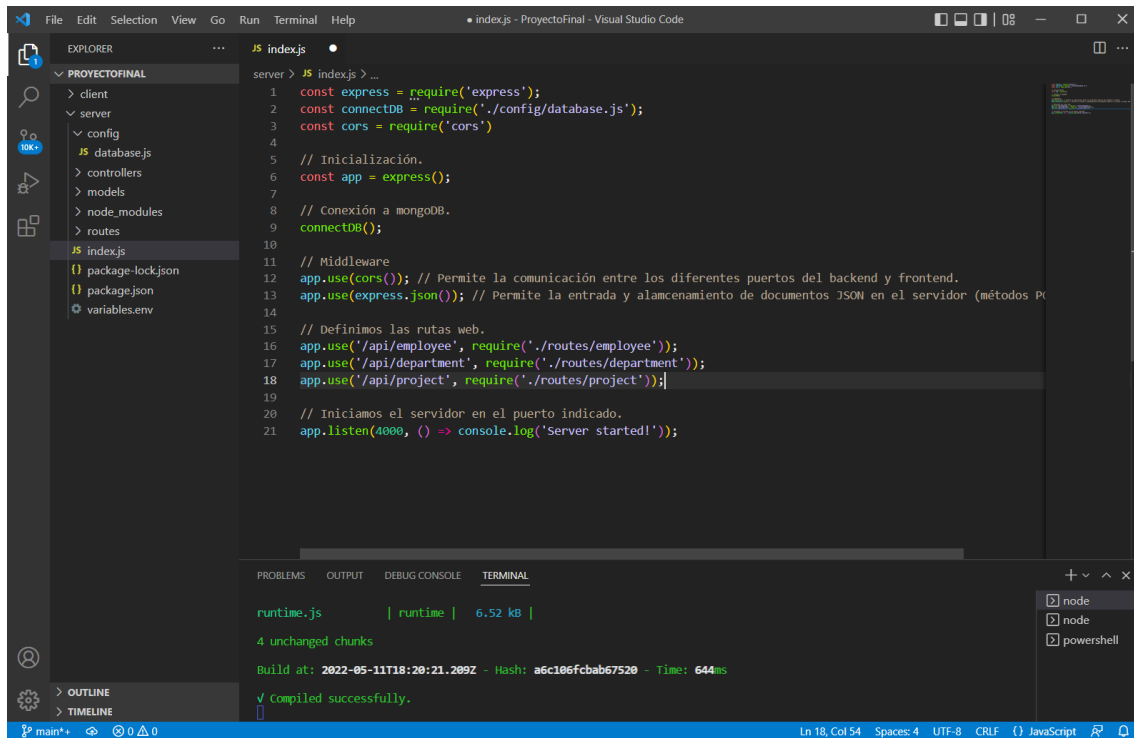
7. En otra nueva carpeta “routes”, definimos las rutas que dirigirán las solicitudes entrantes de la API a los recursos de backend (ya las tenía creadas).

A su vez, en el index.js deben indicarse hacia que archivo de la carpeta Router se dirigen las solicitudes.



The screenshot shows the Visual Studio Code interface with the Explorer panel on the left displaying the project structure. The 'routes' directory is selected, and the 'index.js' file is open in the editor. The code defines the Express.js router, including the 'router.post', 'router.get', 'router.put', 'router.delete', and 'module.exports' methods. The 'router.post' method is used to create a new project. The 'router.get' method is used to get a project. The 'router.put' method is used to update a project. The 'router.delete' method is used to delete a project. The 'module.exports' method is used to export the router.

```
1 const express = require('express');
2 const router = express.Router();
3 const projectController = require('../controllers/projectController')
4
5
6 router.post('/', projectController.createProject);
7
8 router.get('/', projectController.getProject);
9
10 router.put('/:id', projectController.updateProject);
11
12 router.get('/:id', projectController.getOneProject);
13
14 router.delete('/:id', projectController.deleteOneProject);
15
16 module.exports = router;
```



```
server > JS index.js > ...
1  const express = require('express');
2  const connectDB = require('./config/database.js');
3  const cors = require('cors')
4
5  // Inicialización.
6  const app = express();
7
8  // Conexión a MongoDB.
9  connectDB();
10
11 // Middleware
12 app.use(cors()); // Permite la comunicación entre los diferentes puertos del backend y frontend.
13 app.use(express.json()); // Permite la entrada y almacenamiento de documentos JSON en el servidor (métodos POST, PUT, PATCH)
14
15 // Definimos las rutas web.
16 app.use('/api/employee', require('./routes/employee'));
17 app.use('/api/department', require('./routes/department'));
18 app.use('/api/project', require('./routes/project'));
19
20 // Iniciamos el servidor en el puerto indicado.
21 app.listen(4000, () => console.log('Server started!'));
```

