WAPH-Web Application Programming and Hacking

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Lab 1 - Foundations of the Web

Overview :

This lab delves deeper into front-end web application development. From the first lab, i explored more on Telnet and its usage to analyse network packets with the wireshark tool based on HTTP requests and responses and compare them with requests sent by browsers. I completed hands-on practice with CGI applications in HTML and C within Part 2 of Lab 1. In addition, this lab covered the construction of PHP web applications. learned how to use curl and the wireshark tool to become acquainted with HTTP GET and POST requests in part 3.

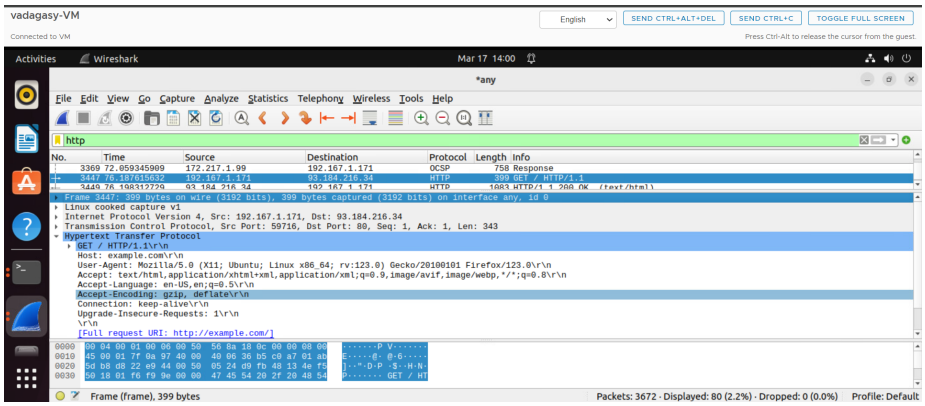
https://github.com/vadagasy/waph-vadagasy/blob/main/labs/lab1/README.md

