Access Control Management System

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***Abstract*— Data security and privacy problems are rapidly increasing by volume, due to the variety, and the increasing amount of Big Data and lacking to handle it, till now. In the paper,the point of convergence is on one of the key data security services, that is, access control, by focusing the contrast with conventional data management systems and relate a set of requirements that any access control solution for Big Data platforms may achieve.The Project Named "Access control Management System" is a web-based Information control system . Access control is the process of controlling every request to a system. The Access Control Management System will provide the security for website from unauthorized user to register, providing website full security from the hackers. the IP address will be taken from the device.**

I. INTRODUCTION

Development of technology, progress and increase of information flow have the impact also on the development of enterprises and require rapid changes in their information systems. The information systems store large quantity of data and allow to perceive a number of operations and business affairs on the data each day. In this scenario, it seems unavoidable to have the ways, techniques and tools that can make likely the development of information system on level reflecting present and future needs. One of the basic concepts of protection models is access control. The purpose of access control to data in information system is a limitation of actions or operations that the system's users can execute. Modern technology has become an essential part of our daily life. Just like some parts of our life are preferred being secret from the public, parts of our data and internet activities also are preferred to be kept private. To ensure privacy on the internet the concept of Virtual Private Network (VPN) came to life and grew larger over time. Today there are many VPN suppliers competing to have you as a customer. But in today's world these VPNs and Proxy are creating issues in individuals or organizational data leakage. Sometimes fraudulent are hiding their real IP address and using VPN or Proxy servers to have a new IP address and access individuals personal data. The proposed platform will provide the security for website from unauthorized user to register, it will encapsulate data that is being used on the internet, making it more secure for data theft or malwares. It will detect User's IP Address and verifies whether it is authorized user or not If the IP matches with the user the user can login and access the data, if it doesn't matches with the user the software will block the login access and notify the user about the practise. Software will also store user's login time and date for future purpose.

The existing systems doesn't tracks user's IP address and verifies whether he is authorized or unauthorized user. The existing systems also don't detect the IP address behind VPN or Proxy Server. Research indicates that VPNs that are free of charge often come with side effects that are not public knowledge. By using free VPN services that could include malware or be using bad algorithms to protect your data the usage of the VPN could be unnecessary. Another study on VPNs has shown that Android VPN enabled apps have security flaws. In this study 283 applications were analysed for security and privacy risks. Out of these apps use third party user tracking, 38 percentage contain some form of malware. The website that user use to register or login, firstly checks the user information in the database if its verified then user can enter in the website but sometimes the unauthorised user can also enter in the website by entering the same login credentials in website through his system, it can cause big problem in the data security.

II. MOTIVATION

In our society everyday there are instances going on where someone's data is leaked and used for inappropriate purposes. Many individuals lose their data as well as money or stocks due to these incidents. To avoid these malpractise and frauds the system is proposed. It will avoid these incidents and protect user's data.Some registered users of the fashion e-commerce site Myntra are reporting suspicious logins into their accounts, raising concerns of their data and payment information being exposed.There are Several Such Events or situation to avoid these situations the proposed system is introduced

III. FEASIBILITY STUDY

As the name implies, a feasibility analysis is used to determine the viability of an idea, such as ensuring a project is legally and technically feasible as well as economically justifiable. It tells whether a project is worth the investment—in some cases, a project not be doable. The reasons include requiring more resources, which not only prevents the resources from performing other tasks but also cost more compared to an organization would earn back by taking on a project isn't profitable. Few types of feasibility are exist, so developers take care of feasibility.The feasibility study is

an evaluation of the potential of a proposed project which is based on extensive and research to support the process of decision making. Feasibility to a project determines whether it is possible to develop the project. There are three main factors, which determine the feasibility of the projects. Primarily the project seems to be feasible.

A. Technical Feasibility

Visualizing the results can be done using HTML and CSS to create interactive dashboards and plots to display the model's predictions and performance. This involves integrating with web technologies such as Django and block-chain to create a web application that can be accessed from any device with an internet connection. Overall, the technical feasibility of using HTML, and CSS for user interface and visualization has been established, and there are many available tools and resources to make it a practical option for researchers and practitioners.

B. Economical Feasibility

The main factor in the feasibility study. If Product is economically affordable it will be used. So project must be cost saving. Establishing the cost effectiveness of the proposed system. The project relies on browser-based interface for end user inputs. Since the interface is completely browser based it doesn't require bandwidth allocation and reduces the financial aspect of project implementation. The project requires some software and tools which adapts freeware software standards and the dataset used for the project is also freely available. It gives an edge for developer's perspective and for customer's point of view as a Freeware.

