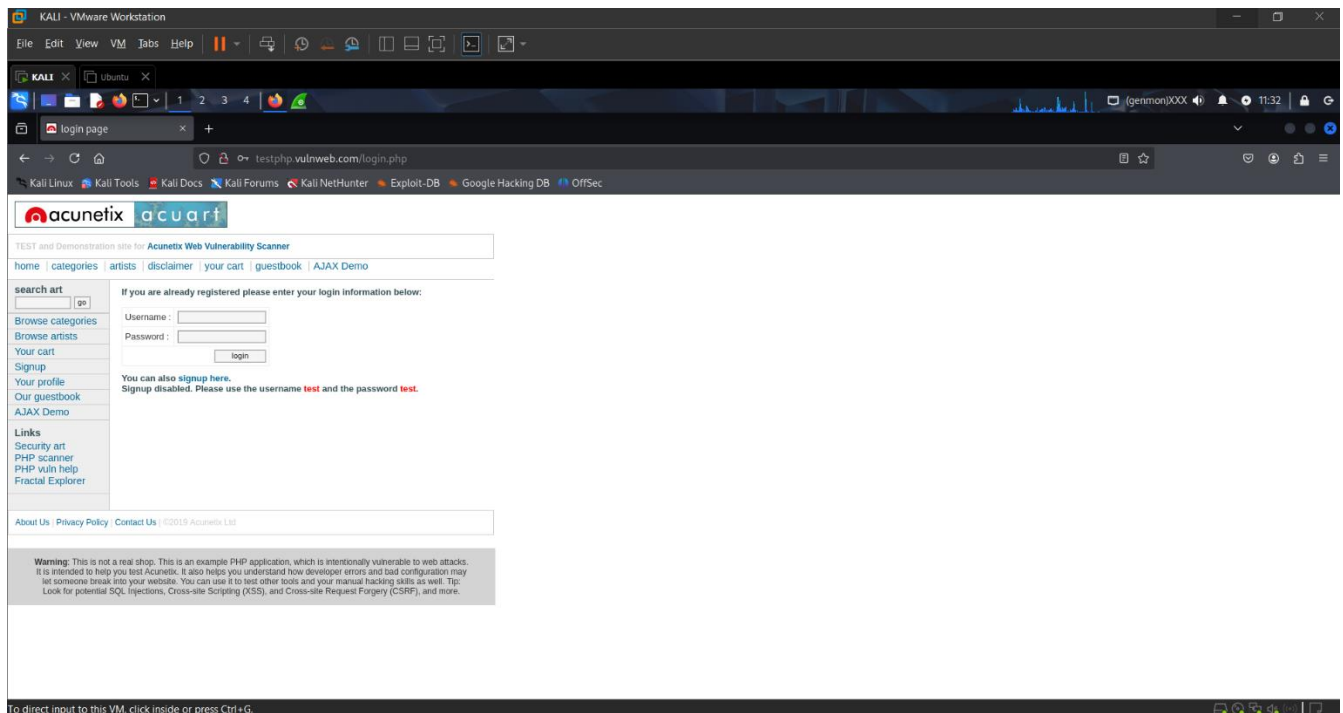


Network Packet Sniffing and Analysis

Capturing and analyse live network traffic to identify credentials or suspicious activity by Wireshark tool.

