Week 3 Homework Problems

Exercise 5.2:

For the following reasons, you might build and use a model of an existing system. To comprehend and record the architecture and functionality of the current system, to serve as the focal point of discussions about potential modifications to that system, and to provide guidance for the system's re-implementation.

Unless the goal is to exhaustively document the operation of the current system, you do not need a complete model. In these situations, the model's purpose is typically to assist you in working on specific system components so that only these need to be modeled. Additionally, if the model is the topic of the debate, you are less likely to be interested in specifics and can disregard some aspects of the model's representation of the system.

Diagram

Description automatically generatedExercise 5.5:

Exercise 6.1:

The system architecture may need to be designed before the requirements specification is finished since it greatly affects the non-functional requirements and has the potential to significantly affect the functional requirements. Specifically, a project manager or system architect may need to demonstrate how the architecture will help in reaching this aim in order to convince stakeholders that an application will fulfill its performance criteria. According to Sommerville, the architecture that outlines the components and their relationships may be helpful in determining the needs because the components have an impact on the requirements.

Exercise 6.3:

There is a contradiction in the architecture design when availability and security are the most crucial non-functional needs. The most crucial components should be placed in the innermost layer of a layered architecture when designing for security. In contrast, when designing for availability, you want to make components redundant so that the system can continue to function even as individual components are updated and replaced. The conflict arises from the fact that, if a component is replaced with a redundant copy while the system is running, the security of the system may be jeopardized. To guarantee the system's security and availability, a concession would have to be made.