Application Development

Group 2:
Pham Viet Anh (C)
Nguyen Manh Dung
Vu Trung Duc
Duong Duc Hiep
Do Viet Quang

Table Of Contents

01
Introduction

1.1 Document Purpose

This document aims to provide a comprehensive overview of the software requirements essential for the Training Management System's development. It outlines the system's functionalities, constraints, assumptions, and dependencies. Serving as a guide for both the development team and stakeholders, the document ensures a clear understanding of the system's objectives, scope, and purpose.

1.2 Product Scope

The Training Management System at FPT Co. aims to foster continuous learning. Its core objective is to empower the HR department in overseeing internal training programs efficiently. The system will feature user account management for trainers and training staff, allowing account creation, modification, and deletion. Training staff will have the ability to manage trainee accounts, course categories, courses, and topics, as well as allocate trainers and trainees to specific courses and topics. Trainers can update their profiles and access information about assigned courses.

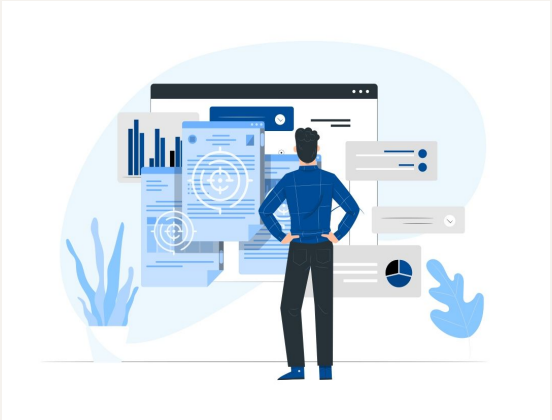
1.3 Intended Audience and Document Overview

This Software Requirements Specification (SRS) document is intended for Mr. Nguyen Thanh Trieu, a subject-matter expert overseeing project assessment, and the Engaged Study Class, comprising students involved in developing the HR training website in app development. Specifically focusing on deployment functionality, the document serves as a comprehensive guide during project assessment. It outlines essential features, constraints, and dependencies related to the deployment aspect of the training website, providing stakeholders with a clear understanding of the project's scope and goals.

1.4 Definitions, Acronyms and Abbreviations

Definitions:

- Training Management System
- Administrator
- Training Staff
- Trainer
- Trainee
- User Account
- Course Category
- Course
- Topic
- DBMS



Acronyms and Abbreviations:

- COMET: Concurrent Object-Oriented Methods and Entity-Relationship Techniques.
- UML: Unified Modeling Language - used for system design.
- TOEIC: Test of English for International Communication - language proficiency test.
- HTTPS: Hypertext Transfer Protocol Secure - secure communication protocol.

1.5 Document Conventions

This document adheres to IEEE formatting requirements for software requirements specification.

The following conventions are applied:

- Font and Size: Arial font size 11.
- Italics: Used for comments or emphasis within the text.
- Spacing: Single-spaced text.
- Margin: Maintains 1-inch margins as specified in the IEEE template.
- Section and Subsection Titles: Follow the template and are formatted accordingly.

1.6 References and Acknowledgments

Standards and Guidelines:

- COMET Method: Adherence to the Concurrent Object-Oriented Methods and Entity-Relationship Techniques (COMET) method for software design.
- UML (Unified Modeling Language): Utilization of UML as the modeling language for system design and architecture.

Web Addresses:

- UML Official Website: Reference to the official website for Unified Modeling Language (UML) specifications and resources.

Acknowledgments:

- Acknowledgment is extended to the collaborative efforts and valuable contributions of the entire project team,..

02

Requirements Specification

Project Summary:

FPT Co. aims to establish a comprehensive internal training system to foster continuous learning. The company requires a web-based platform for managing training activities. The system, designated for use by the HR department, encompasses three key roles: Administrator, Training Staff, and Trainer.

Administrator's Role:

- Login functionality on the system's first page.
- Create, edit, and delete user accounts for trainers and training staff.
- Assign or change usernames and passwords.

Trainer's Role:

- Login using provided credentials.
- Update own profile details.
- View courses associated with assigned topics.

Training Staff's Role

- Login with credentials provided by the administrator.
- Create trainee accounts with details such as name, age, education, programming language, etc.
- Store trainee details in the database.
- View and search trainees based on various criteria.
- Update and delete trainee accounts.
- Manage course categories (search, add, update, delete).
- Manage courses (search, add, update, delete).
- Add topics to courses and assign courses to categories.
- Manage trainer profiles (add, update, delete).
- Assign trainers to topics.
- Assign trainees to courses.

