

Development of Mobile Application to Report Criminal Acts in Young Areas of Peru

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Abstract— This research work entitled "Design of a mobile application for complaints in real time to the national police", being that the police officer must be in his office or in front of a computer with an Internet connection so that he can see the complaints that are in charge, or manually search for documents, cases, folders. For this reason, a mobile application called "mobile application" was proposed and developed; as a solution proposal. Its purpose is to solve different problems without having to be in the police station and / or in the office. We want to help the population to carry out any complaint in a more EASY AND QUICK way, and this will be achieved through the application "MOBILE APPLICATION", with Android operating system, resulting in a friendly and easy-to-use mobile complaint management application. For the present project, XP Extreme Programming (eXtreme programming) methodology was used, which adapts to the necessary characteristics required for the application to have optimal performance, in addition to facilitating the development and design work of the application. We made use of a series of technologies and tools for the development and design work of the application, we will use IDE (integrated development environment) Android Studio that provides us with comprehensive services, which facilitates the task in time of programming our mobile application.

Keywords: Police report, mobile application, Virtual Private Cloud, SQLite, Smartphone

I. INTRODUCTION

In recent years the advance of criminality, corruption and citizen insecurity, has become the main problems for many citizens and there are many more complaints. [1] The present is directed and thought out for all citizens who live in different parts of Northern Lima, so we decided to give added value to citizens through a mobile device; The cell phone can be used in many different situations, among its advantages are easy portability, immediate availability, real-time data capture and independence from a system (computer), what we want is to be able to use these advantages in favor of the police force and give it greater professionalism, so we can provide easy and quick access to quality information to the citizen as well as good treatment, which are the reason for a citizen. [2] The police stations have improved their services to the general public in order to provide quick and efficient access to the information they need. For example, when a citizen files a complaint, a member of the police force or the police stations could access information on the complaints, tax files, protective measures, and other information, instead of being in a district of North Lima, whether or not they have access to the Internet, and thus be able to provide the citizen with the information he needs more quickly and efficiently, whether it be on a case that involves the same or information that a family member needs [3].

For the present project, the Kanban agile methodology was used, which adapts to the necessary characteristics required for the application to have an optimal performance, in addition to facilitating the work of development and design of the application [4]. As a case study for the PNP mobile application; we made use of a series of technologies and tools for the development and design work of the application, we will use Android Studio (integrated development environment) which provides us with comprehensive services, facilitating the task of programming our mobile application in time. Besides the SQLite that allows us to create our database and is integrated into the Android Studio, JDK provides us with the development tools to create java programs and SDK for package management, running the Android apk [5].

The application is designed to make the citizen a quick report and the cash and the commissioners an option to sort and classify the information collected from the various steps that performs every day, and would not need Internet access as the application works with a database locally.

This paper is structured, in the following section II it will be described in detail the methodology used for the application of the citizen's environment to make the complaint directly to the police station. In section III we will plant the case study, in section IV we will show the results obtained and discussions, finally in section V we will present the conclusions.

II. METHODOLOGY

For the development of the mobile application, the Kanban methodology will be used, which is characterized by being highly efficient and easy to implement in project management. In this case, several technologies will be used, including the AWS Local Private Cloud service (Amazon Web Services), which will be in charge of hosting the website that will be connected to the mobile application for both Android and IOS, which will allow an easy access to the application from any mobile device without the need to use a computer. All data will be stored in a MySQL relational database to prevent data loss [6]. The Kanban methodology consists of the following phases.

A. Amazon (Amazon Virtual Private Cloud) acquisition and configuration and communication protocol

A Virtual Private Cloud (VPC) is a set of cloud resources, including virtual machines, storage, and network resources, that provide a layer of multi-tenant security for companies that rent space in the cloud. Enterprise customers connect to the VPC through Internet-based VPNs running on the public carrier's network [7]. Having a private virtual machine in the cloud has numerous advantages, such as isolation from other users and the possibility of configuring the system according to the needs and preferences of each client. For this reason, many opt for services like Amazon VPC or CPV, which are easy to purchase and set up, and also offer a one-year free trial period.

