



Instituto Politécnico
de Viana do Castelo

Licenciatura em ENGENHARIA INFORMÁTICA
Graduation in INFORMATICS ENGINEERING

GESFaturacao - FTKode
Project 3

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Orientation:

- Professor Doutor Ricardo Freitas;
- Engenheiro Miguel Guerra;

■ Summary

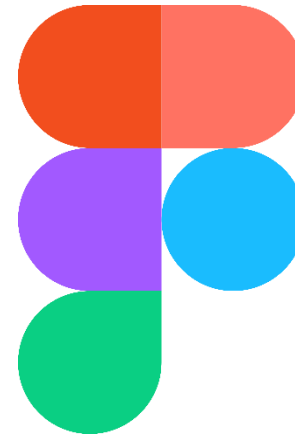
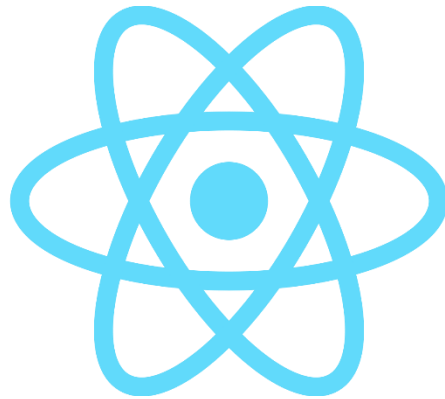
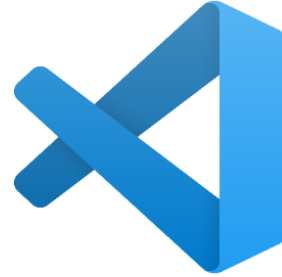
1. Introduction and Objectives
2. Technologies, tools, libraries, methodology and project management
 - 2.1 Programming Environment
 - 2.2 Methodology and Project Management
 - 2.3 Architecture
3. Developed features
4. Practical Case/Project Developed
5. Installation
6. Difficulties, future features and final thoughts
7. Conclusion
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■ 1. Introduction and Objectives



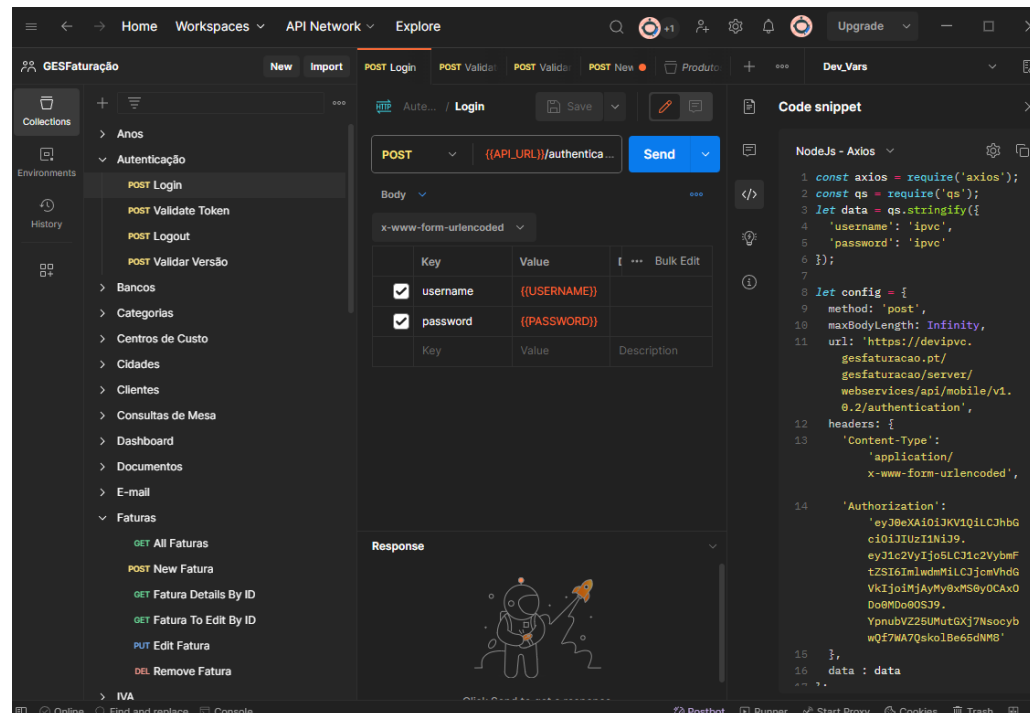
- With this project, we were challenged to take on the role of mobile programmers in a corporate environment.
- The objective was to develop a mobile application in React Native for business management.
- This project was a challenge for the group, as the development had to be carried out using a tool that can be considered unfamiliar, never having been taught in any class taken by the group.

