PLATFORM TO REQUIRE MEDICAL HEALTHCARE ABOARD DOURO CRUISES

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Abstract: Cruise tourism in the Douro is ever growing and ensuring the health and well-being of the tourists should be a priority amongst the organizers of the trips. After a cross-sectional field study, consisting on applying a survey during the cruise trips, was undertaken by the research team, it was shown that the majority of the participants were receptive to the idea of a mobile application to facilitate the requisition of specific medical care, before the trips. The research team then started developing a platform, consisting of the application mentioned above, a back-office website, and a shared database. The app is being built on android studio, utilizing its native programming language, java. The website is being developed on visual studio, using the ASP.NET framework. The database is built on SQL Server 2014, and will be deployed to a server to interact with both the application and the website. The client interacts with the app to request medical care aboard the cruise ship. The request will be submitted into the database and must then be validated by an admin through the website, although this is only necessary for requests that require the submission of a prescription.

Keywords: Mobile application; Tourists; Health care

Introduction

Tourism is constantly and consistently growing in Portugal. In 2016 alone, a total of 28,4 million international tourists visited Portugal (INE, 2017). The Douro region is one of the oldest in the country, having been named a UNESCO World Heritage in 2001.
One of the most important part of the region in regard to tourism is the Douro River, which is navigable, and its surrounding landscape (Sousa, Monte &Fernandes, 2013).
Mobile apps have been increasing in number in the health sector, either for specific diseases and conditions, medical providers, medical education, and even geared for the general public, although these apps are usually much less complex. Although most of them are related to weight loss, they can still be used for other areas, such as tourism (Boulos, Brewer, Karimkhani, Buller & Dellavalle, 2014).
The health and well-being of tourists who frequent river cruises on the Douro River should be a premise of vessels that perform such cruises (Guy, Henson & Dotson, 2015; Kim, Woo & Uysal, 2015).
If tourists who want to take cruises, can at the time of booking, request various health services according to their needs, utilizing a mobile application, there is no doubt that we will be contributing to the health promotion of tourists who visit the Douro region (Ker-Cheng et all, 2014).
After a field study realized by the research team, which involved a survey with questions about the opinion of users about the need for such an application, the conclusion was that the great majority (76,0% of all tourists) saw the application as something they would be favorable towards.
And, if so, this project is being developed and one of the objectives has to do with the development of a mobile application.

Materials and Methods

The platform is being developed by the research team. It will consist of a mobile app, a back-office website, and a shared database. Each of these elements require different platforms and technologies.

The app is being built on android studio. This creation kit is widely used for various types of apps, due to its existing support, consistent updates, and functions like the gradle system, an automation system that supports multi-project code builds. It is the most popular tool for android app design, making it a tool that has lots of technical support and simplicity of use (Arquitetura da plataforma|Android Developers, s.d.).

It utilizes an oauth2.0 protocol for user authentication. This protocol allows a certain website or app to access their information on other websites, without the need for password sharing (OAuth 2.0 - OAuth). The programming language utilized was java, the native coding language of the Android Studio kit, making it a simple and obvious choice. It has a built in json converter to read data received from the database, and to upload any changes.

The database is being developed on the SQL Server 2014 platform, and will be hosted on a server, to be accessed by both the website and the app. This platform allows the storing and treatment of data, while also allowing other applications like websites and mobile apps to have access to said data. The broad array of support for all kinds of software that require a database server, and the streamlined interface of the server, make it a good choice for a database support tool (Otey, 2014)

The website was built upon the Visual Studio programming platform, using the asp.net language and the bootstrap framework. Visual Studio was selected for its vast array of features, as well as being a familiar environment for the developers. Asp.net was chosen due to its scalability and speed (Visual Studio 2019 | Visual Studio), and due to it being familiar to the research team. Bootstrap was chosen due to its organisational ability, and the responsiveness it brings to the website (Bootstrap. the most popular HTML, CSS, and JS library in the world.) and its simplicity and easiness of use. Its purpose is to simply be a back-office platform.

All the elements of the platform will interact with each other. The app will receive information regarding the trips from the database, and, after the user confirms a request, it will be sent to the database, which will in turn send it to the website for validation. After the request is validated, the database state of the request will be altered. It is also possible for the user to cancel requests, which will be an immediate action and will require no validation from the website.

Results and Discussion

Initial testing of the app was mainly positive, although it was done in a local environment, with the database not being hosted on a server. Further tests will be completed with a fully online platform.