C. Operational Feasibility

Operational feasibility is the ability to utilize, support and perform the necessary tasks of a system or program. It includes everyone who creates, operates or uses the system.Provide summary statistical information without disclosing individual's confidential data. It makes the system operationally feasible. The prediction model is developed completely based on Machine Learning for accurate prediction. Technical skills are required for proper Implementation and Synchronization of freely available tools. The product developed Climate Change Prediction will be freely available for users, It will be directly beneficial for the society.

IV. Cost Estimation

Cost estimation in project management is the process of forecasting the financial and other resources needed to complete a project within a defined scope. Cost estimation accounts for each element required for the project—from materials to labor—and calculates a total amount which determines a project's budget. Cocomo Model Cocomo (Constructive Cost estimation Model), proposed by Boehm [1981]. Boehm postulated any software development project will be classified into one of the subsequent categories based on the development complexity: organic, semi detached, and embedded. In order to classify a product into identified categories, Boehm not only considered the characteristics of the product but also those of the development team and development environment[4]. Boehm's definition of organic, semi detached, and embedded systems are elaborates are:

A. Organic Mode • Relatively Small, Simple Software projects • Small teams with good application experience work to a set of less than rigid requirements • Similar to previously developed projects • Relatively small and require little innovation.

B. Semi Detached Mode Intermediate (in size and complexity) software projects in which teams with mixed experience levels must meet a mix of rigid and less than rigid requirements.

C. Embedded mode Software projects must be developed within set of tight hardware, software and operational Constraints Basic Cocomo Model: Basic COCOMO Model is good for a quick, early, rough order of magnitude estimate of software cost. It does not account for differences in hardware constraints, personal Quality and experience, use of modern tools and techniques, and other project attributes known to be a significant influence on software cost, which limits its accuracy. It gives an approximate estimate of the project parameters.

Software project	ab	bb	cb	db
Organic	2.4	1.05	2.5	0.38
Semi-detached	3.0	1.22	2.5	0.33
Embedded	3.6	1.20	2.5	0.32

The basic Cocomo estimation model is given by the expressions.

Effort, E = ab (KLOC) bb (1)

Tdev, D = cb (E) db (2)

$Where,$

Equation 2.1 shows estimation of development of effort.

Equation 2.2 shows Tdev is the estimated time to develop the software, expressed in months,

KLOC is the estimated size of the software product expressed in Kilo Lines of Code,

ab, bb, cb, db are constants for each category of software products.

KLOC = 8(approx.)

Softwere Project Type = Organic

ab = 2.4, bb = 1.05, cb = 2.5, ; db = 0.38

Calculation: E = 2.4 (8)1.05

E = 21.30 PM

D = cb (E)db

D = 8 Months

V. Requirement

Requirement gathering is the main phase of the Analysis phase because it's the time project team begins to understand what the user wants from the project. During the requirement gathering sessions, the project team meets with the User to collect each requirement in detail.

A. Functional Requirement

Functional requirements are the functions which are expected from the software or platform.Functional requirements along with requirement analysis help identify missing requirements.They help clearly define the expected system service and behavior.Table 3.1 shows functional requirement for this project. The prediction model should also provide users with clear and easy-to-understand output, such as visualizations or reports, that can assist in making informed investment decisions. Furthermore, the prediction model should be evaluated on its ability to accurately predict the prices of a diverse range of stocks across different sectors and markets. Overall, the functional requirements of the stock price prediction model are to be accurate, adaptable, user-friendly, and able to handle diverse database.

- The website is user friendly
- All the details are visible to user.
- User can register and login smoothly.
- The accessibility or response time of the website be fast.
- Performance of the system is appropriate

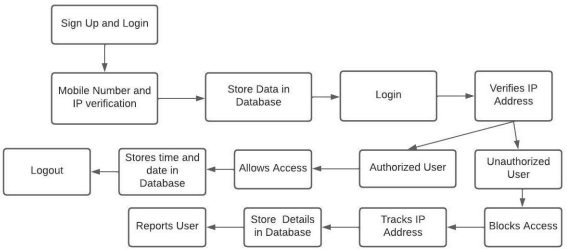
B. Non Functional Requirement

Non-functional Requirement is mostly quality requirement, Stipulates how well the portal does, what it does. Except functional requirements in practice, It entail detail analysis of issues such as availability, security, usability and maintainability. Non-functional requirements are as:

- **Performance Requirement:** System can produce results faster on 4GB of RAM. It take more time for peak loads at main node. The system be available 100 of the time. Once its fatal error, the system provide understandable feed back to the user.
- **Safety Requirements:** Only administrators access the database. For the safety purpose backup of the database must be required.
- **Security Requirements:** System is being developed in Python. python is an object oriented programming language and be easy to maintain. The system is designed in modules where errors can be detected and fixed easily.
- **Software Quality Attributes:** The system considers listed non-functional requirements to provide better functionalities and usage of system.
- **Availability :** The system be available during 24 hours of a day
- **Usability :**The system is designed keeping in mind the usability issues con- sidering the end-users, are developers/programmers. It provides detailed help it lead to better and faster learning. Navigation of system is easy
- **Consistency:** Uniformity in layout, screens, Menus, colours scheme, format
- **Performance :** The performance of the system be fast and as per user requirement. From system output is expected outcome in less time and less space since efficiency is higher. Speed is totally depending on the response of the database and connection type.
- **Extendibility :** Prevention in the system be done in the system by which make changes in the system later on
- **Reusability :** Files of any type be used by the system for any number of times during transformation
- **Reliability :** Protection of data from malicious attack or unauthorized access.
- **Security :** The system provides security to the randomly generated private key by performing encryption to it for encrypting patient data and protects from other nodes in the network. The network is free from malicious node and misbehaving node attacks.
- **Reliability :** The system provide user an efficient search each time. So the user depend on the system. Because system guarantees user to provide interested data every time in least amount of time

VI. Design

In the Section, Architecture of the web application system, is shown in the Diagram below,



It shows the general structure of the software system and the associations, limitations, and boundaries between each element. Software environments are complex, and they aren't static.

VII. Modules

The overall functionality of the Access Control Management System application can be divided into 2 modules, which are detailed below:

- **User interface application of the Website:**User interface application of the Application: This Web Application has the Interface where all the features like Register and Login are displayed.
- **WebSever and other services:** For website Needing Server To host the website on the internet. and Necessary Services to connect the pages to the User Interface.

VIII. Testing

Errors and bugs do occur because of various factors like error in design of system, implementing the design

of system, human error and much more, due to which testing becomes indispensable as application has to be error free, for customer satisfaction and to develop the good product in market.

A. White Box Testing

White Box Testing is testing of a software solution's internal structure, design, and coding. In this type of testing, the code is visible to the tester. It focuses primarily on verifying the flow of inputs and outputs through the application, improving design and usability, and strengthening security. White box testing is also known as Clear Box testing, Open Box testing, Structural testing, Transparent Box testing, Code-Based testing, and Glass Box testing.

- Internal security holes
- Broken or poorly structured paths in the coding processes
- The flow of specific inputs through the code
- Expected output
- The functionality of conditional loops

Testing of each statement, object, and function on an individual basis After completion of testing it was found that,

1) No internal security holes detected during testing in Model/Code.
2) No broken or poorly structured paths found in the coding processes
3) The flow of specific inputs through the code is working seamlessly
4) For Every process Application is generating expected output.
5) Conditional loops are functioning properly
6) Testing of each statement, object, and function on an individual basis done successfully with expected outputs

B. Black Box Testing

In black box testing, the focus is on evaluating the performance of the model based on its inputs and outputs without examining its internal workings. This approach involves providing the model with a range of inputs and evaluating its authentication and getting final output. The goal of the technique is to find issues in the following categories,

- Incorrectly implemented Dialog flow causing vulnerabilities.
- Errors in data structures.
- Behavioral issues and Visualization issues.

After the Successful Testing it was found that :

1) There is no incorrectly implemented Dialog flow causing vulnerabilities
2) The website is correctly fetching the details and Gives a correct output accordingly.
3) No errors found in data structures.
4) Application has no behavioral issues as well as lag issues.

IX. CONCLUSIONS

In conclusion, the use of ACMS for authentication prediction has shown promising results.Software proposes a new approach for Access control management system in a website or application, etc. while using User's IP address and verifying the IP address. Implementing this solution can decrease the frauds and unauthentic access of any website or application. Tested the hypothesis and framework on a laptop and desktop checked IP address with wifi connectivity and without wifi connectivity and also verified the IP address. Using the Python socket library are able to detect IP address and verify it..Furthermore, our framework can be implemented realtime and onboard a Website. This allows for minimal human interaction during operation.

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