

CyberSecurity Roadmap 2025

Introduction to cybersecurity

- What is Cybersecurity?
- CIA Triad
 - White Hat Hackers (Ethical Hackers)
 - Black Hat Hackers
 - Gray Hat Hackers
- Type of Hackers/Hacking
 - Script Kiddies
 - Hacktivists
 - Insider Threats
 - Cyber Terrorists
 - State-Sponsored Hackers (Nation-State Hackers)
- Identification and Authentication, Authorization, and Accounting (IAAA)
- Threat Actors
- Malwarens
- Common Types of Cybersecurity Attacks
- Social engineering

Hack Your Learning

Curiosity
Consistency
Community

CompTIA Security+ SY0-601 Certification Study Guide

Horizontal and Vertical Fields In Cybersecurity

- Offensive Security
 - Ethical Hacking / Penetration Testing
 - Red Team Operator
 - Vulnerability Researcher
 - Malware Analyst/Reverse Engineer
 - Exploit Developer
 - Bug Bounty Hunter
 - Security Analyst (SOC Analyst)
- Defensive Security (Blue Teaming)
 - Blue Team Operator
 - Security Architect
 - Malware Analyst
 - Forensic Analyst (Digital Forensics)
 - Compliance and Risk Analyst
 - Data Loss Prevention (DLP) Specialist
- Verticals
 - Application Security
 - Web Application
 - Mobile Application
 - API Security
 - Thin client application
 - Network Security
 - Cloud Security
 - IoT Security (Internet of Things)
 - Operational Technology (OT) & Industrial Control Systems (ICS) Security
 - Cryptography & Encryption
 - DevSecOps
 - Blockchain & Cryptocurrency Security
 - Disaster Recovery and Business Continuity
 - Security Awareness and Training

Network

- Network Devices
 - Routers/Switches
 - Firewalls
 - Hubs
 - Modems
 - Access Points (APs)
 - Network Interface Cards (NICs)
 - Proxy Servers
- OSI Model
 - How Data Flows from Each Layer?
 - Types of cables: Coaxial, Twisted Pair, Fiber Optic
 - Devices: Hubs, Switches, Routers, Modems
 - MAC Addresses & Switching
 - Basics of IPv4 and IPv6
 - Routing & Protocols
 - TCP vs UDP
 - Session Management
 - Protocols: HTTP/HTTPS, FTP, SMTP, POP3, IMAP, DNS
- TCP/IP
 - ICMP (Ping, Traceroute)
 - 3-Way Handshake (SYN, SYN-ACK, ACK)
 - ARP (Address Resolution Protocol)
 - IP Spoofing & ICMP Flood Attacks
 - Ethernet & MAC Addressing
 - MAC Spoofing
 - VPN & IPsec in TCP/IP
- Protocols
 - SSH
 - RDP
 - FTP
 - SFTP
 - RDD
 - SSL/TLS
 - HTTP/HTTPS
- IP Subnetting
- Network Segmentation
- Zero Trust Security Model
- Firewalls
- VPN
- Wireless Cryptographic Protocols

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Operating Systems

- How Operating Systems Works ?
 - Installation and Configuration
 - Navigating using GUI and CLI
- Windows 7 / 10 / 11
- Windows Server
 - Active Directory
- Linux
 - Kali Linux
 - Parrot Security OS
 - Tails OS

Application working

- Domain
 - Top-Level Domains (TLDs)
 - Second-Level Domains (SLDs)
 - Subdomains
- Hosting
 - Shared Hosting
 - VPS Hosting (Virtual Private Server)
 - Dedicated Hosting
 - Managed Hosting
 - Cloud Hosting
 - Colocation Hosting
- Component
 - Client-Side (Frontend)
 - Server-Side (Backend)
 - Domain Name System (DNS)
 - Databases
- tier architecture
 - Single-Tier Architecture (Monolithic Applications)
 - Two-Tier Architecture (Client-Server Applications)
 - Three-Tier Architecture
 - N-Tier Architecture (Multi-Tier Architecture)
 - Microservices Architecture

