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| Software Design & Architecture |
| Assignment 1 |
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Layered Architecture

“Layered architecture (LA) is a common design pattern used in software development.”

**Successful Software Example: (Linux Operating System)**

1. **Reason for Success**

* **Layered Architecture:** Linux utilizes a layered architecture, promoting modularity, stability, and security. The core kernel handles core functionalities, while higher layers manage user interfaces, programs, and services. This allows for independent development and maintenance of different components.
* **Open-Source Development:** Linux's open-source nature fosters collaboration from a global community of developers. This continuous improvement leads to a robust, feature-rich system.
* **Flexibility and Customization:** Linux caters to a wide range of uses due to its open architecture and vast software ecosystem. Users can customize the system to their specific needs.

1. **Failed Software Example: (Therac-25 Radiation Therapy Machine)**

**Reasons for Failure**

* **Software Bugs:** Therac-25 suffered from critical software bugs that led to overdoses of radiation for patients undergoing cancer treatment. These bugs stemmed from inadequate testing and code flaws.
* **Lack of Oversight:** Regulatory failures allowed the Therac-25 to be deployed with known software issues.
* **Real-World Impact:** The Therac-25 failures resulted in patient deaths and injuries, highlighting the potential dangers of software malfunctions in critical systems.

1. **Additional Successful Software Example: Content Management System (CMS) - WordPress**

**Reason for Success**

* **Ease of Use:** WordPress offers a user-friendly interface that allows users with minimal technical knowledge to create and manage websites.
* **Flexibility:** A vast library of plugins and themes extends WordPress' functionality, catering to diverse website needs like e-commerce, portfolios, and blogs.
* **Large Community:** A vibrant community of developers supports WordPress with ongoing development, security updates, and troubleshooting assistance.

1. **Additional Failed Software Example: Healthcare.gov Website Launch (2013)**

**Reasons for Failure**

* **Rushed Development:** Healthcare.gov was launched before thorough testing, leading to website crashes and user errors during enrollment for the Affordable Care Act.
* **Poor Scalability:** The website infrastructure couldn't handle the high volume of user traffic during the launch, resulting in outages and delays.
* **Negative Impact on Public Perception:** The botched launch of Healthcare.gov eroded public trust in the Affordable Care Act rollout.

The End

“Software is a great combination between artistry and engineering”