Individual Reflective Piece

Network Security is an increasingly important area in Cybersecurity and during the past 6 weeks, studying Network Security Module has generated insights into network vulnerability assessments and impact of cyber security on network systems and designs.

This paper will examine everything that transpired throughout the 6-week course period.

Week 1: History of Network Security, Vulnerabilities and Approaches

With the help of the lecture cast, the seminar, module reading list, the collaborative discussion and my own personal internet research, I was able to cover on:

- The brief history of network security and vulnerability cases throughout time (from compatible time-sharing system (CTSS) first recorded vulnerability in 1965 all the way to 2007's Cyberterrorism attacks in Estonia).
- Identification and analyzation of security threats and vulnerabilities in network systems as from (McNab, 2016).
- Participate to a collaborative discussion on digitalisation and the security implications of the digital economy. Other than writing a 'initial post' referencing (Spremić & Šimunic, 2018), (Banerji, 2019), etc; that mentions digital economy's cybersecurity challenges and threats like phishing, social engineering, etc.
- I also read and reflected on my peers' posts which they were very illuminating, especially on how during the Covid pandemic, digitisation has rapidly grown resulting to remote working becoming a go-to solution thus

leading to the need of cybersecurity prioritization (as also mentioned by Amit Pahuja).

Week 2: Advanced Persistent Threats: Applying the Cyber Kill Chain Model to a Case Study

From the seminar held, I acquired an understanding of The Solar Winds breach case as told by (Oladimeji & Kerner, 2022) and (Temple-Raston, 2021), and how to apply the Cyber Kill Chain model. Additionally, Professor Necat and Jane did a demonstration that explained it further.

Chose a website, https://pchelpme.org.uk/, to practice and perform vulnerability assessment and audit on.

Week 3: Vulnerability Assessments

After accessing the lecture cast and module reading list like (McNab, 2016), etc; I learnt different techniques, tools and penetration tests that can be used to do vulnerability assessments and audits.

I also performed a traceroute scan on the website which later on I did research on it so as to learn how to interpret the results (learning on hops, etc). Then I used the results to create my vulnerability assessment and audit final report.

From the skills acquired, I was able to do a vulnerability audit and assessment- baseline analysis and plan on the website that I chose on week 2. This was challenging in a way

where I was to write a lot of information about the assessment in a clear and limited number of words and straight to the point also.

Week 4: Breach Analysis and Mitigation

A seminar was held in this week, whereby, for its preparation, I read on the breach case studies and from that I created and presented a PowerPoint presentation that assesses the data breach that hit Adobe (one of the case studies).

From this, I got to gain skills on doing assessment on breach cases so as to know the reasons as the challenges and situations faced for a breach to happen, the damages caused and what could have been done better to mitigate, control and respond quicker to the breaches.

Week 5: Logging, Forensics and Future Trends

Gained knowledge on digital forensics, future internet trends, logging on Windows and Linux and a collaborative discussion on the pros and cons of logging and the impact of log4j (a Java-based logging utility as mentioned by (Berger, 2021)), took place.

Reviewed the assessment template from Purplesec (Anon, N.D.) and was able to get an idea of how assessments and audits are layered out and the information to include and not to include in it.

Week 6: The Great Debate: The Future of the Internet

I am assigned to group 2 and participated to a discussion with my group members (Marianne and Jane) on 'the future of the internet is based on peer-to-peer overlay-based networking (BitTorrent, TOR, Freenet, KAD)', whereby afterwards a debate on 'the future of the internet' with the other groups was held.

I applied the skills and knowledge learnt in the module and created a Vulnerability Audit and Assessment – Results and Executive Summary on the website I chose on week 2

Not only did the module focus more on the different approaches of identifying weaknesses of a system or a network (by running scans and penetration tests that identifies the vulnerability), for the purpose of mitigating the cyber threats; but also, gave me the skills on creating a vulnerability assessment and audit.

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