

Weapon's License Verification System

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Abstract—This project is of great security value. The issue of security is paramount in every organization, especially an organization such as Police. One of the reasons Pakistan is still struggling with the security of people is the lack of a proper system to keep a database of all licensed weapons. In recent times, we have seen the impact it is causing on the internal and national security of its provisions. Therefore, we intend to aid to improve the security, by bringing in a Weapon Verification System that involves an individual to access the details of their weapon, such as whether the arm is licensed or not. From this system, the data is managed in a centralized manner in order to be accessed by police and the public not only for verification but also for the validation of weapons and their license. The system will allow every individual to keep track of their weapon license validity, to get a renewal before the expiry. The main idea of this project was to build a security system that can be easily accessible to Local Police and people through mobile and web application. Different approaches were used to make this system work, one of which is using the National Identity Card, and the other is to use Weapon License No. One can use a weapon after the issuance of license only by the government through the National Database System. After research on different ideas related to the project, we widen the E-Policing Module which will improve the coordination between the police and people. In the Future this project can easily be enhanced.

I. INTRODUCTION

Nowadays, the crime rate is increasing day by day in Pakistan see Fig. 1, you can see the increasing trends in the number of deaths due to terrorism. The major reason for crime and violence is a weapon. Different question comes in mind whether weapon a cause of crime or the people who are using it illegally? Due to the increase in buying a weapon, the chance of unlicensed is also increased. "The National Database and Registration Authority (NADRA) was unable to search more than 170,000 of the existing 352,000 licenses in Pakistan, according to the most recent NEWS Report" [1]. The Department of Arms License is an important police organ entrusted with the issuance of a weapons

license. They have implemented laws in past and still envisaging but because of not having a proper platform they are facing difficulties to keep track of weapons. If the weapon is misplaced or stolen the integrity and confidentiality of the weapon may also be lost.

To retain the confidentiality and integrity of the weapon some authentication mechanisms like application will apply. Different methods are used for weapon verification which is a large manual process. There is no such type of system for verification of arms. We introduced an application to find whether it is licensed or not. Police can quickly verify the status of an arm during snap checks or at security checkpoints. The main concept of this project is to fake and unverified licenses. Different approaches are used in this system such as through National Identity Card (NIC) or Weapon Number. The application uses databases to map Weapon no. with their registered NIC. These databases are used to determine the details of the weapon.

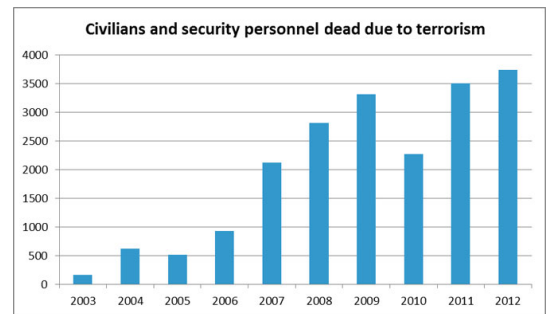


Fig. 1: Number of deaths have been increasing through the years [2]

II. EXISTING SOLUTION

There have been a quite few attempts to improve the system by shutting down the gates between the legal and illegal markets and also tried to reduce the purchase of arms without having a valid reason.

The current method of obtaining a weapons license is effective, without much difficulty but not smart enough. One needs to visit the provincial interior secretary's offices to get the whole thing completed without the need to get clearance from the concerned police station [1]. The new licenses are identical to passports and require an applicant to go through a NADRA-like process. This existing method is still full of question marks and includes a lot of fake endorsements and bribes [1].

The driving license department of Sindh has already implemented the online verification facility for driving licenses through the Public App. License Verification, License Fee Arrangement, and different services are given through the web portal and application [5]. Their goal is to make it simpler for the general public and raise awareness among individuals about driving licenses and road safety. The framework that they have in place is the kind that meets global standards. This method has significantly assisted them in ensuring transparency in both technological and financial terms [5]. The website [5] provided every bit of information needed for driving license, hence it is very effective and useful platform. We have used these guidelines as a stepping stone for our application.

In [3] the author discusses that how technology can help to keep track of illegal weapon. An application Mapping Arms Data (MAD) that maps tens of thousands of reports of exports and imports of weapons and ammunition from more than 200 states and territories between 1992 and 2011.

In [4] the new system by NADRA substitutes a highly protected PVC card for the old booklets, which is easy to hold in a bag. The implementation of Computerized Weapons License cards has made this card foolproof and highly secure. [4]. This solution still consist of manual process but our proposed solution focus on online platform with the several features.

