INTERNATIONAL JOURNAL
FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Ethical Hacking and Advance Python

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Abstract: As nowadays all the information is available online, a large number of users are accessing it, some of them use this information for gaining knowledge and some use it to know how to use this information to destroy or steal the data of websites or databases without the knowledge of the owner. The purpose of this paper is to tell what is hacking, who are hackers, what is ethical hacking, what is the code of conduct of ethical hackers and the need of them. A small introduction of Linux Operating System is given in this paper. All the techniques are performed on the Linux operating system named Kali Linux. After this some basic hacking attacks covered in the paper are MiTM Attack (Man in The Middle Attack), Phishing Attack, DoS Attack (Denial of Services Attack). Further what is Wi-Fi, what are the techniques used in the Wi-Fi protection and the methods used by the hackers to hacks Wi-Fi passwords is covered in the paper.
Keywords: -Hackers, Ethical Hackers, MiTM, DoS, Phishing, Wi-Fi phishing, Code of conduct.

I. INTRODUCTION

Ethical hacking is an umbrella term for all the procedures involved in recognizing vulnerabilities, exploiting known vulnerabilities, and preventing further attacks. Ethical hacking is a legal version of malicious hacking, making ethical hackers the good guys.
Hackers in this field are certified to hack systems following the client's specifications. It is the most suitable career path for persons fascinated with IT security, problem-solving, and communications.
You need to have a basic network background, either through experience working in a networking environment or through a vendor, to become a good ethical hacker. You also need in-depth knowledge of databases, operating systems (Linux and Windows), and command over major programming languages.
On the other hand, penetration testing is a niche aspect of ethical hacking that focuses solely on testing. It is a legitimate, simulated cyberattack carried out to analyze the security infrastructure of a business. While an ethical hacker needs wide-ranging knowledge of software and hardware, a penetration tester merely needs to intricately understand areas specific to pen-testing.
Every business needs ethical hacking and penetration testing professionals because setting up security controls isn't enough to keep the bad guys out. You can only see the big picture when you recognize all the different players and positions in hacking and penetration testing.

II. ETHICAL HACKING

An ethical hacker must be a computer systems expert and needs to have very strong programming and computer networking skills.
An ethical hacker needs to have a lot of patience, persistence, and perseverance to try again and again and wait for the required result.

1) White Hat Hackers (Cyber-Security Hacker)
2) Black Hat Hackers (Cracker)
3) Gray Hat Hackers (Both)

There are three kind of ethical hackers:-
a) *White Hat:* A white hat hacker is considered to be one of the good guy,cuz he uses his skills to improve your systems security and he access your system,with your permission.
b) *Black Hat:* Black Hat hackers are criminals who break into computer networks with malicious intent. They may also release malware that destroys files or steals passwords.
c) *Grey Hat:* A gray hat hacker (also spelled grey hat hacker) is someone who may violate ethical standards or principles, but without the malicious intent ascribed to black hat hackers. Gray hat hackers may engage in practices that seem less than completely above board, but are often operating for the common good.

III.   GOALS AND OBJECTIVES

The purpose of ethical hacking is to evaluate the security of and identify vulnerabilities in systems, networks or system infrastructure. It includes finding and attempting to exploit any vulnerabilities to determine whether unauthorized access or other malicious activities are possible.

A.   Master the fundamentals of writing Python scripts

B.   Learn core Python scripting elements such as variables and flow control structures

C.   Discover how to work with lists and sequence data

D.   Write Python functions to facilitate code reuse

E.   Use Python to read and write files

F.   Make their code robust by handling errors and exceptions properly

G.   Work with the Python standard library

H.   Explore Python's object-oriented features

I.   Search text using regular expressions

IV.   BASIC SKILLS

A.   *Malware*

Ethical hackers need to know different types of malware, how they can be used to gain access into a system, and the latest types of emerging malware. Hackers will use malware either as a way to gain entry, or to corrupt and steal data once they've gained access.

B.   *Cloud*

Most organizations are highly dependent on the cloud in order to collaborate on documents, run applications, and back up their data. Hackers, however, can use the cloud to conduct reconnaissance and build an attack platform. Free cloud platforms are especially vulnerable since organizations assume that security is the responsibility of the cloud provider

V. PYTHON DEVELOPER SKILLS

A.   *Expertise in Core Python*

The developer should have an excellent knowledge of Core Python. One should know the concepts of core python and its aspects are:

1)   Iterators

2)   Generators

3)   Exception Handling

4)   File handling concepts

5)   Data types and variables

6)   OOPs Concepts

7)   Data Structures

B.   *Sound Knowledge of Web Frameworks*

Flask and Django are the most popular Python web framework, and a developer should have an excellent grasp of either of these web frameworks. Flask is a Python micro web framework which is very widely used. Django encourages a practical, clean and functional design and also a high-level Python Web Framework. Knowledge of JavaScript, CSS, and HTML is also beneficial to become a Good Python Developer.

C.   *Object Relational Mappers*

An object-oriented Programming language is used for the conversion of data between two systems that are incompatible, and that technique is called Object Relational Mapper (ORM). From any programming language, a virtual object database is created by Object Relational Mappers. Programmers also use many customizable ORM tools.