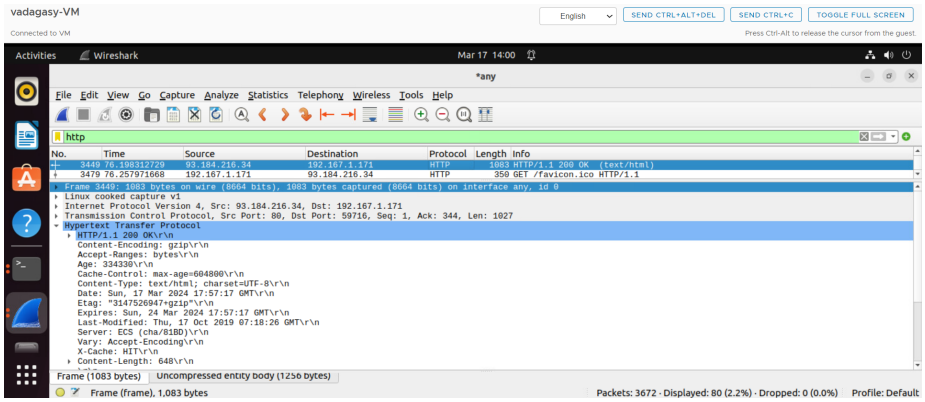
Part 1 : The WEB and the HTTP Protocol

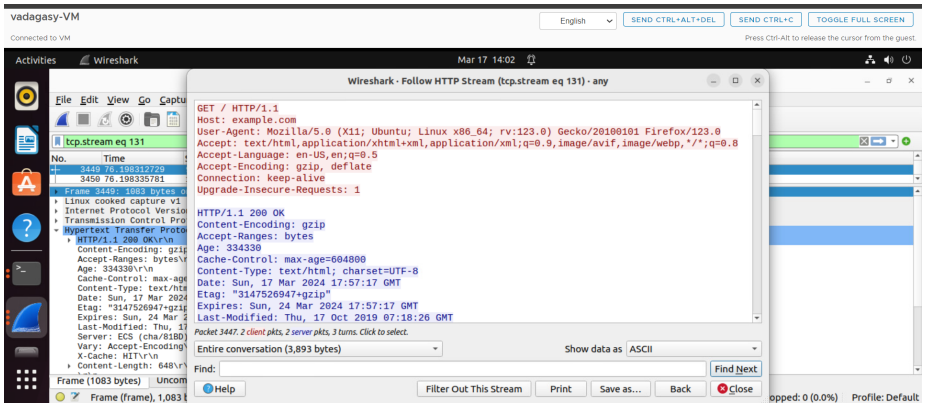
Task 1. Familiar with the Wireshark tool and HTTP protocol

Network packet analysis is the focus of the Wireshark utility. I loaded and launched the application to capture packets in order to become acquainted with this program. I initially set the filter option to any to record all packets. After that, I started using the search box to enter HTTP in order to capture packets and filter data.

The hostname, source, destination, ports, and HTTP version are all included in the HTTP request and the same paramanters are included in the answer By clicking on the response and moving to the follow http stream, the HTTP format was also recorded.



