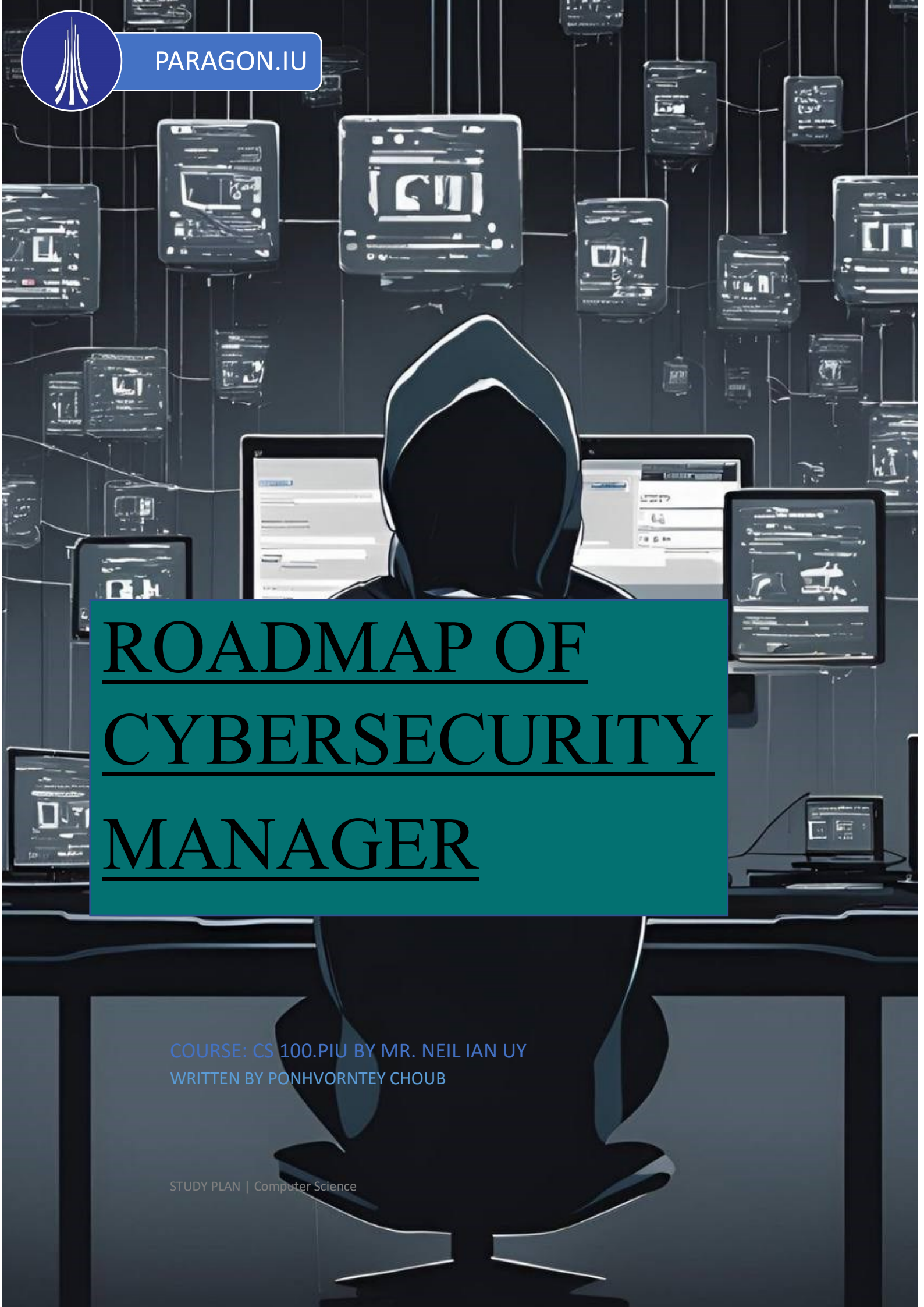

ROADMAP OF CYBERSECURITY MANAGER

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STUDY PLAN | Computer Science

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1.INTRODUCTION

WHAT IS CYBERSECURITY MANAGER?

Cybersecurity Manager is a senior-level that take responsibility of a company, industry, team, and organization, etc.