The Federal Bureau of Investigation (FBI) and the Centers for Disease Control Prevention (CDC) analyze that it is much more affected by controlling who has access to guns than controlling what guns people have. They also checked the same thing by using entirely different data-sets [6]. The key lesson from this study is that they know the solution which laws function, but they need a platform. [6].

III. PROPOSED SYSTEM

Since the project is to develop and design for the public and police. The key feature of our system is that the database is centralized. We worked on a web application, an android application, and an IOS application as a platform to provide maximum benefits and it helps us to achieve our target. The task to select a language for the development is done by checking

the compatibility, efficiency, and performance of the programming language.

We break the project into small modules and compile them in the end. To make a final product available to everyone.

User must be registered to the portal using a unique ID and in case of any illegal activity cause in tracking through ID. The application will verifies license and in a more transparent way. It provides specifics of the weapon, such as the type, name, weapon caliber, national identification, issuance date, expiry date, and reason for getting it.

A. Requirement Analysis

1)Functional Requirements:

- When the application starts, the application must log in to the user first.
- The application displays the profile of the user after login.
- The application displays the option to enter NIC or weapon no. to be input by a user.
- The application shall be very responsive to the input made by the user.
- The application also has the option to view history.
- The application should allow the user to lodge a complaint.

2)Non-functional Requirements:

- Availability: The application should always be available to use.
- Correctness: The application should perform the role exactly as its specifications describe it.
- Maintainability: It should be sustainable and simple to manage the modifications made after its initial release.
- Reliable: The application should be able to trust the user with all of its performance.
- Accurate: There should be real-time data for the user to see his details.
- Usability: Application should be easy to use and it must provide a user-friendly interface.
- Safety: The application provide the encryption of the user ID and password.
- Security: As our application will be accessible to everyone, the source code and project implementation remain undisclosed.
- Timeliness: Within the proposed time, the application should be made.
- Visibility: All of the steps and current status has to be documented properly.

By modeling the Use-case See Fig.2, it makes more clear how the system behaves externally from the perspective of end-users or how user interacts with the system. It illustrates the relationship between actors, system and use cases.

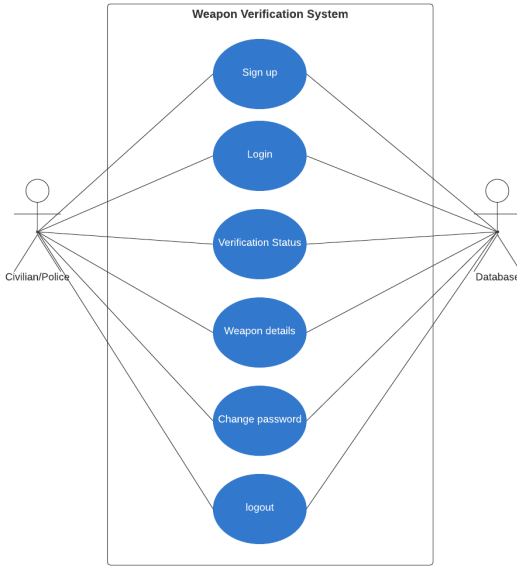


Fig. 2: Use case Diagram

IV. PHASES OF PROJECT

The WLS system is generally a huge and complicated system. It comprises different modules which becomes better for analysis and troubleshooting. We divide the WLS system into two general phases that are well described below.

A. Non-technical Phase

The non-technical phase of the WLS system is comprised on,

- Research

We go through a lot of project-related research papers and concepts. We have gathered the raw project-related information. Learn those things that are the project's core needs. We also refer to the existing projects which are related to ours. We complete the project in many parts.

- Design

By compiling all the aspects of the project, we form the raw information into a completed product. We draw block diagrams, flow charts and the cost of the project is estimated. We make it user-friendly so that everyone can conveniently use it.

B. Technical Phase

The technical phase of the WLS system is comprised on the implementation of design and testing of the project among a group.

- Implementation

The implementation of this project is based on a website, IOS, and Android application. We use Laravel for Web development and React Native for both Android

and IOS applications.

- Testing

We ensure the security of the project using encryption of the user ID and password. System save user password in the form of encrypted data in our database at the time of user registration. It has a user method to destroy the sessions. The initial test was to check the speed, quality, performance, and ability of many users to handle them. We haven't used any testing tool. All necessary testing was performed manually or at the time of implementation.

V. SYSTEM DESIGN AND PROJECT IMPLEMENTATION

The flow of our system and the system diagram is shown in Fig. 3. The system starts working by login to our hosted application and submits a request for the weapon license. The application processes the request and checks the availability of the internet, if the internet facility is available the application checks the database to verify the user credentials, it prompts the user whether it is licensed or not.