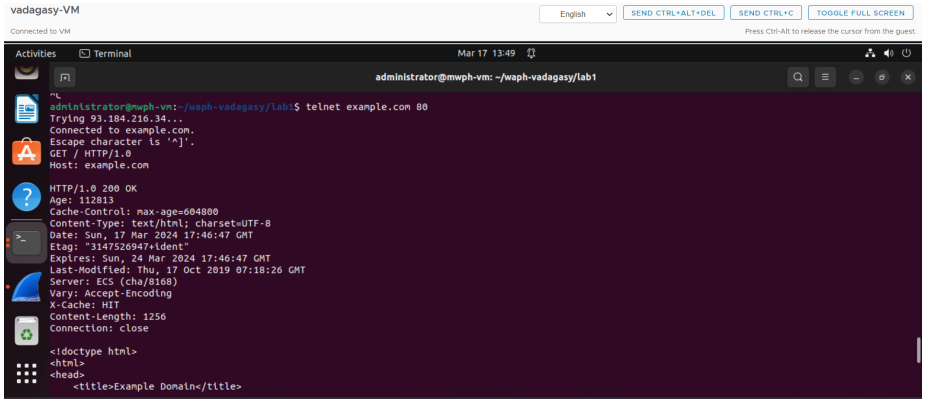


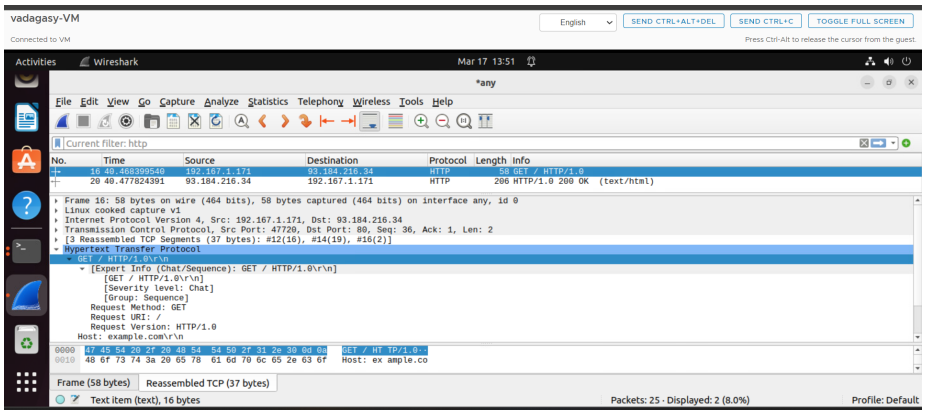


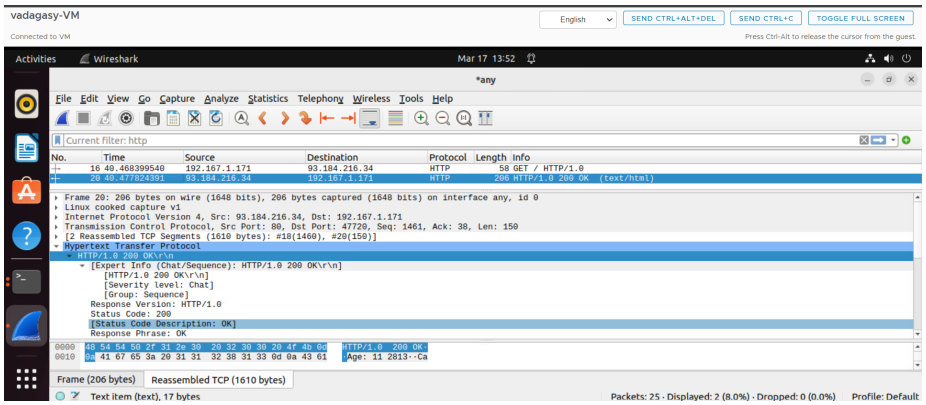
Task 2. Understanding HTTP using telnet and Wireshark

I learned how to capture network pacteks using wireshark there i initially started the wireshark tool and did telnet to example.com or index.html files along with the port number. After establishing the connection i was able to see the request type , path file , version of http and name of the host.After this i clicked the enter button twice to see the response.

when compared it is observed that telent request was lacking server information.



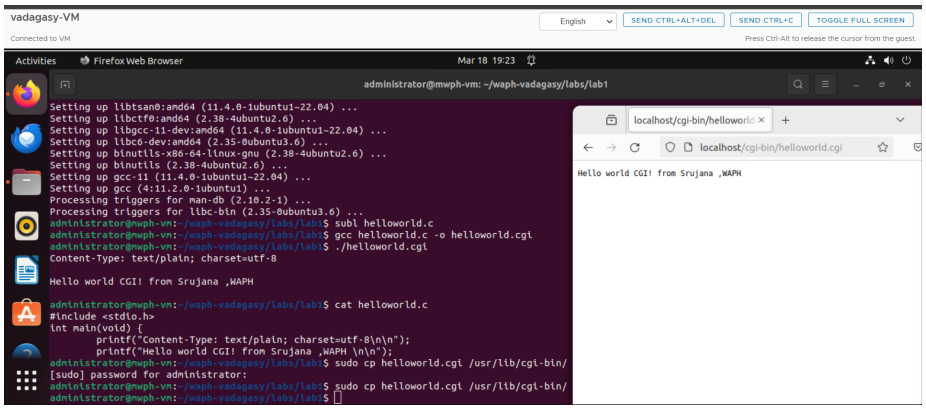




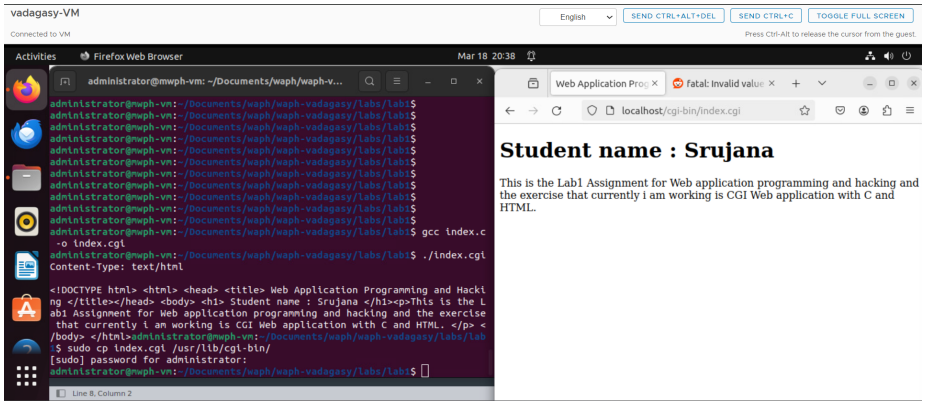
Part II - Basic Web Application Programming

