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Designing a Web Application and Detecting Vulnerabilities Using Vega Vulnerabilities Scanner

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ABSTRACT: *Web applications are popular due to the ubiquity of web browsers and the conveniences if using a web browser as a client to update and maintain web applications. Every day a variety of newly web applications are raised on the internet of public use and it needs high security. Vega is a tool that can make an observation of the web that can help the developer to find vulnerabilities in web and fix the holes before developer online the website. Application testing is very important for success and quality of the web application. In this project we developed a web application and explain about testing the website using the scanner and the result will be analyzed towards the relevance results on each scanner. Now a day's workshops, conference, paper presentations are very important. Event organizing in different colleges is big task to let everyone know. Students are facing difficulties in finding the resources to learn practical knowledge. Developing an application which will allow students to find the right resources for their needs. On using this application anyone can share knowledge and at the same time they can learn new things.*
Keywords: *website, interface designing, Vega vulnerabilities scanner.*

I.   INTRODUCTION

Social networking has become an everyday part of many people lives as evidenced by the huge user communication. Social networking provides a platform to facilitate communication and shared between users, modeling real-world relationships.

The aim of the web application framework should be the ability of rapid and quality improvement of a dynamic web application. The analyzing the several active open sources and determines their positive and negative features describes an approach to design a new web application [3].

The ubiquity of Web browsers and Web document formats across a range of platforms and devices, many developers are using the Web as a platform- independent application environment. Examples of Web applications include reservation systems, online shopping or auction sites, games, multimedia applications, calendars, maps, chat applications, clocks, interactive design applications, stock tickers, currency converters and data entry/display systems. The motivation of this works comes from my desire to learn the increasingly growing field of PHP, SQL server database designing, website designing and their growing popularity by taking up this case study [2].

The word "design" in the context of a Web Application can mean many things. Its most popular usage perhaps refers to the visual and user interface (UI) design of a website. This aspect is critical because, the guest is often more impressed with how a website looks and how easy it is to use than about which technologies and techniques are used behind the scenes, or what operating system the web server is running. If the site is hard to use and easy to forget, it just doesn't matter what technologies was used to create it. Unluckily, this truth makes many unproven programmers underestimate the significance of the way the invisible part of the site is implemented—the code, the database, and so on.

The visual part of a site gets visitors involved, to begin with, but its functionality makes them come back. A website can sometimes be implemented very quickly based on certain initial requirements, but if not properly architected, it can become difficult, if not impossible, to change.

Thus, the presentation is also a major thrust area in the Web application which is one of the main reasons why users get fascinated to it. Rising user needs should be taken to in concern with new features to be included. A Successful presentation can be achieved by making proper database design strategy. Also, easy navigation also needs to be accomplished while executing this project.

Over the past ten years, a number of different technologies have targeted application development on the Web. However, much of the work in this area has been platform specific. Web applications typically have some form of programmatic control, either on the client, on the server or a combination of both. This workshop addresses client-side Web applications only. They may run within the browser, or within another host application. A Web application is typically downloaded on demand each time it is "executed", allowing a developer to update the application for all users when needed. Web applications are usually smaller than regular desktop applications, and can have rich graphical interactive interfaces. Now a day's workshops are being popular. It gives a practical knowledge than a theoretical knowledge. To Provide Flexibility to Users, to Know, to Learn, to Register, to Attend, to review, to feedback, the Events, to gain Knowledge from Various Areas of aspects. Easy to attend the workshops, events through online, get certification through online. Questions and answers, likes and dislikes, posts, comments etc can be done by this application.

This application will allow students/users to find the right resources for their needs. Everything is not available in internet.

Practical knowledge won't be available on the internet. Machines can't answer everything human need. So, there should be a communication channel between everyone to share their knowledge and practical experiences. Learners need more practical knowledge than theory. Even though many are interested in learning, the resources are not available on their surroundings. These problems are mostly facing my student [degree/engineering etc.] to solve these problems an application has to be there to make everyone more interactive and share their knowledge.