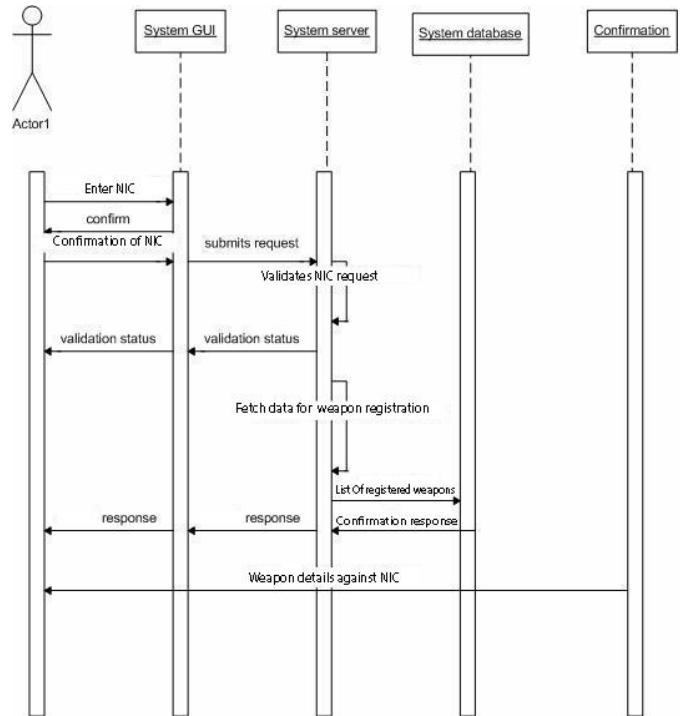


Fig. 3: System Diagram

The real-time environment of our system is exposed in Fig. 4 and Fig. 5. Which shows the flow of data at level 1 and level 2, it explains how a system processes data in terms of inputs and outputs by a user and admin respectively.

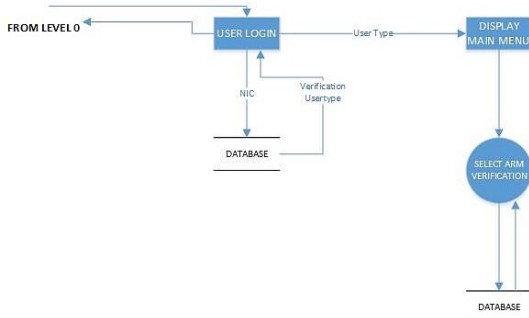


Fig. 4: Flow diagram at level 1

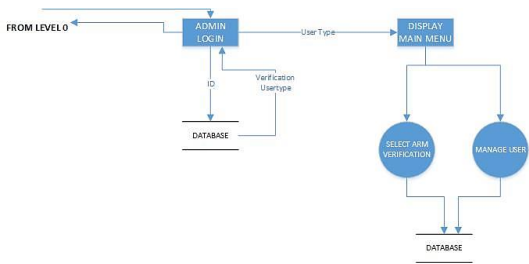


Fig. 5: Flow diagram at level 2

VI. TOOLS AND TECHNOLOGIES

A. Laravel

Laravel is a free, open-source PHP web framework and intended for the development of web applications following the architectural pattern model view controller (MVC) model in a structured way. [7].

B. XAMPP

XAMPP is a free, open-source, cross-platform web server stack package mainly consisting of Apache HTTP Server, MariaDB database, and PHP-written script interpreters [7].

C. React Native

React Native is a mobile application platform developed by Facebook, Inc. that is open source. It is used to build Android, iOS, macOS, Web and Windows applications by allowing developers to use the architecture of React along with the functionality of native platforms [7].

D. MY SQL

MySQL is an open source relational database management system (RDBMS). SQL is a language that is used by programmers to generate, modify and extract relational database data, as well as to manage user access to the database [7].

VII. CONCLUSION AND FUTURE ENHANCEMENTS

A. Conclusion

We develop an application that monitors our weapon, also retrieves our information against weapon no. any illegal activity cause in tracking through ID. There can be any user who can access the application through various platforms i.e: Android, IOS, and Web portal as well, who just need internet access, and the data is retrieved from a centralized database. License authentication will be now at fingertips.

B. Future Enhancement

The Weapon License System (WLS) requires enhancements and it has a lot of aspects that can be changed in the future. We are expanding the module of E-Policing. In the future, Government can easily improve this project according to their needs. Online arms can then easily be tracked and issued only by the Government through NADRA. To minimize the chances of bribery, the method of payment of the license fees may also be carried out through online bank transactions.

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