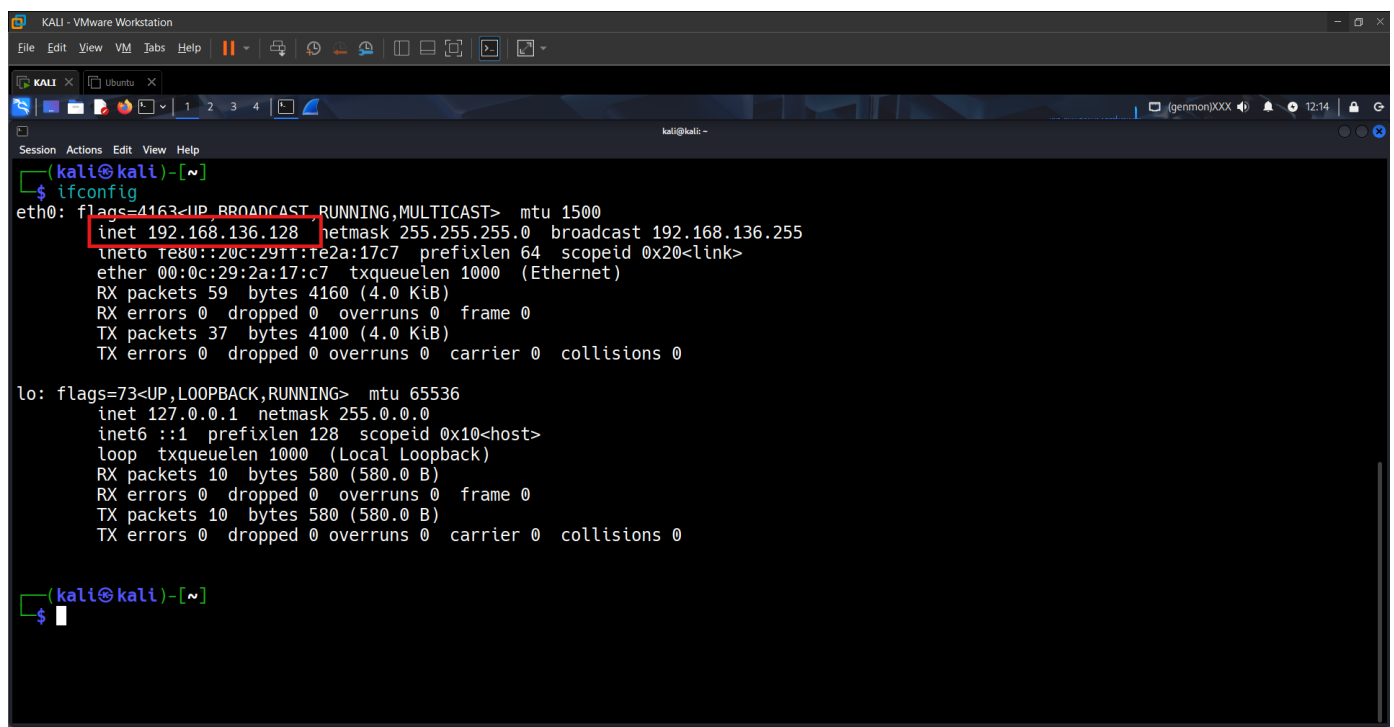
Target: vulbweb.com

Target IP: 44.228.249.3

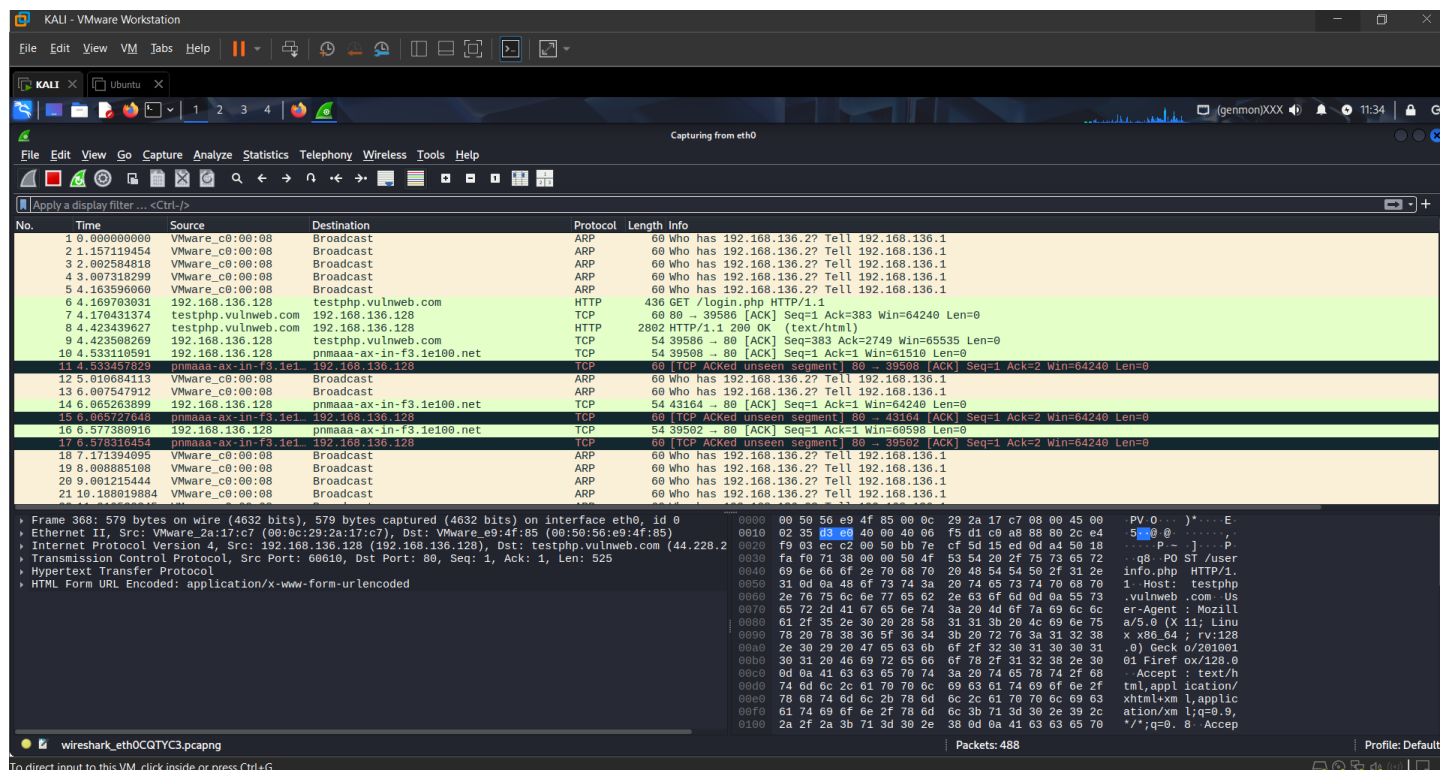


Attacker: kali Linux

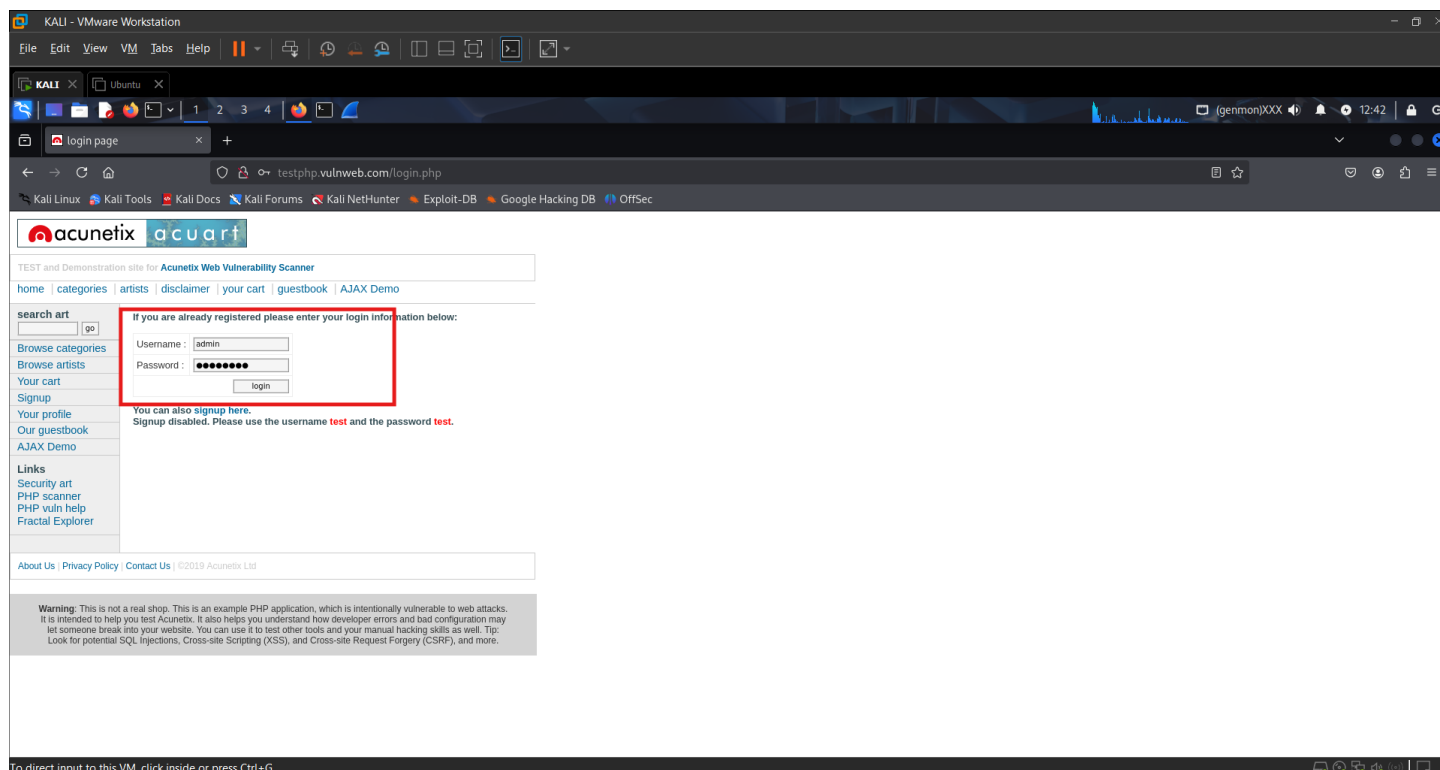
Attacker IP:192.168.136.128



The packets in below image are traffic generated by Wireshark tool



Now try to login with random credentials in target website (vulnweb).