■ 2. Technologies, tools and libraries



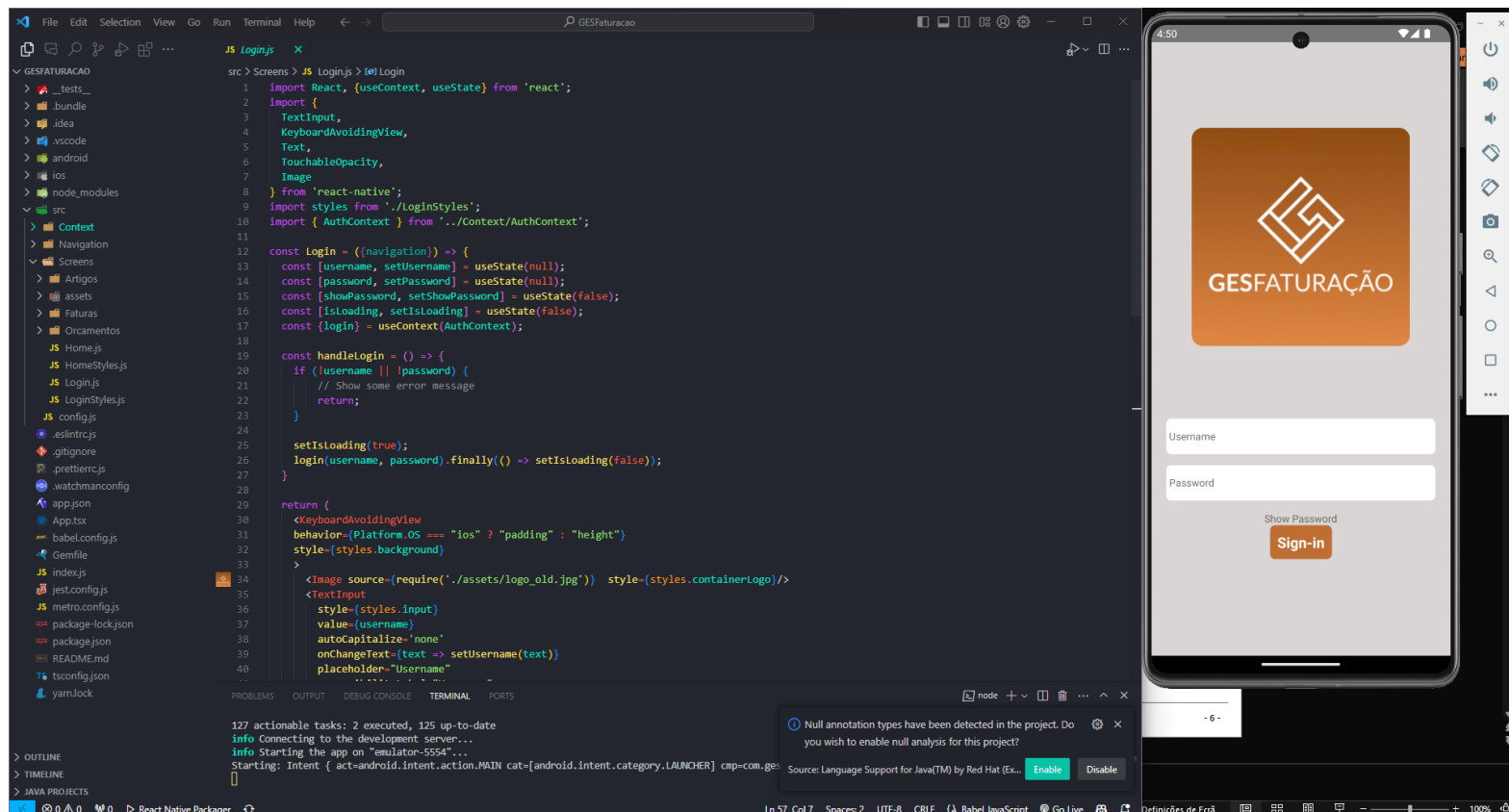
■ 2.1. Programming Environment

- For the development of the application, our data source was the API provided by the company, and we had access to it through the Postman API.
- We could test the requests to the server and implement them in the app too create the functionalities.



2.1. Programming Environment

- The IDE we used was visual studio code, React Native as the framework for mobile development and Javascript as the main programming language.



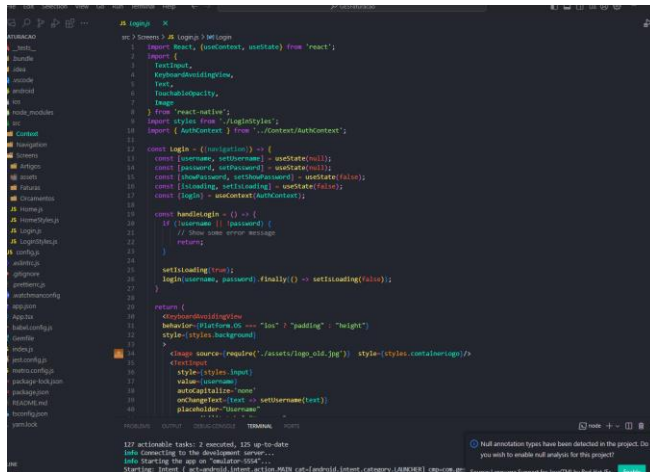
2.1. Programming Environment

- In order to work together as a team and maintain the versioning of the project, we used Github.

The screenshot shows a code editor with a sidebar on the left displaying a file tree and a list of commits. The main area shows the code for 'CriarOrçamento.js'. The code is written in JavaScript and uses React Native components and hooks. It includes imports for React, useState, useEffect, useContext, and various UI components like Button, StyleSheet, Text, TouchableOpacity, View, FlatList, TextInput, ScrollView, ToastAndroid, and LogBox. It also imports date and time pickers from 'react-native-date-picker' and 'react-native-community/datetimepicker'. The code defines a function 'CriarOrçamento' that handles the creation of a budget, including state management for clients, series, and the budget itself. It uses navigation to move between different screens.

