Development of an application on the Android platform for viewing and placing an order at a restaurant

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Abstract— **The diploma project aims to develop an application for mobile devices on the Android platform, for viewing and placing an order at a restaurant. The functionality and design were designed using the Java programming language, in the Android Studio development environment, integrating specific libraries, having created its own database, using the SQL Server database management system. After running this application, the results are as expected, being run both on the emulators in the development environment and on the personal mobile device (SAMSUNG A51), to ascertain the functionality. The application offers the possibility to quickly select the desired products, and helps people with certain culinary intolerances to make a quick selection of appropriate products.**

I. *INTRODUCTION*

Lucrare The work aims to develop an application for mobile devices on the Android platform, for viewing and placing an order at a restaurant directly from the phone. The Java programming language and the SQL Server database management system were used to implement the application.

II. *THEORETICAL CONCEPTS*

1. *Android*: Android Studio presents an integrated development environment (IDE), which on May 16, 2013, was presented following a conference at Google I / O as IDE as the official IDE for the development of Android-based applications. In 2014, the first version was released, version 1.0. being built since 2013. The development environment, Android Studio, is an official integrated environment (IDE) that underlies the development of Android applications based on IntelliJ IDEA, for application creation comes with a lot of functions in addition to those of code editing and development of IntelliJ , such as:[1]

- An elastic construction system based on Gradle;

- Fast emulator with many functions;

- The ability to change the code and resources of the running application without restarting the application;

- NDK and C ++ support;

- Lint tools are used to detect performance, and also for version compatibility or other issues;

- Github integration and code templates to allow the creation of common application functions and the import of code;

- Facilitating the integration of App EngineF and Cloud Messaging there is a built-in support;

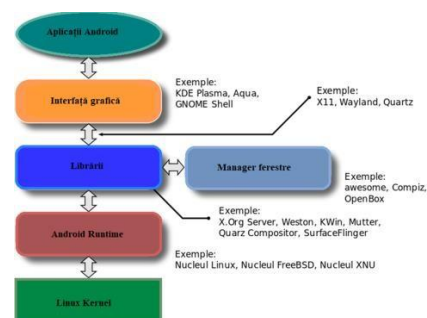2. *Android operating system architecture*

Figure 1 - Android operating system architecture

3. *Java programming language*: The Java programming language is one of the most powerful programming languages, it was created in 1995 by Sun Miccrosystems, which is currently the owner of Oracle. It is object-oriented, but not purely object-oriented, because it has the ability to support some types of data, for example int, char, etc., it does not offer low-level programming

features, such as pointers. The syntax of the code is very similar to C / C ++, the code being always presented in the form of classes and objects.

4. *Extensible Markup Language (XML):* XML (Extensible Markup Language) has a rather suggestive name, which gives us a suggestion of the things it can give us, that is, the marking of a language that can be extended. This type of language is different from the programming languages described above (Java, c #, C ++, Kotlin, etc.), so it is used to describe data, to illustrate static user interfaces, while other languages establish behaviors , clauses and dynamic interactions. Similar to XML, it is the HTML language, which creates the look of a website. It is an easy to understand language being similar to HTML, only there is a small difference, namely that in XML tags can be created custom to serve the needs of the client on the application, and are not predefined to use. It is created to carry data, not to display that data, being an extensible language, very well structured, simple to write and understand.

5. *SQL:* SQL is the acronym for "Structured query language", it is a data language that was developed to manage the data found in a database and to be able to search and find data, in short, communication with a database . ANSI (American National Standards Institute) states that "it is a standard language used for relational database management systems", being well known for performing certain tasks, such as updating a database, by DBMSs. relational (Database Management Systems), is also used by data analysts, and last but not least by script developers. Structured query language has its origins in the 1970s, developed by Donald D. Chamberlin and Raymond F. Boyce, within the IBM company, with the initial name of SEQUEL which wanted to manipulate and retrieve data stored in IBM relational databases. In 1979, Oracle was introduced as the first commercially available SQL implementation, created by Relational Software, after which there were other implementations from IBM.

III. *PRACTICAL IMPLEMENTATION*

To implement this project, I used the Java and XML programming language combined with a database in SQL, created by me, all of which were transposed into the Android Studio development environment, as well as into Microsoft SQL Server Management Studio 18. This application was created in order to be used in a restaurant by customers. The name of the restaurant chosen by me is "Miracle". To test this application I chose to use my mobile phone as well as emulators from the environment. development.

This application was created to solve many real life problems.First of all, the waiting time at a table in a restaurant until a waiter comes to take the order, we all know how unpleasant it is.Secondly, these are people who have certain health problems, because of this they have to be very careful about what they order, so the application through a special section suggests certain products, to ensure their safety that we care enough about the health of customers. And last but not least, the application is a good start to develop a business, as the application works on a local database, through a computer, so the restaurant can illustrate some statistics about its proper functioning, for example he may notice how often a person

comes to the restaurant, and perhaps in the future these "loyal" customers will be rewarded.

In the following we will discover how this application was born, the way of thinking, the implementation, and at the same time the results, which will surely be in line with expectations, maybe in the future it will become a more developed application.