D. Skills of Data Scientists

A Python developer can grow very much in the field of Data Science by having a good grasp in the popular aspect of Data Science such as:

1) Good Knowledge of SQL
2) Knowledge to use Python packages such as Scikit learn, MatPlotib, NumPy, etc. for Data Science
3) Cleaning up of Data
4) Data Wrangling
5) Analysis of Data
6) Visualization of Data
7) Mathematical Knowledge
8) Knowledge of Probability
9) Knowledge of Statistics

E. Good Understanding of Multi-Process Architecture

A developer should know the codes that are used in the working of release and deployment. The design engineer usually does this, but a developer too must have a basic understanding. If one wants to become a good Python Developer, then they should learn about MVT (Model View Template) and MVC (Model View Controller) Architecture. A developer will be able to solve the problem in the core framework after understanding the multi-process architecture.

F.   Analytical Skills

One must have excellent analytical skills in the field of Data Science to be a good python developer in the future. The required analytical skills may need a good understanding of building useful websites for web development, visualizing datasets for Data Science in a better way, optimization of algorithms while coding, writing clean code which is not redundant, etc.

G. Design Skills
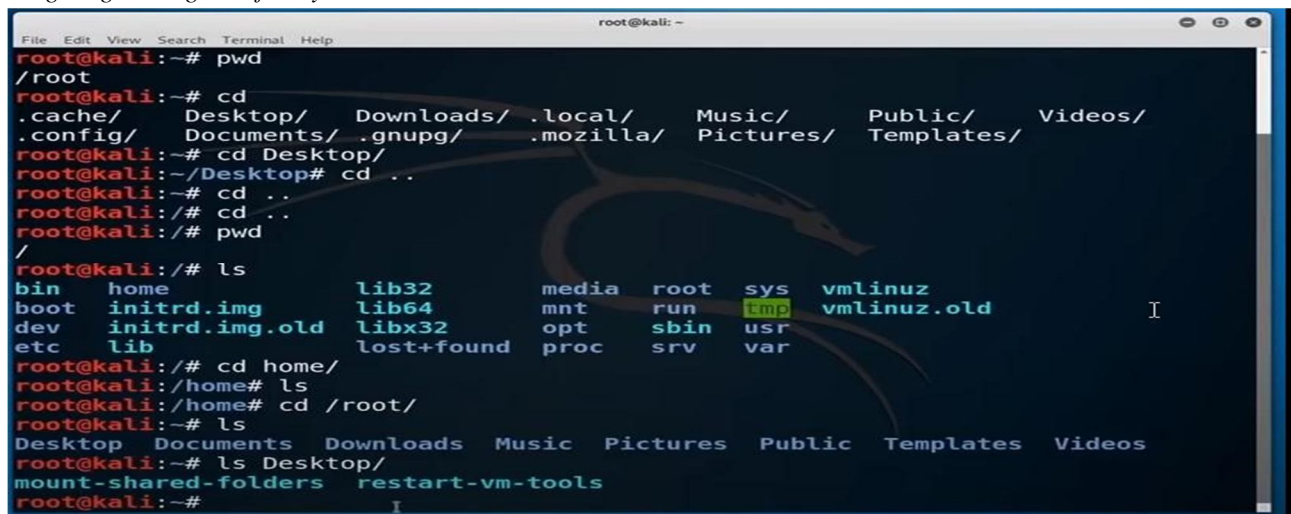
A good developer should also have a good understanding of designs which will be helpful while designing scalable products. Servers should be implemented to make them highly available. A python developer can use any python framework like Flask or Django to create a website. In this way, Python will be able to work at both server-side and client-side programming.

H. Communication Skills

Communication skill is one of the essential skills which one should have in any profession. Successful communication can bring success to the professional and the organization. One must be able to avoid any communication gap or confusion in understanding or any kind of misunderstanding.

VI.   PROJECT DETAILS

A. Navigating Through the file System

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue V May 2021- Available at www.ijraset.com

1) pwd(print working directory): tells u the current location
2) cd(change directory): to move to a folder or to move out of current folder
3) *here to enter to a location just type cd Desktop/
4) *to move out of a folder just type cd ..
5) 3.ls (list): here ls can be used to check the content of a folder.
6) put a forward slash "/" in front to get to a directory.
7) from unknown source:

8) mkdir (make directory): used to make a new directory.
9) rmdir (remove diectory): remove that new directory u just made.

10) ls -la:it reveals the hidden files (useful for pentesting)
11) cp(copy): copy the file

12) mv(move): moves the file.

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13) locate: locate ur files

14) *if this error ever comes up just use "sudo updatedb"

VII. WHAT IS A SELENIUM CHROME DRIVER?

VIII. CONCLUSION

Hacking is a serious concern for any business nowadays. In fact, it is almost a statistical certainty that at some point, any given company will suffer a data breach. In spite of this, the pressure to keep up with the rapidly developing technology industry leads to carelessness in securing computer systems. While the desire to maximize profit is understandable, computer crime can affect people's lives so dramatically that companies are ethically obligated to secure their systems, even if the extra time and resources reduce revenue. To this end, a full-disclosure policy is needed.

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