

Advance database security using secured layer

Prof. Anisaara Nadaph, Rishabh khunda, Mohammad Rizwan,. Farooq Shaikh,. Pramod Gokhale

anisaaranadaph@gmail.com, rishabh.ri001@gmail.com, rizwankh9548@gmail.com,
pamapramod7875@gmail.com, farooqshaikh2693@gmail.com

Department Of Computer Engineering

Trinity college of engineering and research Pune, 411048

Abstract— An online shopping website is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser. So, data security plays an important role when it comes to managing all Internet shopper's data including personal information, banking information etc. Situation is when user register & complete its shopping process & log out. Attacker access database & modify data. So, to overcome this problem, we are using a 3-layer system such as Analyzer Engine, Secured Layer, Rollback Engine. In which analyzer engine will trace the database & changes made by an attacker will be visible on a front end. Id, password, IP address of attacker will be display on Screen. Then Secured layer act as a middleware, where a request made by user or attacker will go this layer. The last one is Rollback Engine will revert all modification & give original data.[5]

Keywords— Secured Layer, Rollback engine, Analyzer engine.

1. INTRODUCTION

Online transactions are the ones which get easily hacked by hackers. As, they are less secured it is always easy for them for hacking and phishing. As, customers directly buy goods and services from Internet many times their bank details are shared and there are possibilities of hacking the data. So, data security plays an important role when it comes to managing all Internet shopper's data including

personal information, banking information etc. Once the desired products are purchased customers have no idea about what is being happening with their bank details. Hackers trace the records and misuse them i.e they can change the details so this is where our system comes in picture.

We are using a 3-layer system such as Analyzer Engine, Secured Layer, Rollback Engine. In which analyzer engine will trace the database & changes made by an attacker will be visible on a front end. Id, password, IP address of attacker will be display on Screen. Then Secured layer act as a middleware, where a request made by user or attacker will go this layer. The last one is Rollback Engine will revert all modification & give original data.[7]

In tradition websites security measures are very low resulting easily hack able server systems. We are proposing a new All in One architecture that will guard our system from various attacks. We are using a 3-layer system such as Analyzer Engine, Secured Layer, Rollback Engine. Every time a hacker tries to launch any of these attacks our system will generate a log into database. Analyzer engine will trace the database & changes made by an attacker and rollback Engine will revert all modification & give original data.[1]

2. MOTIVATION

Main motivation of the system is to develop a secured system where in data which is hacked during online transactions is protected from hackers.

Analyzer engine trace the database & changes which are made by an attackers are traced and rollback Engine will revert all modification & give original data. Id, password, IP address of attacker will be display on Screen. These changes are displayed on screen.

3. OBJECTIVE

1. To provide secure online shopping website.
2. To provide secure layer system for electronic commerce website which allows consumers to directly buy goods or services from a seller.
3. To develop a 3-layer system such as Analyzer Engine, Secured Layer, Rollback Engine.

4. LITERATURE SURVEY

Based on the definitions in the aforementioned studies, we can see that data timeliness is affected by three important time instances, i.e., the time when data change in the real world, the time when the changes are extracted and recorded in an information system, and the time when the data are delivered to the information users. The entire process and related events affecting data timeliness are depicted. In this paper, the research problem we focus on design- ing optimal data update polices to achieve data timeliness. Data timeliness in this paper refers to the difference between the time when data change in the real world and the time when these changes are input into a database system, which corresponds to the first two events . Therefore, our research belongs to the first research stream and a more de- tailed review of the related literature on update policy is provided next. Data timeliness has long been considered an important data quality dimension and needs improvement for effective decision-making, especially in the age of big data. Prior re- search has tried to define data timeliness and proposed various timeless metrics in different applications. Wand and Wang defined timeliness as the delay between a change of a real-world state and the resulting modification of the recorded state in an nformation system. Similarly, Lee and Strong considered timeliness the extent to which the data