Project Phases:

Current Phase - Requirement Analysis and Solution Design:

- Understand project requirements.
- Analyze roles and functionalities.
- Develop a solution design for the training system.

Next Phase - Implementation and Development:

- Begin coding based on the solution design.
- Develop user interface and system functionalities.
- Ensure integration and performance.

Performance Requirements:

Responsiveness:
- User actions completed within 1.5 seconds.
- Intensive processes within 10 seconds.

Scalability:
- Support for 200+ concurrent users.
- Critical Event Response:
- Quick response (<100 milliseconds) for crucial events.

Compatibility:
- Accessible from diverse browsers and devices.
- Consistent performance and display quality

Safety and Security Requirements

Security Measures:

- SSL/TLS Encryption
- Multi-Factor Authentication
- Access Control
- Data Security
- Suspicious Activity Detection
- Legal Compliance

Software Quality Attributes for Training Management System:

- **Usability**: The system should be user-friendly, with an intuitive interface and clear navigation, ensuring ease of use for administrators, training staff, and trainers.
- **Maintainability**: The codebase should be well-structured and documented to facilitate future maintenance and updates
- **Reliability**: The system should be highly reliable, minimizing downtime and errors to ensure uninterrupted training activities.
- **Portability**: The system should be accessible from various web browsers and devices. promoting accessibility and flexibility.
- **Interoperability**: The system should support integration with other HR tools or systems, enabling seamless data exchange.

***Rationale:**These quality attributes aim to elevate the overall quality of the Training Management System, fostering user-friendliness, reliability, and adaptability to evolving needs.

Risk Assessment for Training Management System:

Technical Complexity:

- **Risk**: Potential technical challenges in integration, scalability, and data security.
- **Mitigation**: Conduct a thorough technical feasibility study, hire experienced developers, and establish a clear architecture and design strategy.

Scope Creep:

- **Risk**: High likelihood of additional features leading to project delays and budget overruns.
- **Mitigation**: Define a well-defined scope, engage in comprehensive requirement analysis, and implement a change management process.

Resource Constraints:

- **Risk**: Constraints in human, financial, and time resources may lead to project delays and compromise quality.
- **Mitigation**: Conduct comprehensive resource assessments, allocate resources carefully, and implement effective resource management practices.

03

Database

3.1 Product overview

Name Product: FPT Training Management System

Key Features:

- Administrator
- Training Staff
- Trainer

Additional Features:

- Information security and role-based access.
- User-friendly interface.
- Database for trainees, courses, topics, and trainers.
- Search and filter functionality for quick access.

3.2 Product functionality

System Features Overview:

- User Authentication
- Administrator Functions
- Training Staff Functions
- Trainer Functions
- Data Management
- Search and Filter
- Notifications and Reminders
- Reporting and Analytics
- Security
- User Interface

