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CI453 Group project

Within this report, it will discuss and review detailing how the assessment brief has been met, and how we managed to do so. The initial task was to create a website, using sources such as the National Cyber Security Centre's website, etc, detailing on the understanding of security mechanisms that can protect information systems as well as resilient information security programs that aid in protecting organisation's technology assets, physical or virtual, from malicious attacks outside or within the organisation.

The website also aims to deepen the understanding of the issues around privacy in business information systems because information regarding business relations is usually sensitive information.

The created website also enables the students to understand, use, and develop the techniques for mitigating privacy threats through appropriate security measures as these tools will be essential to remaining safe and secure on the internet while dealing with information systems.

Before beginning the creation and development of the website, the group first came together, discussed ideas and how the website can be laid out, where information can be set and what other things can be potentially included, like quizzes, glossary, etc. The group then developed a rough idea of the site's wireframe which was later confirmed to contain three - four columns each splitting into different sectors of information, this is a suitable wireframe because it is a clean and formal way of presenting information on a website, including interactives such as clickables, will keep students engaged and allow our group to feature a few highlighting bits of information in a condensed space, the three column wireframe of ours also was beneficial as it allowed editing and adding information much easier, another physical benefit to this sort of layout is that it will reduce eye strain as most of the page and its information will be split into 3 columns.

Another benefit to having 3 separate columns is that the website will be accessed on a variety of devices, from desktops to phones, and the 3 column layout will have a fixed width, offer great design control, and ease of build, so this will allow for appropriate GUI behaviour, viewing glitches should be a minimal, and because the three column layout is easy to

program, this means it should keep the code at a comfortable amount and should not overboard with code, and it should allow for page elements to position easier.

The first section was on cyber security where information regarding how to avoid cyber-attacks, such as trojan horses, viruses, etc is discussed, this is vital information for younger students because a large majority will use the internet to do several things, such as browsing, communicating and learning. Additionally, internet access within the 21st century has grown substantially in recent years, which subsequently means more users on the internet, and more opportunity for malicious attacks on users. The site will offer insight and information on negating these at the best of the user's abilities.

The next page that was created focused on Information Security. Users of all age ranges share sensitive data on their devices and ensuring this data is secure is important. Data such as, Account details (passwords, emails and usernames), addresses, payment information and medical information are shared everyday across the internet, and it is vital that not only businesses, but users are informed and educated on the appropriate procedures for sharing this information. The website, which is designed for secondary school ages (11-16) provides the user with interactive buttons which they can engage with to learn how to keep their information safe. The external articles are all provided by The National Cyber Security Centre and are full of trustworthy information which the government recommends.

The Website is designed to be as interactive as possible to ensure all ages are at the maximum amount of engagement. It is understandable and expected that the younger ages may find themselves easily distracted so as a solution, the website provides a fun, interactive game for them to play. This game was created by The NCSC. The inclusion of this game will hopefully increase the engagement of the website while also increasing how much educational information the users consumes and stores though the means of an educational video game.

Furthermore, the page also includes embedded videos. The use of these embedded videos provides the consumer with a quick and easy way to learn about information technology. The choice of picking short but informative videos is important as this ensures that the younger demographic; in which the site is designed and intended for, stay focused and

entertained throughout the sites use. This also stops the user from feeling overwhelmed by large amounts of text.

The last section is regarding network security and the fundamentals of it, this section of the website discusses how network security is an extensive topic, how a collection of configurations that use both hardware and software can maintain and help protect networks and related data. This meets the assignment brief of techniques for mitigating and avoiding privacy threats through appropriate controls because the website offers insight on four differing network managers that students will learn upon visiting the site, the four network managers are encryption, and discusses how encryption works, what tools are required, such as a decryption key, etc, and how it keeps sensitive / private data secure, by turning sensitive data into an unreadable format. Firewalls and how they're an essential piece of software that can protect against malicious viruses, etc. authentication and MAC address filtering. Discussing authentication and MAC filtering both meet the assessment criteria as it further discusses how students can mitigate threats using these managers.

But how did we manage to create the website?

Throughout the development of the website, we used a range of management techniques. Using specialised management software such as Trello allowed us to organise our workloads as a team while remaining organised. Creating quick and informative bulletins which provided members with the necessary information on what needed to be completed made sure each member of the team was on the same page and was not confused on what needed to be completed. Furthermore, Trello also provided us with an area to share ideas, designs and concerns each member may have had.

When it came to the development however, we used the industry giant GitHub.

