Elbthel Zeleke
Assignment #3
Part #2 Individual Capstone Assessment

For my senior design project, I will be working on the back-end development of an advanced smart home control interface. I'm looking forward to this project as it involves creating a customizable and dynamic system that can tailor itself to a user's specific needs, such as language preferences, technical skills, and daily routines. I'm hoping to apply my experience in software development, especially in back-end development and system integration, to contribute meaningfully to this project. I hope the project will further my understanding of modern software systems, particularly in relation to device integration and personalized user interfaces. Additionally, it provides an excellent opportunity to work with technologies like 3D modeling and potentially VR, which is new territory for me. I see this as an opportunity to grow my technical skills while also improving my soft skills, such as teamwork, communication, and problem-solving.

My college courses have equipped me with a good foundation in computer science, particularly in areas directly relevant to this project's objectives. Courses such as CS 2028C Data Structures and CS 4092 Database Design and Development have equipped me with the technical skills needed for effective database management, data integration, and back-end development. EECE 3093C Software Engineering has deepened my understanding of software design principles and project management, which are crucial for integrating various components into our smart home system. Additionally, EECE 4029 Operating Systems and Systems Programming has given me insight into system processes and multitasking, which will be valuable in managing the integration of multiple devices. Furthermore, the overall curriculum has strengthened my problem-solving abilities and familiarity with diverse technologies. These skills and knowledge will be directly applicable as I work on developing and refining the smart home control interface.

My co-op rotations at Learn 21 have significantly enhanced my practical skills in software development and project management. During my time as a Software analyst intern, I worked on back-end development, which involved database management, analyzing software for bugs, and integrating new software with existing systems. I was actively involved in the transition from .NET 2 to .NET 6, assisting with testing, debugging, and ensuring the seamless functionality of the upgraded applications. This role required a strong attention to detail and problem-solving skills, which I developed further through hands-on experience. This internship deepened my skills in C#, SQL, and web application development, as I worked closely with the development team to implement and refine software solutions. This experience will directly translate to my work on the smart home control interface, especially when it comes to handling user profiles and managing the integration of device data.

I'm motivated to contribute to this project due to its potential to significantly enhance people's everyday lives. As smart home technology continues to grow in popularity, I'm looking forward to being part of a system that provides a seamless and personalized user experience. The task of integrating multiple features into a cohesive interface is an exciting opportunity to elevate my technical skills. I initially plan to conduct research to stay informed about the latest developments in smart home security, identify gaps in the current solutions, and ensure our system is both safe and user-friendly. Following that, I plan to build a strong and flexible back-end infrastructure that guarantees efficient communication between the system's components. By collaborating closely with my team, I aim to ensure that our solution is both effective and innovative.

I expect our project to deliver a fully functional smart home control interface that is adaptable to various user needs. I anticipate that my contributions to the back-end will ensure the system operates efficiently, integrates data seamlessly, and scales to accommodate a range of devices and user profiles. To evaluate my progress, I will set specific goals for each feature I develop and actively seek feedback from both my team and faculty

advisor to ensure alignment with the project's requirements. Additionally, I will assess my success based on the system's performance during our testing phases. I will measure effectiveness by how well the system runs, how intuitive it is for users, and whether it meets their needs. Ultimately, I will consider my work successful when the system demonstrates reliability, usability, and adaptability.