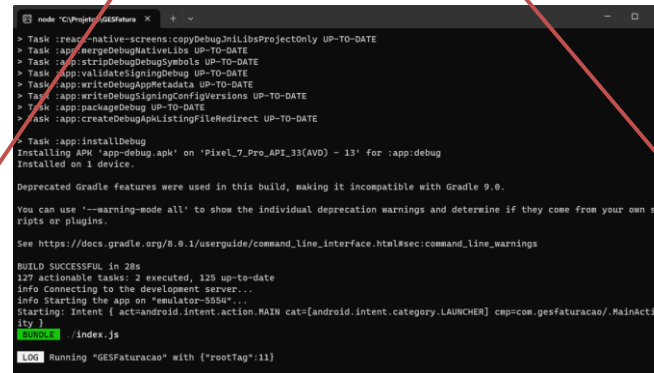
2.1. Development Environment

(1) Save code file



Visual Studio Code

(2) Build if saved



npx run android

(3) Upload latest project build



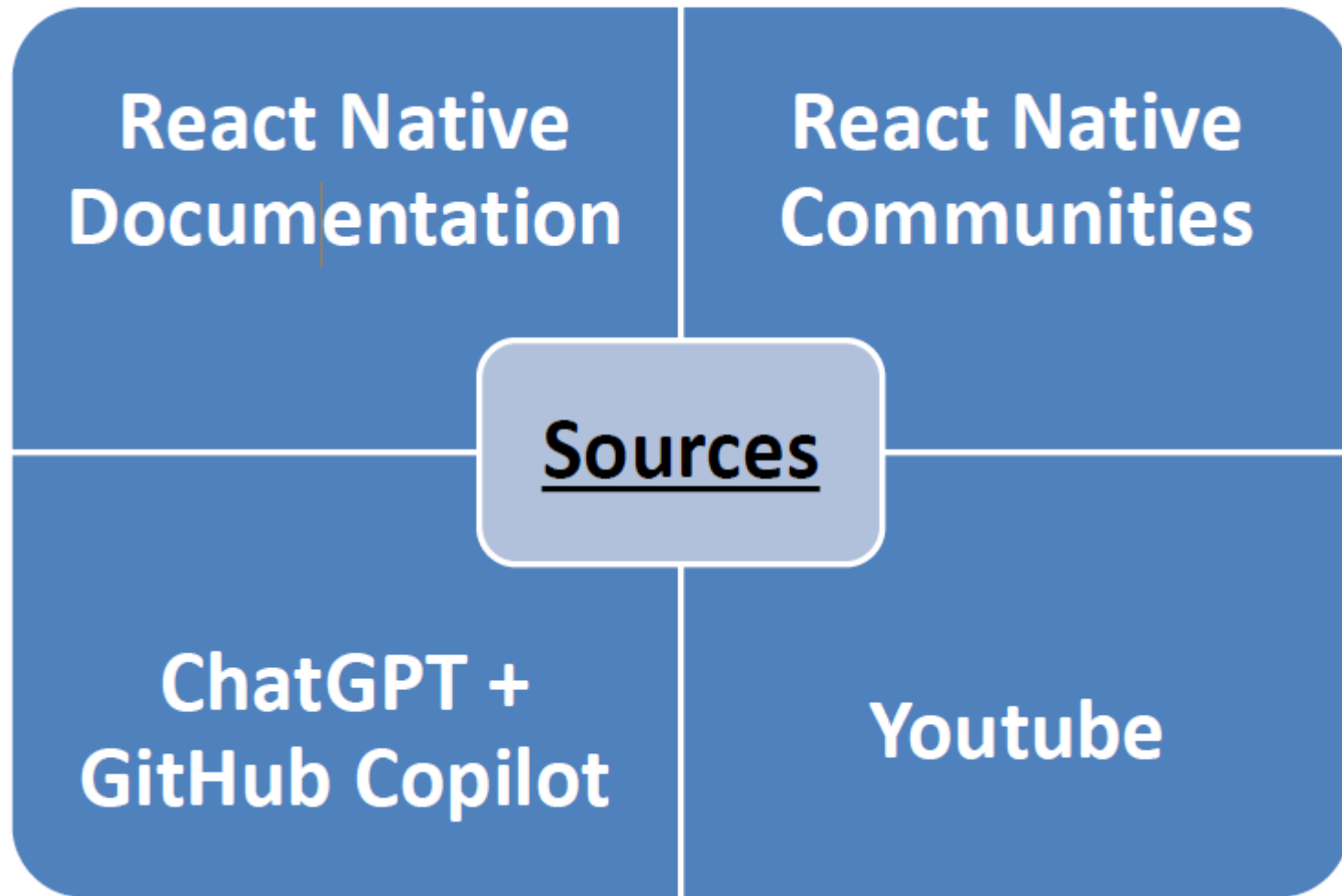
Android Studio Emulator

■ 2.2 Methodology



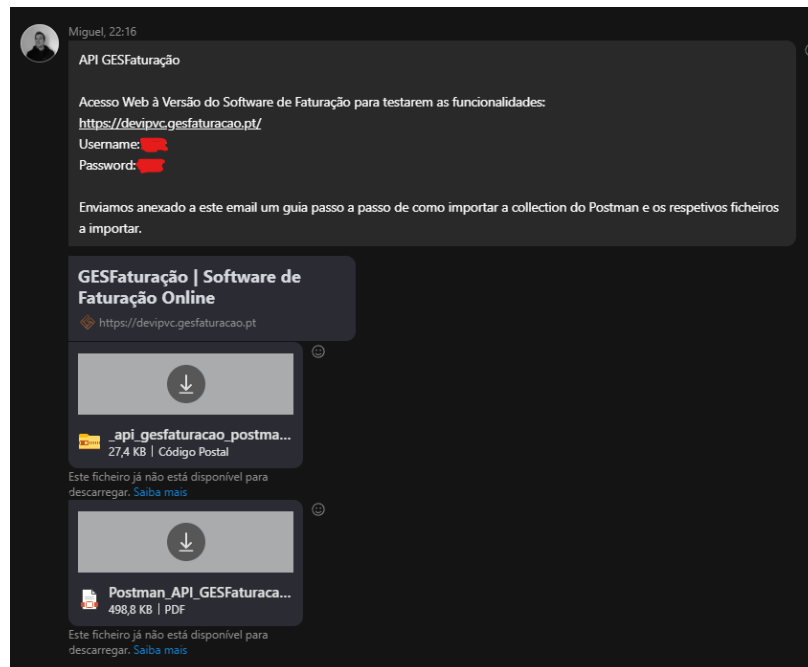
- Week 1: Initial contact with the company and definition of objectives;
- Week 2 to 3: Research for learning the tools to be used;
- Week 4 to 5: Authentication development;
- Week 6 to 8: Development of Invoice, Budget and Product Creation;
- Week 9 to 12: Development of Invoice, Budget and Product Listing;
- Week 13 to 15: Development of Invoice, Budget and Product Editing;
- Week 16: Development of Client creation, listing and editing;
- Week 17: Final touches to the layout and code optimization.

■ 2.2 Sources Used



2.2 Project Management

- Via Skype, we collaborated with the company engineer to define tasks and set deadlines.
- Weekly meetings were held with the company supervisor on Fridays, and group meetings were held every Wednesday.



Funcionalidades com datas estipuladas:

Funcionalidade 1 - Desenvolver Login/Logout "Subpasta Autenticação" - 17/11

Funcionalidade 2 - Desenvolver Inserir Fatura "Subpasta Faturas" - 17/11

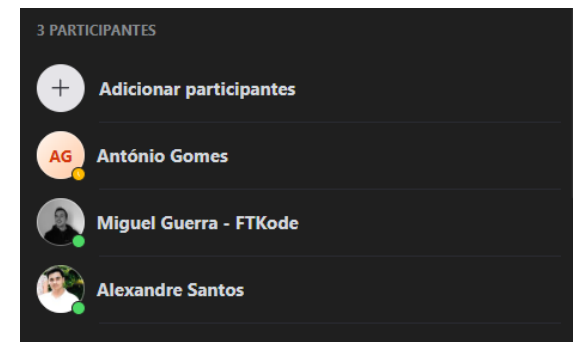