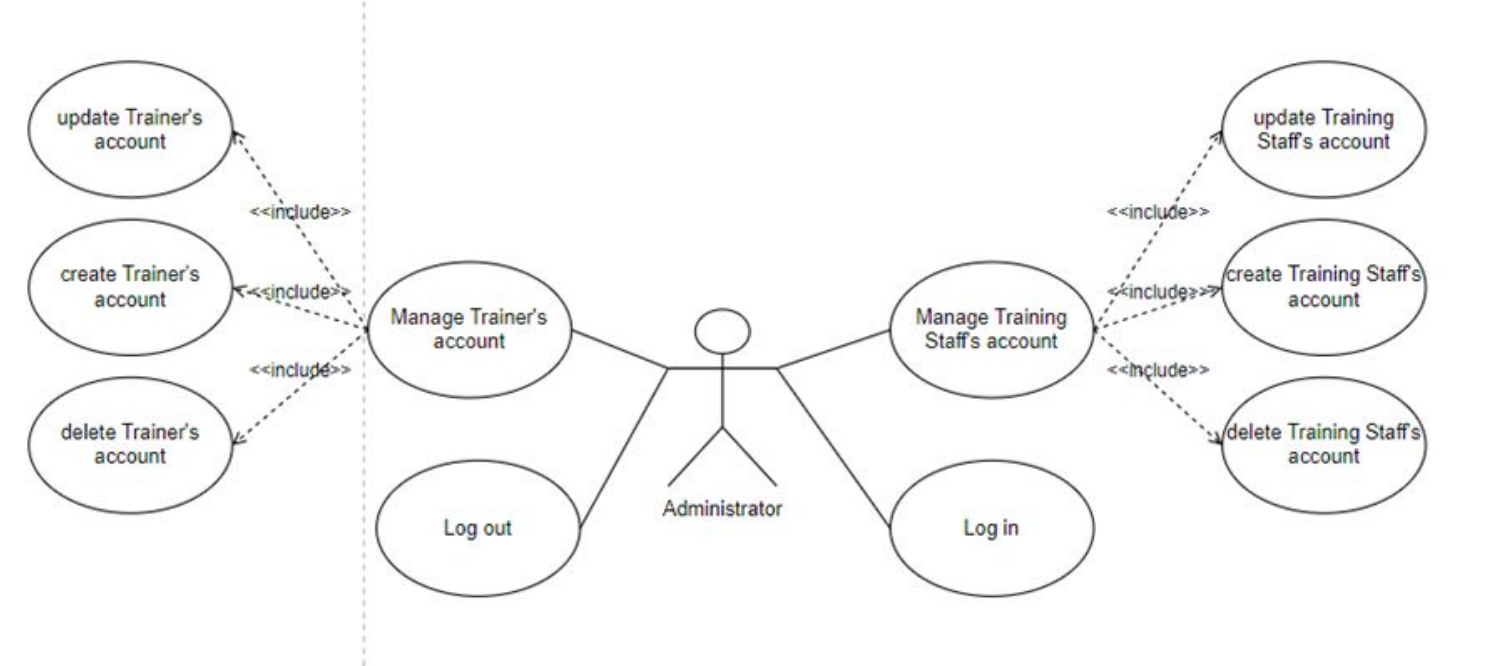
3.3 Design and Implementation Constraints

3.3.1 Database diagram:

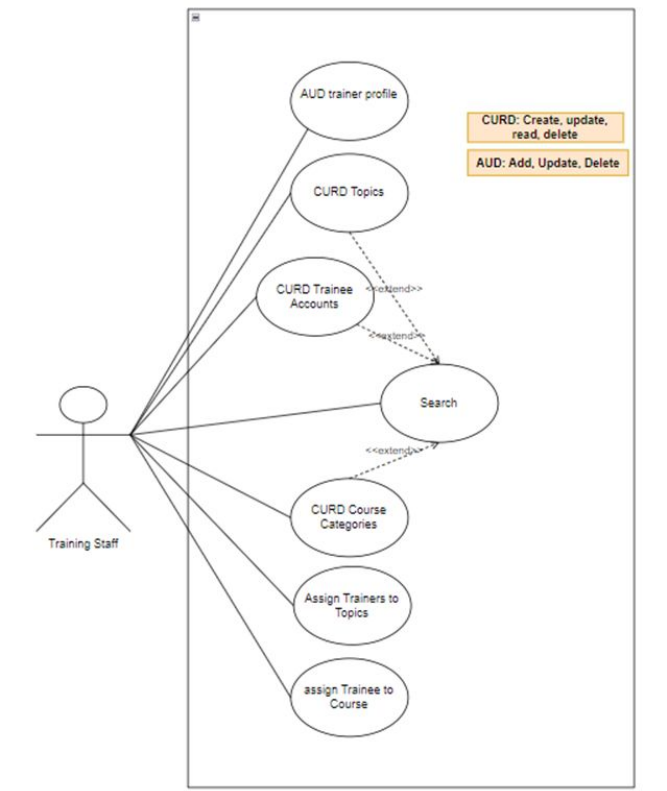
3.3.2 Overview Use Case Diagrams:

3.3.3 Detailed use case diagrams:

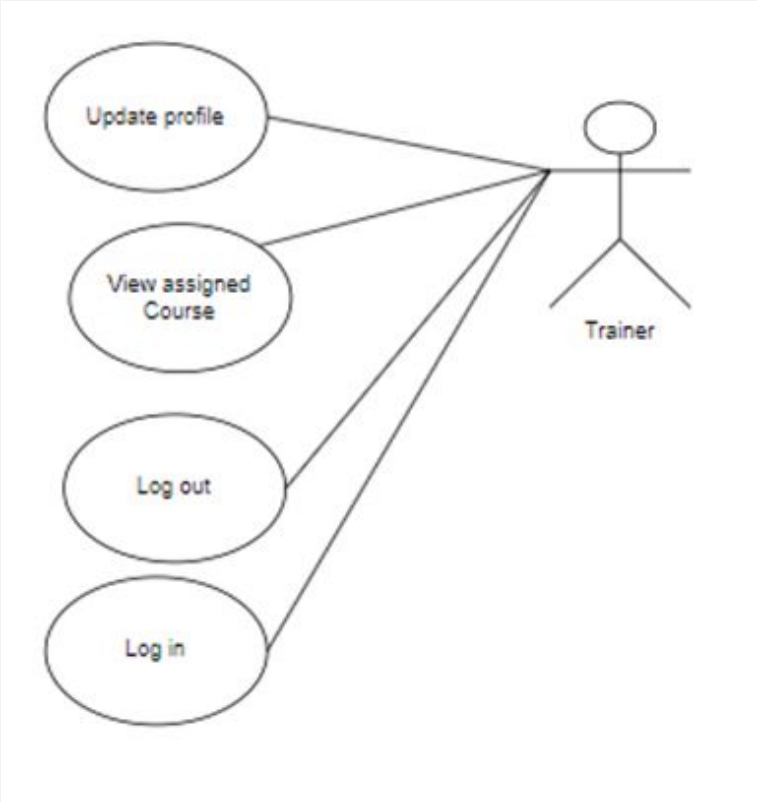
3.3.3.1 Use Case decomposition for “Admin”



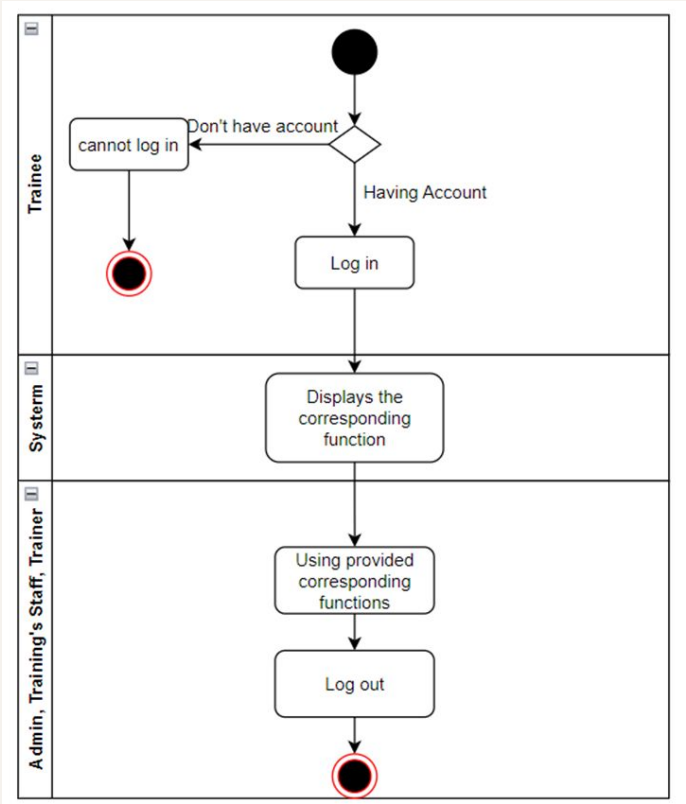
3.3.3.2 Use Case decomposition for “Training Staff”



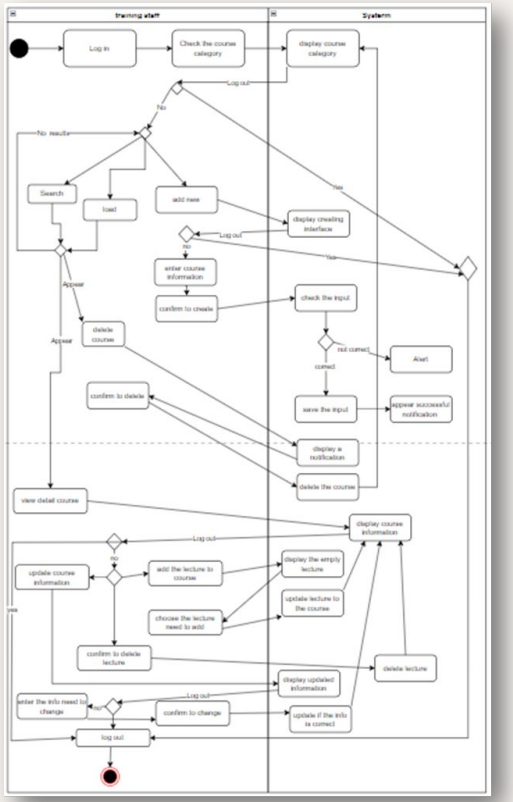
3.3.3.3 Use Case decomposition for “Trainer”