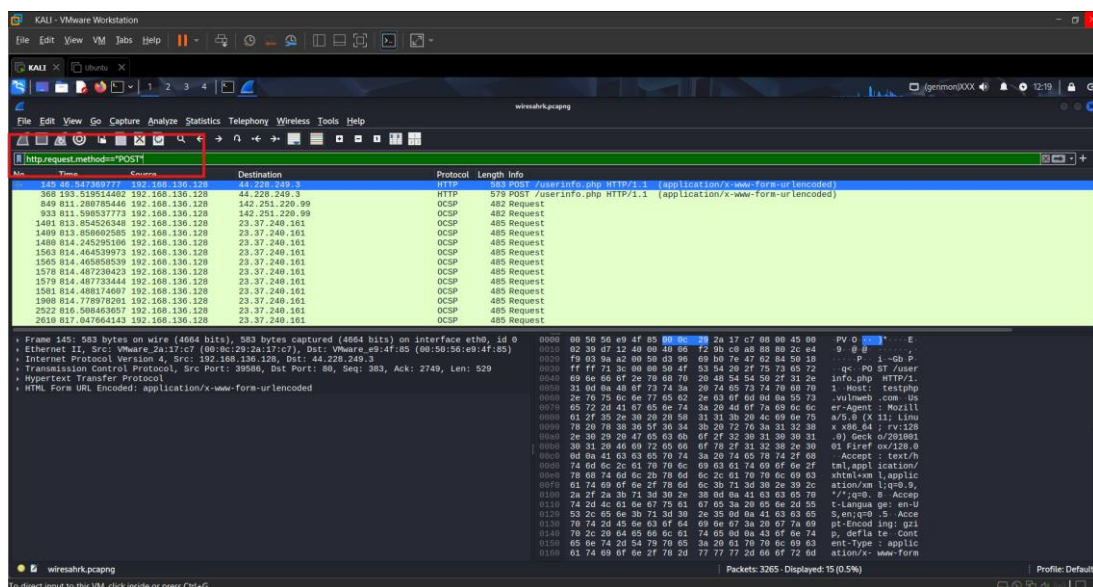


Now to inspect the packets we use filter to limit the packets to make the task easy.

Filter: http.request.method=="POST"

This filter will show packets which are http request and POST method.

POST method is where we send data to server, when we enter the credentials or user input then it is said to be POST method.



The 1st packet we had packet name “/userinfo.php” with HTTP (Hyper Text Transfer protocol) protocol.

