Subject: Open Source Software

Training Management System (TMS) Report

A Comprehensive Overview of AFLEX TMS

Group L

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1 Introduction to AFLEX TMS

1.1 Overview

In the rapidly evolving world of business and education, continuous learning and skill development are essential for both organizations and individuals. A Training Management System (TMS) serves as a comprehensive solution to streamline and optimize the administration, documentation, tracking, reporting, and delivery of training programs. It enables organizations to manage employee development, track progress, and ensure compliance with industry standards and regulations. The traditional methods of managing training processes, such as manual record-keeping and paper-based evaluations, are often inefficient, error-prone, and difficult to scale. A TMS addresses these challenges by automating and centralizing training-related activities. It provides functionalities such as course creation and scheduling, learner enrollment, progress tracking, assessment management, certification issuance, and reporting analytics. The significance of a Training Management System extends beyond just operational efficiency. By providing real-time insights into learners' progress and training effectiveness, it empowers organizations to make data-driven decisions. Additionally, TMS platforms often integrate with existing Human Resource Management Systems (HRMS), Learning Management Systems (LMS), and compliance tools, enhancing the overall learning ecosystem. This system is designed to cater to the needs of training administrators, providing a centralized platform for managing all training-related activities.

1.2 Purpose

The primary purpose of the AFLEX TMS is to:

- Facilitate efficient training management by providing tools to schedule, track, and evaluate training programs.
- Provide real-time data on trainees, trainings, and schedules to ensure informed decision-making.
- Enhance organizational productivity through structured workflows and easy access to critical information.

1.3 Scope of the Report

This report provides a detailed overview of the AFLEX TMS, covering its key features, user interface, functionalities, project design, and coding implementation using PHP, JavaScript, and MySQL. And also presents an in-depth exploration of the Training Management System, covering its architecture, functionalities, implementation challenges, and potential benefits. The system is designed to cater to both corporate and educational institutions, facilitating the development of a skilled and knowledgeable workforce, which is crucial for long-term success and competitiveness in the global market.

2 System Dashboard

2.1 Dashboard Overview

The dashboard serves as the entry point to the AFLEX TMS, offering a quick snapshot of key metrics. It is designed to provide administrators with an at-a-glance view of the system's status.

2.2 Key Metrics Displayed

The dashboard displays the following metrics:

- **Number of Customers**: Currently 0, indicating the total number of customer organizations registered in the system.
- **Number of Trainings**: Currently 0, representing the total number of training programs scheduled.
- **Number of Trainees**: Currently 0, showing the total number of trainees enrolled.

2.3 Trainee Statistics

The dashboard includes a graphical representation of trainee data, which includes:

- Total number of trainees per year, presented in a bar chart format.
- Breakdown by gender (Male/Female) to provide insights into the demographic distribution of trainees.
- Regional distribution, allowing administrators to analyze trainee participation by geographic area.

3 Trainee Management

3.1 Trainee List

The Trainee section is a core component of the TMS, enabling administrators to manage trainee records efficiently. This section provides a tabular view of trainee information, which can be sorted and filtered as needed.

3.2 Features

The Trainee List offers the following functionalities:

- **View Trainee Details**: Displays comprehensive information including Full Name, Levels of Education, Training Organizer, Trainee Institute, Phone, and Email.
- **Add New Trainees**: A prominent "Add New Trainee" button allows administrators to register new trainees easily.
- **Search Functionality**: A search bar enables filtering of trainees based on specific criteria, improving accessibility to records.
- **Pagination**: Navigation buttons (Previous, Next) facilitate browsing through large datasets of trainees.

4 Training Management

4.1 Trainings Section

The Trainings section is dedicated to managing training programs and their schedules. It provides a structured view of all training rounds, ensuring that administrators can track and organize training activities effectively.

4.2 Features

Key features of the Trainings section include:

- **List Training Rounds**: Displays details such as Training Round, Subject/Title, Requested Date, Starting Date, End Date, Coordinator, and Phone.
- **Add New Training Programs**: The "Add New Training" button enables the creation of new training sessions.

- **Pagination**: Similar to the Trainee section, pagination (Previous, Next) is available for navigating through training records.

5 Training Documents

5.1 Document Management

The Training Documents section is designed to manage training-related documents, ensuring that all necessary materials are easily accessible to administrators and trainees.