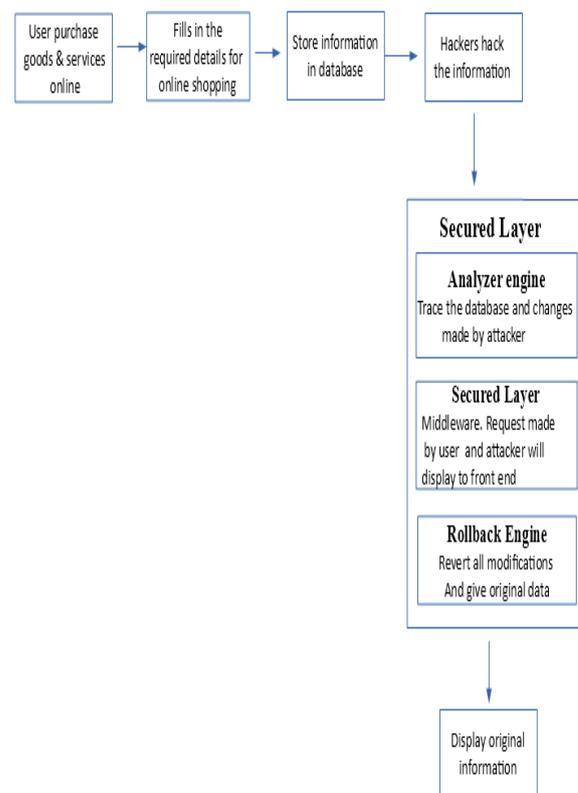
were sufficiently up-to- date for the task at hand. Provided a more general and pragmatic definition and employed currency and volatility to judge whether the data were out of date.

5. ALGORITHM

Replication:

Replication is a symmetric block data that can be used as a drop-in replacement for original data. It takes a variable-length string, from 32 bits to 448 bits, making it ideal for both domestic and exportable use. Replication was designed in early 1993 by Schneier as a fast, free alternative to existing Data Replication algorithms[1].

6. Architectural Diagram



1) About JAVA

Java is an object oriented programming language. It is a complete platform for object oriented programming. Java is a platform independent because of JVM. JVM is a Java Virtual Machine. It converts the java program into the bytecode which can be understood by any JVM. We need to

install JVM on our machine separately, it comes along with the operating system. Even if JVM makes java platform independent, JVM itself is a platform dependent. Java is a more secure language. Java is a portable, light weight.

JDK is a java development kit which we require to install at the client machine. JDK provides all the necessary support to develop java based applications. JRE contains all the libraries and predefined classes needed to develop and run the java based applications. With the help of java we can develop the wide range of applications. We can develop the desktop applications, web applications and enterprise applications. Even in android we use java language to develop android based applications.

About Android:

An Android phone is a powerful, high-tech smartphone that runs on Google's Android operating system. Pick an Android mobile phone and you can choose from hundreds of great applications and multitask with ease. You'll also get regular software updates that add great new features to your smartphone. Android is an OS created by Google for use on mobile devices, such as smartphones and tablets. It's an OS that's available on devices made by a variety of manufacturers, giving you more choices of device style and pricing. Also, with the Android OS, you can customize your device in many ways.

2) About JSP:

JavaServer Pages (JSP) is a technology for developing Webpages that supports dynamic content. This helps developers insert java code in HTML pages by making use of special JSP tags, most of which start with `<%` and end with `%>`.

A JavaServer Pages component is a type of Java servlet that is designed to fulfill the role of a user interface for a Java web application. Web developers write JSPs as text files that combine HTML or XHTML code, XML elements, and embedded JSP actions and commands.

Using JSP, you can collect input from users through Webpage forms, present records from a database or another source, and create Webpages dynamically.

JSP tags can be used for a variety of purposes, such as retrieving information from a database or registering user preferences, accessing JavaBeans components, passing control between pages, and sharing information between requests, pages etc.

2) Servlet

A servlet is basically used to provide the dynamic web pages. The static web pages are provided by the server but in case request is of dynamic web page server cant provide dynamic web pages. So web engine redirects request of dynamic web page to the servlet which then fulfils it. Servlet has some callback methods with which web engine can communicate with it.