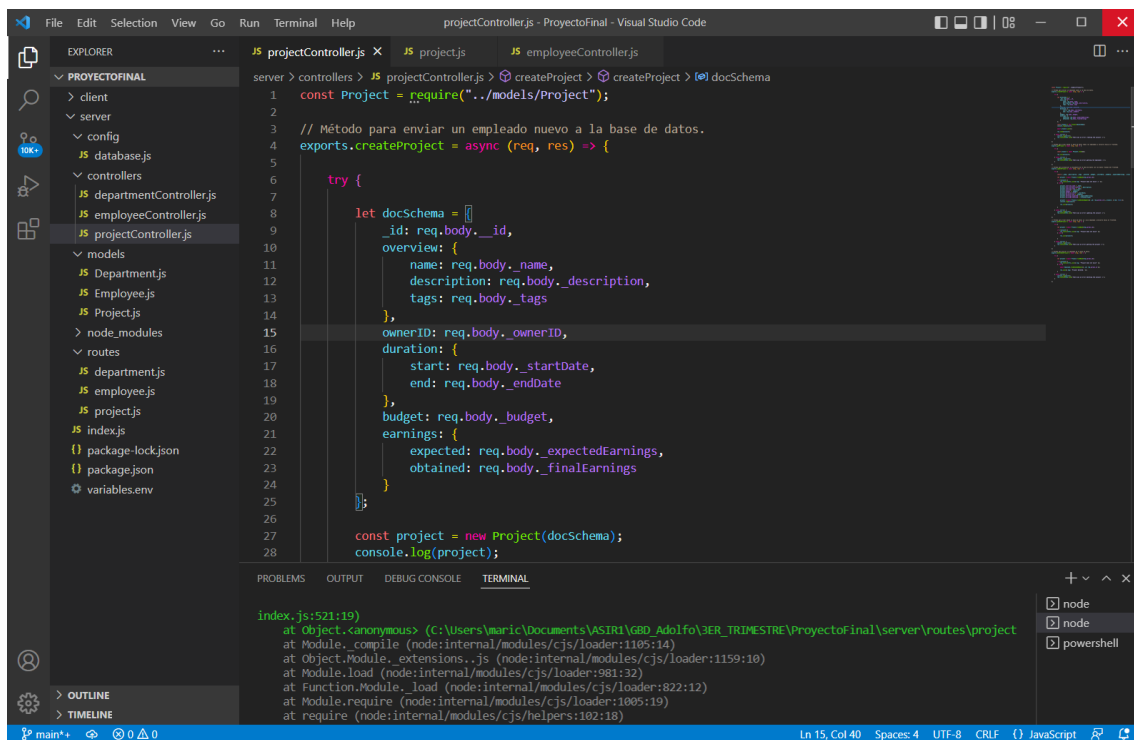
runtime.js | runtime | 6.52 kB |

4 unchanged chunks

Build at: 2022-05-11T18:20:21.209Z - Hash: a6c106fcba67520 - Time: 644ms

✓ Compiled successfully.

8. Creamos otra carpeta “controllors” donde definiremos los métodos que permitirán recibir las peticiones web. Estos métodos son los que importaremos en la carpera “routes”.



```
server > controllers > JS projectController.js > createProject > createProject > docSchema
1  const Project = require("../models/Project");
2
3  // Método para enviar un empleado nuevo a la base de datos.
4  exports.createProject = async (req, res) => {
5
6
7
8      try {
9
10         let docSchema = {
11             _id: req.body._id,
12             overview: {
13                 name: req.body_name,
14                 description: req.body_description,
15                 tags: req.body_tags
16             },
17             ownerId: req.body_ownerID,
18             duration: {
19                 start: req.body_startDate,
20                 end: req.body_enddate
21             },
22             budget: req.body_budget,
23             earnings: {
24                 expected: req.body_expectedEarnings,
25                 obtained: req.body_finalEarnings
26             }
27         };
28
29         const project = new Project(docSchema);
30         console.log(project);
31     } catch (error) {
32         console.log(error);
33     }
34 }
```

index.js:521:19)

at Object.<anonymous> (C:\Users\maric\Documents\ASIRI\GBO Adolfo\3ER TRIMESTRE\ProyectoFinal\server\routes\project

at Module.compile (node:internal/modules/cjs/loader:1105:14)

at Object.Module._extensions..js (node:internal/modules/cjs/loader:1159:10)