5.2 Features

This section includes the following features:

- **Search for Documents**: A "Search Book" feature allows users to find specific documents quickly.
- **Add New Training Documents**: The "Add New Training Document" button facilitates the upload of new materials.
- **Pagination**: Navigation options (First, Prev, Next, Last) enable users to browse through document lists efficiently.

6 Class and Meeting Room Scheduling

6.1 Scheduling Overview

The Class/Hall/Room Schedules section provides tools for scheduling training sessions, ensuring that rooms and halls are allocated efficiently.

6.2 Features

Key features include:

- **Calendar View**: Displays a calendar for May 2025, with the current date (May 28, 2025) highlighted for easy reference.
- **View Options**: Allows users to view schedules by Month, Week, or Day, providing flexibility in scheduling.
- **Add New Schedules**: Users can create new schedules by specifying details such as Assembly Hall/Room, Reserved By, DateTime Start, DateTime End, and Remarks.

7 Organization Management

7.1 Organization Section

The Organization section manages data related to customer organizations, providing a centralized view of organizational details.

7.2 Features

This section offers:

- **View Organization Details**: Displays information such as Name, Region, City, Phone, Secondary Phone, Email, and Training To Come.
- **Add New Customers**: The "Add New Customer" button allows administrators to register new organizations.
- **Search and Pagination**: Includes search functionality and pagination (Previous, Next) for navigating organizational records.

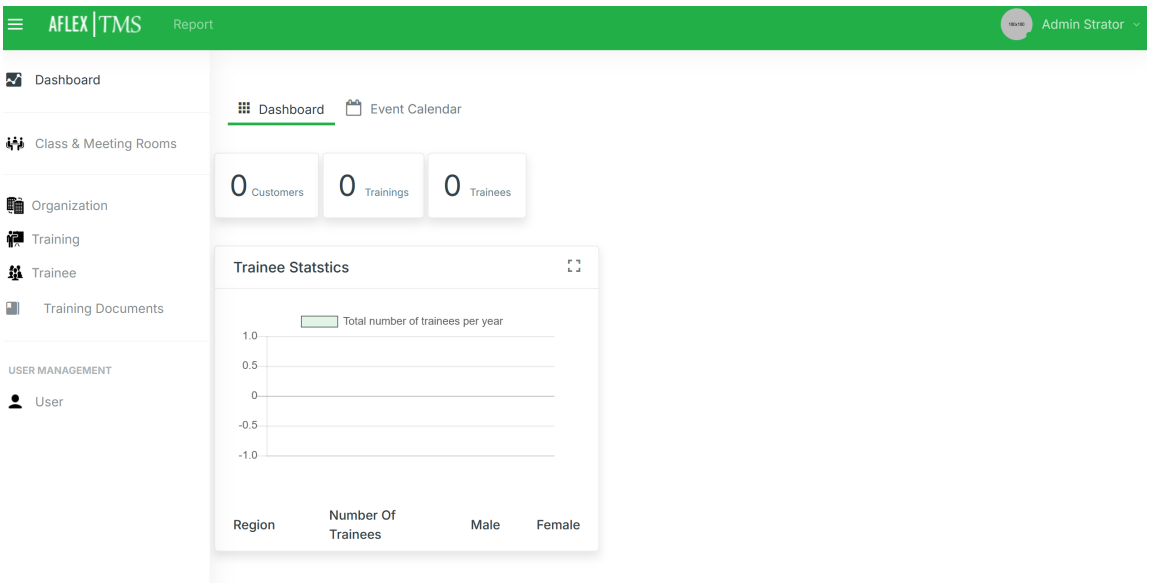

Figure 1: Sample Demostration

8 User Management

8.1 User Section

The User Management section enables administrators to manage system users, ensuring proper access control and user permissions.

8.2 Features

Key features include:

- **Access Control**: Manages user roles, such as "Admin Strator," ensuring that only authorized users can access specific sections.
- **User Permissions**: Allows administrators to define and modify access levels for different users.

9 System Features and Benefits

9.1 Key Features

The AFLEX TMS is equipped with several features that enhance its usability:

- **Intuitive User Interface**: Features a green and white color scheme, consistent with the branding of the African Leadership Excellence Academy.
- **Comprehensive Navigation Menu**: A sidebar menu provides easy access to all sections, including Dashboard, Class & Meeting Rooms, Organization, Training, Trainee, Training Documents, and User Management.
- **Real-Time Data Updates**: Ensures that all metrics and records are updated in real time, providing accurate information to administrators.