1.1 Vega vulnerabilities scanner

Vega is an open source scanner and testing platform to test the security of web application. Vega can find and validate vulnerabilities like SQL Injection, Cross-Site Scripting (XSS), inadvertently disclosed sensitive information and other vulnerabilities. Including an automated scanner for quick tests and an intercepting proxy for tactical inspection and can be extended using a powerful API in the language of the web: JavaScript [1].

Vega is written in java and run on Linux, OSX, and Windows. Detection modules are written in JavaScript.

II.   RELATED WORK

The Vulnerability scanner is the art of looking weakness in the security of a computer. Using Vega vulnerability scanner we can find and fix the weakness in the system before some attacker finds that there is a security weakness and attacks it.

Sagala, Albert; Manurung, Elni [1] Popularity of the web increases nowadays and it is used every day and it needs a high security. Web vulnerability scanner is a tool that can make an observation of the web that can help developers or pen tester web to find vulnerabilities in web and fix the holes before the developer online the website. Here explains about testing in a few websites using different scanners in five websites and the result will be analyzed toward the relevance result on each scanner. Scanning results are useful to complete in testing.

V. Okanovic, T. Mateljan [2] described the designing of a new web application framework. The aim of the web application framework should be the ability of rapid and quality development of a dynamic web application. Then analyzes several existing open source java web framework and determines their positive and negative features. Then the approach integrates and applies the positive characteristics of the analyzed web framework.

Further, Nadya ELBachir [3] illustrated the web attacks due to the shift of the majority of companies towards web applications. Therefore, the security of their sensitive data against attackers becomes a crucial matter for all organization and companies. Thus the necessities to use intrusion detection systems are required in order to increase the protection and prevent attackers from exploiting these data in an illegal way. In this project we begin by giving a survey of web application attacks and vulnerabilities, also approaches to improve the web application security using intrusion detection systems and scanners based on machine learning and artificial intelligence. When it comes to vulnerability, it is also an attack which exploits this vulnerability; therefore our paper presents web intrusion detection system based on detection of web vulnerabilities. Experimental results have been acquired from HTTP simulations in our network and from responses to HTTP requests sent to a bunch of websites and applications to test the efficiency of our intrusion detection system. This efficiency can be noticed from a High detection rate which is greater than 90%.

Albert Sagala, Elni Manurung [4] illustrated that the website is the collection of pages of many kinds information provided on internet that can be accessed around the world over a network connected to the internet that consists of text, images, sound, etc., that it becomes media information that very popular nowadays. The website is now widely used in some aspect of Education, Culture, Business, and so on. Vulnerability scanning is the art of using computer look for weakness in the security of another computer. Using the Vulnerability scanner, it can find and fix the weakness in the system before someone or attacker finds that there is a security

weakness and decides to break in. Before publishing the website on the internet for public use, the best way is to do testing in application because when the web was developed, mistakes are mad and have error slip through and developers do not realize the way they codes has been written in mistakes. So, the intruder or attacker can gain access our system easily that can steal data and something precious. Because that reason, we need to test our system so we can prevent it.

III. IMPLEMENTATION

Implementing a web application using different frameworks and different technologies are not a big task to providing security is a very big task. Workshops are very popular in the day to day lives students are facing many problem in finding their right resources. Event organizing in different colleges is a big tuff task to know everyone. Developing a web application which will increase the users to browse their need in the right way. Now a day's workshops are being popular. It gives a practical knowledge than a theoretical knowledge. To Provide Flexibility to Users, to Know, to Learn, to Register, to Attend, to review, to feedback, the Events, to gain Knowledge from Various Areas of aspects. Flexibility to attend the workshops, events through online. Get certification through online. Questions and answers, likes and dislikes, posts, verification etc can be done by this application. Event organizing (workshops, culture feasts, and technical fests) in different colleges is a tuff task to let them everyone to know about their college events. Students are facing difficulties in finding the resources to learn practical knowledge.

