REAL-TIME INTRUSION DETECTION SYSTEM FOR E-COMMERCE USING QR CODE

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Abstract

The major issues faced by ecommerce today are security, integrity and protection of the ecommerce products at the point of sales. The fake product claims by customers are generally affecting the entire system leading to financial losses. Intrusion detection system enhance the security of ecommerce systems using the QR code encryption techniques with alarming system. The project work provides solution to the existing system by encrypting a unique product ID with an image known as the QR code system. The system provides a counter attack by raising alarm. The problems of ecommerce conventional transaction processes have been identified to exist with loophole thereby causing financial damages by return of a fake product QR code. The system reacts according to the failures of the existing system. It is a web based platform that generates unique identifier for each products and making payment transaction for products after successful adding to cart. The new system will have the advantages over the existing and very advance method of product integrity. A real time response system is activated once an unrecognized QRcode is flipped before camera (displays product details or raise alarm for fake product).

Keywords: *QR Code, E-Commerce, Real time IDS, Encryption techniques*.

1.0 Introduction

As the web goliath forms into sharp attacks, the internet based security system moreover deals with in their counter-attacks to guarantee their decency. As the organization advancement we use is additionally grown, so do the security issues incorporating this development. The presence of the "sneaker net" to gigabit Ethernet has introduced clearly limitless dangers related with our social and private associations. Access control centers, confirmation and encryption procedures are fundamental for the complete plan. As various security administrative gatherings fight consistently to keep their capacities composed with the latest breaks, contaminations, and shortcomings, it is the brutal clients and chiefs who "re-advance by learning" from them. Association Access Systems (IDS) can give an

effective technique to security chiefs and supervisors to assist them with decisions concerning IT approaches [1]. Continuous Response System is a dynamic arrangement that integrates a great deal of information from a variety of sources, for instance, PC helped transmission, video sensors, record the board structures, and outcast information. It assembles data and gives city workplaces an organized, exact and quit for the day on a certifiable city. The program is actually individuals who contribute energy conveying yield from the structure foundation necessities gave. As a web-based stage As a Verizon worked with and regulated game plan, Real Time Response System gives straightforward induction to the mechanical assemblies expected to respond to events when there is an issue, yet what's more during ordinary errands [2]. The choice help arrangement game plan joins information from various free tasks into a singular perspective to help you with directing peril, event the chiefs and convey important criticism. An Intrusion Detection System (IDS) is a structure that screens network traffic for questionable development and presentations an admonition at whatever point such administrations are accessible. This is a program that goes through an organization or system for malignant action or rule encroachment. Each hazardous or unlawful movement will, of course, be represented to the overseer or got through the Security Information and Event Management System (SIEM). The SIEM system joins the yield from many sources and the use of sign filtering strategies to perceive dangerous and counterfeit up-sides. Therefore, affiliations ought to introduce their IDS when they at first set it up [3]. With an organized login structure, it will seem like a normal traffic stream over the association, appeared differently in relation to a high-peril task. The interruption counteraction program tracks network packages that ought to be turned on, the framework identifies risky activities that they are busy with, and instantly sends warnings. The internet business stage is a product application that licenses online associations to manage their webpage, showcasing, arrangements and execution. Internet business stages for instance, Big Commerce offer the staggering parts expected to keep a business, while in like manner integrating with ordinary business gadgets that license associations to arrange and keep up with their business in their own particular way. Web business, an electronic retailer, may require security the leaders and security the board. To ensure a workspace PC, or a laborer on the LAN can present confined challenges in guaranteeing your phone, getting the phone in an E-Commerce environment can be a huge test [4]. Whether or not for the customer or for business, E-Commerce offers surprising hardships considering the way that your affiliation uses this revenue stream to give the most accessible public and private help, and consistently requires unnecessary relationship with these contraptions.