In Transmission Control Protocol, we have

Source Port: 39586 (kali Linux),

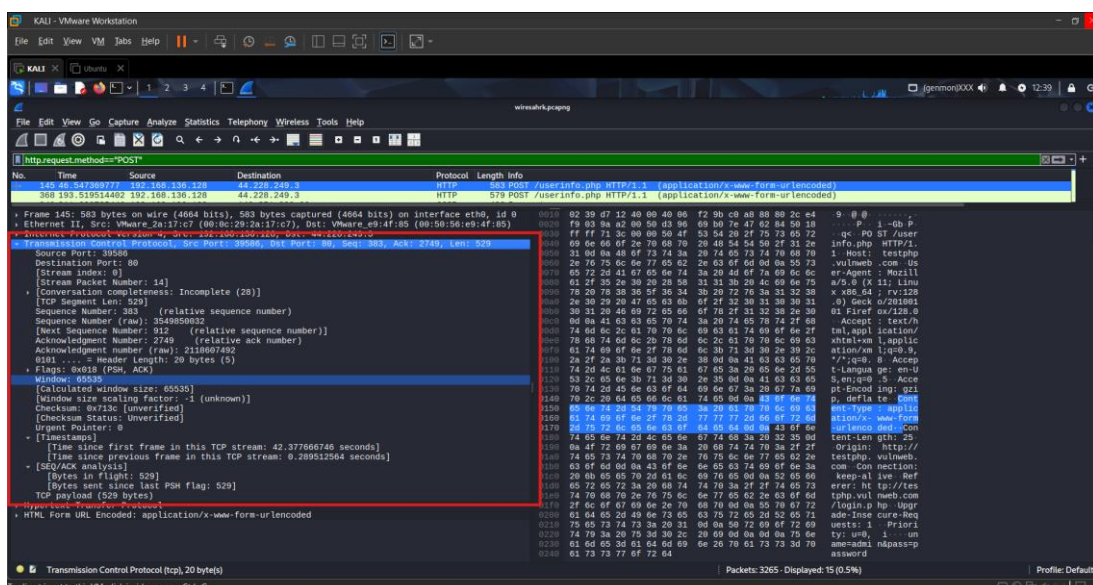
Destination Port: 80(target),

Seq: 383, Ack: 2749, Len: 529

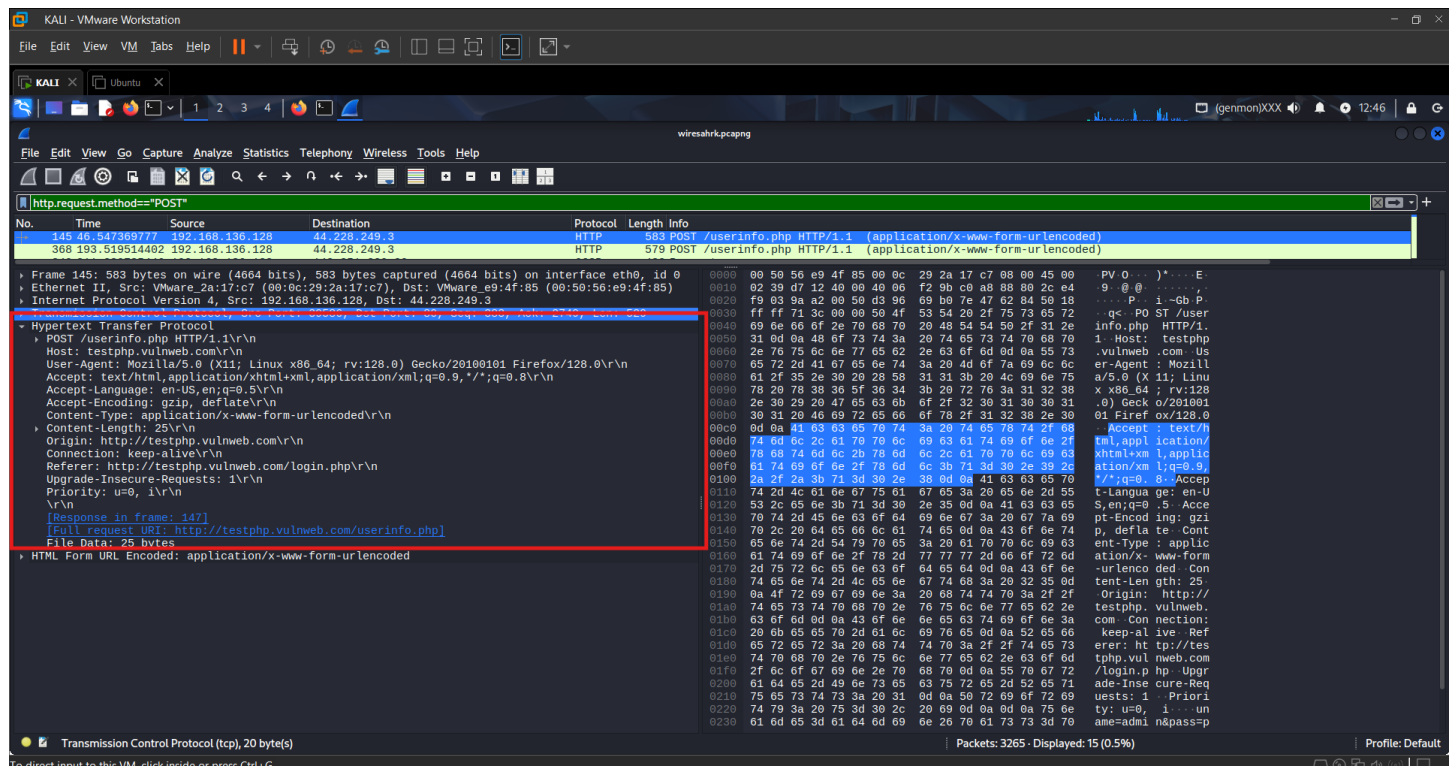
IP version: IPV4

[SEQ/ACK analysis]