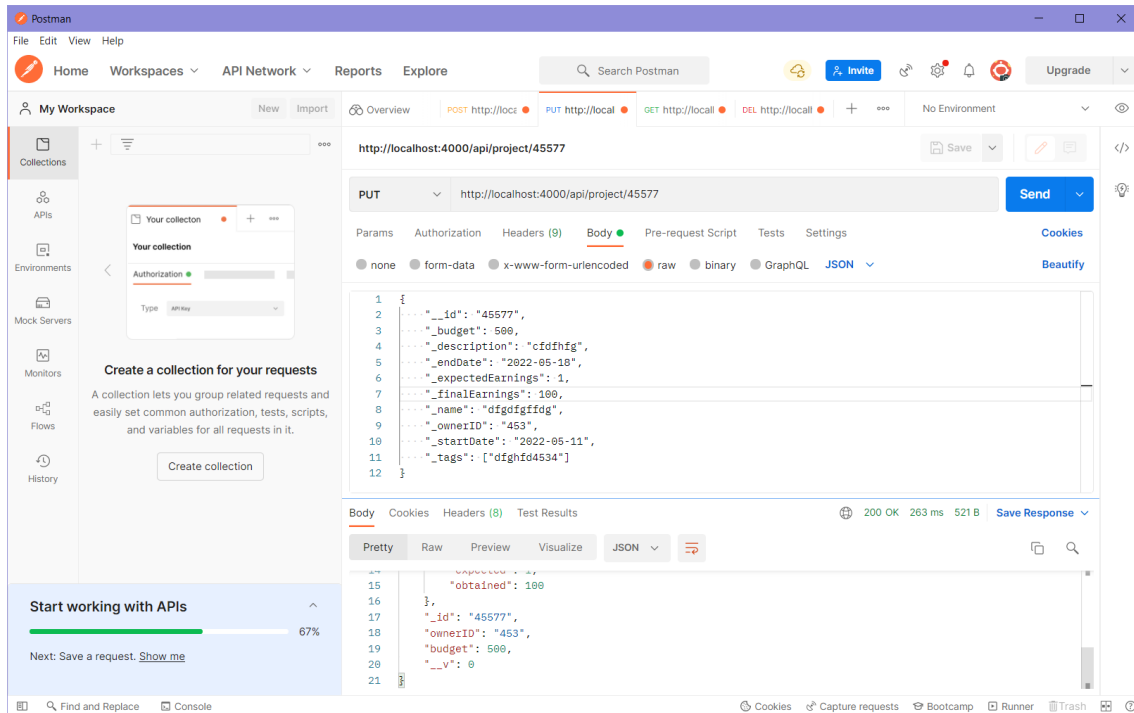
at Module.load (node:internal/modules/cjs/loader:981:32)

at Function.Module._load (node:internal/modules/cjs/loader:822:12)

at Module.require (node:internal/modules/cjs/loader:1005:19)