9.2 Benefits

The system offers the following benefits:

- **Streamlined Training Processes**: Automates scheduling, trainee management, and document handling, reducing manual effort.
- **Improved Trainee and Training Management**: Provides detailed insights into trainee demographics and training schedules.

- **Enhanced Scheduling and Resource Allocation**: Ensures efficient use of halls and rooms through a user-friendly scheduling interface.

10 Designing the Project

10.1 Planning and Requirements Gathering

The design of the AFLEX TMS began with a thorough requirements-gathering phase. Key stakeholders from the African Leadership Excellence Academy were consulted to identify the primary needs:

- A centralized platform to manage trainees, trainings, and schedules.
- Real-time data visualization for quick decision-making.
- User-friendly interface with role-based access control.

A detailed requirements document was created, outlining functional and non-functional requirements, such as data security, scalability, and ease of use.

10.2 System Architecture

The system was designed using a three-tier architecture:

- **Presentation Layer**: Built using HTML, CSS, and JavaScript to create a responsive and intuitive user interface.
- **Application Layer**: Implemented with PHP to handle business logic, process user requests, and manage interactions between the front-end and the database.
- **Data Layer**: Utilized MySQL to store and manage all data, including trainee records, training schedules, and organizational details.

This architecture ensures separation of concerns, making the system modular and easier to maintain.

10.3 User Interface Design

The user interface was designed with simplicity and functionality in mind:

- **Color Scheme**: A green and white theme was chosen to align with the Academy's branding.

- **Navigation**: A sidebar menu was implemented to provide easy access to all sections (Dashboard, Trainee, Training, etc.).
- **Responsive Design**: The interface was designed to be responsive, ensuring compatibility with both desktop and mobile devices.

Wireframes and mockups were created using tools like Figma, and feedback from stakeholders was incorporated to refine the design before development began.

10.4 Database Design

The database schema was designed to support the system's functionalities:

- **Tables**: Key tables include `trainees`, `trainings`, `schedules`, `organizations`, and `users`.
- **Relationships**: Foreign keys were used to establish relationships, such as linking trainees to their respective training programs.
- **Normalization**: The database was normalized to the third normal form (3NF) to reduce redundancy and ensure data integrity.

A detailed Entity-Relationship Diagram (ERD) was created to visualize the database structure and relationships.

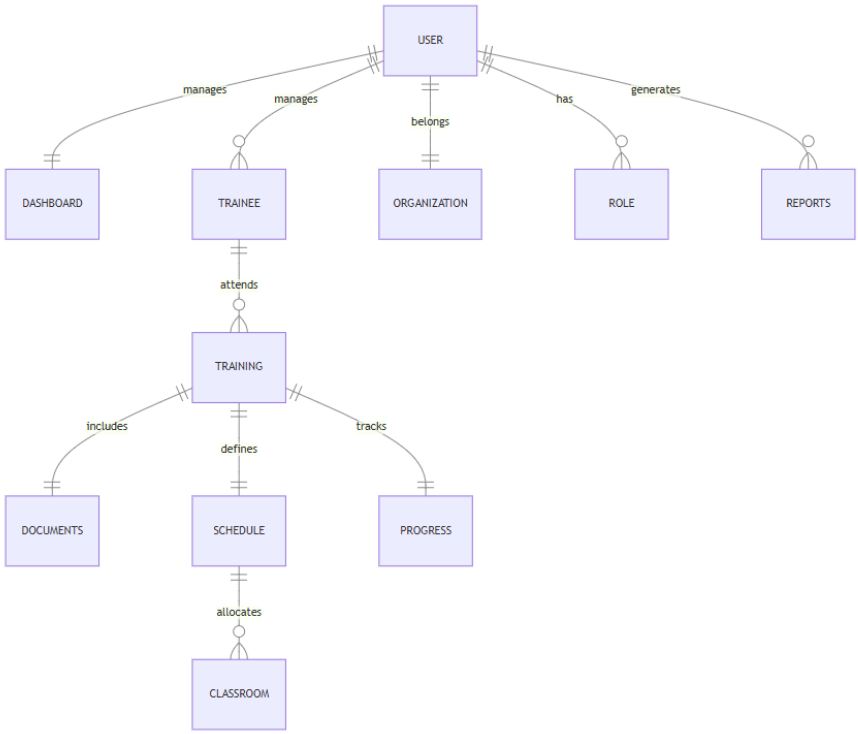

Figure 2: ER Diagram for database structure

11 Coding the TMS with PHP, JavaScript, and MySQL

11.1 Technology Stack Overview

The AFLEX TMS was developed using a combination of PHP, JavaScript, and MySQL:

- **PHP**: Used for server-side logic, handling requests, and interacting with the MySQL database.
- **JavaScript**: Employed for client-side interactivity, such as dynamic updates and form validations.
- **MySQL**: Utilized as the relational database to store and retrieve system data.

