Course Duration: - 3 Months

Courses: - 1: - Basics of Networking (Duration- 15 Days)
2: - Linux (Duration- 15 Days)
3: - Ethical Hacking (Duration- 60 Days)

Chapter 1: Basics of Networking

1. Introduction to Networking
2. The TCP/IP Five-Layer Network Model
3. Cables
4. Hubs and Switches
5. Routers
6. Servers and Clients
7. Moving Bits across the Wire
8. Twisted Pair Cabling and Duplexing
9. Network Ports and Protocols
10. Ethernet and MAC Addresses
11. Unicast, Multicast, and Broadcast
12. Dissecting an Ethernet Frame
13. Proxy and Proxy server
14. VPN
15. Firewalls and Types of Firewall
16. Intrusion Detection and Prevention System

Introduction to the Network Layer

1. The Network Layer
2. IP Addresses
3. IP Datagrams and Encapsulation
4. IP Address Classes
5. Address Resolution Protocol
6. Subnet Masks
7. Basic Binary Math
8. CIDR
9. Basic Routing Concepts
10. Routing Tables
11. Interior Gateway Protocols
12. Exterior Gateway Protocols
13. Non-Routable Address Space
14. Routing Protocol Examples
15. RFCs and Standards
16. The Network Layer

Introduction to the Transport and Application Layers

The Transport Layer

1. Dissection of a TCP Segment
2. TCP Control Flags and the Three-way Handshake
3. TCP Socket States
4. Connection-oriented and Connectionless Protocols
5. Firewalls

The Application Layer

1. The Application Layer and the OSI Model

Introduction to Network Services

2. Why do we need DNS?
3. The Many Steps of Name Resolution
4. DNS and UDP
5. Resource Record Types
6. Anatomy of a Domain Name
7. DNS Zones
8. Overview of DHCP
9. Basics of NAT
10. NAT and the Transport Layer
11. NAT, Non-Routable Address Space and the Limits of IPv4
12. Virtual Private Networks
13. Proxy Services

Wide Area Network Technologies

1. Point-to-Point VPNs
2. Introduction to Wireless Networking Technologies
3. Wireless Network Configurations
4. Wireless Channels
5. Wireless Security
6. Cellular Networking

Introduction to Troubleshooting and the Future of Networking

1. Ping: Internet Control Message Protocol
2. Traceroute
3. Testing Port Connectivity
4. Name Resolution Tools
5. Public DNS Servers
6. DNS Registration and Expiration
7. Hosts Files
8. What is The Cloud?
9. Everything as a Service
10. Cloud Storage
11. IPv6 Addressing and Subnetting
12. IPv6 Headers

Chapter 2: Introduction to Linux Operating System

1. Introduction to Linux
2. Linux User/Group and File Permissions
3. Add New User and Group
4. File and Directory
5. Environment Variable and Find Files
6. File Packing and Compression
7. File System and Disk Management
8. Command Execution Sequence Control and Pipeline
9. Simple Text Processing
10. Data Stream Redirection

11. Analyse Historical Commands
12. Regular Expression
13. Software Installation on Linux

Basic Shell Scripting

1. **Shell Basics**
    1. Types of shells
    2. Shell functionality
    3. Environment
2. **Writing first script**
    1. Writing script & executing basic script
    2. Debugging script
    3. Making interactive scripts
    4. Variables (default variables)
    5. Mathematical expressions
3. **Conditional statements**
    1. If-else-elif
    2. Test command
    3. Logical operators-AND,OR,NOT
    4. ase –esac
4. **Loops**
    1. While
    2. For
    3. Until
    4. Break & continue
5. **Command line arguments**
    1. Positional parameters
    2. Set & shift
    3. IFS
    4. Break & continue
6. **Functions & file manipulations**
    1. Processing file line by line
    2. Functions
7. **Regular Expression & Filters**
    1. What is regular expression
    2. Grep,cut ,sort commands
    3. Grep patterns
8. **SED & AWK**
9. **Processes**
    1. Concept of process in Unix
    2. Background processes
    3. Scheduling processes -At, batch & Cron

Chapter 3: Introduction to Ethical Hacking

1. Overview of Information Security
2. Information Security Threats and Attack Vectors
3. Hacking Concepts, Types and Phases.
4. Ethical Hacking Concepts and Scope.
5. Information Security Control
6. Information Security Laws and standards