Funcionalidade 3 - Desenvolver Inserir Orçamentos - 24/11

Funcionalidade 4 - Desenvolver Inserir Artigos - 1/12

Funcionalidade 5 - Desenvolver Consultar Faturas + Orçamentos + Artigos - 8/12

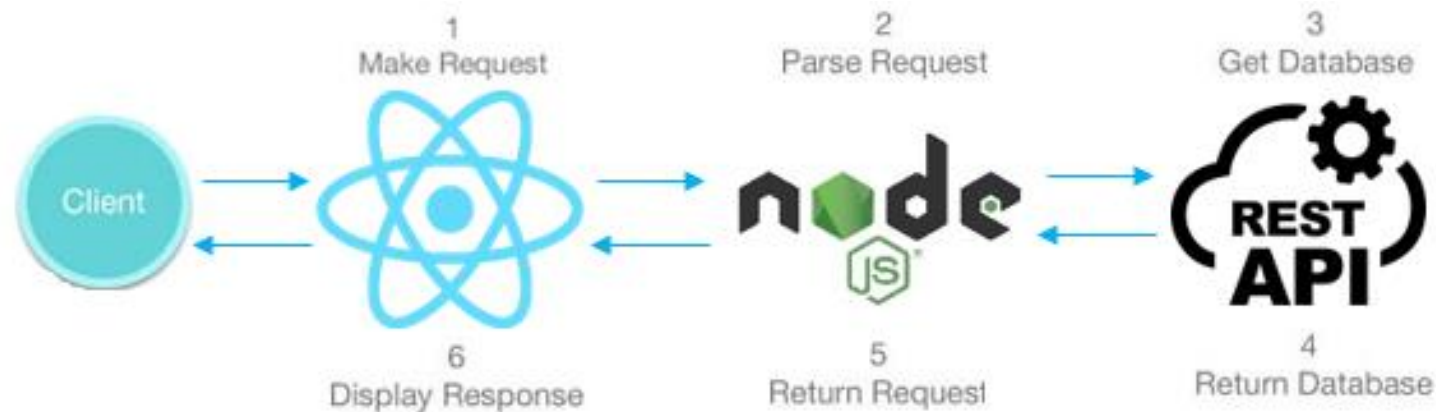
Funcionalidade 6 - Desenvolver Editar Faturas + Orçamentos + Artigos - 8/12

IPVC - ESTG - EI - GESFaturação - APP Móvel 3 participantes



■ 2.3 Architecture

- The environment used for the development of the project consisted in a collection of technologies (React Native, Node.JS and Rest API) associated with JavaScript, which is used to build web-based applications.



3. Developed features

- API methods for accessing login, token validation, and version.

The screenshot displays the REST Client interface for a project named 'GESFaturação'. The left sidebar shows a tree view of API collections, with 'Autenticação' expanded to show several endpoints, including 'POST Login'. The main panel shows the configuration for the 'POST Login' request. The URL is set to '{{API_URL}}/authentication'. The body is configured with 'x-www-form-urlencoded' encoding and contains two form fields: 'username' and 'password', both with values '{{USERNAME}}' and '{{PASSWORD}}' respectively. The 'Response' section at the bottom shows a successful response with a 200 status code and a JSON body containing an 'Authorization' token.