11.2 Backend Development with PHP

PHP was used to build the backend of the TMS, handling all server-side operations. Below is an example of how PHP was used to fetch trainee data from the MySQL database:

- **Database Connection**: A connection to the MySQL database was established using PHP's PDO (PHP Data Objects) for secure and efficient database interactions.
- **Query Execution**: PHP scripts were written to retrieve data, such as a list of trainees, and send it to the front-end.

Example PHP code for fetching trainee data:

```
<?php
$dsn = "mysql:host=localhost;dbname=tms_db";
$username = "root";
$password = "";
try {
    $pdo = new PDO($dsn, $username, $password);
    $pdo->setAttribute(PDO::ATTR_ERRMODE, PDO::ERRMODE_EXCEPTION);
    $stmt = $pdo->prepare("SELECT * FROM trainees");
    $stmt->execute();
    $trainees = $stmt->fetchAll(PDO::FETCH_ASSOC);
    echo json_encode($trainees);
}

catch (PDOException $e) {
    echo "Connection failed: " . $e->getMessage();
}
?>
```

11.3 Frontend Development with JavaScript

JavaScript was used to enhance the interactivity of the TMS interface. For example, the dashboard's trainee statistics graph was dynamically rendered using JavaScript:

- **AJAX Requests**: JavaScript was used to make asynchronous requests to the PHP backend to fetch data without reloading the page.
- **Dynamic Updates**: JavaScript manipulated the DOM to display data, such as updating the trainee list table or rendering the calendar view.

Example JavaScript code for fetching and displaying trainee data:

```
fetch('get_trainees.php')
    .then(response => response.json())
    .then(data => {
        const tableBody = document.querySelector('#traineeTable tbody');
        tableBody.innerHTML = '';
        data.forEach(trainee => {
            const row = document.createElement('tr');
            row.innerHTML = `
                <td>${trainee.full_name}</td>
                <td>${trainee.education_level}</td>
                <td>${trainee.training_organizer}</td>
                <td>${trainee.institute}</td>
                <td>${trainee.phone}</td>
                <td>${trainee.email}</td>
            `;
            tableBody.appendChild(row);
        });
    })
    .catch(error => console.error('Error:', error));
```

11.4 Database Management with MySQL

MySQL was used to store and manage all data in the TMS. The database was structured to support efficient querying and data retrieval:

- **Table Creation**: Tables were created with appropriate data types and constraints.
- **Indexing**: Indexes were added to frequently queried fields (e.g., trainee ID, training date) to improve performance.

Example MySQL code for creating the `trainees` table:

```
CREATE TABLE trainees (
    id INT AUTO_INCREMENT PRIMARY KEY,
    full_name VARCHAR(255) NOT NULL,
    education_level VARCHAR(100),
    training_organizer VARCHAR(255),
```

```
    institute VARCHAR(255),
    phone VARCHAR(20),
    email VARCHAR(255)
);
```

11.5 Integration and Testing

The PHP backend, JavaScript frontend, and MySQL database were integrated to create a cohesive system:

- **API Endpoints**: PHP scripts served as API endpoints that JavaScript called to fetch or update data.
- **Testing**: The system was tested for functionality (e.g., adding a new trainee), performance (e.g., handling large datasets), and security (e.g., preventing SQL injection using prepared statements).

12 Conclusion

12.1 Summary

The AFLEX TMS is a powerful tool for managing training programs, trainees, and schedules, providing a seamless experience for administrators at the African Leadership Excellence Academy. Its comprehensive features, user-friendly interface, and robust design and coding implementation make it an essential platform for training management.

12.2 Future Enhancements

To further improve the system, the following enhancements could be considered:

- **Integration with External Calendar Applications**: To allow seamless synchronization with tools like Google Calendar.
- **Advanced Analytics for Trainee Performance**: To provide deeper insights into trainee progress and outcomes.
- **Mobile App Support**: To enable on-the-go management for administrators and trainees.

13 References

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14 Appendix: Member's Work

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