College Panel where one authorized person from each college will get login credentials to college panel. The authorized person will register all these college details on the website, and then he will create a profile of college like, college name, URL links, address, and he will add all the events with are to be conducted in their college like workshops, cultural events, technical events, non-technical events, sports, conferences, etc., He will be adding department wise, subject wise, and year wise, deleting department wise, subject wise, and year wise and updating department wise, subject wise, and year wise in this college panel. With the help of this college panel the authorized person will be adding, deleting, and updating all the events. The authorized person also reports previous events, previous registered users/students everything can be monitored which was done previously.

Student panel each and every student will be given a login credentials from a student panel. Where each and every user/student can create his own profile in this panel like; student name, which college he/she belonged to, the address of his/her college with URL link. Each and every user/student can add/update/delete his/her profile. The user/student can search/view/register any events he/she through online. The student/users can pay through online option is available, Demand Draft option is also available. Each and every student/user can attend workshops through online option available. The student/user will get materials/ videos/ certifications/ even through students/users attend workshops through online itself. The students/users must and should attend workshops through online at one time and the same time.

Professional's panel is nothing but the person who is conducting the workshop. The professionals will be given a login credential from the professional panel. Whereas he/she can able to view all the workshops they have given / presented. The professionals will be able to view all the students/participates who have attended the workshops.

Discussion Panel is where users/students/professionals all will participate in discussions panel. The students/participants can participate only if they attend that particular event/workshop [otherwise they are not allowed to discuss]. The students/participants can communicate easily with each other in this discussion panel they can live their comments and clarify their questions and answers and live replies, live comments, live ratings like, live dislikes, live posts will be available on a discussion panel.

Fig.1. Homepage of Website

IV. RESULTS

Now a day the internet has undoubtedly a huge part of our lives. Many people in today's generation are relying on the internet to do a lot of different tasks. In fact, wherever you go these days, you can see people holding some sort of gadgets and using the internet to play games or search things that they want. But of course, the internet is not just about entertainment. It's also useful in many other things as well.

Today, many students are using the internet to do research and complete their assignments. Since the internet is full of information, most students use this as a source of education. In fact, there are now even online programs and courses available, which people can easily access to study and learn other things even while they're in the comfort of their homes.

Creating websites using different software applications and also to providing security to that website is a very big deal. Using a Vega Tool based website can be scanner vulnerabilities and protect from the hackers.

a. Open Source Web Vulnerabilities Scanner

Web scanner is a free open source which can be used in windows a Linux. Using this scanner was simple and does not require any particular configuration, we do not need to configure the type of scanning mode, just pick one or two modules supplied that is Injection Modules or Responsive Processing Modules. Figure 2 explains a number of percentage potential attacks in this scanner.
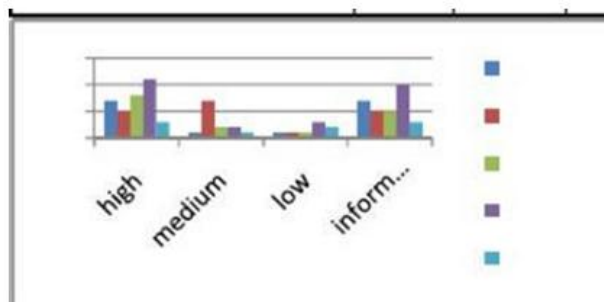