Task 1: CGI Web applications in C

a. Using CGI I've created a C program that prints the following message: "Hello World CGI! Regards, Srujana, WAPH." Subl has been used to write this sentence in C. GCC was then installed in order. This .cgi is been cpoied to path /usr/lib/cgi-bin once the program has been executed. I entered the localhost and the name of the.cgi file in the browser to access it, and the output appeared as follows:



b. To continue, As part of my homework, I created a C program that included HTML information. The student's name is in the heading part and some other information is in the paragraph section. Initially, I copied the helloworld.c file to the index.c file. I used GCC to compile the code and execute the application in a similar manner. After that, the.cgi file was moved to the /usr/lib/cgi-bin directory.I entered the localhost and the name of the index.cgi file in the browser to access it, and the output was shown as follows.



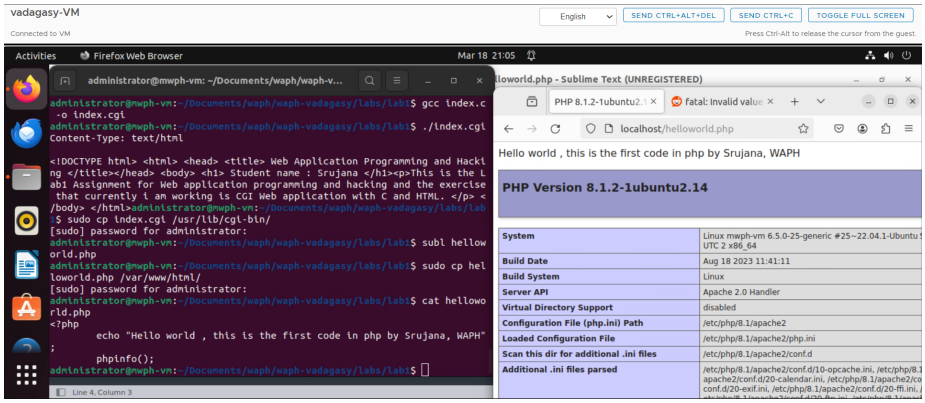
Included file `helloworld.c`:

```
#include<stdio.h>
int main() {
const char *htmlContent = "<!DOCTYPE html> <html> <head> <title>Web Application
                          Programming and Hacking</title>"
                          "</head> <body> <h1>Student: Srujana</h1>"
                          "<p>This exercise is done as part of Lab1
                          assessment i.e CGI Web Applications with C.
                          </p></body></html>";
```

```
    printf("Content-Type: text/html\n\n");
    printf("%s", htmlContent);
    return 0;
}
```

Task 2: A Simple PHP Web application with User input

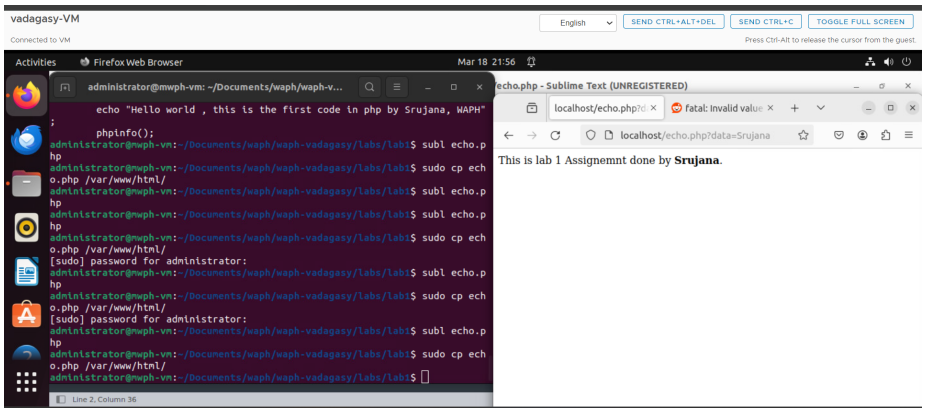
a. PHP is a programming tool used to create server-side web applications. I have developed a straightforward web application using PHP that accepts user input. As part of assignment 2 installation of PHP and apacheserver setup is done. Subsequently, I used subl to construct helloworld.php. Helloworld and my name, Srujana, are included in the sample code that I used.After copying it to /var/www/html, it was deployed by utilizing the localhost address and the.php file name to check in a browser.



