

[Assignment reminder notification feature in the NextLeap Learning Portal to Improve Weekly Activity Completion Rate]

Implementing daily reminders or notifications via WhatsApp to alert fellows about upcoming assignment deadlines and follow-ups serves to strengthen the organization and engagement. This initiative ultimately enhances fellows' awareness and sharpens their time management skills, leading to a reduction in missed deadlines.

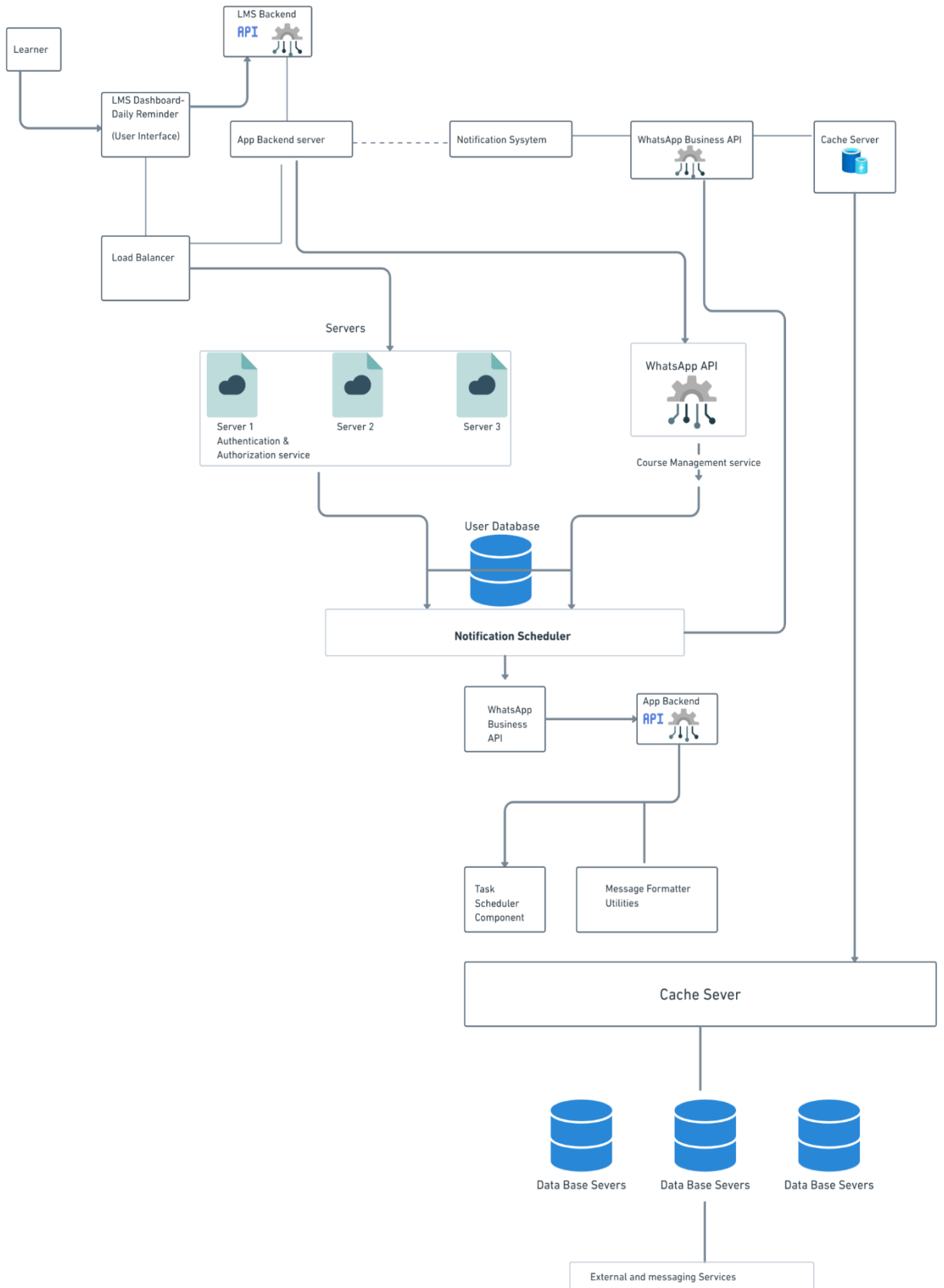
System Requirements:

Functional Requirements:

1. **User Registration and Authentication:** Users must register and authenticate securely to receive assignment reminders.
2. **Assignment Retrieval:** The system should fetch assignment details from the LMS.
3. **Notification Generation:** Generate personalized assignment reminder messages for each student.
4. **WhatsApp Message Sending:** Send assignment reminder messages to students via WhatsApp.
5. **Notification Customization:** Allow users to customize notification preferences, such as frequency, timings and content.

Non-Functional Requirements:

1. **Scalability:** The system should be scalable to accommodate a growing user base.
2. **Reliability:** Assignment reminders should be sent accurately and reliably without errors.
3. **Performance:** Ensure that notifications are sent promptly with minimal delay.
4. **Security:** Implement robust security measures to protect user data and ensure privacy.
5. **Error Handling:** Handle errors gracefully and provide informative error messages to users.



User Interface (LMS Dashboard-Daily reminder tab):

- This is where users (students) interact with the LMS.
- Users can access course materials, view assignments, check deadlines, and schedule their reminders.

LMS Backend API:

- Acts as an intermediary layer between the user interface and the application backend.
- Handles client-side requests, validates user input, and forwards requests to the application backend.

Load Balancer:

- Distributes incoming requests across multiple server instances to ensure optimal performance and reliability.
- It helps in scaling the system horizontally by directing traffic to different server instances based on factors like server load, availability, and response time.

Application Backend (Server/Database):

- Handles the core functionalities of the LMS, such as user authentication, course management, assignment tracking, etc.
- Stores user data, course materials, assignment details, and other relevant information in a database.
- Processes requests from the user interface and interacts with other components of the system.

Notification Scheduler:

- Responsible for scheduling and sending assignment reminder notifications.
- Periodically checks assignment deadlines and user preferences stored in the database.
- Determines when to send reminders and triggers the WhatsApp API accordingly.

WhatsApp API:

- Acts as an interface between the LMS and WhatsApp.
- Receives notification requests from the scheduler and delivers assignment reminders to users' WhatsApp accounts based on the schedule set by the notification scheduler based on the schedule set by the notification scheduler.

User Database:

- Stores user profiles, preferences, contact information, and other relevant data.
- Used by the application backend and notification scheduler to retrieve user information and preferences for sending reminders.

Authentication & Authorization Service:

- Manages user authentication and authorization processes.
- Verifies user credentials

Course Management Service:

- Handles course-related functionalities such as creating, updating, and deleting courses.
- Manages course enrollment, assignment creation, and grading.

WhatsApp Business API:

- A business-oriented interface provided by WhatsApp for programmatically interacting with users on the platform.
- Used for sending assignment reminder notifications and other messages to users via WhatsApp.

Cache Server:

- Stores frequently accessed data in memory to improve system performance by reducing database load and latency.

Task Scheduler:

- Manages the scheduling and execution of background tasks within the system, including notification scheduling and other automated processes.

Message Formatter:

- Formats notification messages and content before sending them to users, ensuring consistency and clarity in communication.

Utilities:

- Includes various utility functions and services used by other components, such as logging, error handling, and data processing utilities.

Database Servers:

- Hosts databases used by the system to store persistent data, including user information, course content, and system configurations.

External/Messaging services

- The External Services component integrates third-party services or APIs to enhance system functionality. These services include messaging.