Key	Value	Description
username	{{USERNAME}}	
password	{{PASSWORD}}	

```

1 const axios = require('axios')
2 ;
3 const qs = require('qs');
4 let data = qs.stringify({
5   'username': 'ipvc',
6   'password': 'ipvc'
7 });
8 let config = {
9   method: 'post',
10  maxBodyLength: Infinity,
11  url: 'https://devipvc.gesfaturacao.pt/gesfaturacao/server/webservices/api/mobile/v1.0.2/authentication',
12  headers: {
13    'Content-Type': 'application/x-www-form-urlencoded',
14    'Authorization': 'eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJ1c2VyIjo5LCJ1c2Vybm
  
```

3. Developed features

- API method for invoice creation.

The screenshot displays the REST Client application interface. The left sidebar shows the 'Collections' list with 'Faturas' expanded, highlighting the 'POST New Fatura' method. The main panel shows the configuration for a POST request to '{{API_URL}}/invoices'. The 'Body' tab is selected, showing a table of form data with the following key-value pairs:

Key	Value	Type
client	1	int; ID
serie	27	int; ID
number	0	int; 0 por ...
date	17/03/2023	string; ex....
expiration	17/03/2023	string; ex....
reference		string;
dueDate	0	int; Condi

The 'Response' tab is currently empty. On the right, the 'Code snippet' panel shows a Node.js script using Axios to make a POST request and log the response.

```

1 const axios = require('axios')
2 ;
3 const qs = require('qs');
4 let data = qs.stringify({
5   'client': '1',
6   'serie': '27',
7   'number': '0',
8   'date': '17/03/2023',
9   'expiration': '17/03/2023',
10  'reference': '',
11  'dueDate': '0',
12  'coin': '1',
13  'discount': '0',
14  'observations': '',
15  'finalize': '1',
16  'payment': '0',
17  'lines': '[{"id": "113",
18    "description": "Tinteiro
19    Compativel Epson T1631
20    Preto", "quantity": "1",
21    "price": "1.22",
22    "discount": "0", "tax": 1,
23    "exemption": "0",
24    "retention": "0"}]',
25  'id': '113'
26  })
27 axios.post('{{API_URL}}/invoices', data)
28   .then(function (response) {
29     console.log(response.data);
30   })
31   .catch(function (error) {
32     console.log(error);
33   });

```

3. Developed features

- API method for budget creation.

The screenshot displays the Postman API client interface. On the left, a sidebar shows the 'Collections' and 'Environments' sections. The 'Collections' section is expanded, showing a collection named 'GESFaturação'. Under this collection, there are several API endpoints listed, including 'GET All Orçamentos', 'POST New Orçamento', 'GET Orçamento Details By ID', 'GET Orçamento To Edit By ID', 'PUT Edit Orçamento', 'PUT Finalize Orçamento', and 'DEL Remove Orçamento'. The 'POST New Orçamento' endpoint is selected.

The main panel shows the details of the selected endpoint. The method is 'POST' and the URL is '{{API_URL}}/budgets'. The body is set to 'x-www-form-urlencoded'. A table lists the form fields:

Key	Value	Description
dueDate	0	int; Condi...
coin	1	int; ID
discount	0	int;
observations		string;
finalize	0	boolean;
lines	{{"id":"12","de...	array de o...