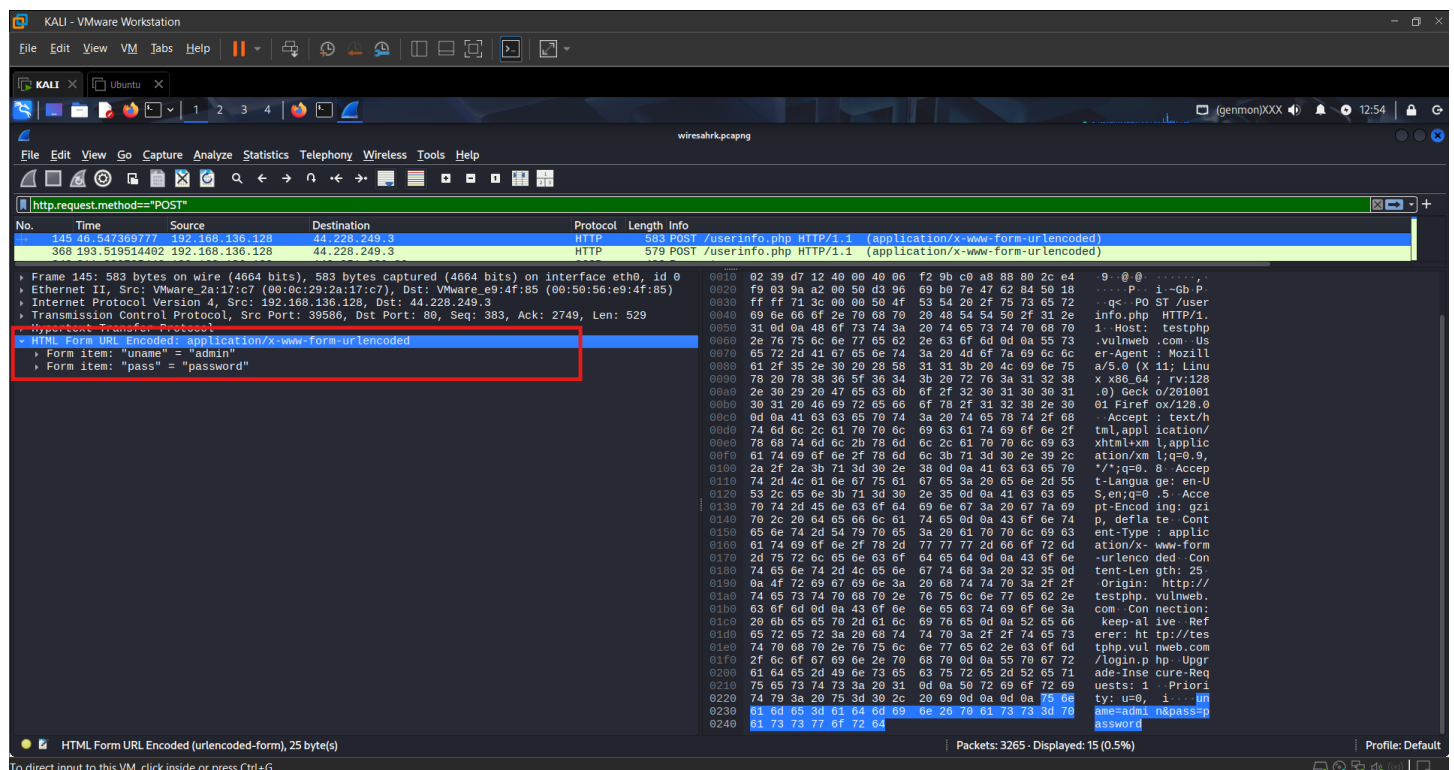
TCP payload and other details of packet as shown in below image.

