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Software Architecture 6653

Assignment 1

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Topology and Motivation

Topology

Client Tier

- Comprises different types of client applications:
  - Browser-Based Client Applications: Utilize HTML, applets, DHTML/Scripting.
  - Java Client Applications: Standalone Java applications.
  - Windows/COM Client Applications: Applications using COM technology.

Web Tier

- Manages web requests and remote interactions:
  - Web Server: Handles HTTP requests and serves servlets and JSPs.
  - Java RMI: Manages remote method invocation for business services.

Business Component Tier

- Contains core application logic and business services:

  - EJBs (Enterprise JavaBeans): Encapsulate business logic.

  - Container Services Components: Provide services like transactions (JTS) and messaging (JMS).

EIS (Enterprise Information System) Tier

- Integrates enterprise systems:

  - ERPs: Enterprise Resource Planning systems.

  - CRMs: Customer Relationship Management systems.

  - Mainframe TP System: Mainframe-based transaction processing systems.

  - RDBMS: Relational Database Management Systems.

Motivation

The topology reflects a well-structured, multi-tiered architecture that supports scalability, maintainability, and separation of concerns. Each tier handles a specific aspect of the application:

- Client Tier: Provides various interfaces for user interaction, accommodating different technologies (HTML, Java, COM).

- Web Tier: Serves as the intermediary between clients and business logic, handling HTTP requests, and invoking business services remotely.

- Business Component Tier: Encapsulates the core business logic and services, ensuring that business rules are centralized and managed effectively.

- EIS Tier: Connects to backend enterprise systems, enabling integration with existing databases and enterprise applications.

- Summary:

The diagram represents a typical enterprise architecture with multiple tiers, each handling different responsibilities and interacting with each other through well-defined connectors (HTTP, RMI, JDBC, etc.). The client tier interfaces with the web tier, which in turn interacts with the business components, and finally, these components communicate with the enterprise information systems.

What I Learned:

Before starting this assignment, I had little knowledge about the concepts of topology and motivation in software architecture. Through this project, I learned that topology refers to the structure and arrangement of different components in a system, showing how they interact with each other. The motivation behind such an architecture is to ensure that the system is scalable, maintainable, and organized efficiently. Each tier in the architecture has a specific role and set of responsibilities, which helps in managing and scaling the system effectively. This assignment has deepened my understanding of why multi-tiered architectures are essential in developing robust enterprise applications.