Ex. No.: 9 **Roll No.: 22BCS100**

Date : 2/4/2025

Component and Deployment Diagrams

Aim

To create Component and Deployment diagrams for E-Governance Portal for Public Services system using CASE tools

Component Diagram

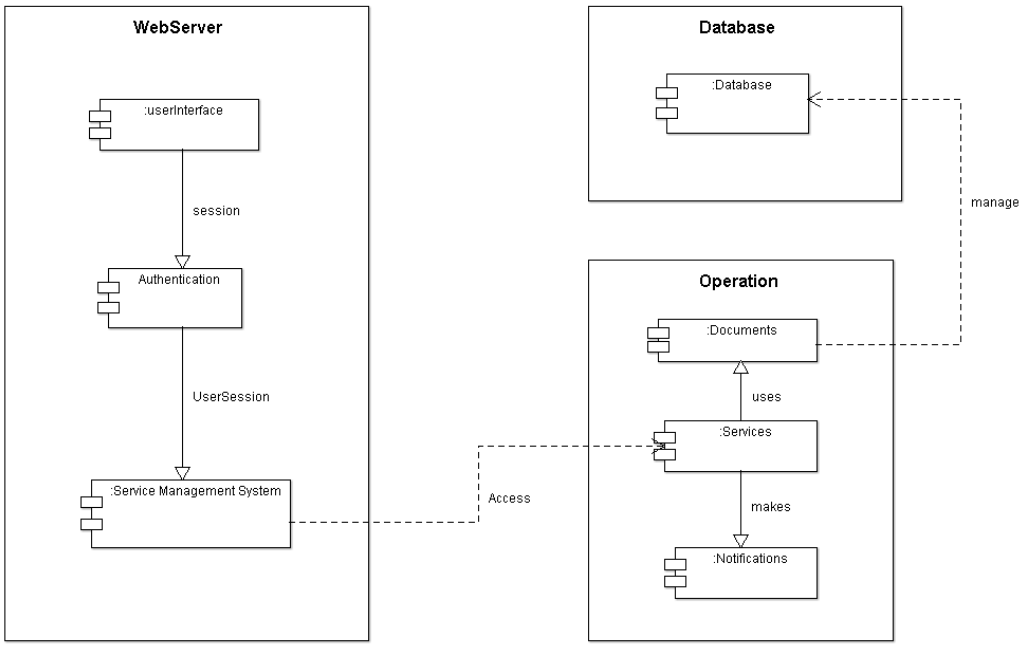

Fig: 9.1 – Component Diagram for E-Governance Portal for Public Services

Definition: A UML diagram that visually represents the organization and relationships of system components and how they are wired together.

Description

Figure 9.1 shows the individual components of E-Governance Portal for Public Services.

- **WebSystem**: Includes interfaces (e.g., API endpoints) and session components (e.g., user session management). Acts as the entry point for user requests.
- **Authentication**: Connected to session (for user validation) and service components (for access control). Implements security protocols like OAuth or JWT.
- **Service**: Includes operation components (e.g., business logic execution) and access components (e.g., resource retrieval). Connected to notification (for alerts) and check service (for validation).
- **Notification**: Connected to the service component, manages asynchronous communication, supports multiple channels (e.g., push notifications, emails).
- **Database**: Connected to the web system for data management, includes schema definitions, indexes, and stored procedures for optimized queries.