Included file `helloworld.php`:

```
<?php
    echo "Hello World! This is my first PHP program, Srujana , WAPH";
?>
```

b. As part of homework, I Copied a .php file created newly to the directory /var/www/html allows PHP to use $_REQUEST(‘data’) to analyze the GET and POST request path variables.I entered the filename, the localhost IP address, and a? with the name in the browser.Confidentiality-related security risks, such as data manipulation. By validating the input, preparing statements for inputs of SQL, cleaning user provided inputs, these risks can be minimized.

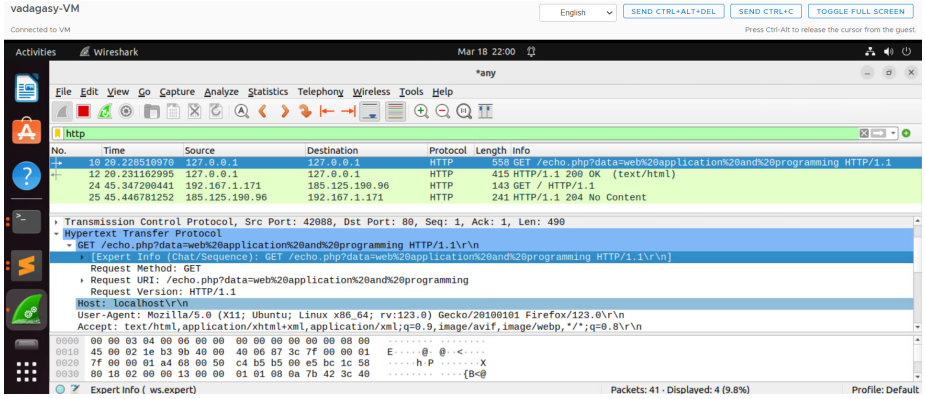


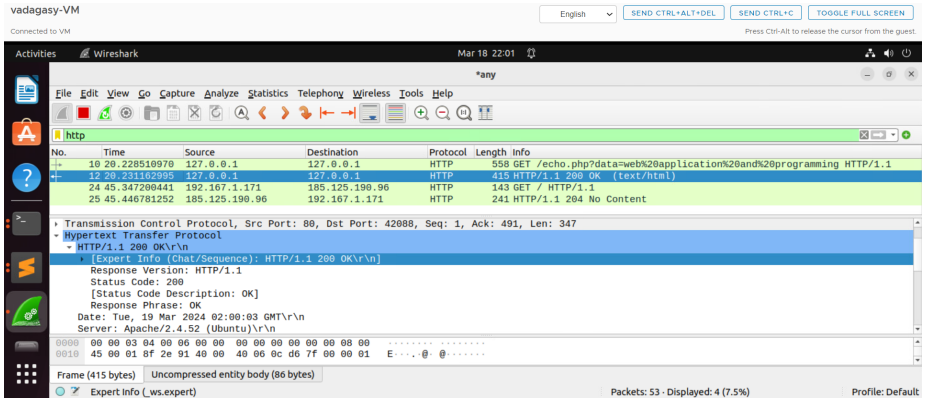
Included file `echo.php`:

```
<?php
    $inputData = $_REQUEST["data"];
    echo "The input from the request is <strong>" . $inputData . "</strong>.<br>";
?>
```