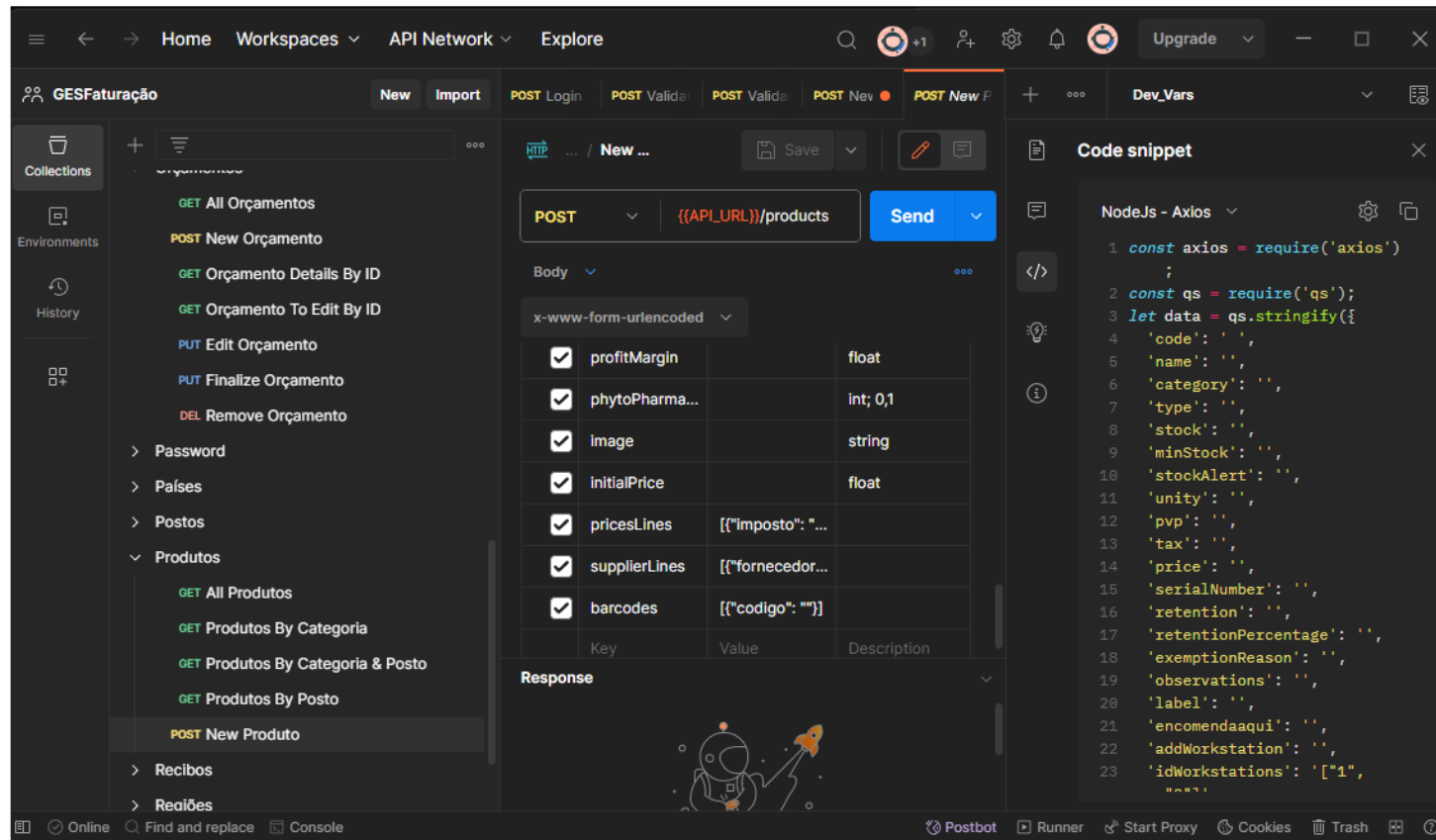
On the right side, a 'Code snippet' panel shows a Node.js script using the Axios library to make a POST request to the same endpoint. The script defines the request data and sends it using Axios.

```

1 const axios = require('axios')
2 ;
3 const qs = require('qs');
4 let data = qs.stringify({
5   'client': '1',
6   'serie': '27',
7   'number': '0',
8   'date': '18/01/2023',
9   'expiration': '18/01/2023',
10  'reference': '123456',
11  'dueDate': '0',
12  'coin': '1',
13  'discount': '0',
14  'observations': '',
15  'finalize': '0',
16  'lines': '[{"id":"12",
17    "description":"ABATANADO",
18    "quantity":"1","price":"0.
19    885","discount":"0",
20    "tax":2,"exemption":"","
21    "retention":0}]'
22 });
23
24 let config = {
25   // ...
  