To ensure seamless and error-free communication between our services, we have enabled specific ports on both AWS and our Vesta dashboard. Additionally, to enhance the security of our website, we have added an SSL certificate, which provides an encryption protocol designed to secure data transfers and communications over the Internet [8].

B. Development technologies

In this stage of the process, a detailed description of the users for whom the application will be created is made, using different methodologies such as "People" and "User Journey". Likewise, the foundations of the functionality are established, which will allow defining the scope of the project and the complexity of the design and programming of the app [9].

- User definition
- Functional definition

C. Design

During the design phase, the previous concepts and definitions will be defined in a concrete representation, which will be reflected in the form of wireframes. These wireframes allow the creation of the first prototypes, which will be tested with users. Subsequently, the final visual design is created, which is refined to the developer in the form of separate files and model screens, so that he can program the code [10].

- Prototypes

D. Development

the implementation of the designs and building the structure that will give life to the application. Once the initial version is created, a lot of time is spent fixing functional bugs to ensure proper app performance and prepare it for store approval [11].

- Code programming
- Bing fixes

E. Testing and operation of the Application

After the development stage is complete, the application is released in stores so that users can download it. Subsequently, a follow-up is started through the analysis of statistics and user comments, with the aim of evaluating the performance of the application, detecting errors and opportunities for improvement, and updating it in future versions. This evaluation and improvement process will continue as long as the application is in use by users [12].

- Launching
- Update

III. CASE STUDY

This research was developed with a project development methodology, then describe the development, operation of the system and project implementation of a citizen who was a victim of theft of a mobile application tends to make his report back, in addition to providing security to citizens and make it a user-friendly environment.

A. Acquisition and configuration of Amazon (Amazon Virtual Private Cloud) and communication protocol

It was decided that the project should be developed with the most economical budget possible and in a work environment that allowed the use of online services instead of local ones. Therefore, it was chosen to use AWS services as an initial free tool, since by creating an account you can access a free VPS for one year. This made it possible to save costs and work in a real online environment from the beginning of the project [13]. Also, created the account will have the instance or vps with the Ubuntu Server 18 operating system as shown in Fig. 1.

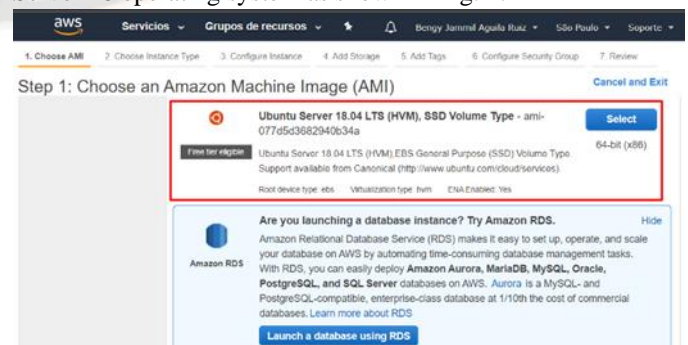


Figure 1. Selection of the Instance or private VPS.

B. Development technologies

In this phase we will start developing the website using the IDE of development of ATOM. Likewise, the design was developed based on a template administration that was carried out in balsamiq, which was modified to meet the requirements. In this way, it was programmed in Android Studio [14].

C. Design

A device with wireless connectivity was selected. Since, many of them use different connectivity such as Wi-Fi, Lora WAN among other protocols. In this way, the device must meet the necessary requirements, such as Wi-Fi enabled modules and be able to connect to the Internet. Therefore, the ESP8266 receives a lot of attention due to its low price and features, such as containing the power of 2.4 GHz [15]. Also, they integrate the TCP/IP protocol that was selected as the device as the main use. To program the device, a connection to our website and mobile app was established. In addition, a unique identifier for each device was incorporated into the code, along with the username and password to connect to our Wi-Fi network. Therefore, it is necessary to adjust the domain, port, user and password settings as shown in Fig.2.