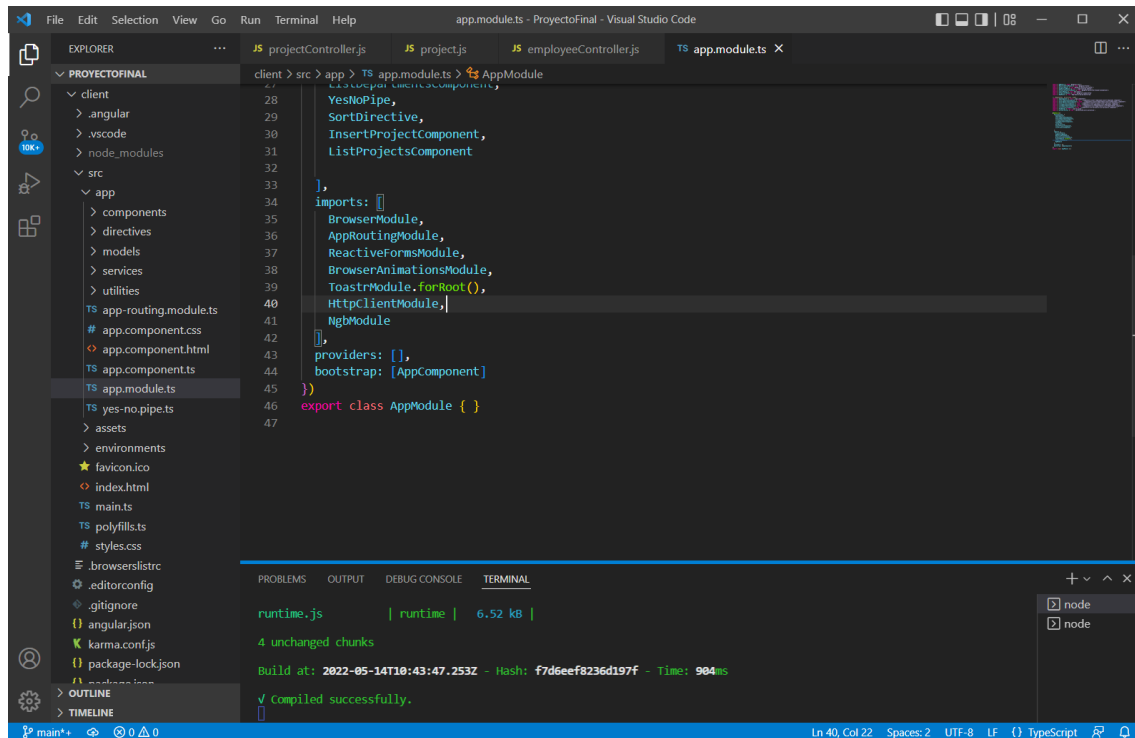
at require (node:internal/modules/cjs/helpers:102:10)

