NOVA SCHOOL OF SCIENCE & TECHNOLOGY

Interação Pessoa-Máquina

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Transit Pass Application

Stage 4: Functional prototype

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1. Prototype URL

The computational prototype can be accessed downloaded in the following link:

- https://github.com/BlasterJoni/ipm_navegante/releases/download/v1.0.1/navegante.apk

2. Startup instructions

To start up the application prototype the user needs to download the .apk on the link and install it on their smartphone. As the application isn't signed it's necessary to enable applications from external/unknown sources. After that the prototype is ready for use.

To test out the scenarios it's necessary to login with the correct users and to logout after each scenario. The following users were created for each scenario:

Scenario 1:
Username: julie@email.com
Password: password

Scenario 2:
Username: bree@email.com
Password: password

Scenario 3:
Username: susan@email.com
Password: password

Scenario 4:
Username: danielle@email.com
Password: password

Something important to note is that the android's back button shouldn't be used when navigating within the application as it could lead to an incorrect previous page. The history works well if using the application's own buttons and menus. Sadly, this error was only found at last minute and could not be solved in time.

In scenario 4 you can upload any file you have at hand because this is a dummy upload and it just shows how the page should work.

3. Briefing

Public transportation users face a lot of problems daily due to the lack of a digital transit pass or the automatization of certain tasks like the renewal of passes and access to transport information, for example. It's with the development of this transit pass mobile application which works as a transit pass that we intend to fix these problems and provide the users a better and more automated way to deal with all the needed tasks.

4. Scenarios

Scenario 1 - Julie won't be late

Waking up after she slept through her alarm, Julie realized that she had already missed her train.

When she got to the station, Julie opened her Navegante App to check, in the Fertagus timetable, if the next train in Sete Rios at 08:39 would be in Pragal before 09:00.

After confirming that she could catch it and not be late she opened her pass screen and realized that it had expired and she had to renew it, using her Mastercard.

After confirming the payment, she used the pass' QR Code to open the gates to the platform and finally caught the train.

Scenario 2 – Bree goes another route

Bree's means of transportation were tardy by 5 minutes so she decided to open her Navegante App to check if the cause of this tardiness was stated in the alerts tab.

There, she found an alert stating that someone had parked on the metro line nº 1 and caused some problems.

Realizing that she would be late, she decided to use the path finding feature in the app – she selected the origin as Cacilhas, destination as Corroios and the arrival time as 15:00.

After expanding the second path's details, she realized it fulfilled her demands and decided to take it.

Because it was necessary to buy an extra ticket, she used the app to charge her zapping with an extra 3 euros, paying with her Mastercard.

Scenario 3 – Susan is craving choco frito

Susan remembers that her and her friends went out to eat a very good choco frito but she doesn't remember where, only that it was the day of her birthday.

She knows she went by train so she decided to check the Navegante's app travel history, searching by the date – the 27th of October, 2021.

In her search she found out it was on Setúbal, so she just needed to buy that exact ticket to get there.

In the tickets tab, she bought a Fertagus Ticket, with origin in Fogueteiro and destination in Setúbal, paying with her Visa.

With that ticket she got to eat her so desired choco frito that same day.

Scenario 4 – Danielle prepares to be a freshman

Danielle just turned 18. Because she just started college and opened a personal bank account, she needs to update her Navegante App's information.

She starts by accessing her account information and editing it by changing the NIF to her own: "295686937" and her password to "daniellepassword".

After that, she accessed her pass profile and submitted a document to prove she's a college student, so that the profile could be updated do Sub23.

At last, she added a new method of payment to her account – A Mastercard with a number of "5466160126455789", validity date of 09/25 and CVV of 289.

With all these changes Danielle finally felt ready to start college.

5. URL of your project

5.1. Implementation of the prototype

The computational prototype's project with the source code can be accessed in the following link:

- https://github.com/BlasterJoni/ipm_navegante

To develop this application we used Ionic with React.

Ionic - complete open-source SDK for hybrid mobile app development.
React - open-source front-end JavaScript library for building user interfaces based on UI components.

The Navegante application has various features such as:

- Login with different users
- Registration
- Access transit pass / bought tickets / zapping information
- Use transit pass / tickets / zapping (QR code)
- Renew transit pass monthly
- Buy Fertagus/MTS/TTSL tickets
- Charge zapping
- See transit transportation alerts
- Access Fertagus/MTS/TTSL timetables
- Path finder given origin, destination and arrival/departure time
- See the user's public transportation history, filterable by date
- Access user's information
- Update user's account information
- Access user's pass profile details
- Update/renew pass profile
- Access list of user's methods of payment
- Add a new method of payment (VISA/Mastercard/MBWay)
- Log out

5.2. Non/partially implemented features

The MTS and TTSL timetables weren't implemented because they're very similar to the Fertagus timetable and, due to the amount of variations (different trips / summer and winter / workday, weekends and holidays) it required a lot of effort to implement, as all the different timetables needed to be retrieved and treated.

The registration and password retrieval process also weren't implemented as they didn't seem like a priority – instead of focusing on implementing these basic functionalities we put more effort in implementing the more important and unique features in our application. Besides, the identity of the user being registered would have to be verified, so an account wouldn't be automatically created.

At last, due to the difficulty of implementing a full path finder from scratch because of its great complexity, need for heavy computations and processing of large quantities of data we thought it was out of the scope of this subject to develop such a "vertically deep" prototype and our implementation only covered the given scenarios. We tried to use the support of path finding APIs like the Google Directions API but unfortunately none of them were free to use.