



An Overview of Scopes and Challenges in the Field of Ethical Hacking

A Study based on current scenario

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Abstract:

Ethical hacking is the process of recognizing the security issues and vulnerabilities in the system or computer network. A Hacking may be ethical or unethical. The ethical hacker has a good purpose to do it. It has become the general perception in our mind for the hacker that he will be bad, fanatic, criminal, and unethical. Basically, some of the hackers have even done the hacking for earning money. They have stolen very important information from their customers. In some of the government organizations, they have damaged very confidential information like social security numbers and other sensitive information. The programmers from the field of computer science have a huge opportunity to become ethical hackers. In this article, we are looking forward to identifying the opportunities and challenges of ethical hacking progression

Index Terms: *Hacking, Ethical hacking, Unethical Hacking, Gray Hat Hackers, White Hat Hackers, Black Hat Hackers, Penetration Test*

I. INTRODUCTION

Ethical hacking is to explore vulnerabilities and to find threats on a computer or network of an individual or an organization. An ethical hacker finds the weak points or loopholes in a computer, web applications, or network and reports them to the organization in a proper way and helps them to resolve that issues, and also helps them to prepare a patch. So, let's explore more about Ethical Hacking step-by-step. Unethical hackers illegally do things. That is the reason hackers are not having a very good reputation. To avoid such circumstances many organizations have appointed many ethical hackers to keep an eye on their system and computer network. Ethical hackers are supposing to test and check vulnerabilities and weaknesses in the present system. If we do hacking ethically it will be a good opportunity and a carrier for the programmers. There are several fields in computing where hackers made a measurable impact on society. In this paper, I have tried to look into different ways how we can make ethical hacking safe and ethical.

II. TYPES OF HACKERS

2.1. Black Hat Hackers

The color black usually represents bad things or sadness, where the bad guys in ethical hacking are represented as black hats. A black-hat hacker is an individual who attempts to gain unauthorized access to a system or network to explore them for malicious reasons. The black-hat hacker does not have any permission or authority to access their targets. They try to inflict damage by compromising security systems, altering the functions of websites and networks, or shutting down systems. They often do so to steal or gain access to passwords, financial information, and other personal data.

2.2. White Hat Hackers

White-hat hackers are considered to be the good guys. They work in association with the organizations to strengthen the security of a system and the network. A white hat has permission to do security checks and penetration testing within the organization with authorization. White-hat hackers are often known as ethical hackers.

Unlike black-hat hackers, ethical hackers exploit security networks and look for backdoors and loopholes when they are legally authorized to do so. White-hat hackers always disclose every vulnerability they find in the company's security system through proper channels so that it can be fixed before they are being exploited by malicious actors.

2.2.3. Grey Hat Hackers

Grey hats scan and uncover networks and computer systems in the way that black hats do. But a gray hat hacker does not exploit it illegally or doesn't tell others to do so. They usually work with the target organization to fix the problem. Usually, grey-hat hackers surf the net and hack into computer systems to notify the administrator or the owner that their system/network contains one or more vulnerabilities that must be fixed immediately. Grey hats may also extort the hacked, offering to correct the defect for a nominal fee.

III. Opportunities in the Field of Ethical Hacking

A person with an ethical hacking career is expected to be an expert in database management, networking, and operating systems. They also have excellent communication skills to inform the problems regarding security to the rest of the organization. Other than these generalized skill sets, an ethical hacker also has a good awareness of the following skills:

- Network traffic sniffing
- Orchestrate various network attacks
- Exploit buffer overflow vulnerabilities
- SQL injection
- Password guessing and cracking
- Session hijacking and spoofing
- DNS spoofing

Apart from this, an ethical hacker must be a creative thinker because black hat hackers are constantly coming up with crooked ways to exploit a system and it is an ethical hacker's job to predict and prevent such breaches and find solutions to penetrate it.



Figure 1: Career Opportunities in Ethical Hacking

IV. Challenges in the field of Ethical Hacking

Ethical hacking is a vital role those business organizations can use for their organization's security purposes. Ethical hacking helps to increase the capabilities of organizations to protect organizations computer systems and networks.

The legal risks of ethical hacking include legal action due to the disclosure of personal or confidential information. Such disclosure can lead to a legal battle and issues between the organization and the ethical hacker.

Another issue behind ethical hacking is that if the flaws found by an ethical hacker should be concise and convincing. Otherwise, the organization will go for legal action. A Hacker has to prove all types of errors and flaws

After performing ethical hacking, a Hacker never discloses client information to third parties or other organizations and must ensure the protection of the client. Ethical hacking is done for the security of the client's system or network. Disclosure of the client's confidential information renders ethical hacking ineffective. Private information must be kept private, and confidential information must be kept confidential.

Hackers must have a piece of deep knowledge about CERT Process, Rain Forest Puppy Policy and OIS (Organization of Internet Safety), different types of procedures available in proper ethical disclosure. Often people make career choices without considering the full scope of what the job entails and the daily stresses of your workflow. When people imagine being a hacker for hire, the endless documenting, education, paperwork, dialogue, and even legal issues overshadow the actual research.

V. Tools used for Ethical Hacking

A hacking tool is a software that is used for a hacking process. An ethical hacker should be well acquainted with these tools to perform a successful hacking

Kinds of Hacking Tools

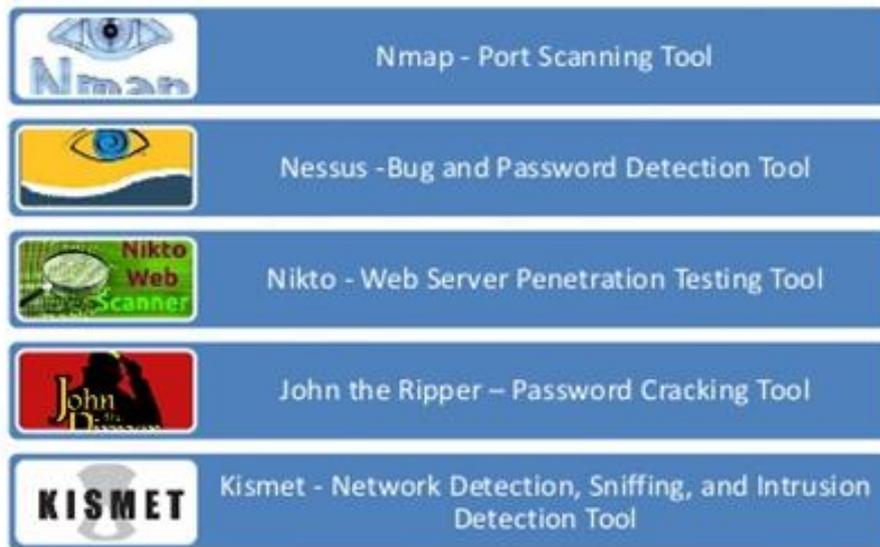


Figure 2: Types of Hacking Tools

VI. CONCLUSION

Ethical Hacking is a glittering field in computer science. A computer expert with deep knowledge and patients had a good chance to become an ethical hacker. Doing ethical hacking is a reputed job while if it is in an unethical manner, it would be an offense. In conclusion, ethical hacking is not a crime. Ethical hacking as a career offers vast opportunities. A fresh certified ethical hacker could attract a salary anywhere between INR 4 to 5 lakh per year. Experienced professionals in this field such as security consultants, information security analysts, and ethical hacking experts can earn salaries in the range of INR 10 to INR 20 lakh.

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