Task 3: Understanding the HTTP GET and POST Requests

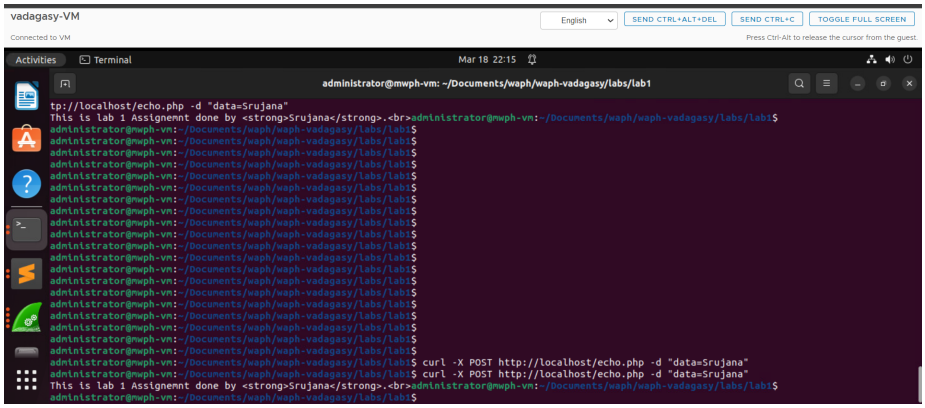
a. I've now grasped the fundamentals of requests using GEt and POST and have used Wireshark to analyze packets using GET and POST calls. Initially, an HTTP GET request was made, and IPaddress/echo.php?data="value" was used to supply the path variable. Instead of value, the user might supply personalized information. I've included my name as a value in the example. Following that, the stream packets for the HTTP request and HTTP response were recorded and examined. The screenshots are attached below.

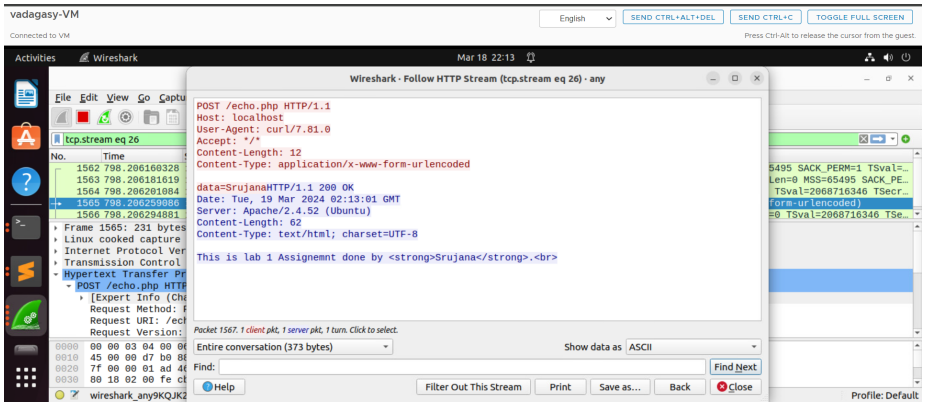




b. Data is processed using many network protocols by a command-line application named Client URL of Curl. Through the terminal, using Curl i have done a post request.

curl -X POST localhost/echo.php -d “data=Srujana”





c.The GET and POST methods are similar in that 1. Both are utilized for file

uploads and data transfers between the client and server. 2. The HTTP protocol is the same for both. 3. Both approaches include request parameters. 4. GET and POST requests can be sent over HTTPS.

Differences 1. Since the data is visible in the URL, GET is not safe. 2. Whereas the URL is used for GET requests, the request body is used for POST requests. 3. POST Url cannot be bookmarked, but GET Url can. The responses from the HTTP GET and HTTP POST queries are identical because the echo.php website is a copy of the application and only prints the input it gets.