GitHub provides developers like us an area in which we can share and inspect code that we or other developers create. We used it to store the code for our website and it allowed us as a team to work in a collaborative manor. Each time a team member made a change to the codebase we could then all review it and provide the necessary feedback. Providing each

other with feedback was important as it ensured we produced work to the highest standard possible while also keeping everybody on the same page.

We used design techniques such as producing wireframes to create an initial design for the website. Wireframes allowed us to visualise the websites layout and see how a user may interact with what we have produced. Wireframes also make the developmental phases easier as they provide a visual aid to developers.

Once we had completed all the initial designs, the next step was the development stage. We used a management technique called development sprints which compressed the workload down to a smaller time scale to produce artificial pressure which ensured we met our deadlines while also producing a project to a high standard. We gave ourselves a timescale of a week to complete the development of the website. While initially a week may not sound like a long time, when all three team members collaborated on the codebase together this one week proved to be more than enough. After Pushing, Merging and creating countless pull requests on GitHub, the project was completed, and we successfully met our deadline.

In Conclusion, the website provides users with the fundamental knowledge necessary to remain safe on the internet when it comes to Network, Information and Cyber Security. This is reinforced as workflow was fluid and on point, and communication was essential to diversify tasks which was critically assessed and then assigned to, this allowed for efficiency to thrive and prosper. To maximise our chances of completing and obtaining the highest marks, we created a Trello, group chat, and GitHub containing our codebase, and whenever a person from the group would add changes or create new sections to the site, it would first be discussed within the group chat and then once agreed upon, changes are then merged into the codebase, this style of communication was vital as it not only allowed for excellent communication, but it also allowed for vast amount of critical analysis to occur, a few weeks before the deadline, an interactive game was considered, either a quiz or a word puzzle, as this would also meet an assessment brief point on an understanding of issues surrounding information systems. This is further reinforced as it is a proven fact that interactions allow for better learning for a younger audience, as a whole, however, unfortunately time was of the essence, so, instead, the team refined the website and linked a game from the NCSC website which also still meets the brief point.

We created a dynamic and user-friendly website that serves as a valuable resource for users seeking to enhance their understanding of cybersecurity. We offer a comprehensive range of information and best practices to educate users to protect themselves from potential online threats. GitHub was pivotal to our project's success, providing us with a centralized platform to organize, store and collaborate on our code. Thus, offering a seamless experience when syncing and merging files. Ensuring that everyone had access to the latest code updates and enabling us to effectively address any issues that arose during the development process. Through this project, we have deepened our understanding of web development and cybersecurity and cultivated teamwork and collaboration skills.

The group project has taught us the importance of effective communication and coordination in achieving a common goal. As we conclude this project, we recognize that cybersecurity is an ongoing and evolving field. Our website serves to encourage individuals to explore the field of cybersecurity, empowering them to adapt and protect themselves in an increasingly complex digital environment. We hope that our website will continue to serve as a valuable resource to create a safer and more secure online world.

References

NCSC. Available at: https://www.ncsc.gov.uk/ (Accessed: 19 May 2023).

Importance of Network Security: Safety in the Digital World. Available at: https://www.ecpi.edu/blog/importance-of-network-security-safety-in-the-digital-world (Accessed: 19 May 2023).

All topics (no date) *NCSC*. Available at: https://www.ncsc.gov.uk/section/advice-guidance/all-topics (Accessed: 19 May 2023).

Barney, N. and Lutkevich, B. (2022) *What is network security? definition, importance and types: TechTarget*, *Networking*. Available at: https://www.techtarget.com/searchnetworking/definition/network-security (Accessed: 19 May 2023).

CloverDX (no date) *The 8 most challenging data privacy issues (and how to solve them)*, *CloverDX*. Available at: https://www.cloverdx.com/blog/data-privacy-issues-and-how-to-solve-them (Accessed: 19 May 2023).

SME Web Hub – Advice for all small organisations (no date) *ICO*. Available at: https://ico.org.uk/for-organisations/sme-web-hub/ (Accessed: 19 May 2023).

What is information security: Policy, principles & threats: Imperva (2023) *Learning Center*. Available at: https://www.imperva.com/learn/data-security/information-security-infosec/ (Accessed: 19 May 2023).

Yasar, K. and Gillis, A.S. (2023) *What is a computer network?: Definition from TechTarget*, *Networking*. Available at: https://www.techtarget.com/searchnetworking/definition/network (Accessed: 19 May 2023).