2.0 BANK VERIFICATION AND AUTHENTICATION

The manner in which we pay and do banking changes with new advances and freedoms to expand credibility. Banks should pick a procedure for check. As the entire business sees open entryways here, there is moreover an impact of new headways, gadgets and advancements, with new things and organizations being made every day. A fair trustworthy rule for all portion uses is to set the right congruity among security and accommodation [5]. A huge fixing in business association, is the ability to ensure buyers and the portion device they give during the trade. Consequently, there is a nonstop race for significance in purchaser dependability, by sending creative responses for engage this. To find different thoughts of realness, a special raised area of standpoint is expected in customary banks. In a rapidly advancing world, banking ought to be more open and more versatile. Check of realness is the most widely recognized approach to sorting out who a business is, without a doubt, claiming to be. In the monetary business the thought is by and large used. Nowadays, deals with serious consequences regarding the prerequisite for affirmation are ending up being logically typical. Banks should set up their own affirmation methodology for the not really far off future, where sufficient authenticity and steady experience will be shown [6]. Uncover how to support an OTP challenge subject to secret view sees. A private register message is left behind two cryptographic visual offers. Using a PDA's camera, the client's detectable quality recognizes secret by covering one undertaking on the screen of the PDA with another proposition displayed on the PC screen. The web banking trade check system uses a safeguarded trade stamping methodology where the image cryptogram is shown, the Cronto Sign picture on the client's PC screen. The client is using a camera phone or gear contraption gave to get the cryptogram. Trade nuances can be securely wiped out from the cryptogram in the event that the image isn't discouraged. The client will actually look at the trade nuances and affirm that the trade is authentic. Affirmation code is then delivered on the client's phone or contraption and the client moves this back to the bank specialist to complete the trade [7].

2.1   QR CODE ENCRYPTION

In this day and age, security is a huge issue and induction to critical data is basic, so data can't be manhandled or mishandled in any way. Software engineers and gatecrashers are reliably saving watch for individual or huge individual or legitimate data, and misuse it in a combination of ways. Consequently, the cryptography field is crucial and cryptographic makers endeavor to familiarize new cryptographic systems with guarantee data whatever amount as could sensibly be anticipated [8]. This issue can be tended to by scrambling the data and disguising it in a QR

Code, which can be kept with the individual reliably and the QR Code scanner with programming, using a system that can be used to conclude the particular mystery key the information is taken care of. QR code is a brand name of a sort of structure normalized tag (or twofold scanner tag) first created for the Japanese car industry. Normalized ID is a machine-intelligible visual bar that contains information about the article joined to it. Four standard encoding strategies (numeric, numeric and byte/twofold) can be taken care of as the QR of the capable data store. The QR Code structure became eminent outside the auto business taking into account its speedy learning and high accumulating limit appeared differently in relation to standard UPC normalized labels. Applications consolidate thing following, thing conspicuous confirmation, time following, record the load up, and general displaying [9]. The plan of a QR code is contained dim modules engineered on a white square structure, which can be examined by a thinking contraption and arranged using Reed Solomon's mix-up correction until the image can be suitably deciphered. The significant nuances are attracted from the models that exist both straight and vertical bits of the image [10].

2.2 ECOMMERCE PAYMENT TYPES AND SYSTEM

At this point, everybody has discovered that there are various kinds of e-installment frameworks for online buys yet nobody has truly isolated. All things considered, Payment Service Providers or Payment Gateways was a specialized association between the online retailer's store and exchange preparing banks [11]. Today, a considerable lot of them are authorized, working globally, and gathering and requesting assets from retailers.

1. CARD PAYMENTS

Cards can be viewed as an 'electronic key' in a shopper's ledger, regardless of whether a store (charge), or advance (credit). With cards, clients can 'open' and move cash to an online dealer. There are 4 kinds of Mastercard choices, 3 of which have been referenced above yet one in particular that is generally utilized in Nigeria, which is check cards gave by your banks for card organizations like MasterCard, Visa, and Verve by Interswitch.

MasterCard and Visa cards are widely acclaimed players, and card organizations, for example, Paypal, Interswitch, and eTranzact are fostering their own installment strategies to empower nearby installments on the web and your cards on the trader's website. You will see other installment specialist co-ops, for example, GTPay, Paga and Simple compensation relying upon the making of an Interswitch open framework to deal with installment of Mastercards for their clients.