Fig.2. Potential Web Attacks

In high web alerts, potential attacks are session cookie without a secure flag, session cookie with put Httponlyflag, Integer overflow, and possibly social security number detected, page fingerprint different detected, Possible XPath Injection, shell injection, clear text password over HTTP. In Medium web alerts, potential attacks are local file system paths found, possible XML Injection, possible code disclosure. In low web alerts, potential attacks are email address found, from password field with auto complete enable and internal address found Shows in figure 3.
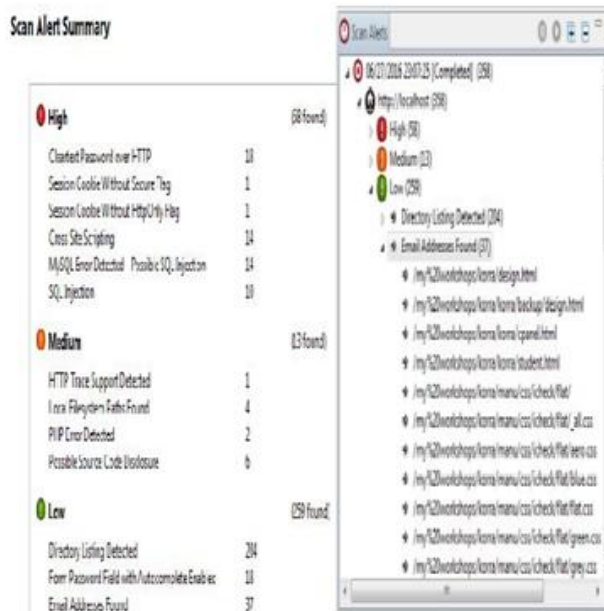

Fig.3. Web attacks in High,Medium, and Low

Fig.4. Web vulnerabilities of High, Medium, Low

In figure 4 describes the vulnerabilities in the website after using VEGA tool.

In high potential attack, there is contrast difference like an original website using web vulnerability scanner. There is no high potential attack but there are a number of very high attackers. In Medium the distributed is almost same which distributes the number of the potential attacker. In Low, there is less number of potential web attackers.
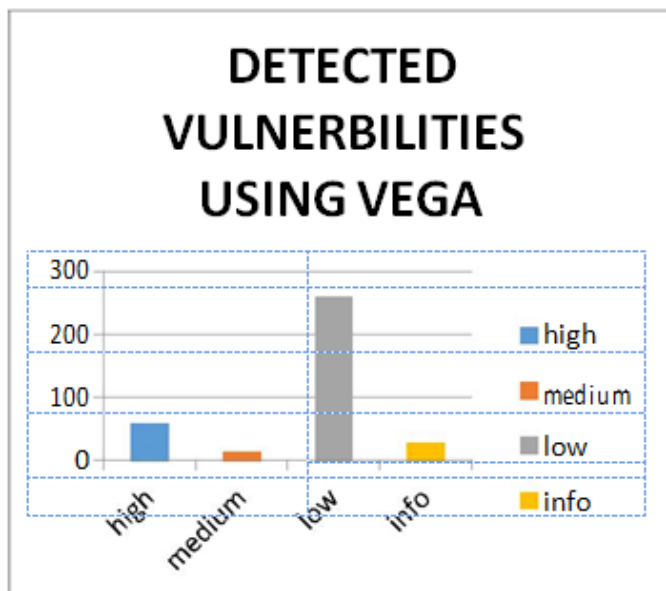

Fig.5. Vulnerabilities before and after using the tool

Figure 5 describes the graph between the vulnerabilities in the website before using the Vega web vulnerabilities scanner representing it in the blue color and the vulnerabilities in the website after using the tool represents the orange color.

As shown in the above graph represented in the figure 5, number of low priority vulnerabilities detected in the web application is more when compared to high and medium. Hence this concludes that the developed web application is robust application.

V. CONCLUSION AND FURTHERWORK

This paper provides the solution, to the problems faced by students while exploring the events, conferences, symposiums and workshops conducted in various colleges. The developed application reduces the human effort and eases the process of multiple registrations and when tested the application, it is recognized as low prone to risk. In future work we can implement the live cameras while the workshop or conference is going on so, that student can be more effectively use this website.

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