```

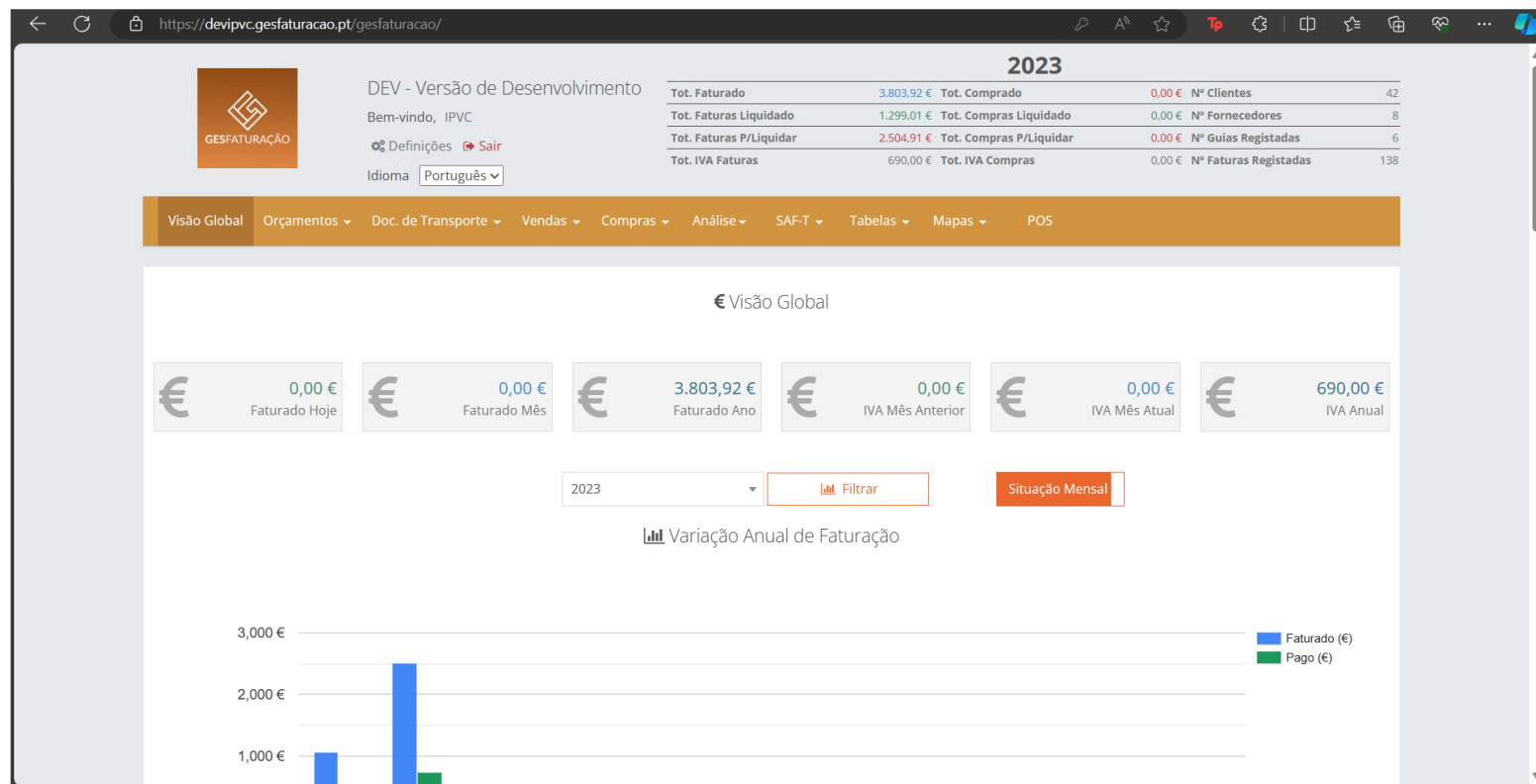
3. Developed features

- API method for product creation.



3. Developed features

- Original website of the company that served as our guide for creating the app and its functionalities.



3. Developed features

- Figma prototypes for the UI to be implemented after the development of all the functionalities.



■ 4. Practical Case/Project Developed

■ Login Page - Dark mode (Extra):

14:25

Nome de utilizador

Palavra-passe

Mostrar

☐ Lembrar credenciais?

Entrar

■ Login Page:

20:43

Nome de utilizador

Palavra-passe

Mostrar

☐ Lembrar credenciais?

Entrar

■ Dashboard:

13:07

SAIR

Dashboard

Faturas

Criar Listar

Orçamentos

Criar Listar

Artigos

Criar Listar

Clientes

Criar Listar

Bem-vindo, ipvc

■ 4. Practical Case/Project Developed

■ Invoice Creation:

13:08   

VOLTAR Criar Fatura

Desconto

0

Observações

Observações

Finalizar

Rascunho

Método de Pagamento

Selecione um método de pagamento

Artigo e Quantidade

Selecione um artigo Quantidade

Adicionar

Linha de Artigos

ID: 25
Artigo: BRANDY
Preço Un.: 2.033 €
QTD.: 1
Total: 2.033 €

Criar Fatura

■ Invoice Listing:

13:08   

VOLTAR Listar Faturas

Número: FT 2022A/13
Cliente: CLIENTE TESTE
NIF: 999999990
Data: 06/02/2024
Data Venc.: 07/03/2024
Total: 45.00 €
Saldo: -45.00 €
Estado: Aberto

Enviar

Número: FT 2022/0
Cliente: Consumidor Final
NIF: 999999990
Data: 06/02/2024
Data Venc.: 07/03/2024
Total: 190.00 €
Saldo: -190.00 €
Estado: Rascunho




Finalizar Remover

Número: FT 2022C/14
Cliente: CLIENTE TESTE
NIF: 999999990
Data: 22/01/2024
Data Venc.: 22/01/2024
Total: 1.40 €
Saldo: -1.40 €
Estado: Aberto

Enviar

Número: FT 2022A/0

■ Invoice Editing:

13:08   

VOLTAR Detalhes Fatura

Editar

Client

Consumidor Final

Series

2022

Data

06/02/2024

Validade

07/03/2024

Condições de Pagamento

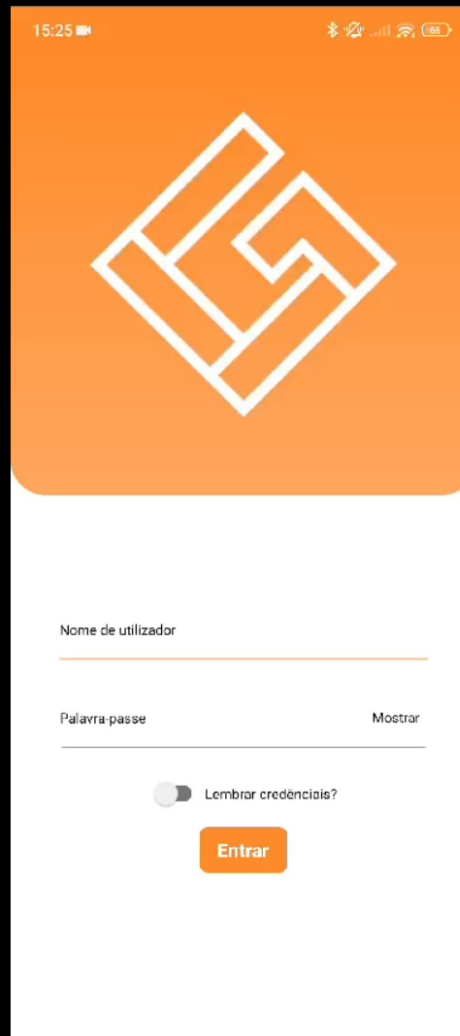
30 Dias Após Emissão

Referencia

Teste

Moeda

■ 4. Practical Case/Project Developed



A mobile application login screen displayed on a black background. The app interface has an orange header with a white geometric logo. Below the header is a white login form. The form includes a text input for 'Nome de utilizador', a password input for 'Palavra-passe' with a 'Mostrar' toggle, a 'Lembrar credenciais?' checkbox, and an orange 'Entrar' button. The status bar at the top shows the time 15:25 and various system icons.

