Week 7 Essay Question

CSE-682 SOFTWARE ENGINEERING

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Question

An information system is to be developed to maintain information about assets owned by a utility company such as buildings, vehicles, equipment, and so on. It is intended that this will be updatable by staff working in the field using mobile devices as new asset information becomes available. The company has several existing asset databases that should be integrated through this system. Suggest a layered architecture for this asset-management system based on the generic layered architecture described earlier and the related examples.

In a generic layered architecture, each layer provides services to the layer above it. The lowest layer contains fundamental services that are used commonly throughout the system. The layered architecture is appropriate when building a larger system that will utilize and depend on an existing system's services. The layers can be encapsulated (separated into different modules) that interact with each other.

In the asset-management of a utility company example, it would be ideal for the lowest layer to deal with user input. The user input may be received through a website or mobile application that employees will use to catalog their inventory. One layer above user input is the authentication and authorization/configuration services layer. Its primary function is to ensure that only employees have access to the user interface. It contains the application settings and tools available to the user via the application.

One layer above the authentication/configuration layer is the system utilities layer. It contains all the classes and methods required to operate the tools offered in the user interface, such as email, messaging, video, and video storage. Finally, the topmost layer is the system support layer. It will contain a catalog of all resources and equipment owned by the company. The catalog includes the type, serial number, last known authorized user, and location of each item owned by the company. Also, usernames, passwords, and other user management settings will be stored at this layer. The company's private data will be stored here.