APPLICATION SECURITY

PENETRATION TESTING

Penetration testing is a simulated cyberattack on a system, network, or application to identify security vulnerabilities before malicious actors exploit them. It involves ethical hackers using tools and techniques to assess weaknesses, such as SQL injection, XSS, or misconfigurations. The goal is to provide actionable insights to strengthen defenses and comply with security standards. Regular penetration testing helps organizations proactively mitigate risks and protect sensitive data.

1. Networking Essentials

- Introduction to Computer Network
- Network Topologies and Type
- IP Addressing
- Subnet Mask, Subnetting and CIDR
- VLSM, Wild Card, Summarization
- Networking Models
- OSI Model
- Networking Device, Cabling, Network Simulator Tools
- ARP and ICMP
- Packet Flow

- Routing - Static and Dynamic
- Static Routing - Next HOP IP & Exit Interface
- Dynamic Routing - RIP, EIGRP, & OSPF
- Remote Service Configuration
- DHCP Configuration
- ACLs
- Switching
- L2 Protocols - CDP, VLAN, STP, DTP, VTP
- Ether Channel
- Port Security

2. Kali Linux

- Introduction to Linux
- Setting up Lab
- Exploring Kali
- Sudo Overview
- Navigating the File System
- Basic Commands
- Creating, Viewing and Editing Text Files
- Managing Users and Group

- File Privileges / Permissions
- Linux Networking
- Process Management
- Sevices and Demons
- Log Analysis
- Archiving Files
- Debain Package Management
- Road Ahead - Towards Penetration Testing

3. Python Programming

- Introduction
- Set up
- Variables and Data Types
- Numbers
- String Formatting
- Booleans and Operators
- Tuples
- Lists
- Dictionaries
- Sets
- Conditionals
- Loops

- Reading and Writing Files
- User Input
- Exception and Error Handling
- Comprehensions
- Function and Code Reuse
- Lambdas
- The Python Package Manner
- Python Virtual Environment
- Introduction to Sys
- Introduction to Requests
- Introduction to Pwntools
- Projects

4. Ethical Hacking

- Networking Refresher
- Linux Refresher
- Introduction to Information Security
- Introduction to Ethical Hacking
- Foot printing / Information Gathering
- Scanning
- Enumeration
- Vulnerability Analysis
- System Hacking
- Malware and Threats
- Sniffing
- Social Engineering
- Denial of Service
- Session Hijacking
- IDS, IPS, and Firewalls
- Hacking Web Servers
- Hacking Web Applications
- SQL Injection
- Hacking Wireless Network
- Hacking Mobile Platforms
- Introduction to IOT
- Introduction to Cloud Computing
- Cryptography and Steganography

5. Web Application Security

- Introduction to Web Application Security
- Setting up the Environment
- Reconnaissance and Scanning
- Exploitation Techniques
- Authentication and Session Management
- Advance Web Application Attacks
- Reporting and Remediation
- Legal and Ethical Consideration
- Practical Application
- Recape and Review

6. Mobile Application Security

- Introduction to Android Penetration Testing
- Setting Up Android Penetration Testing Environment
- Android Penetration Testing Methodologies
- Lab Setup Design
- Traditional Android Penetration Testing Report
- Traditional Android PT Approach & Guidelines
- Android Attack Surface – Client-Side Vulnerabilities
- Android Attack Surface – Server-Side Vulnerabilities
- Android Attack Surface Logical Security Threats
- Owasp Mobile Top 10
- Setup Android Debug Bridge Utility (adb)
- Vulnerable Android Application Source Code Review
- Structure an Android Application Package (APK)
- Reversing an Android application using dex2jar
- Reversing an Android application using apktools
- Signing an Android Applications Manually
- Android Code Obfuscation & Code Protection
- Adding Malicious Code to Android Apps
- Debugging Detection
- Root Detection
- VM Detection
- iOS Application Basic Standards

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