Front end users:

The user will be required to log in, utilizing the oauth2.0 protocol. From there, he can access all the features of the app. The login screen is as follows, see (Figure 1).
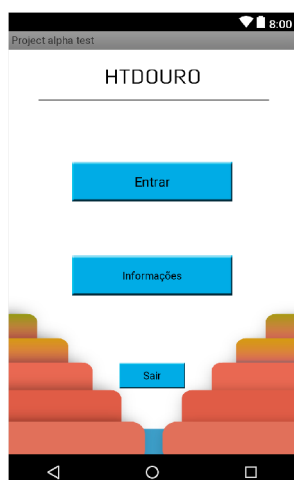:

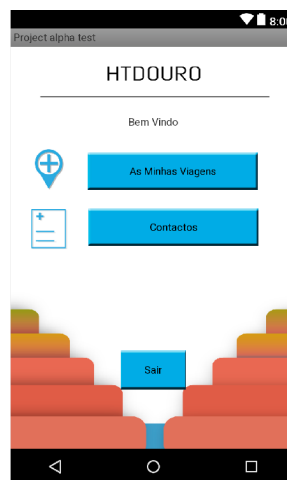**Figure 1** - Login Screen

Figure 2 - Home Page

This will take the user to the home page, where the user can view trips already linked, add new trips, or consult the contacts & information page, see (Figure 2).

On the trip list, the user can select from a list of trips linked (it's assumed that in most cases there will be a single trip), see (Figure 3).
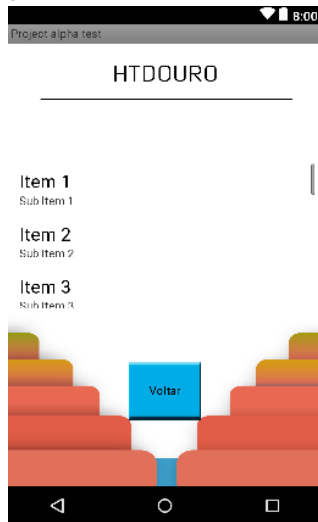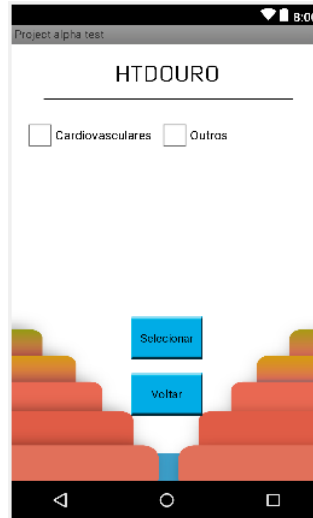

Figure 3 - Trip List

Figure 4 - Health Care Requirement Screen

The user then selects a trip, and can view its info, as well as select the option to request medical care.
The user can then select from a list of offered medical care packages (some of them will require that a prescription be sent by email to an admin at a later date), see (Figure 4).

To link a new trip, the user must request a trip token when purchasing the ticket. Every ticket can only have 1 code, and every code can only link to 1 trip. The user will then enter the code in the respective field, and the trip will be linked to the active account. It is possible to request medical care for friends or family using the same account, as long as the user has the required codes for every ticket.
On the contacts and info page, the user will be able to learn a bit more about the company organizing the trip, see (Figure 5).
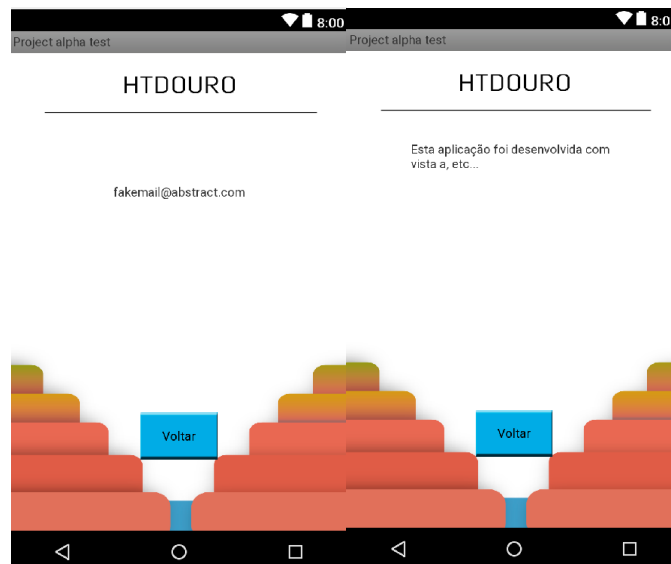

