

Mini Project Report

of

Computer Networks LAB

Capture the Communications involving Cookies

**SUBMITTED**

**BY**

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# **ABSTRACT**

The use of the Internet has only increased in the recent years. Cookies are essential to the modern Internet but a vulnerability to your privacy. As a necessary part of web browsing, cookies help web developers give a more personally recommended websites to visit. Cookies let websites remember you, website logins, shopping carts etc. But they can also be a treasure trove of private info for criminals to spy on. In this project we simulate a website to analyze these cookies. While most cookies are safe, some can be used for malicious purposes. Through this project we hope to understand what these cookies are, how they are used and analyze it.

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# **1 INTRODUCTION**

## **GENERAL INTRODUCTION**

### **1.1.1 Cookies**

Cookies are text files with small pieces of data, that are used to identify your computer as you use a computer network. Data stored in a cookie is created by the server upon your connection. This data is labeled with an ID unique to you and your computer.

When this cookie is exchanged between your computer and a network server, this server reads the ID and knows what information to specifically serve to you.

### **1.1.2 Types of Cookies**

Cookies Based on Source:

*First-party cookies* − The user's browser sets first-party cookies when they visit a website. The information gathered by first-party cookies is used to calculate page views, sessions, and the number of users. Ad agencies and advertisers primarily utilize it to locate potential ad targets.

*Third-party cookies* − These are set by domains that the user does not visit directly. This occurs when publishers include third-party elements on their website (such as a chatbot, social plugins, or advertisements).

Cookies Based on Duration:

*Session cookie* − A session cookie is a file that a website server delivers to a browser with an identification (a string of letters and numbers) for temporary use during a set period. By default, session cookies are enabled. Their goal is to make individual webpages load faster and improve website navigation.

*Persistent cookies* − Persistent cookies are those that remain in the browser for an extended length of time. They will only be erased when the cookies expire or the users clear them from the browser after being installed.

Cookies Based on Purpose:

*Necessary cookies* − These are cookies that have to be present for a website to work.

*Non-Necessary cookies* − These cookies help keep track of the behavior on a browser.

### **1.1.3 Advantage of Cookies**

User Friendly

Cookies are extremely user friendly. The client can choose what they need to do with cookies. All the browsers come with settings to clear history including the cookies. Manually users could find the cookies text files stored in the hard drive. Users can choose to edit and delete them.

Availability

Cookies can also set to be made available for a longer period of time. Once the cookies are stored on the user's hard drive, it will be available as long as the user deletes them manually. Even if the server fails, information can be retrieved from the cookies.

Convenience

Besides websites, cookies can also remember information related to forms. So, each time the user visits the site, the address form will be filled automatically. However, cookies will not remember confidential information such as credit card info.

Marketing

Most companies, especially, e-commerce sites tend to use cookies to target products to their customers. Information such as search term, keywords and geographical locations are gathered for their marketing campaign. Even social networking sites like Facebook use cookies to show relevant ads.

Configurations

Cookies can also be configured as per the requirement. For an example, it can be made to expire once the user closes the browser tab or set to exist only for a specific period of time.

Server Requirement

All the data related to cookies are stored on the hard drive without the use of server resources. No extra load or weight is added to the server. Therefore, less burden is placed on them which makes cookies easier to implement.

### **1.1.4 Disadvantage of Cookies**

Browser Impacts

Cookies are not restricted based on internet usage. Whenever a user surfs the web, more and more cookies will be accumulated. Unless the user deletes them, these cookies will be a part of the hard drive space. This eventually slows down or lags the browser.

Security Risks

Since cookies are stored in the hard drive as text files, it possesses some serious security risks. Any intruder can easily open these files and view the information. And also, not all the sites that collect information from cookies are legitimate. Some of them can be malicious that uses cookies for the purpose of hacking.

Size Limitations

Size limitations also exist on cookies. They cannot store large amount of information. Most cookies are able to store information only up to 4kb. Browsers too pose restrictions when it comes to number of cookies. Except internet explorer, all other browsers only allow up to 20 cookies for a single website.

Privacy Concerns

Apart from security, privacy is another concern for users in cookies. Whenever the user browses the internet, the cookie enabled sites will be recording all the online activities. Most users are unaware that such information are stored on their hard drive. As a result, this information can be accessed by any third parties including government agencies and businesses.

Manual Disabling

Browsers also comes with the option to disable cookies. Users who are highly security conscious could simply disable them. Even some browsers disable cookies automatically if the security level is set to high. Therefore, web applications will not work without cookies.

Encoding Information

Both encrypting and decrypting cookies is a difficult process since it requires additional coding. Due to the time involved in the encoding process, the application's performance will be affected.

## **HARDWARE AND SOFTWARE REQUIREMENTS**

The program developed in this project uses HTML, JavaScript, CSS, jQuery. The requirements are as follow

The software requirements are:

* Text Editor
* Browser

The Hardware requirements are:

* Internet Connection

# **PROBLEM DEFINITION**

Capture the communication involving Cookies and point the server IP’s using those packets.

# **OBJECTIVE**

The main objective of this project is to help the user get a better understanding of cookies, and to help them analyze how the cookie works.

# **METHODOLOGY**

## **WHAT DATA TO COLLECT**

The following data is meant to be captured:

* IP address of original source
* Name and value of cookie
* Expiration of the Cookie
* Size of cookie

## **HOW TO COLLECT DATA**

A webpage will be created to simulate how cookies are captured. With the help of using the console, it can be determined if the data collected is successful or unsuccessful.

## **HOW TO ANALYZE THE DATA**

# **IMPLEMENTATION**

# **OUTPUT**

# **CONTRIBUTION SUMMARY**

## **TEAM MEMBERS**

### **Kiran Kishor**

I was responsible for the overall website and its styling and the insertion of cookies

### **Devansh Sood**

I was responsible for the overall documentation and the deletion of cookies

## **RESEARCH OF THE TOPIC**

The research for the topic was done together with the help of the internet and reference books. Then came the preliminary design.