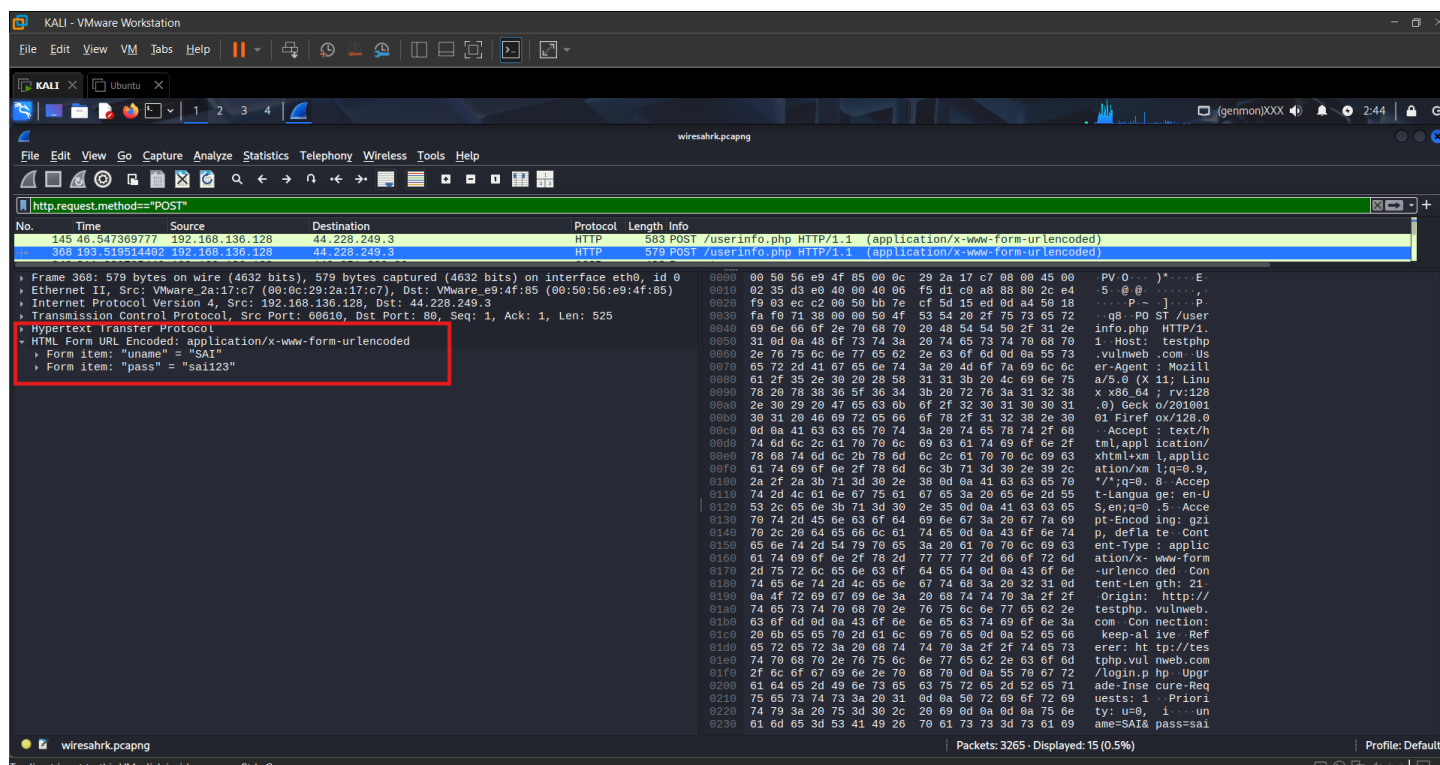


If we inspect Hypertext Transfer Protocol we have version, URL and other details of target website as shown in below image.



If you see HTML form URL Encoded, inspect it there you see the plan text of credentials you gave in target website as shown in below image.