Web

- How the Web Works ?
- HTTP Methods
- HTTP Headers
- HTTP Verb
 - GET
 - POST
 - PUT
 - PATCH
 - DELETE
 - HEAD
 - OPTIONS
 - CONNECT
 - TRACE
- Cookies
- HTTP response status codes

Cryptography

- Cryptosystem
- Key Exchange
 - Diffie-Hellman Key Exchange (DH)
 - Elliptic Curve Diffie-Hellman (ECDH)
 - KE (Internet Key Exchange)
- Encryption
 - Symmetric Algorithms
 - Asymmetric Algorithms
- Hashing
 - MD5
 - SHA/SHA-256/SHA-3
 - bcrypt
 - HMAC
- Steganography

Programming Language

- PHP
- Python
- Javascript
- SQL

Shell Scripting

- Bash
- PowerShell

Vulnerabilities

- Web Vulnerabilities
 - OWASP TOP 10
- Network Vulnerabilities & Attacks
- Zero-Day
- Third-Party Risks

Penetration Testing

- What is Penetration Testing ?
- Types of Penetration Testing
- Testing Methodology
- SAST & DAST
- Vulnerability Scans
- Threat Assessment

Advanced

- Active Directory Attacks
- Reverse Engineering
- Buffer overflow
- Malware analysis

Must know

- Cyber Kill Chain
- MITRE ATT&ck

Blue Team & Red Team

- Red Team
 - Red Teaming Methodology
 - Red Teaming Tools
- Blue Team
 - SOC
 - Digital Forensics
 - SIEM / CASB
 - Incident Response
 - Log Management & Analysis
 - Blue Team Tools

Regulations, Standards, and Frameworks

- What is a Cybersecurity Framework ?
- The NIST Framework
- OS Benchmarks
- ISO 27001 and ISO 27002
- PCI DSS
- HIPAA
- GDPR

Cyber Lab Setup

- Network/Infra
 - HackTheBox
 - TryHackMe
 - VulnHub
 - PicoCTF
 - SANS Holiday Hack Challenge
 - Damn Vulnerable Web Application (DVWA)
- Application
 - OWASP Juice Shop
 - OWASP WebGoat
 - OWASP (Buggy Web Application)
 - MultiStage 1
 - OWASP Broken Web Applications (BWA) Project
 - Metasploitable2

Courses, Books and Cert Path

- Learning platforms
 - Let'sDefend
 - Portswigger
 - TryHackMe
 - HackTheBox
- Youtube
 - CyberRishabh
 - ISOubed
 - Computerphile
 - PwFunction
 - UseOverflow
 - The Cyber Mentor
 - HackerSploit
 - John Hammond
 - FreeHarab
- Books
 - Cybersecurity For Dummies
 - Social Engineering: The Science of Human Hacking
 - The Art of Invisibility
 - Ghost In The Wires
 - Kali Linux Hacking: A Complete Step by Step Guide by Ethem Meriç
 - The Hacker Playbook 3: Practical Guide to Penetration Testing
 - Penetration Testing: A Hands-On Introduction to Hacking
 - Practical Malware Analysis: The Hands-On Guide to Dissecting Malicious Software
- Some of Certifications Learning Path
 - CCNA
 - CompTIA Network +
 - CompTIA Security +
 - GIAC (GISE)
 - CISSP
 - eJPT
 - OSCP

- Instagram: [Instagram: Instagram \(@cyber_rishabh\)](#)
- YouTube: [youtube.com/CyberRishabh](#)
- https://www.linkedin.com/in/cyber_rishabh/
- Personal Website

I'm Rishabh Pandey, aka CyberRishabh—20+ years in cybersecurity, turning real-world hacks into simple lessons. Not your regular content creator, but your guide to mastering ethical hacking, certifications, and hands-on labs.