Cybersecurity managers work closely with IT teams, network administrators, and upper management to identify vulnerabilities, address security risks, and respond to the threats.

>>So What Cybersecurity Manager do exactly?

Cybersecurity managers lead teams of IT professionals who work to keep sensitive data from falling into the wrong hands, and also prevent the cyberattacks.

In order to reduce risk, cybersecurity managers have to ensure that they have an efficient amount of resources dedicated to critical tasks.
Cybersecurity managers must also make smart decisions on how to secure the data as well.

>>Why I choose it?

Guiding people, create the problem and solve with people, making a serious decision, all of this motivate me to go on the way to Cybersecurity Manager.

2. COMPONENT OF ROADMAP

Knowledge

a. Networking

Understanding how different data networks operate (and how different networks can become compromised) is also key to the profession.

Learn:
- TCP/IP
- DNs/VPNs
- Firewalls

b. Foundation

Before diving deeper into Cybersecurity Manager, learning and building a strong fundamental is essential.

What you going to learn are:

- Computer Network
- Computer Security
- Operating System
- Switching Router/Wireless
- Search engine

c. Programming

It is not necessary at all to learn Programming Language, however, having the basic of programming is the key to be Cybersecurity Manager.

Having a Basic of:

- Python
- C/C++
- Java/JavaScript
- Bash/PowerShell

2.COMPONENT OF ROADMAP

Skills

a. Leadership skill

As Cybersecurity Managers, they have a high responsibility, which mean they need to take the responsible for the team. They also guide and find a way out for the whole team.

That's why Leadership skills here is important.

a. Communication Skills

Cybersecurity Managers need to explain the complex or the serious problem to the IT teams, imagine if you are the manager and you don't know how to communicate with people. That's why Communication is a key.

c. Problem-Solving

Some situation is kind of serious, as cybersecurity managers, they have to be well predicted on the problem will shown up, and how to solve them as well.

2.COMPONENT OF ROADMAP

Practice & Experience

a. Online Course

There are several of course on the internet where you can learn and practice.

Example:

- TryHackMe
- Hack The Box

b. Certificate

Having certificate prove that you have the knowledge and skill on this career.

Example:

- CompTIA Certificate
- eJPT Certificate
- CiSO

c. Project/Internship/Job Hunting

Having the Certificate is not really help you to archive your goal. If you can prove not only the certificate, but also you project that you made by yourself, this job will run to you.

You need to work with people to gain experience in order to build you own project which mean you intern with any companies or organizations.

3.GEARS

As a cybersecurity manager, you need a laptop with strong security. This is what you need to look:

- Processor (CPU): Intel core i7 (12^{th}-13^{th} Gen)
- RAM (Memory): 16GB or more
- Storage (SSD): 512GB or more
- Security Features: TPM 2.0, Fingerprint sensor, Smart Card reader, Privacy Screen.
- Cost: $1000-2000

Beside Laptop you also need some essential gears like

- USB security keys ($29-55)
- Wi-Fi adapter etc ($15-50)

Figure1.Lenovo ThinkPad

Figure2. USB security key

Figure3. Wi-Fi Adapter

4. 4-YEARS CYBERSECURITY MANAGER PLAN

- Year 1: Foundation Building

  • First Semester:
    - Focus on your Computer Science fundamentals like **CS125 (algorithms, data structures, programming languages), CS 100 (CS Orientation).**
    - Take introductory courses in networking and security basics **(MIS120).**

  • Second Semester:
    - Continue with foundational computer science courses, focusing on networking, databases, and operating systems, will take:
      CS 126 (Principles of Programming II), CS 311 (Discrete Mathematics), and CS 128(Web Design & Development).
    - Begin learning about encryption, firewalls, and common cyber threats, and get involved in cybersecurity student clubs or online.
    - Start practicing with free resources like TryHackMe or Hack The Box for hands-on skills.
    - Develop my soft skills, such as communication, leadership, and problem-solving.

- Year 2: Skill Development & Certification

  • Third Semester:
    - Begin taking more advanced courses in networking, programming, and web security, will have course:
      CS 201 (Data Structures and Algorithms), CS 223 (Object-Oriented Programming), CS 230 (Computer Networks), CS 233(System Analysis), MIS 201(Management Information Systems) .

