**Individual Reflective Piece**

The design document outlined the vulnerabilities and mitigations applicable to the vulnerabilities in a smart home with specific focus to those relevant to smart locks and its centralized controller hub. As such, the lifecycle methodology was instrumental in guiding our team towards creating a functional design. The life cycle defines a methodology for improving the quality of software and the overall development process (Pezzottaet al., 2019). For example, it allowed our team to improve the features of the smart locks and the controller hub to minimize their vulnerabilities. The planning stage also involved vulnerability assessment to determine the components of smart home software that enhanced their vulnerabilities. For example, it was established that weak password encryptions and device spoofing from trusted sources supported password compromise in smart locks (Sharif and Tenbergen, 2020 p.18). The vulnerability assessment demonstrated that it was easier to execute an attack against the smart home software because of its weak security measures.

I actively participated in the development process to guarantee that the design specifications were consistent with the issues it aimed at addressing. The development process entailed idea generation and screening of the generated ideas to filter out the viable design of smart homes with specific focus to the smart lock and controller hub components to reduce their vulnerabilities to threats (Jain, Sharma, and Ahuja, 2018 p.812). For example, I proposed the adoption of a smart home design with sufficient and secure authentication measures, including strong voice recognition systems and designs that do not support saving passwords to prevent unauthorized access. Participating in the design development created a sense of pride, which increased my engagement in other activities of the group.

Furthermore, the testing process was a memorable experience that I actively participated in to help my team create a functional design. Manual testing entails using the homeowners (human testers) without any automated tools to evaluate the quality of the new smart home design, guarantee that it is error-free, and ensure that it conforms to the specified software requirements (Schaffert, 2021). On the other hand, automated testing aimed at determining the ability of the new smart home design to be integrated into the existing design as well as the functionality of the new design (Sánchez-Gordón, Rijal, and Colomo-Palacios, 2020 p.162). As such, we applied regression testing to determine the functionality of the design as well as its performance to ensure that it achieved the intended outcome. The testing process revealed that the new design had sufficient measures to prevent intrusions and reduce the vulnerabilities.

Despite the positive experiences participating in the lifecycle methodology, including the development and testing phases, I also encountered significant challenges. Firstly, time constraint was a significant challenge because we were working under a tight schedule to ensure that all project deliverables. Conflicts within the teams also undermined the process because we often disagreed on the viable design ideas and testing process. However, collaborations through dialogue and focusing on issues rather than the person involved helped mitigate conflicts (Rolfe, Freshwater, & Jasper, 2001). Deliberations among all team members helped us address conflicts and achieve project deliverables.

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