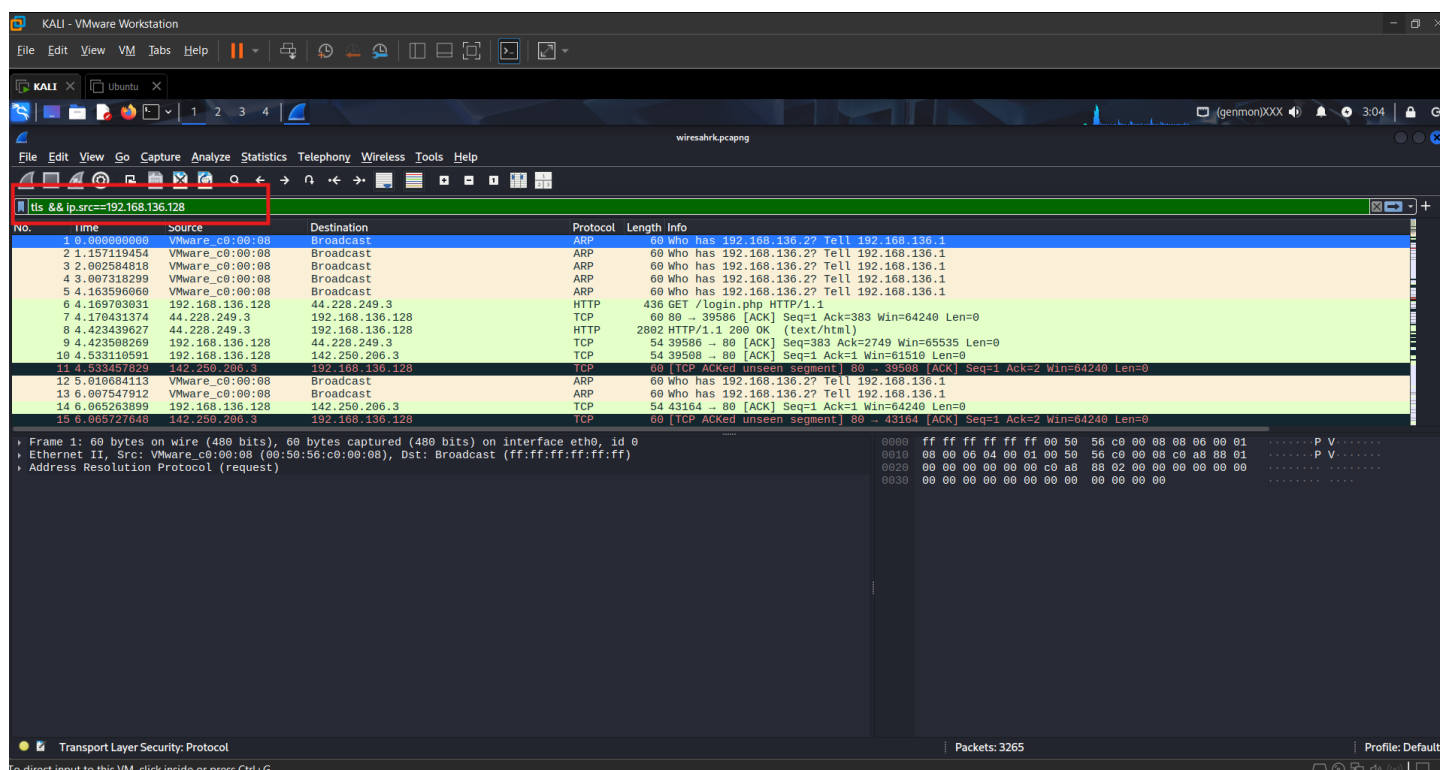




This says the website is vulnerable as the website discloses the credentials in a plain text.

Let's check on another website (Instagram) how credentials are encrypted.

Use filter - `tls && ip.src==192.168.136.128`



Now check any application data packet details there you see encrypted data in Transport Layer Security (TLS) as shown in below figure.

The image shows a Wireshark packet capture interface. The top pane displays a list of network packets. The middle pane shows the details of the selected packet (No. 51), highlighting the Transport Layer Security (TLS) section. The bottom pane shows the raw packet data in hexadecimal and ASCII.

Packet List:

No.	Time	Source	Destination	Protocol	Length	Info
33	18.593468570	192.168.136.128	151.101.1.91	TLSv1.2	93	Application Data
34	18.594920740	192.168.136.128	151.101.1.91	TLSv1.2	78	Application Data
41	19.594148146	192.168.136.128	34.160.144.191	TLSv1.2	100	Application Data
42	19.594623085	192.168.136.128	34.160.144.191	TLSv1.2	85	Encrypted Alert
49	20.596009332	192.168.136.128	34.36.137.203	TLSv1.2	93	Application Data
51	20.597383233	192.168.136.128	34.36.137.203	TLSv1.2	78	Application Data
57	21.551258862	192.168.136.128	142.251.43.35	TLSv1.2	93	Application Data
58	21.551534656	192.168.136.128	142.251.220.100	TLSv1.2	93	Application Data
59	21.551707789	192.168.136.128	142.250.66.2	TLSv1.2	93	Application Data
60	21.551836462	192.168.136.128	142.250.182.74	TLSv1.2	93	Application Data
73	23.594979064	192.168.136.128	142.251.221.177	TLSv1.2	93	Application Data
74	23.595335224	192.168.136.128	142.251.221.174	TLSv1.2	93	Application Data
83	25.060835423	192.168.136.128	104.18.11.224	TLSv1.2	93	Application Data
93	32.744715749	192.168.136.128	185.199.108.153	TLSv1.2	93	Application Data
94	32.745953219	192.168.136.128	151.101.66.137	TLSv1.2	93	Application Data

Packet Details (Frame 51):

- Frame 51: 78 bytes on wire (624 bits), 78 bytes captured (624 bits) on interface eth0, id 0
- Ethernet II, Src: VMware 2a:17:c7 (00:0c:29:2a:17:c7), Dst: VMware e9:4f:85 (00:50:56:e9:4f:85)
- Internet Protocol Version 4, Src: 192.168.136.128, Dst: 34.36.137.203
- Transmission Control Protocol, Src Port: 59582, Dst Port: 443, Seq: 40, Ack: 1, Len: 24
- Transport Layer Security
 - TLSv1.2 Record Layer: Application Data Protocol: Hypertext Transfer Protocol
 - Content Type: Application Data (23)
 - Version: TLS 1.2 (0x0303)
 - Length: 19
 - Encrypted Application Data: 2da4ae24516412d312594cf884ed1a9d71b0c8
 - [Application Data Protocol: Hypertext Transfer Protocol]

Raw Data:

```
0000 00 50 56 e9 4f 85 00 0c 29 2a 17 c7 08 00 45 00  PV 0... ).... E
0010 00 40 83 0f 40 00 40 06 c2 90 c9 a8 88 80 22 24  @.0.83.f.40.0.40.6 c2.90.c9.a8.88.80.22.24
0020 89 cb e8 0e 01 bb 61 fa 4b 1d 0b 69 30 c7 50 18  9.cb.e8.0e.01.bb.61.fa 4b.1d.0b.69.30.c7.50.18
0030 ff ff f5 4a 00 00 17 03 03 00 13 2d a4 ae 24 51  ..f.f.f5.4a.00.00.17.03 03.00.13.2d.a4.ae.24.51
0040 64 12 d3 42 59 4c f8 84 ed 1a 9d 71 b0 c8      64.12.d3.42.59.4c.f8.84 ed.1a.9d.71.b0.c8
```

This how the data should be encrypted as shown in above image.