Chapter 4: Footprinting & Reconnaissance

1. Footprinting Concepts
2. Footprinting Methodology
3. Lab 04-1: Maltego Tool Overview
4. Lab 04-2: Recon-ng Overview
5. Lab 04-3: FOCA Tool Overview
6. Countermeasures of Footprinting
7. Lab 4-4: Gathering information using Windows Command Line Utilities
8. Lab 4-5: Downloading a Website using Website Copier tool (HTTrack)

Chapter 5: Scanning Networks

1. Overview of Network Scanning
2. Scanning Methodology
3. Lab 4-1: Hping Commands:
4. Lab 4-2: Hping Commands:
5. Lab 4-3: Xmas Scanning
6. Scanning Beyond IDS
7. OS Fingerprinting & Banner Grabbing
8. Draw Network Diagrams
9. Lab 4-4: Creating Network Topology Map using Tool

Chapter 6: Enumeration

1. Enumeration Concepts
2. Techniques for Enumeration
3. Services and Ports to Enumerate
4. Lab 6-1: Services Enumeration using Nmap
5. NetBIOS Enumeration
6. NetBIOS Enumeration Tool
7. Lab 6-2: Enumeration using SuperScan Tool
8. Enumerating Shared Resources Using Net View
9. Lab 6-3: Enumeration using SoftPerfect Network Scanner Tool
10. SNMP Enumeration
11. Simple Network Management Protocol
12. LDAP Enumeration
13. Lightweight Directory Access Protocol (LDAP)
14. LDAP Enumeration Tool
15. NTP Enumeration
16. Network Time Protocol (NTP)
17. SMTP Enumeration
18. Simple Mail Transfer Protocol (SMTP)
19. SMTP Enumeration Technique
20. Enumeration Countermeasures

Chapter 7: Vulnerability Analysis

1. Vulnerability Assessment Concept:
2. Vulnerability Assessment
3. Vulnerability Assessment Life-Cycle
4. Vulnerability Assessment Solutions
5. Vulnerability Scoring Systems
6. Vulnerability Scanning
7. Lab 7.1: Vulnerability Scanning using Nessus Vulnerability Scanning Tool

Chapter 8: System Hacking

1. System Hacking
2. System Hacking Methodology
3. Password Cracking
4. Dictionary attack
5. Brute force attack
6. Rainbow table attack

Chapter 9: Malware Threats

1. Malware
2. Trojan Concept
3. Virus and Worms Concepts
4. Virus Analysis and Detection Methods
5. Malware Reverse Engineering
6. Malware Analysis
7. Lab 9-1: HTTP RAT Trojan

Chapter 10: Overview of Cryptography

1. Cryptography Concepts
2. Cryptography
3. Types of Cryptography
4. Symmetric Cryptography
5. Symmetric Encryption Algorithms
6. Asymmetric Cryptography
7. Asymmetric Encryption Algorithms
8. Hashing
9. Hashing Algorithms
10. Public Key Infrastructure
11. Securing Network Traffic
12. Cryptographic Hardware

Chapter 11: Social Engineering Attacks

1. Social Engineering Concepts
2. Introduction to Social Engineering
3. Hacking Email Accounts (Facebook, Gmail, SnapChat)
4. Phases of a Social Engineering Attack
5. Social Engineering Techniques
6. Types of Social Engineering
7. Insider Attack
8. Impersonation on Social Networking Sites
9. Social Engineering Through Impersonation on Social Networking Sites
10. Risks of Social Networking in a Corporate Networks
11. Identity Theft
12. The process of Identity theft
13. Social Engineering Countermeasures

Chapter 12: Hacking Web Servers - Web Server Concepts

1. Web Server Attacks
2. Web Server Attack Methodology
3. Web Server Attack Tools

4. Web Server Countermeasures
5. Patch Management
6. Web Server Security Tools
7. **Hacking Web Applications - Web App Concepts**
8. Web App Threats
9. Web App Hacking Methodology
10. Footprint Web Infrastructure
11. Analyze Web Applications
12. Bypass Client-Side Controls
13. Attack Authentication Mechanism
14. Attack Authorization Schemes
15. Attack Access Controls
16. Attack Session Management Mechanism
17. Perform Injection Attacks
18. Attack Application Logic Flaws
19. Attack Shared Environments
20. Attack Database Connectivity
21. Attack Web App Client
22. Attack Web Services
23. Web API, Webhooks and Web Shell
24. Web App Security
25. **SQL Injection - SQL Injection Concepts**
26. Types of SQL Injection
27. SQL Injection Methodology
28. SQL Injection Tools
29. Evasion Techniques
30. SQL Injection Countermeasures