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Uchecker : Automatically Recognition of Unrestricted File upload Vulnerability in PHP

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Abstract :- Unrestricted file upload vulnerabilities enable malicious scripts to be uploaded and executed on web servers by attackers. In PHP server-side web applications, we have developed a framework, namely Uchecker , to effectively and automatically detect such vulnerabilities. A Whitelist filter is featured in Uchecker . That input against all possible lists of correct inputs was fantasized in this form of research. It is important to change the scrambler to use the file names and extensions of the imported files to avoid future execution. If it is important to protect the primary file names, they must be stored in a database file. Real-world examples backed by studies have demonstrated that Uchecker has reached a high degree of detection precision.

Keywords: vulnerability, web security, detection, extension, scrambler, whitelist filter.

1. INTRODUCTION

A vulnerability may be a weakness that could be abused by a threaded agent, such as an attacker, to cross privileges boundaries (i.e. execute illegal actions) within an automated processing device. To use a vulnerability, an attacker must have at least one application mechanism or method that can be attached to a device's weakness. The unrestricted file upload vulnerability program helps attacks to upload an exploit file that can be run on the server. The uploaded file, once executed, can be used to launch attacks such as uploading web shells, damaging the web applications, distributing ransomware, and phishing. File upload vulnerability is already listing among the vulnerability of the top network by OWASP. They have also been listed as one of the leading popular vulnerabilities for WordPress, a variation of one open-source content management framework based on PHP. It is therefore of urgent interest to identify the insecurity of unrestricted downloading of data. For this purpose, we are developing a system called Uchecker file uploading vulnerability. Uchecker is currently focused on PHP considering its prominent position in the deployment of the server-side web application.

An online application with unrestricted file upload vulnerability that enables attacks to upload an exploit file that can be run on a computer. the uploaded file can be used to initiated attacks like double extension, whitelist file extension, MIME type validation, etc. These vulnerabilities are particularly significant for the server-side script, e.g. those with an extension like ".jpg"," .png "and ".jpeg". they are treated as manually executable, requiring no permission for execution of the arrangement. These types of attacks or vulnerabilities are harmful to our system. For this problem, we are designing an Uchecker system to recover this kind of problem. The most significant purpose of this paper is to eliminate file vulnerabilities and provide protection.

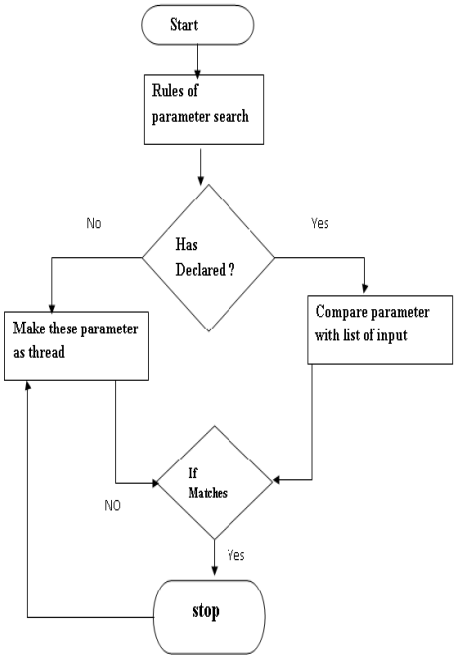
2. ALOGRITHM

There are two algorithm used

- Whitelist filter
- Scrambler

1. Whitelist filter

Whitelist filter is used for protect the computer and network from harmful extension and identify the malicious activity . This filter check the valid input against list of possible input. Whitelist filter check the user input with defined input. This could compile the user provided value compare with list of possible input.



The whitelist filter algorithm checking multiple things. First Whitelist filter checks if the parameter is declared in list . Then whitelist applied on every parameter . If the parameter not matched then whitelist filter restricted this parameter. If parameter matched then it passed this parameter.

If the file extension is defined in parameter then that type of file will be allowed. User tries to upload the file like .php,.php5 extension then file restricted because this type of parameter is not declared.

Example.

```
$para  = ['.php' => 1, 'accept' => 'file'];

$Keysallowed = ['.jpg','’.png’];

$filteredParameters = array_filter(

   $para,

   function ($key) use ($Keysallowed) {

      return in_array($key, $Keysallowed);

   },

   ARRAY_FILTER_USE_KEY

);
```

2. Scrambler

Scrambler The file names and extensions of uploaded files are used to avoid future implementation, files should be modified to stop possible implementation. If it is important to retain the original file names, they must be contained inside the database file. The supported PHP file code extension file is executed on example Web servers. If a file's extension is specified as a code in the server's configuration, it will be executed. Popular extensions for PHP files are .php and. Php5, but there are also some, depending on the configuration of the server. Files with extensions that allow files to be interpreted as code must not be uploaded by attackers. The server's file permissions can be changed to enable read-only files. Scrambling is the process of removing file extensions. The added benefit is that the file names are scrambled, making it more difficult for the attacker to locate the uploaded files.