9. Podemos valernos del servicio de Postman para comprobar el funcionamiento de los módulos.

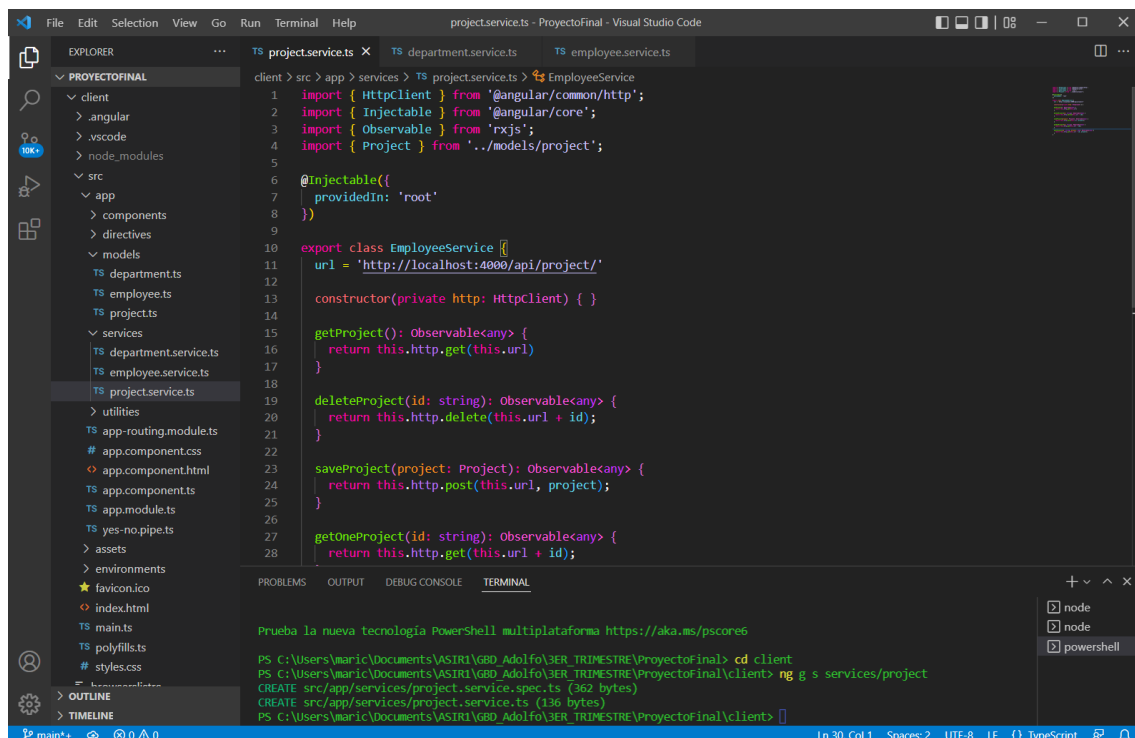


INTEGRACIÓN DEL BACKEND Y EL FRONTEND

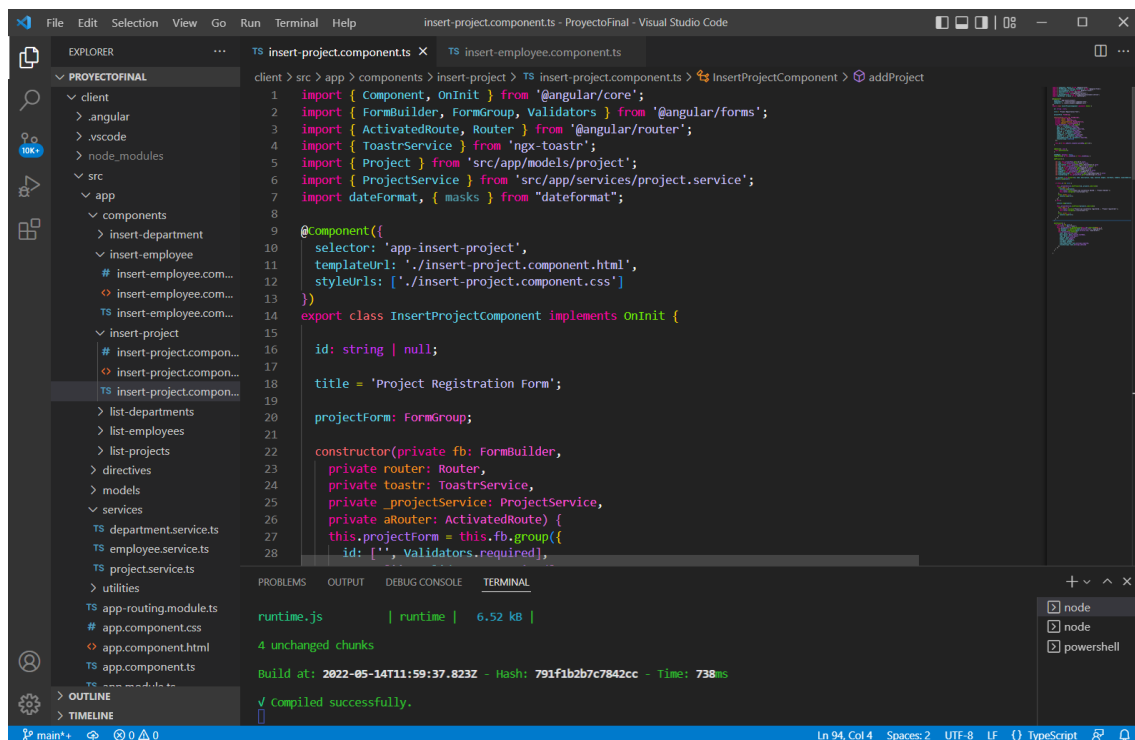
1. En el frontend, añadimos el módulo HttpClientModule en el app.module.ts.



2. En la carpeta servicios, creamos un nuevo archivo .ts (ng g s services/NOMBRECOMPONENTE) e introducimos el código para hacer las peticiones http.