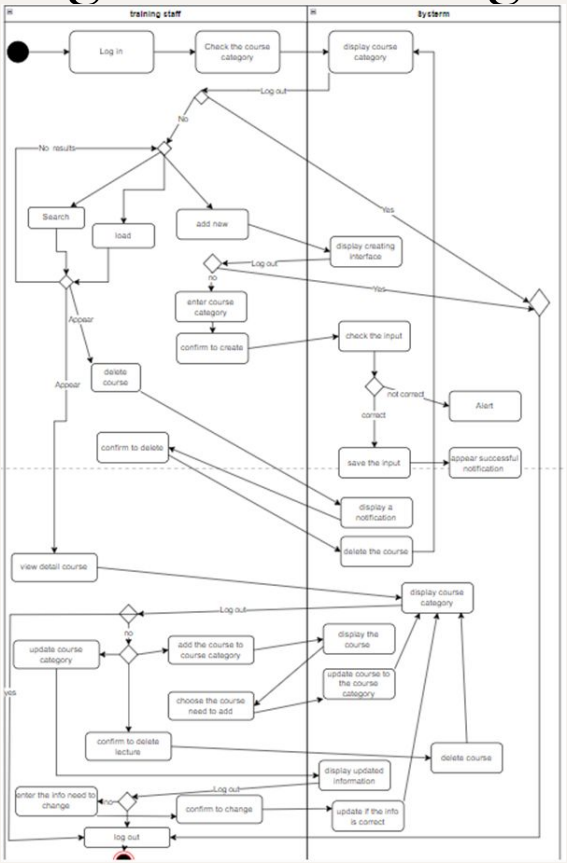
3.3.4 Activity Diagrams



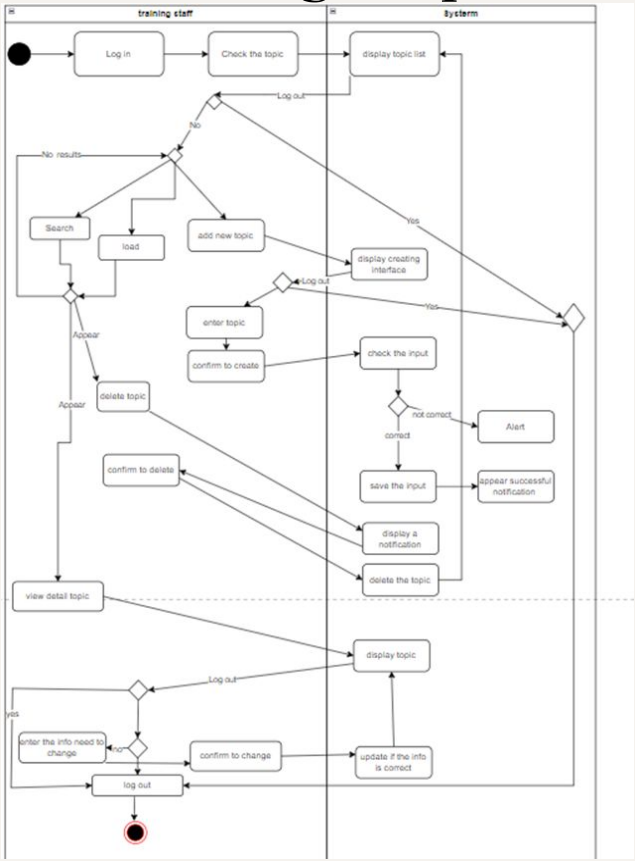
Manage course



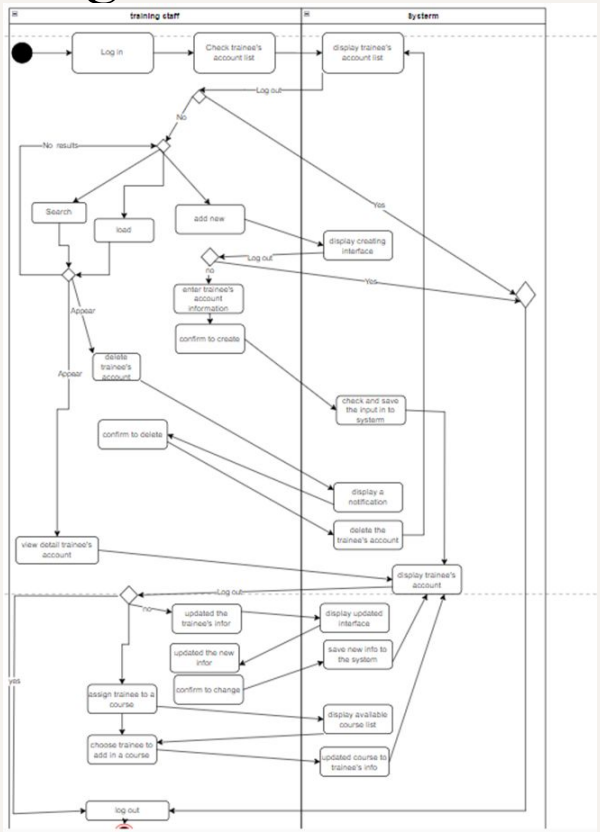
Manage Course category



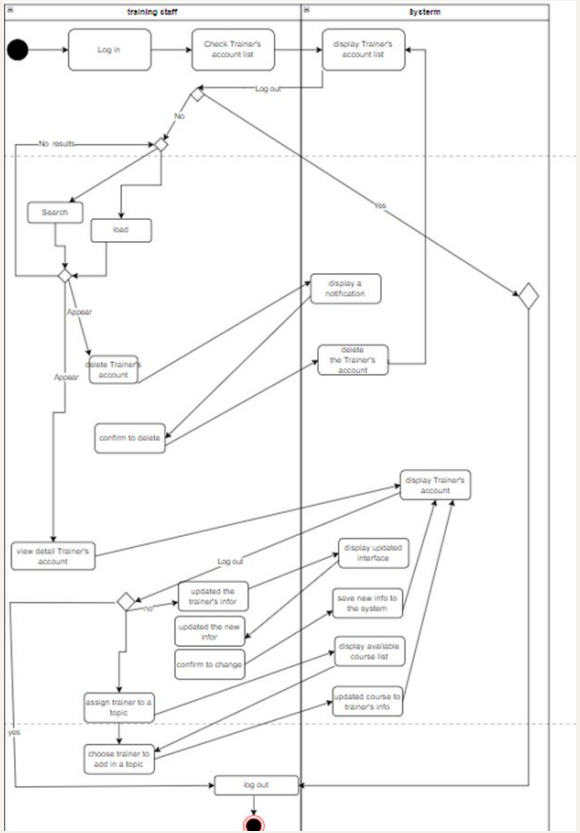
Manage topic



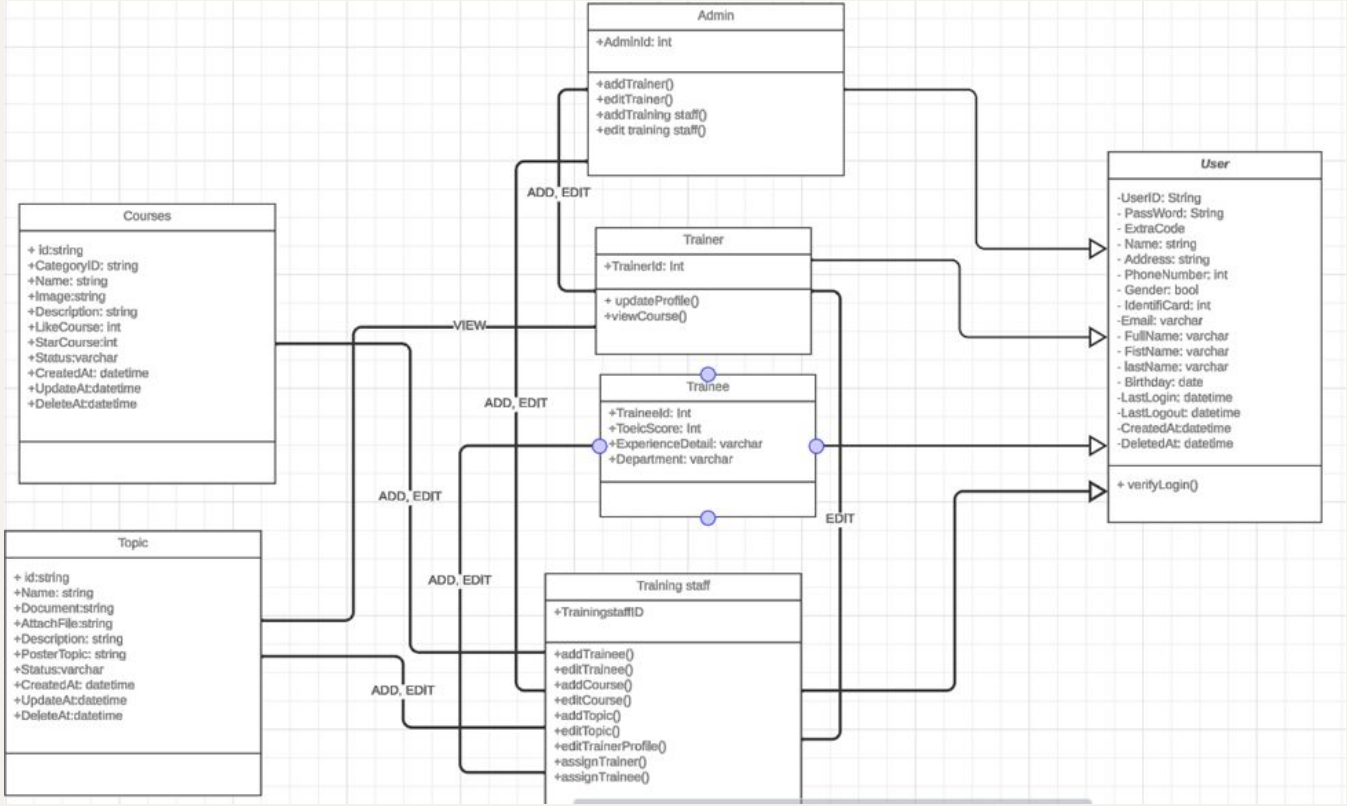
Manage trainee's account



Manage trainer’s account



3.3.5 UML


Admin
+AdminId: int
+addTrainer()
+editTrainer()
+addTraining staff()
+edit training staff()
ADD, EDIT
Courses
+ id:string
+CategoryID: string
+Name: string
+Image:string
+Description: string
+LikeCourse: int
+StarCourse:int
+Status:varchar
+CreatedAt: datetime
+UpdateAt:datetime
+DeleteAt:datetime
VIEW
Trainer
+TrainerId: Int
+ updateProfile()
+viewCourse()
User
-UserID: String
- PassWord: String
- ExtraCode
- Name: string
- Address: string
- PhoneNumber: int
- Gender: bool
- IdentifiCard: int
-Email: varchar
- FullName: varchar
- FistName: varchar
- lastName: varchar
- Birthday: date