2. Computerized Wallet Payments

These computerized sacks are unmistakable items like our actual packs. These advanced wallets can contain Mastercards, bank cards, gift and steadfastness cards and give admittance to other installment strategies, for example, online bank moves. A few wallets permit a shopper to store cash in his wallet first. There are fundamentally two sorts:

3. Preloaded Digital Wallet

A computerized advance wallet is a prepaid wallet and has e-cash previously transferred for use as another money. This is basically the same as the portable cash specialist co-ops like wallet by eTranzact they offer. Asset clients should subsidize the asset prior to paying for online exchanges. They can add cash to a wallet through different installment strategies like cards, portable dealers or banks. The equilibrium in the wallet is utilized to pay for on the web and versatile exchanges. You may likewise see that some internet business organizations additionally have their pre-stacked sacks; for instance, Dealdey

4. Pass-Through Digital Wallet

Pass-Through Digital Wallet is the place where a computerized wallet approves the cardholder, yet the exchange is acclimated to a connected installment framework, for example, a ledger, or bank card. The Wallet client doesn't utilize the assets put away in Wallet yet picks at the hour of installment one of the 'saved' installment strategies to finish the installment to the trader. Essentially, snap and pay. This is like the administrations presented by KongaPay

and Google wallet, in spite of the fact that they have various capacities for conveying this assistance. KongaPay interfaces with your financial balance while Google wallet associates straightforwardly to your card. Customary pre-stacked Digital Wallet organizations in Nigeria should acquire a PCI DSS permit to give an advanced wallet move framework. Fundamentally, a permit implies that significant card organizations guarantee that the installment supplier is approved and that the organization finds a way genuine ways to fabricate the right framework to battle extortion and secure its clients. Konga found a new line of work around the country by consenting to arrangements with Nigerian banks.

5.   Elective Payment Methods

A few installments are conventional here and there however bring the purchaser and merchant incredible significant serenity. Different installments, for example, online bank moves and direct installments are frequently connected with low and fixed exchange costs, secure a lot exchanges, ensured installments and moment installments. Here are three normal ones:

6.   Bank Transfers

These installment strategies associate with the shopper bank where the purchaser can approve the exchange. Moves were orchestrated by the vender and ought to just be approved by the purchaser inside his web based financial webpage. Comparative administrations include: GTpay and KongaPay. KongaPay has underestimated this by blending the customer's own ledgers with us and as yet offering full administrations to permit you to drop your exchange without a second to spare and get your cash back in your record from its login administration.

7.   Direct Debits

The technique for installment in which the vendor makes a withdrawal from the customer's record on a particular day dependent on set up agreements, is practically equivalent to a methodical machine. Much of the time, authority is required (either paper or electronic, with shifting levels of approval). This isn't exceptional here; The most widely recognized occasions when this occurs, is the point at which you are in the membership model, maybe your facilitating supplier or Gmail administration. You will naturally set up your installment account, your card will be kept on record by the trader and your ledger will then, at that point be deducted from the enlistment charge.

8.   Money down

Satisfaction of online customers and worst thing about online retailers; with this installment choice, shoppers can pay at conveyance in real money or by deals tables. I don't actually have to discuss this, Lanre Akinlagun, author of Drinks.ng, has effectively done equity to this.

2.3 Related Literature Review

In this section, we survey some of the previous approaches used by researchers for e-commerce. Various approaches have been used for real time on e-commerce. Below, we give a brief review of research studies/ that have been conducted:
According to [4], illustrate the usage of QR codes in education. They carried out some experiments and elucidate the potential of QR codes in education. Since any smart phone with built-in camera can capture the image of the QR Code and decode the information, security and secrecy become an important issue.

In [5], did a literature survey regarding QR codes and security concerns and suggested few ideas. Since it is easy to modify the content stored in the 2-D code, the author advised the users to verify authenticity of the QR codes.

According [6], proposed a method to embed QR codes into colour images based on the luminance of the QR codes.

In [7], suggest a method for authentication by creating OTP using QR codes instead of using conventional methods such as ID/Password, this method the luminance of the colour image is decreased after embedding the QR codes.

Authentication is the most important aspect in human life from the security point of view. Most of the existing mechanisms use the reference template for the final authentication. These templates are stored in the raw format or some encrypted format. There is possibility of getting this information by imposter and can change the information which leads to the leakage of information. If the authentication is not being done then there is compromise in security. The problem here is to authenticate using the information of the user without compromise in the security as well as the leakage of information of the individual. Authentication and User Identification are being leading technologies various research and solutions have been designed so far are good and accepted by industries. Researchers, Experts have been giving full attention to subjects about Online banking security, the research include Framework for the Governance of Information Security in Banking System[10] and the security issues Internet banking are facing today and solutions for online banking security threats.

According to [11], summed up security issues in two categories: system security issues and information security issues and the corresponding solutions are cryptography, identity authentication and the data transmission protection technology.