1. IMPLEMENTATION

The vulnerability detection Module is divided into different blocks. Its block diagram and the relationships between every block are shown in Figure 3. Computer File is input data is that the source file that the user or the attacker tries to upload with malicious code. The Authentication Block check whether the actual user is the authorized user for performing the file upload. Whitelist Filter block used for testing a coveted input against the list of all available correct input’s. File Analysis blocks the input may be a series of PHP files for an online application that goes through all the limitations of security checks. Scrambling block the file names and extensions, or even fully deleting the extensions, ensures that. Scrambling the names of the files also offers the added advantage that. It makes it very difficult for the attacker to check for the uploaded file(s) and therefore makes it more difficult to construct HTTP requests. Directly access certain files. Storing the uploaded files in a place that is not web-accessible. To do so, there are several options. Uploaded files may be stored outside the Webroot, in a very large directory, or in a folder that is configured as inaccessible by the online server configuration.

When the security professional wants to perform a security test, the user configures all the parameters using the web application provided by the computer file Module. Then, this module sends an image file to inform

the checking configuration of the different test file extensions. This provides a suitable and reliable algorithms scrambler and white list filter for the whole system. Different vulnerability tests can be configured using the Uchecker web application. This web interface has been designed and implemented for the system. Therefore, all the systems can be managed and all the tests can be controlled only using this web interface.

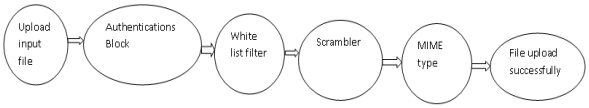


Fig -1: Bloack-

The current implementation of UChecker has the same limitations. The checker now focuses on vulnerabilities that allow the uploading of image files (i.e., those with ". png" and ".jpeg"). Checker can easily cover these variants by verifying more image file extensions.

2. RESULT

1. Whitelist Filter

Suppose the filter whitelist= [". JPEG", ".png"]. Then we'll check the file extension If the uploaded file extension is .php the whitelist filter will reject the file because it accepts only .jpg and .png.

File Extension	Result
.png	Upload file
.jpeg	Upload file
.doc	File not upload

Table -1: Whitelist Filter Modes Results

2. Scrambler

Popular extensions for PHP files are .php and. Php5, but there are also some, depending on the configuration of the server. Attackers mustn't allow files with extensions that allow files to be interpreted as code to be uploaded. Changing file permissions on the server enables read-only files. Scrambling is deleting the file extensions. The added advantage is also offered by scrambling the file names, which makes it harder for the attacker to find the uploaded files.

Original File Name	File permission	Scrambler File Name
File1.php	Read only	Xyz.php
File2.php	Read only	Abc.php

Table -2: Scrambler Filter Modes Results

Some forms need to be fulfilled after running any test like, for example, the file extension or file content. The first steps checking image configuration. Then These are some of the parameters that the MIME Module will send to the whitelist filter Module before starting the test again will send to the scrambler module.

This information is stored in the system database and the user can choose specific data to include in a certain report. The information is stored in the system database like original file name, MIME type give the new file name, with the new file extension. Information about the obtained file name, file extension, other file attribute data useful for the security expert will be finding possible vulnerabilities. See Fig 3.

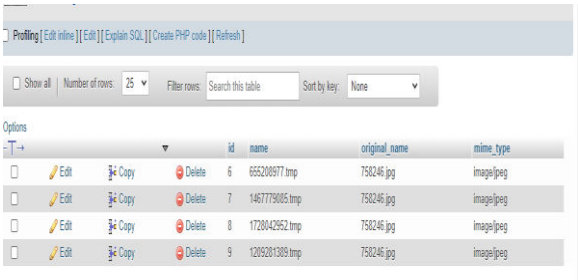


Fig -1: Result

The system has been tested on several vulnerabilities and results have shown that this system reduces the time a security specialist spends to perform security vulnerability tests and gather information.

3. CONCLUSIONS

Uchecker can be a good tool with unconditional file upload vulnerabilities to detect PHP dependent web programs automatically. Uchecker for web server vulnerability detection and evaluation. The tool that applies the PHP application and input validation vulnerability approach.

Two tools were used for this: the whitelist filter and the scrambler. The whitelist filter tests the valid inputs against all possible inputs in the set. The scrambler was used to delete a file extension and stored at an inaccessible location.

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