- Start working with tools like Wireshark, Metasploit, and Nmap to practice network scanning and vulnerability analysis.
- Enroll in a cybersecurity internship or participate in CTF (Capture The Flag) challenges.
- Aim to earn CompTIA Security+ certification.

• Forth Semester:

- Continue with courses related to operating systems security and incident response, will have course: **CS 204 (Computer Architecture), CS 226(Database Management), CS 250 (Operating Systems), CS 262(Advanced Concepts in Web Development), CS 332(Switching, Routing, and Wireless), and MIS 380(Human-Computer Interaction) .**
- Participate in internships or cybersecurity competitions for real-world experience.
- Begin studying for CISSP (Certified Information Systems Security Professional) or a similar certification for long term goal.
- Build my personal security lab to practice penetration testing, incident response, and ethical hacking.

- Year 3: Advanced Knowledge & Specialization

• Fifth Semester:

- Dive deeper into specialized cybersecurity topics like malware analysis, threat intelligence, and digital forensics, will have course:
- **CS 315(Software Design), ICT 311(Work-Integrated Learning I), CS 426(Cloud Computing), CS 395(Data Communications Engineering), CS 312(Computer Security), CS 397(Inter of Everything).**
- Take courses related to cloud security, network architecture, and security automation **CS 393(Automata Theory).**
- Work on my personal project or research in a niche area like penetration testing or threat hunting.
- Taking on leadership roles in cybersecurity clubs or teams to build management skills.

• Sixth Semester:

- Focus on cybersecurity management, governance, and risk analysis. Learn about compliance frameworks like HIPAA, PCI-DSS, and GDPR.
- Might think of certifications like Certified Ethical Hacker (CEH) or Cisco's CCNA Security.
- Gain experience in security operations (SOC) environments through internships or part-time work.
- Attend cybersecurity conferences and workshops to expand my professional network.
- There are course to take which are: **CS 382 (Search Engines and Information Retrieval), CS 342(Artificial Intelligence), CS 394 (Advanced Database Management), CS 398(Systems Management and Administration), CS 480(Professionalism in Computing), BUS 230(Business Communications)**