8. Overall Description

A. Product Perspective

This system developing perspective is to provide high-level security to every user from Hackers. An online shopping website is a form of electronic commerce which allows consumers to directly buy goods or services. So, data security plays an important role when it comes to managing all Internet shopper's data including personal information, banking information etc. Situation is when user register & complete its shopping process & logout. Attacker access database & modify data. So, to overcome this problem, we are using a 3-layer system such as Analyzer Engine, Secured Layer, Rollback Engine[9]

A. Interface:

Hardware Requirements:

512 MB or higher

Processor : 1 GHz or higher

Memory : 200 MB

Software Requirements:

JSP, Servlet

Swing

MySQL

Windows VERSION:7 and above

B. Product Function:

1. Website for shopping having atleast 5 to 8 products →select→buy→finish→payment.
2. User will register→login→buy product→finish
Update information, Update password.
3. Analyzer engine→analyzer engine will track the database and changes made by attacker.
4. Secured layer→secured layer will acts as a middleware,request made by user or attacker will go through secured layer.
5. attacker→1 directly access database
2.will be traced by analyzer engine.
3.name,password and other information will get displayed on screen.
6. Admin→add product, update info,update password.

User Characteristics:

- 1.form for registration and login→ user
- 2.login form for Admin
3. products details and user can buy and pay.
- 4.swing developed analyzer and rollback engines

MATHEMATICAL MODEL

System Specification:

$S = \{S, s, X, Y, T, f_{main}, DD, NDD, f_{friend}, \text{memory shared}, CPU_{count}\}$

- **S (system)**:- Is our proposed system which includes following tuple.
- **s (initial state at time T)** :-GUI of **Advance database security using secured layer**. The GUI provides space to communicate to server using the secured layer for user.
- **X (input to system)** :- Input Query. The user has to first enter the query. The query may be ambiguous or not. The query also represents what user wants to search.
- **Y (output of system)** :-Depending upon the query respective products will be displayed to the user
- **T (No. of steps to be performed)** :- 6. There are some steps that to be performed to execute the query that steps are as follows.

- **f_{main}(main algorithm)** :- Process P is here. Input ,Output and subordinates functions are in the process P. The process of query tokenization and generation of results is mentioned here.
- **DD (deterministic data)**:- Here is data. Crime if user is contained in a crime records Here are some rules as a criteria which has ambiguous queries. These queries are for showing results.
- **NDD (non-deterministic data)**:-Here the user is allowed to enter number of queries. Here we can not judge the number of queries user has entered. So it is not deterministic.
- **f_{friend}** :- CF, IE, UR, CR all these are the friend functions of the main function. Here both the functions are included in our system because both are used in our system. CF corresponds to the product Fields and it is based to submit the details to the server and Information is extracted to browser with the help of IE that is information extraction. To submit the data to the server CR is used which is product field based.
- Input to CF is CR. Based on the information of product which is available on secured layer stored on to the Database is UR.
- **Memory shared**: - The information details like product name, prize and all that is contained in the database. We have included it in the memory shared because this is the only memory we have shared in our system.
- **CPU_{count}**: CPU count in our system is two because at least one CPU for server and one for the client we have to use.

Subordinate functions:

- P is process here..
 $S = \{I, O, P, \dots\}$
 $P = \{UR, CF, IE, CR\}$

Here,

- UR is Secured Layer
- CF is product Fields
- IE is Information Extraction.
- CR is Attack Report

- UR= {U, SUBMIT, MESSAGES}

Here,

- U=input Query using the information
- SUBMIT = {1, 2, 3, ... , n}
- MESSAGES is Status Messages which is output of UR which.

- IE= {CP, NLP Techniques, Info}

Here,

- CP is input and is filter information to IE
- NLP : it is used to convert case of letters, to remove stop words and other operations.

Algorithm:

- Step 1: Accept a Query (Q).
- Step 2: Get Data at secured layer.
- Step 3: Analyze each user on secured layer.
- Step 4: if abnormal behavior analyzed.
- Step 4.1 : Trace that users IP and Mac address.
- Step 4.2 :check the modifications done in database.
- Step 4.3: Call the RollBack .
- Step 4.4 : Get Relevant Information from database.
- Step5: Rollback the data to save state.
- Step 6: Stop.
- CF= {U, SUBMIT, Info}

Where,

- U=input Query using the information
- SUBMIT = {1, 2, 3, ... , n}
- Info is output of CF which is result of analyzer engine.