15:25

Nome de utilizador

Palavra-passe

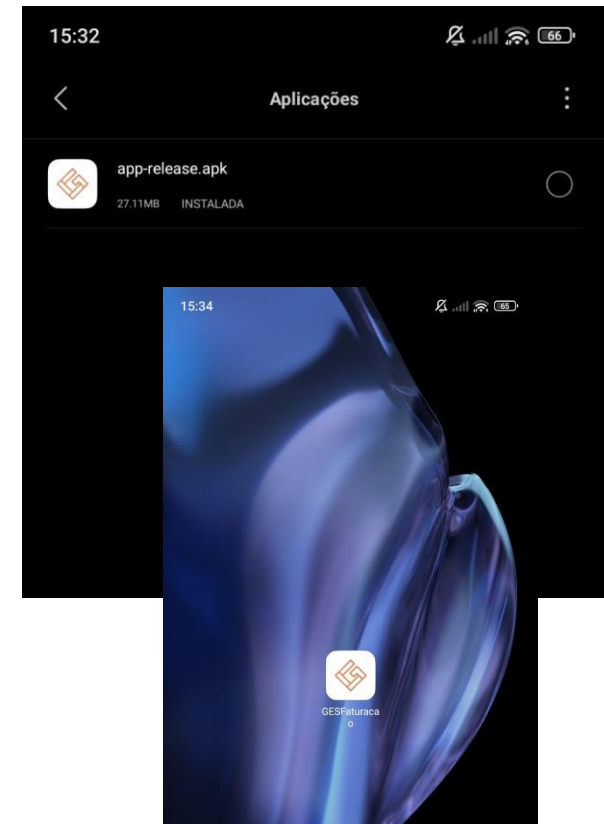
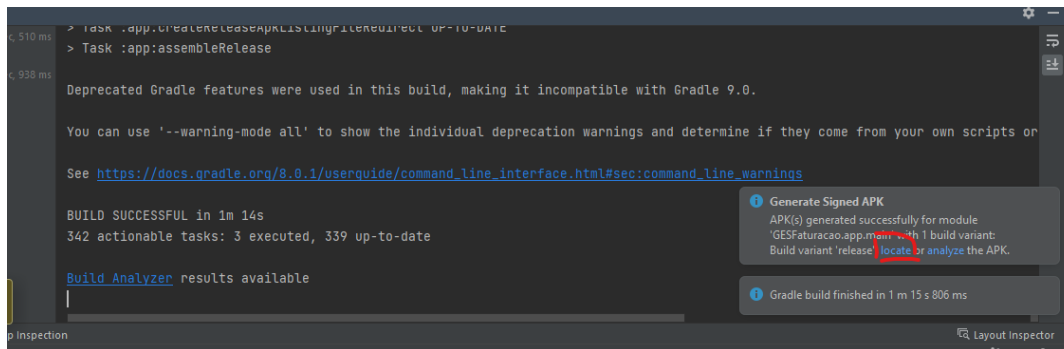
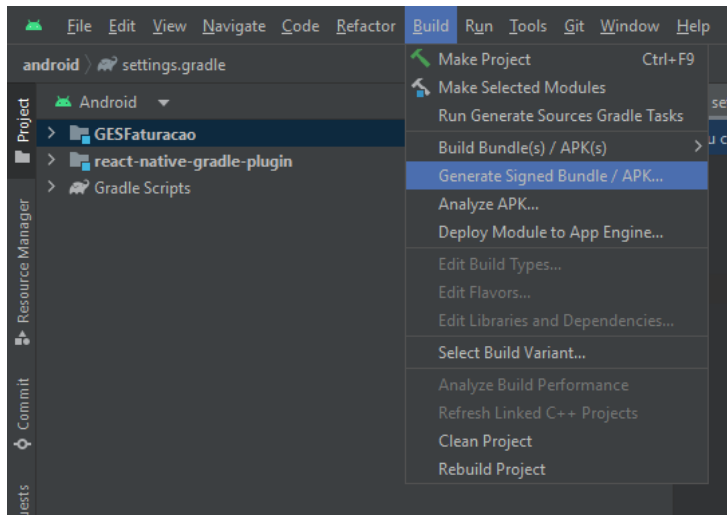
Mostrar

☐ Lembrar credenciais?

Entrar

5. Installation

- For the installation we had to generate an APK, this APK is used to install the app on mobile devices, and it's generated by Android Studio;



■ 6. Difficulties & future features

Difficulties:

- First contact with the technology, understanding how it works;
- Meeting some of the deadlines due to difficulties arising from the use of an unfamiliar technology;
- Implementation of API functions due to a lack of documentation;

Future features:

- Tables with data representation on the dashboard instead of buttons;
- Tabs to access the functionalities;

■ 7. Conclusion and final thoughts



- We can conclude that this is a project of great importance, not only because it is within the scope of a company but also because it prepares us for the job market as we are exposed to a corporate development environment.
- Despite the difficulties arising from a lack of knowledge in the tool we are used, the project was of great interest to the group, which motivated us to overcome the challenges and develop the best possible project.

■ 8. Bibliography and Web References



- Course to learn Javascript: <https://www.codecademy.com/learn/introduction-to-javascript>
- Course to learn the basics of React Native: <https://www.codecademy.com/learn/learn-react-native>
- React Native documentation: <https://reactnative.dev/>
- NPM documentation: <https://www.npmjs.com/>
- React Native navigation documentation: <https://reactnavigation.org/>
- Axios documentation to execute API calls: <https://axios-http.com/docs/intro>
- React native development methodology: <https://markovate.com/blog/react-native-development/>
- Figma tool for the UI prototypes: <https://www.figma.com/>

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