Figure 5 - Contacts and information screens

Back End Users:

Only the admins will interact with the website. The admins will receive a username and password from the database manager. The login function of the website is a more classical approach than the application. It simply requires the input of the username and password given to the admin, see (Figure 6).
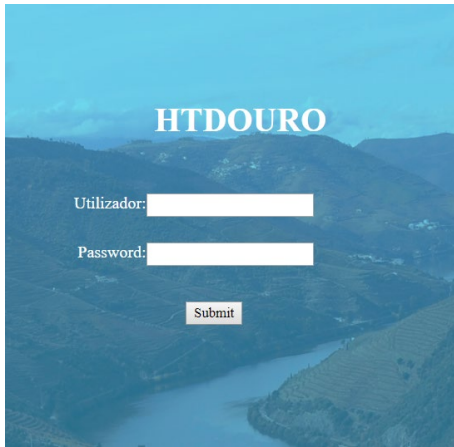

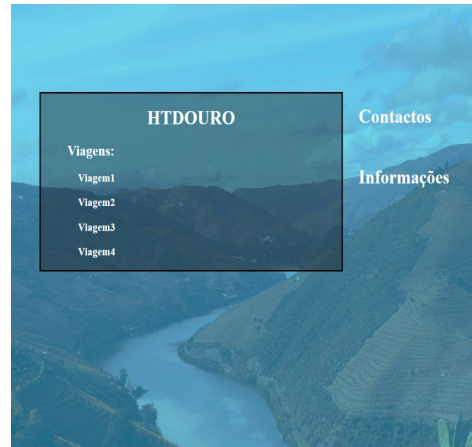**Figure 6** - Website's Login Page

Figure 7 - Website's Trip List Page

The admin will be taken to the home page after the login. Here, one can select from a list of trips from the company the admin belongs to, see (Figure 7).

Afterwards, the admin will view the trip page, where he can access the trip's information, and a list of passengers whom require medical care, see (Figure 8).

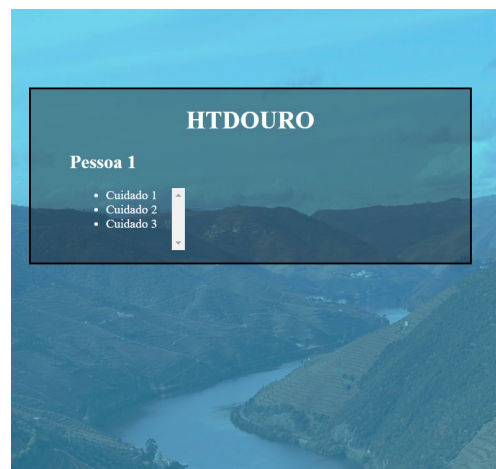**Figure 8** - Website's Trip Info Page

Figure 9 - Website's Health Care Requirements Page

He can then access the specific health care requirements of each passenger on the list. Here the admin will have the option to validate requirements, see (Figure 9).

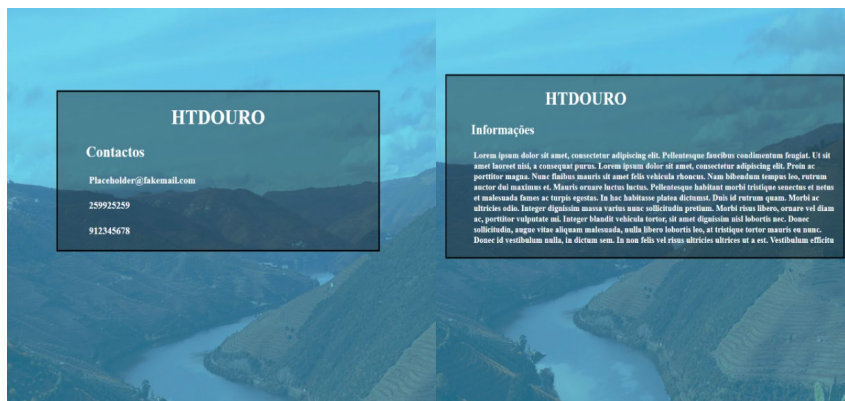The admin can also access the contacts and information page, see (Figure 10).

Figure 10 - Contacts and Information Pages

Conclusion

Technology application in healthcare has been arousing engineering's attention for a long time in support to health recovery and maintenance therapy practices.

In this regard, creating support systems to watch the fulfilling of the therapeutical plan, assisting healthcare professionals and informal caregivers on dependent elders' care may be an added value.

Acknowledgements

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