-LastLogin: datetime
-LastLogout: datetime
-CreatedAt:datetime
-DeletedAt: datetime
+ verifyLogin()
ADD, EDIT
Trainee
+TraineeId: Int
+ToeicScore: Int
+ExperienceDetail: varchar
+Department: varchar
EDIT
ADD, EDIT
Topic
+ id:string
+Name: string
+Document:string
+AttachFile:string
+Description: string
+PosterTopic: string
+Status:varchar
+CreatedAt: datetime
+UpdateAt:datetime
+DeleteAt:datetime
ADD, EDIT
Training staff
+TrainingstaffID
+addTrainee()
+editTrainee()
+addCourse()
+editCourse()
+addTopic()
+editTopic()
+editTrainerProfile()
+assignTrainer()
+assignTrainee()
ADD, EDIT

3.4 Assumptions and Dependencies

Assumptions:

- **Stable Internet Connection:** Users are expected to have continuous access to a stable internet connection for uninterrupted use of the web-based training management system.

- **User Availability:** The system assumes that administrators, training staff, and trainers will be available and responsive during system usage for necessary actions and communications.

- **User Training:** Users are presumed to have received the required training and understanding of the system's functionalities to effectively perform their roles.

- **Data Accuracy:** The accuracy of data entered into the system by users is assumed, as any inaccuracies may impact system operations and reporting.

- **System Security:** It is assumed that implemented security measures will effectively safeguard the system and its data from unauthorized access and breaches.

Dependencies

- **Hardware Infrastructure:** The availability of suitable hardware infrastructure, encompassing servers, databases, and network devices, is crucial for hosting and operating the web-based training management system.

- **Software Components:** Dependencies on third-party software components or libraries, facilitating functionalities like user authentication, database management, and reporting, may be present.

