**Title: Lab 1**

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1. Discuss two enterprise system’s weaknesses and ways to solve them.

***Answer:***

Enterprise systems, which streamline procedures and enable effective workflows, are the foundation of contemporary businesses. Like any intricate infrastructure, these systems do have certain drawbacks, too. Integration issues and security flaws are two frequent problems that need to be addressed with calculated strategies.

The difficulty of integration is a serious flaw in a lot of corporate solutions. These systems are usually made up of several modules, each of which performs a certain task. The total effectiveness of the system depends on these modules interacting seamlessly with one another. Problems with integration occur when several software programmes in the system are not properly integrated. Data discrepancies, communication breakdowns, and inefficiencies in operations can all be caused by this lack of cohesiveness.

Organisations might employ middleware solutions or enterprise service buses (ESBs) to lessen integration issues. An ESB facilitates data interchange and maintains system consistency by serving as a communication link between several applications. Organisations can improve interoperability between heterogeneous systems by using standardised protocols like RESTful APIs or by leveraging common communications formats like JSON. This facilitates communication and makes maintenance and upgrades easier as the system changes.

Security vulnerabilities are another major flaw that corporate systems suffer from. Cybercriminals find these systems appealing because they hold vital and sensitive data. Inadequate access restrictions, insufficient encryption, or out-of-date software components are examples of security flaws that might leave the system vulnerable to data breaches, illegal access, and other security threats.

1. What problems do architects face when designing an enterprise systems architecture for an organization, and how can they mitigate them?

***Answer:***

Enterprise system architecture has special difficulties that architects must overcome to provide a reliable and expandable infrastructure. Complexity and scalability issues as well as shifting business needs are two major issues that frequently arise during this procedure.

Undertaking frameworks are troublesome due to their huge number of forbid parts and the necessity to preserve smooth communication between them. Adaptability is additionally a major issue as businesses grow and the framework must to alter to more clients, exchanges, and information volumes without relinquishing proficiency.

Architects may utilize a microservices engineering and secluded plan concepts to diminish complexity and make strides adaptability. Versatility, updates, and upkeep are made less difficult by separating the framework into littler units, or microservices. Since each microservice is independent, businesses may develop person modules as required without affecting the framework as a entire. By advertising on-demand assets, cloud-based arrangements encourage progress versatility by enabling businesses to adaptably disseminate handling capacity in reaction to changing workloads.

Adapting enterprise systems architecture to changing business requirements is a major problem as well. Business demands are dynamic and subject to change because of shifting organisational strategy, advances in technology, or changes in market circumstances. It's never easy to design a system that can adjust to these changes without needing to be completely redesigned.

Agile development techniques should be adopted by architects to handle the problem of shifting business requirements. By using an agile methodology, organisations may make small, iterative changes that enable them to react swiftly to changing business requirements. Adopting flexible design patterns, such loosely linked components, guarantees that changes may be made without causing the system as a whole to malfunction. Furthermore, putting in place a strong change management procedure guarantees a seamless integration of modifications and aids in assessing how new needs will affect the current architecture.