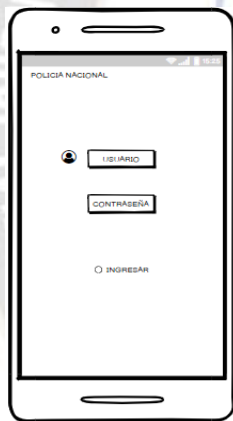


Figure 2. Application architecture

D. Development

In this section LoginPage in MainActivity is set as the root page which means that when loading the application on any platform the login page at the time of starting the application will automatically open.

E. System test and operation

This section describes the mobile application, a series of tests have been applied to verify the correct functioning of each of the functionalities and modules. The tests of navigation in the different menus of the application and tests of persistence of the database at the time of the security incidents.

Fig.4 and fig.5 show the navigation interface can be done from any cell phone. To do so, the user must authenticate himself in a correct way and then enter the menu shown with three bars.

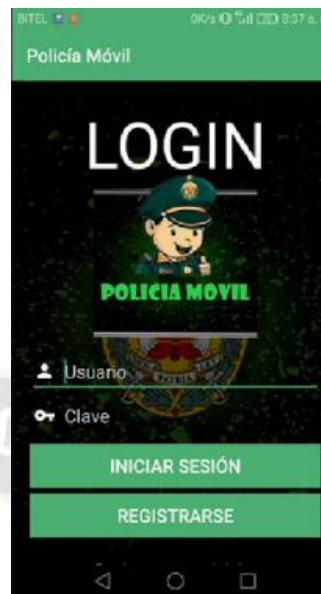


Figure 3. Login illustration



Figure 4. Registry Illustration

Once you have entered the sub menu, the following window will appear where you will be asked to add a report and consult it, as shown in the following figure 5 and in figure 6 it is shown as a report.

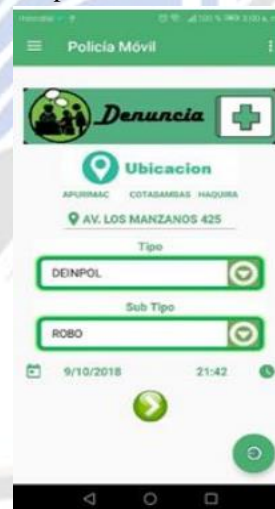


Figure 5. Illustration of sub menu illustration



Figure 6. Report

IV. RESULT AND DISCUSSIONS

A. About the case study

As a case study, the mobile application was developed in an appropriate way using the right tools and following the phases of the Kanban methodology.

To begin, the research work on a mobile application about a report of a robbery in any part of North Lima, this work takes the report of a robbery to the citizen, and thus investigate how was the robbery and according to that make the report to the National Police, These processes are monitored from an

application with a single report that makes the citizen, for this use both the citizen and the police and another direct connection, in both cases the communication is via wifi, data on the mobile, the data is stored in the cloud server, resulting in the project being innovative and generating knowledge.

In our project, we are focused on providing direct data connection services for the population of Lima Norte, instead of using the connection to the internet network that is commonly used. Our services currently cover this specific geographic area, but we have plans to expand to other locations in the future. Compared to another project we investigated, which focuses on a mobile application for real-time reporting to the national police, our project has a different approach and focuses on offering direct data connectivity services to our community.

B. About the case methodology

To achieve a successful development of a project, it is essential to follow an organized and structured action plan. In this case, the Kanban methodology was applied, which allowed dividing the project into different phases and carrying them out efficiently. Various tools and technologies were used that optimized the development process and minimized project costs. In addition, best practices were used, such as creating a mobile application. Each of the phases of the project was documented with images for a better understanding of its evolution.

V. CONCLUSIONS

We came to the conclusion that a system can be developed following the phases of the Kanban methodology, In this way it was possible to obtain as a result the application created exclusive use for the citizens, who will be able to make their complaints in a faster way. With an interface and operation friendly, easy to use for the citizen and that does not need many resources for its operation the app was made using the combination of development technologies such as Android Studio, and SQLite database, based on the methodology of Kanban. As a second conclusion with the use of methods and functions of interaction of the application with the database was achieved to reduce the time of making the reports.

Finally, the system can be used without an internet connection, which will benefit the community, you can also expand the project in the form of providing services to more places as the project is all north Lima.

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