- Year 4: Transitioning to Management

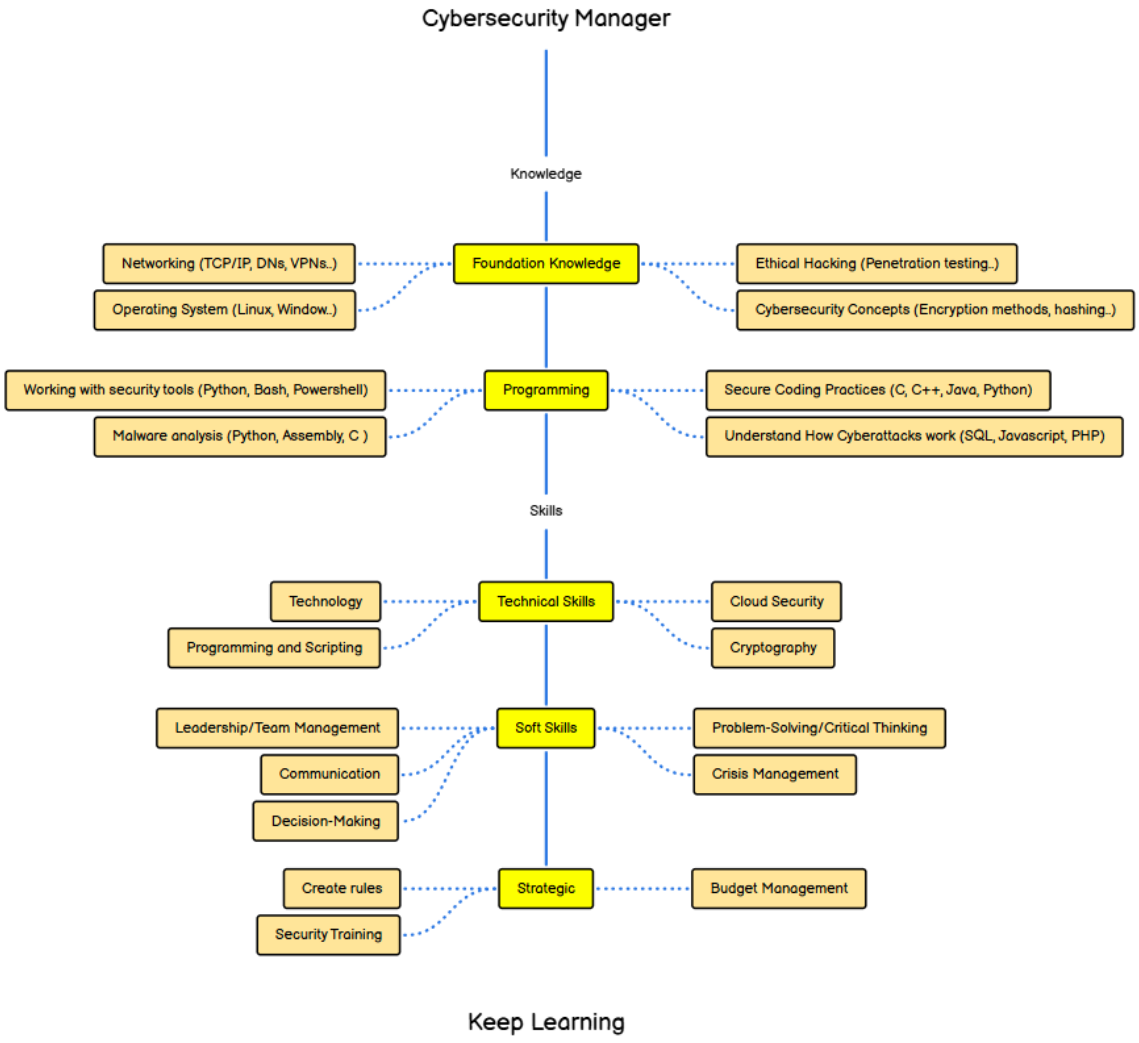
• Seventh Semester:

- Take courses or workshops in project management, leadership, and business strategy, as these are critical for a managerial role.
- Continue with hands-on projects, focusing on areas like incident response, security policy development, and enterprise security management.
- In **CS 401(Final Year Project I), CS 468(IT Project Management), CS 495 (Distributed System), CS 497(Modeling and Simulations), ICT 491(Humanitarian Engineering).**

• Eighth Semester:

- Focus on finalizing your knowledge of risk management, compliance, and security strategy, will have:

- **CS 402(Final Year Project II), CS 492(Applied Information Management Systems), CS 494(Software Information Management System), MIS 460(Information Security and Risk Assessment), ICT 421(Internship for IT Education I).**
- Prepare a comprehensive cybersecurity project or thesis that demonstrates both your technical and managerial capabilities.
- Network with professionals in the field via LinkedIn, career fairs, or conferences to explore post-graduation opportunities.
- Aim to earn CISSP or CISM certifications.
- Apply for entry-level cybersecurity management roles or cybersecurity consulting positions after graduation.



5.CONCLUSION

As I am in my foundation year in Computer Science at Paragon International University, I have always curious of the technology world because everything happens just a minute.

In the roadmap of cybersecurity manager, I aim to explore and learn of how to guide and make the decision for the team in a better way.

There is a long journey for me, so I am going to walk through it wisely, and make sure that I will achieve this goal even if this journey is only me left.

The road to Cybersecurity Manager might be challenge for me, but I am ready for it as a freshman in Computer Science at Paragon.

6. Reference

Resource for Researching:

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https://cybersecurityguide.org/programs/cybersecurity-bachelors-degree/#courses

https://www.w3schools.com/cybersecurity/cybersecurity_networking.php

>>Firgure1.

https://www.lenovo.com/us/en/p/laptops/thinkpad/thinkpadx1/thinkpad-x1-carbon-gen-11-14-inch-intel/len101t0049

>>Figure2.

https://www.yubico.com/products/security-key/

>>Figure3.

https://www.tp-link.com/us/home-networking/usb-adapter/