- **Development Tools and Technologies:** Essential development tools and technologies, including programming languages, frameworks, and integrated development environments (IDEs), are required for system construction and maintenance.

- **Data Integration:** Integration with existing systems or databases within FPT Company for accessing user information and organizational data may be necessary.

- **Regulatory Compliance:** Adherence to relevant regulatory requirements and industry standards, such as data protection regulations, may influence system design and implementation.

- **User Acceptance Testing (UAT):** Stakeholder involvement in User Acceptance Testing is necessary to validate system functionalities, usability, and performance before deployment.

- **Training and Support:** The provision of training sessions and continuous support for users is essential to familiarize them with the system and address any issues or queries.

- **Continuous Improvement:** A process for gathering feedback from users and stakeholders to identify areas for improvement and implementing updates or enhancements to the system is crucial for ongoing success.

04

Deployment

Deployment Steps for the Training Management System:

Step 1: Environment Preparation:

Set up the deployment environment, ensuring it meets system requirements.

Step 2: Database Deployment:

Backup and deploy the system's database to the deployment environment.

Step 3: Application Deployment:

Backup and deploy the application code to the deployment environment.

Step 4: Configuration and Integration:

Configure environment variables and integrate the system with HR databases.

Step 5: Testing in Staging:

Conduct testing in a staging environment to ensure a smooth transition.

Step 6: Secure Deployment:

Implement security measures, such as HTTPS, for a secure deployment.

Step 7: User Acceptance Testing (UAT):

Conduct user acceptance testing with HR personnel to validate functionality.

05

Development

Phases of Development for the Training Management System:

Phase 1: Requirement Analysis

- Conduct in-depth discussions with HR department to understand specific needs.
- Define system requirements, functionalities, and constraints.
- Document user roles (Administrator, Training Staff, Trainer).
- Develop a detailed Requirement Specification Document.

Phase2: Planning and Design

- Plan the development timeline, resource allocation, and budget.
- Create a comprehensive project plan outlining tasks and milestones.
- Design the system architecture, including database structure and user interface.
- Define the data flow and relationships between different components.

Phase 3: Prototype Development Phase:

- Build a prototype of the system based on the design.
- Validate the prototype with key stakeholders to gather feedback.
- Make necessary adjustments to the system's design and functionalities.

Phase 4: Core System Development Phase:

- Initiate the actual coding and development of the Training Management System.
- Implement features for managing trainee accounts, trainers, course categories, courses, and topics.
- Develop functionalities for assigning topics to courses, trainers to topics, and trainees to courses.

Phase 5: Testing and Quality Assurance Phase:

- Conduct thorough testing of the developed system.
- Perform unit testing, integration testing, and system testing.
- Identify and rectify any bugs or issues.
- Ensure the system meets the specified requirements and is user-friendly.

Phase 6: Deployment and Integration Phase:

- Prepare the system for deployment to a testing environment.
- Integrate the system with existing HR tools and databases.
- Test the system's performance and functionality in a real-world scenario.
- Address any issues that arise during the deployment and integration process.

Phase 7: User Training and Acceptance Testing Phase:

- Provide training sessions for administrators, training staff, and trainers.
- Conduct acceptance testing with end-users to ensure the system aligns with their expectations.
- Gather feedback from users and make final adjustments as needed.

Phase 8: Final Deployment and Maintenance Phase:

- Deploy the finalized system to the production environment.
- Implement continuous monitoring and address any post-deployment issues.
- Establish a maintenance plan for regular updates and improvements.

06

Conclusion

- In summary, FPT Co. is actively striving to cultivate a Continuous Learning Environment across the entire corporation. This has prompted the development of an Internal Training Management System, overseen by the HR department. Throughout the deployment process, we meticulously outlined detailed requirements, integrated a robust database, implemented a systematic deployment plan, and followed a phased development approach.
- The detailed user roles and system functionalities specified during the Requirement Specification phase set a clear trajectory. Integrating a robust database lays the foundation for high performance and efficient data retrieval. The organized deployment steps ensure a smooth and minimally disruptive transition. The phased development prioritizes user-friendliness, maintainability, and compatibility, ensuring a high-quality and adaptable system.
- In conclusion, FPT Co.'s comprehensive strategy not only swiftly adapts to technological shifts but also creates an efficient and positively impactful Training Management System for the organizational learning environment.

Thanks

Do you have any questions?