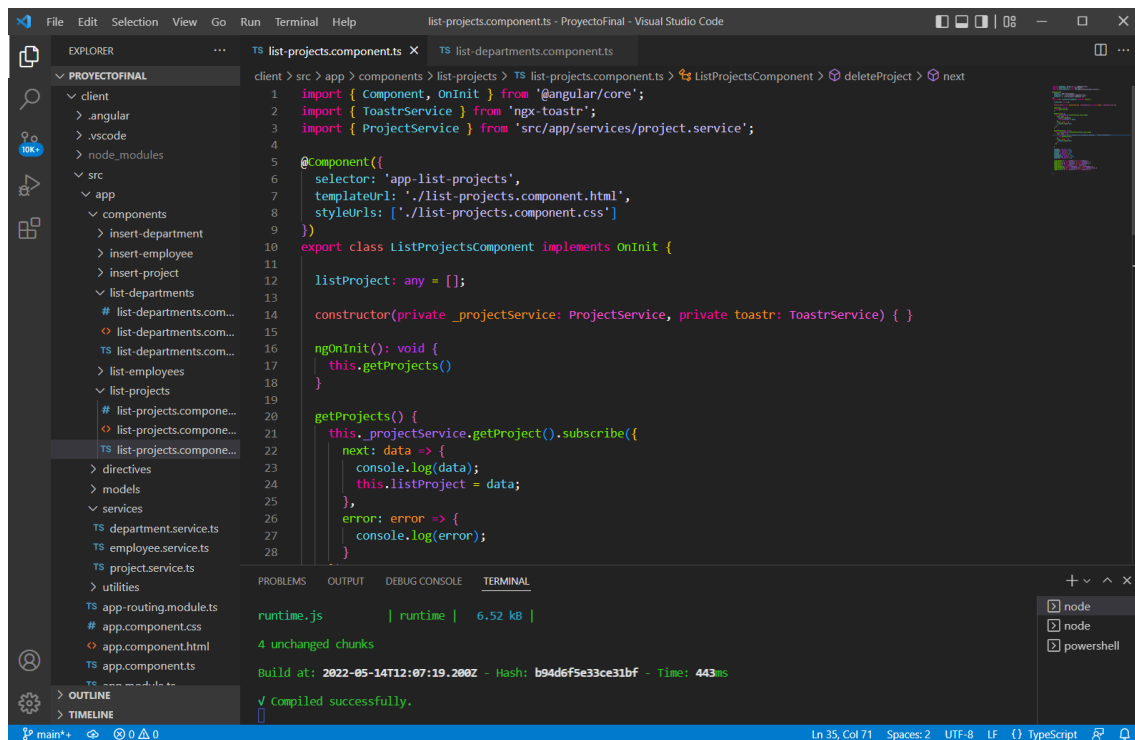
3. En todos los .ts del componente, inyectamos los servicios creados.



```
client > src > app > components > insert-project > TS insert-project.component.ts > InsertProjectComponent > addProject

1 import { Component, OnInit } from '@angular/core';
2 import { FormBuilder, FormGroup, Validators } from '@angular/forms';
3 import { ActivatedRoute, Router } from '@angular/router';
4 import { ToastrService } from 'ngx-toastr';
5 import { Project } from 'src/app/models/project';
6 import { ProjectService } from 'src/app/services/project.service';
7 import dateFormat, { masks } from 'dateFormat';
8
9 @Component({
10   selector: 'app-insert-project',
11   templateUrl: './insert-project.component.html',
12   styleUrls: ['./insert-project.component.css']
13 })
14 export class InsertProjectComponent implements OnInit {
15
16   id: string | null;
17
18   title = 'Project Registration Form';
19
20   projectForm: FormGroup;
21
22   constructor(private fb: FormBuilder,
23     private router: Router,
24     private toastr: ToastrService,
25     private _projectService: ProjectService,
26     private aRouter: ActivatedRoute) {
27     this.projectForm = this.fb.group({
28       id: ['', Validators.required],
29     });
30   }
31
32   ngOnInit(): void {
33     this._projectService.getProject().subscribe({
34       next: data => {
35         console.log(data);
36         this.id = data.id;
37       },
38       error: error => {
39         console.log(error);
40       }
41     });
42   }
43
44   saveProject(): void {
45     this._projectService.createProject(this.projectForm.value).subscribe({
46       next: data => {
47         console.log(data);
48         this.toastr.success('Project created successfully');
49         this.router.navigate(['/list-projects']);
50       },
51       error: error => {
52         console.log(error);
53       }
54     });
55   }
56
57   deleteProject(): void {
58     this._projectService.deleteProject(this.id).subscribe({
59       next: data => {
60         console.log(data);
61         this.toastr.success('Project deleted successfully');
62       },
63       error: error => {
64         console.log(error);
65       }
66     });
67   }
68
69   updateProject(): void {
70     this._projectService.updateProject(this.id, this.projectForm.value).subscribe({
71       next: data => {
72         console.log(data);
73         this.toastr.success('Project updated successfully');
74       },
75       error: error => {
76         console.log(error);
77       }
78     });
79   }
80
81   cancel(): void {
82     this.router.navigate(['/list-projects']);
83   }
84
85   ngOnDestroy(): void {
86     this._projectService.deleteProject(this.id).subscribe({
87       next: data => {
88         console.log(data);
89       },
90       error: error => {
91         console.log(error);
92       }
93     });
94   }
95 }
```