A. *Android application architecture implemented:* The Android platform is for most mobile devices an operating system, being a software platform, which is based on the Linux kernel. On November 5, 2017, the platform was launched by Google, but was created by Andy Rubin, Nick Sears and Chis White. The Linux kernel, the root of this platform, is to support running enviroments, allowing Android to access security feautures, such as isolating a process and removing unnecessary parts, from a user-based permission model, which helps developers produce hardware drivers. Android is able to provide the operation of a mobile device, apart from the range of Apple mobile phones; it first starts an interface, in which there are several applications that can be accessed quite easily. It is available open-source; since 2008, when the entire source code was published, bringing a note of popularity among developers because the support for telephony networks was also published.

B. *Diagram of app functionality*

Figure 2 - Diagram of app functionality
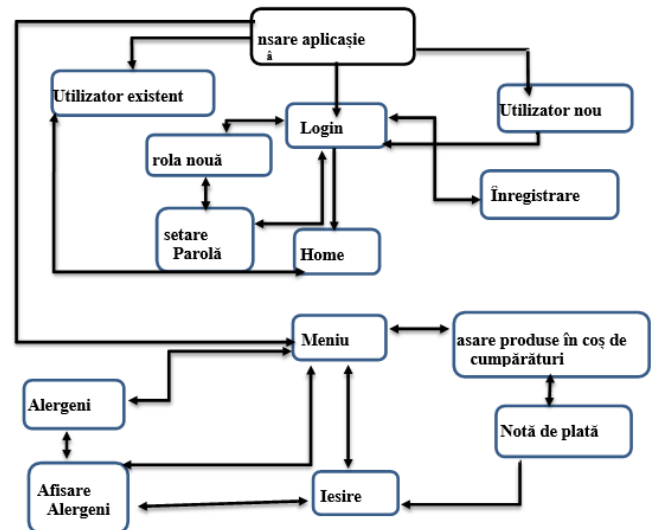
IV. *PRACTICAL RESULTS*

1. *Miracol*: The application was built on carefully selected elements to provide an interactive, easy-to-use uinterface that gives users a pleasant feeling when using it. It is intended for mobile devices with Android operating systems, which illustrates the menu of the Miracol restaurany, presenting a wide range of food menus that are available to be served. The menu consists of six large categories, which in turn contain products that are made in the restaurant kitchen from fresh products.

Figure 3-Application home page

2. *Login page:* The application starts with this interface where the user can log in, register, or if he is registered in the database to change his password. If he is not interested in these aspects, he can go to the Home page without being logged in.
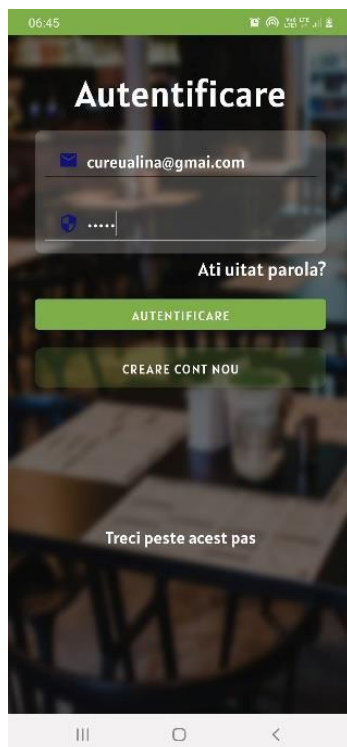

Figure 4- Login Page

3. Home: The interface tells the user about the history of the restaurant and how it is cooked in this place to attract the attention of customers in a pleasant way.

Figura 5- Home page

4. Product menu: This interface helps the use with 6 food categories: breakfast, side dishes, meat, pizza, pasta, dessert; about which he can view details, such as ingredients or price. Also, in this section the user selects the table he wants to eat.
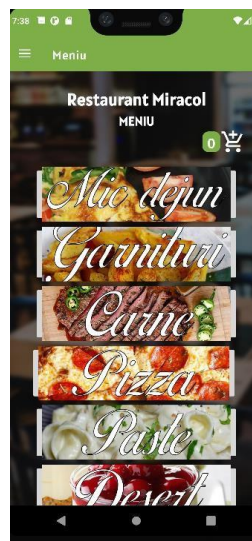

Figura 6- Product menu

5. *Shopping cart:* This page shows the shopping cart and the total for the selected products.
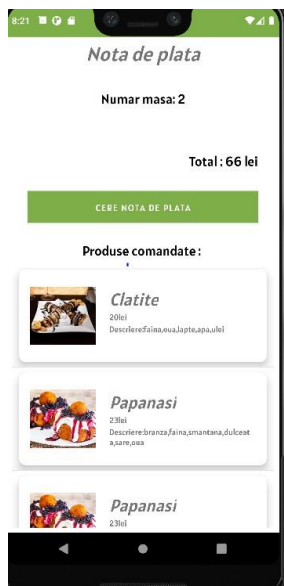

Figure 7- Shopping cart

Figura 8- Payment note page

V. CONCLUSION

The diploma project was developed in the Android Studio environment and in th Microsoft SQL Server ManagementStudio 16 program where you can find your own created database.The results obtained after the implementations were in line with my expectations, a user can view but also order products from the menu displayed.The application also presents a section in wich the customers offer a list of offers for allergens.In the future, the application could be very easy to adapt to implement other methods, for example, due to statistics that can be made based on recorded data, the restaurant could count these results and determine the type of customer, for the loyal customer offering some offers.Finally, based on all the above, the application has fulfilled its purpose, to be an application for viewing and placing orders online, dedicated to both restaurany customers and the admin to establish some statistics, being open and other imporvements.

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