- CR= {CP, NLP Techniques, Info}

Where,

- CP is input which is filter information to CR

State Transition Diagram:

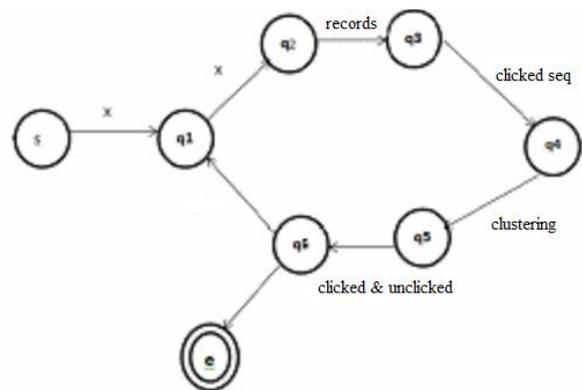


Fig: State Transition Diagram

Where,

s=input state

x=query

q1= accept ambiguous Query

q2 =User log

q3= feedback session.

q4=pseudo doc.

q5= restructuring result.

q6= optimization.

e= end state

Explanation

- The 'q1' state accept the ambiguous query 'x' from the state 's' which is our initial state .
- The q2 state is meant for User log which stores the query x which is accept in state q1. The query stores in state q2 used for finding the related data from database and send this records to state q3.
- In q3 state, the records from database as well as from click through log will retrieved and generate the feedback sessions.
- 'q4' state will generate pseudo Data from feedback session with clicked URLs by the user.
- Apply analyzer algorithm to detect the abnormal behavior of any user.
- Next step 'q6' is if any user is found to be abnormal then trace his information.

- In this step i.e. 'q6', if he/she has done any modification in database then rollback the data to safe state.

q6 state Download notice and view notice.

11. CONCLUSION

This is a system in which to bring in a revolution in the online shopping website which allows consumers to directly buy goods or services. By making the procedure a little easy and more systematic for the online shopping transaction officials. This is just a proposed model which when implemented would surely give a very good protection from the hackers attack. Then Secured layer act as a middleware, where a request made by user or attacker will go this layer. The last one is Rollback Engine will revert all modification & give original data. This system prevents unauthorized access.

12. REFERENCES

- [1] An encryption aware physical layer security system, Özge Cepheli;Guido Dartmann; Güneş Karabulut Kurt; Gerd Ascheid, 2017 IEEE International Conference on Communications Workshops (ICC Workshops), Year: 2017.
- [2]Honeypot testbed for network defence strategy evaluation,Jana Medková; Martin Husák; Martin Vizváry;Pavel Čeleda, 2017 IFIP/IEEE Symposium on Integrated Network and Service Management (IM), Year: 2017
- [3] Detecting VoIP fuzzing attacks by using a honeypot system, H. Hakan Kılınç; Uğur Çağal, 2017 25th Signal Processing and Communications Applications Conference (SIU), Year: 2017
- [4] "SSH", Ru.wikipedia.org, 2016. [Online]. Available: <https://ru.wikipedia.org/wiki/SSH>. [Accessed: 08- Dec- 2016].

- [5] Arzhakov A. V., Silnov D. S. Analysis of Brute Force Attacks with Ylmf-pc Signature //International Journal of Electrical and Computer Engineering (IJECE). – 2016. – T. 6. – №. 4.
- [6] Ivanov, M.A., Vavrenyuk, A.B., Makarov, V.V., Skitev, A.A. Nonlinear transformations for the construction of the primitives of symmetric cryptoraphy (2016) Journal of Theoretical and Applied Information Technology, 87 (1), pp. 153-158.
- [7] D. S. Silnov An Analysis of Modern Approaches to the Delivery of Unwanted Emails (Spam). Indian Journal of Science and Technology, Vol 9(4), DOI: 10.17485/ijst/2016/v9i4/84803, January 2016.
- [8] Belashenkova N.N., Cherepovskaya E.N., Lyamin A.V., Skshidlevsky A.A. Protection Methods of Assessment Procedures Used in e-Learning // 13th International Conference on Emerging eLearning Technologies and Applications. – 2015. – P. 27-32.
- [9] Uskov, V., Lyamin, A., Lisitsyna, L., Sekar, B. (2014) Smart eLearning as a Student-Centered Biotechnical System, In: E-Learning, E-Education, and Online-Training, Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, Vol. 138, Eds.: Vincenti, G., Bucciero, A., Vaz de Carvalho, C. , Springer, 200 p., ISBN 978-3-319-13292-1. pp. 167-176.
- [10] "desaster/kippo", GitHub, 2016. [Online]. Available: <https://github.com/desaster/kippo>. [Accessed: 08- Dec- 2016].