runtime.js | runtime | 6.52 kB |
4 unchanged chunks
Build at: 2022-05-14T11:59:37.823Z - Hash: 791f1b2b7c7842cc - Time: 738ms
✓ Compiled successfully.

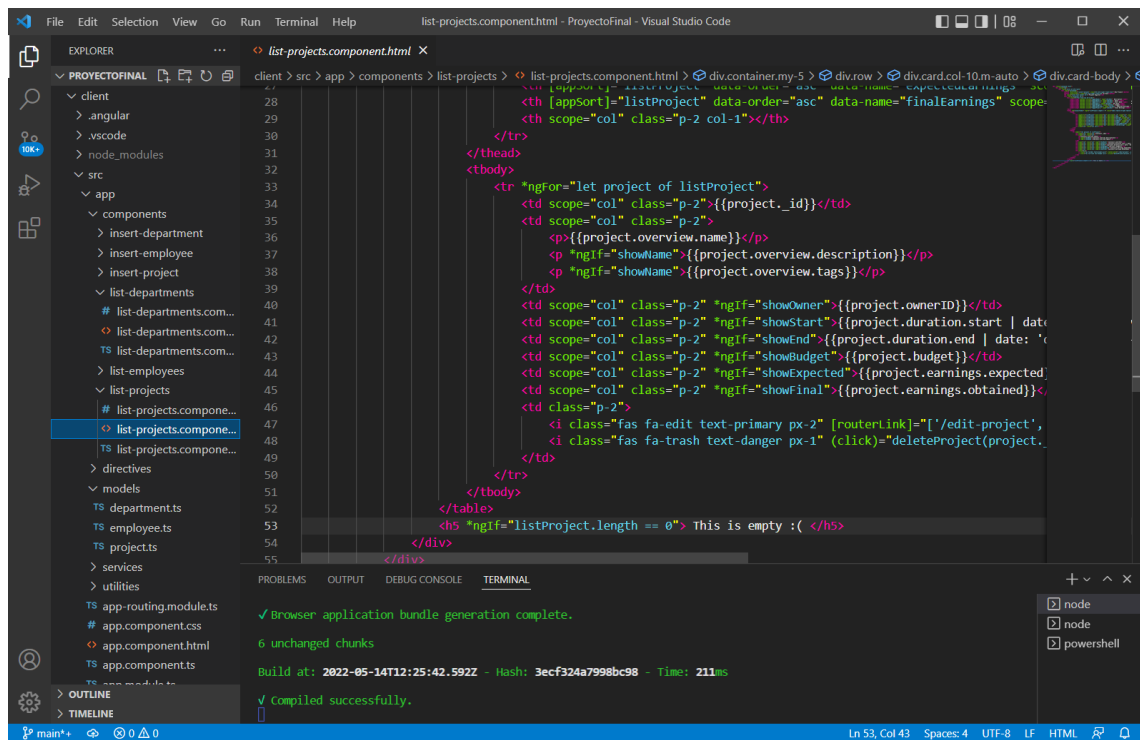


```
client > src > app > components > list-projects > TS list-projects.component.ts > ListProjectsComponent > deleteProject > next

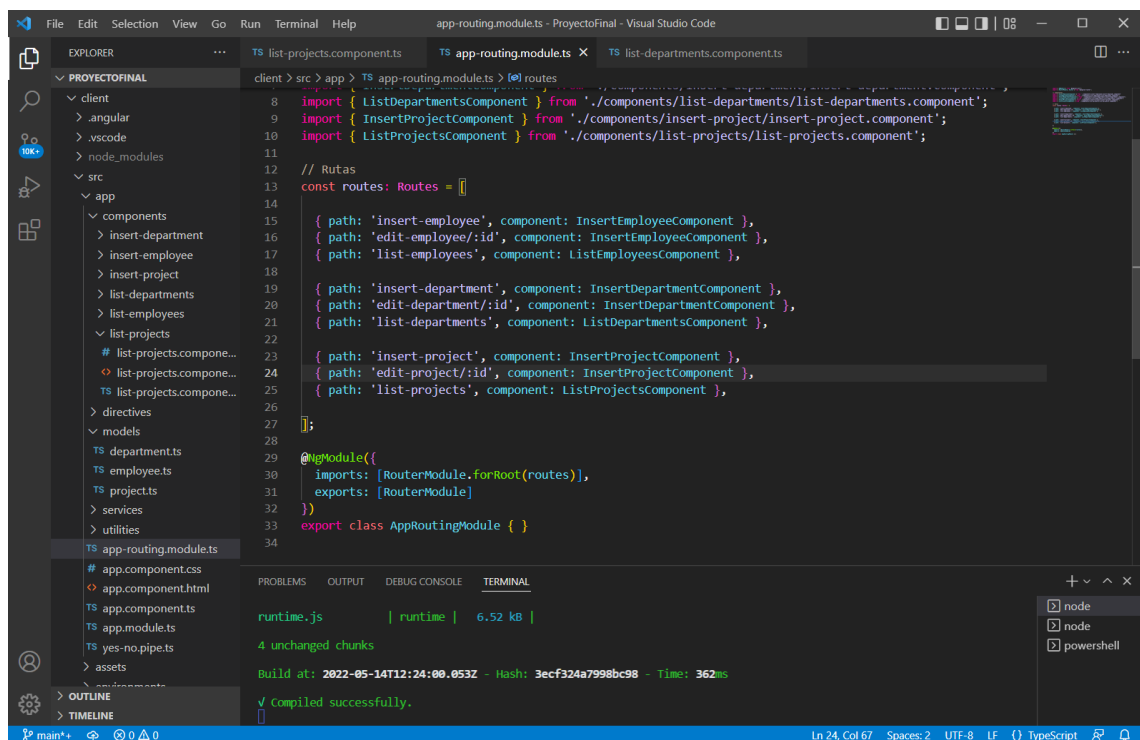
1 import { Component, OnInit } from '@angular/core';
2 import { ToastrService } from 'ngx-toastr';
3 import { ProjectService } from 'src/app/services/project.service';
4
5 @Component({
6   selector: 'app-list-projects',
7   templateUrl: './list-projects.component.html',
8   styleUrls: ['./list-projects.component.css']
9 })
10 export class ListProjectsComponent implements OnInit {
11
12   listProject: any = [];
13
14   constructor(private _projectService: ProjectService, private toastr: ToastrService) { }
15
16   ngOnInit(): void {
17     this.getProject();
18   }
19
20   getProjects() {
21     this._projectService.getProject().subscribe({
22       next: data => {
23         console.log(data);
24         this.listProject = data;
25       },
26       error: error => {
27         console.log(error);
28       }
29     });
30   }
31
32   deleteProject(): void {
33     this._projectService.deleteProject(this.id).subscribe({
34       next: data => {
35         console.log(data);
36         this.toastr.success('Project deleted successfully');
37       },
38       error: error => {
39         console.log(error);
40       }
41     });
42   }
43
44   updateProject(): void {
45     this._projectService.updateProject(this.id, this.projectForm.value).subscribe({
46       next: data => {
47         console.log(data);
48         this.toastr.success('Project updated successfully');
49       },
50       error: error => {
51         console.log(error);
52       }
53     });
54   }
55
56   cancel(): void {
57     this.router.navigate(['/list-projects']);
58   }
59
60   ngOnDestroy(): void {
61     this._projectService.deleteProject(this.id).subscribe({
62       next: data => {
63         console.log(data);
64       },
65       error: error => {
66         console.log(error);
67       }
68     });
69   }
70 }
```

runtime.js | runtime | 6.52 kB |
4 unchanged chunks
Build at: 2022-05-14T12:07:19.200Z - Hash: b94def5e33ce31bf - Time: 443ms
✓ Compiled successfully.

3. Terminamos de conectar el .ts con el .html del componente.



4. Si es necesario añadiremos nueva rutas al app-routing.module.ts.



5. Comprobamos el funcionamiento.