The survey conducted by Data Security Council of India (DSCI) in 2010 indicates that the focus of the data governance processes so far has focused on integrity of data, but there is a need to increase efforts in the direction of data privacy [18].
In [19], found that 76% of the sites in their survey suffered from at least one design flaw that are not widely understood, even by experts who are responsible for web security and they present and discussed methodology for testing websites[19].
According to [20], defined attack and protection trees and discussed how they can be implemented in the security analysis of an online banking system to maintain user's trust and confidence in the security of their online bank accounts. Many researchers have done studies of several banks in their countries to compare their systems, but in India research on online banking security is still in its infancy especially in User Authentication. Let us study and understand them so we could analyze and understand their impact on user.

2.4 ENHANCING QR CODE SECURITY
QR code attempted and how it will in general be used to attack both human correspondences and automated programs. This has included and raised subjects for extra examination in the field of QR code security. [21], have researched a case called "Scanner tag in-Barcode attack".
QR code is a two-sided scanner tag. QR code can store and send information including web affiliation URLs (Uniform Resource Locators), clear message, email addresses, contact information to say the very least. At first expected for following vehicle parts during mechanical cycle, (Raspberry Pi Software, 2016). Nevertheless, the QR code mixed public thought and transformed into your own-and publicizing vector because of its flexibility and ease of use. Anyone can get to their QR code by giving information that will be mixed, either by specific sorts of programming or locales. While coding is done, the information set aside in this code can be isolated with a decoder or scanner application or mechanical assembly that will be used to unscramble the QR code and recuperate put away information.

2.5 THE QR CODE STANDARD
we give a succinct show of the QR level and a layout of the ceaseless use of QR codes. QR codes (Quick Response) are two-layered web codes that recall information for both straight and level course. To get to the inserted data from the QR code, the wireless' hidden camera gets a QR code picture and dispenses with it using the QR code peruser programming. Up until this point, there are in excess of 40 unmistakable interpretations of QR codes with different data capacities. Structure 1 has 21 X 21 modules of which 133 can be used to store embedded data. Transformation 40, which makes the greatest QR code, has 23,648, which is the explanation 4,296 alphanumeric characters, (Camera, 2018) can be coded. Model code 2 QR code, which is the most by and large used. Despite alphanumeric characters, QR codes could integrate copies, Kanjis 3 levels L (Low 7%), M (Medium 15%), Q (Quartile 25%) and H (High 30%). Botch revision L level perseveres up to 7% modules that are not understandable in plan, (Camera, 2018). High misstep amendment rates increase the locale, hold the right code names and diminish the region of the veritable data. Accordingly, the bumble correction level L is every now and again picked. An additional a part of settling the understanding cycle is covering. Hair masking ensures that the high differentiation modules are

reasonably appropriated [22]. The reasonable cover is subsequently picked by the encoding programming when the code is made or controls the codes. Besides, QR codes are scrutinized from different places and the data can be successfully isolated whether the code is fairly covered or sabotaged. This is a result of strong botch revision reliant upon Reed-Solomon codes.

3.0 Intrusion Detection, Ecommerce System and QR code

Intrusion detection is a framework that screens an organization/framework malignant exercises or strategy infringement. Web or online are workplaces with a good natured objective yet the ongoing system porosity subject to the cybercrime works out. Security and trustworthiness of online business thing on the web is essential. The structure electronic business are truly demand an especially huge level of wellbeing to thwart unapproved client for moving toward the system. The interference area discuss an unapproved clients moving toward a structure without following suitable show in a web-based business stage. The revelation transforms into a perceiving and tracking down developer. The web business as a structure is collection of saleable thing put on web-based store. The QR code is a united security for the structure made for each thing. The undertaking work is assigned to give reinforced security to web business things.