Deployment Diagram

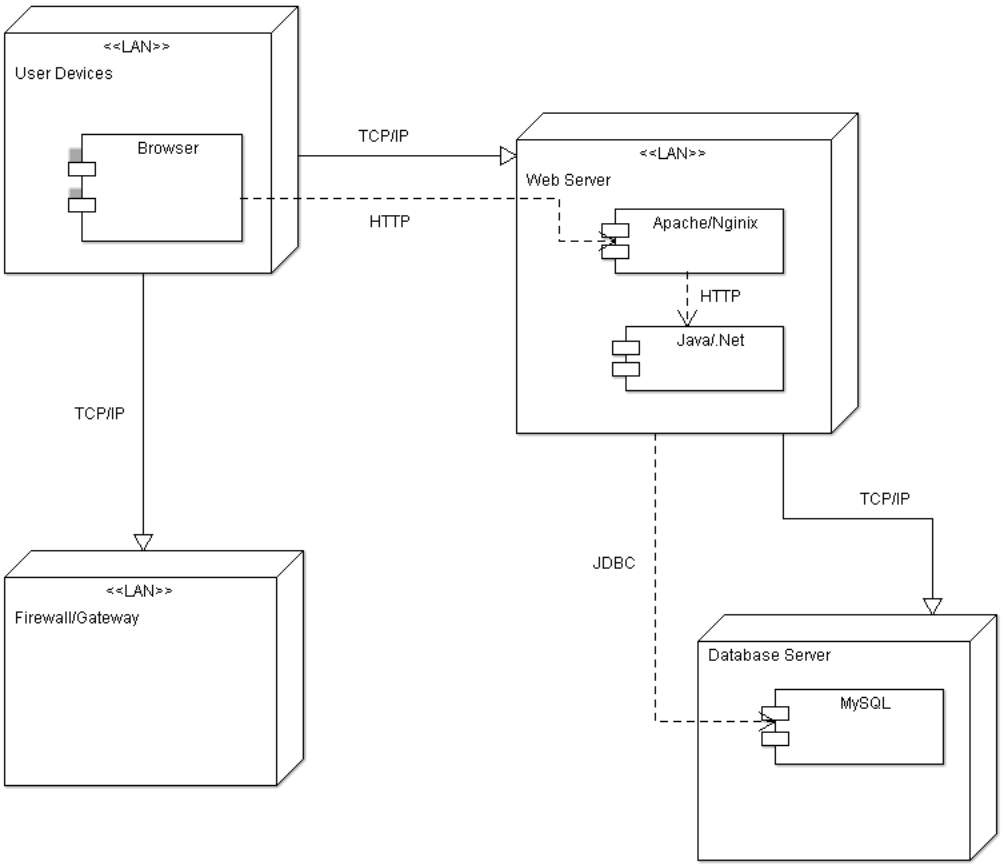

Fig: 9.2 – Deployment Diagram for E-Governance Portal for Public Services

Definition: A UML diagram that visually represents the physical architecture of a system, showing how software artifacts are assigned to hardware components.

Description

Figure 9.2 shows the deployment diagram of E-Governance Portal for Public Services

- **Device Nodes**
  1. **User Device**: Facilitates user interaction with the system via a browser, supports multiple platforms (e.g., desktop, mobile).
  2. **Web Server (CLM)**: Hosts web server software (Nginx, Apache) and Java backend for processing requests, includes load balancing for high traffic.
  3. **Database Server (DBS)**: Manages data storage and retrieval using a database, supports replication for fault tolerance.
  4. **Firewall/Gateway (CLM)**: Ensures network security and manages traffic between internal and external networks, includes intrusion detection systems.
  5. **Notification Service**: Handles real-time notifications to users (e.g., email, SMS), supports multi-channel delivery (e.g., push notifications).
  6. **Backup Server**: Stores periodic backups of the database and system data, connected via secure channels.
  7. **Monitoring Server**: Tracks system performance and alerts administrators to issues, integrated with the web server.
- **Executable Environment Nodes**
  1. **EEN1 (Web Server Environment)**: Provides the runtime environment for Nginx, Apache, and Java backend to execute web-related operations, supports containerization (e.g., Docker).
  2. **EEN2 (Database Environment)**: Supports the database runtime, ensuring data integrity and transaction processing, includes clustering for scalability.
  3. **EEN3 (Notification Environment)**: Executes the notification service, managing message queues and delivery channels, supports failover mechanisms.
  4. **EEN4 (Backup Environment)**: Runs backup processes and data archival, ensures data recovery in case of failures.
  5. **EEN5 (Monitoring Environment)**: Executes monitoring tools, collects logs and metrics, supports real-time analytics.

Result

Thus the component and deployment diagrams for E-Governance Portal for Public Services system is created using CASE tools.