Fig 1: system architecture
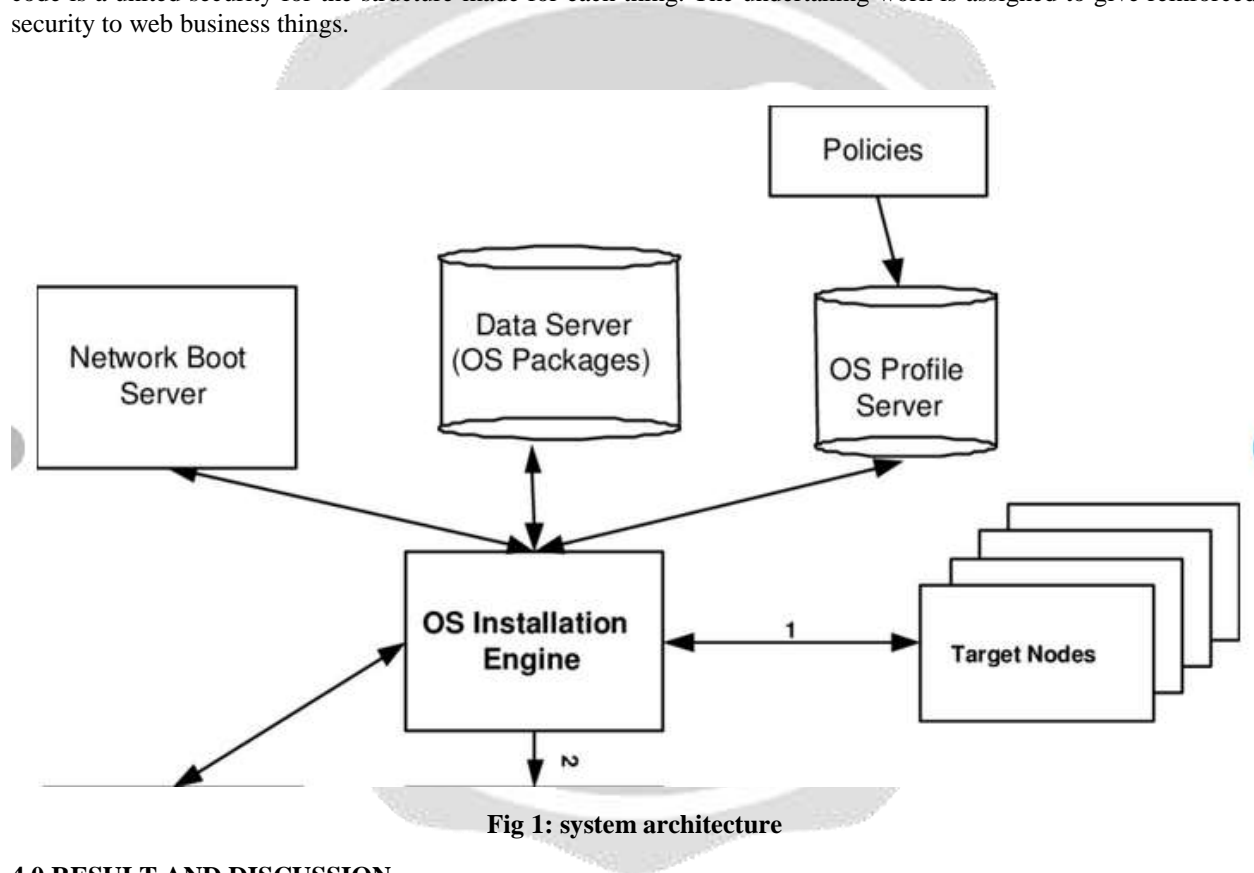
4.0 RESULT AND DISCUSSION

The intrusion detection system is related to tracking down product not produced by the company. The application generate QR code for each product. The QR code is used for protecting the integrity of the product, once a fake product is identified it raises alarm and call for security. The customer wants to defraud the company by claiming damages on product that was not produced by the company. The product already has a generated QR code on the body of the product. The product QR code is scanned using the webcam if the product id is not recognized the application raises alarm. Products are uploaded to the ecommerce web site to be made visible to the customers to make choice of product. And finally make order. The client register to approach acquisition of items. The client add item to truck and all item have a remarkable QR code produced for it lastly exit. To secure, protect and manage the whole item in the web based business biological system. The client register to approach buying items and the items are checked through webcam. Item are transferred and create a QR code for every items and so forth this obligation is for the overseer.

5.0 Conclusion

The ecommerce platform is link to an intrusion detection web based platform. The unit system actually verifier the genuineness of the product through the product with QR code on the body of the product. The project work provides solution to the existing system by encrypting a unique product ID with an image known as the QR code system. The system provides a counter attack by raising alarm. The problems of ecommerce conventional transaction processes have been identified to exist with loophole thereby causing financial damages by return of a fake product QR code. The system reacts according to the failures of the existing system. It is a web based platform that generates unique identifier for each products and making payment transaction for products after successful adding to cart. The new system will have the advantages over the existing and very advance method of product integrity. A real time response system is activated once an unrecognized QRcode is flipped before camera (displays product details or raise alarm for fake product).

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