Software Requirements Specification

for

<FPT TRAINING APPLICATION>

Version <0.0.1>

Prepared by

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Revisions

1 Introduction (P1)

1.1 Document Purpose

Function Requirements for Each Human Resources Department Role:

1. Administrator's Role:
   - Ability to access the system through the application's initial screen.
   - Capability to create, edit, and delete user accounts for trainers and training staff.
   - Authority to assign or change usernames and passwords for both trainers and training staff

2.Training Staff's Role:
   - Upon logging in with the provided credentials from the administrator, the training staff should be able to:
     - Create trainee accounts by entering comprehensive details such as name, age, date of birth, education, main programming language, TOEIC score, experience, department, location, etc.
     - Store trainee information securely in the database upon successful input.
     - Access a list of trainees for viewing and searching purposes, with the ability to search by various criteria like trainee account, programming language, TOEIC score, etc.
     - Update and delete trainee accounts as necessary.
     - Manage course categories by performing actions such as searching, adding, modifying, and removing them, including details like category name and descriptions.
     - Manage courses by conducting tasks like searching, adding, modifying, and removing them, including details like course name and description.
     - Add topics to courses and assign courses to categories.
     - Manage trainer profiles by adding, updating, and removing details such as trainer name, External or Internal Type, working location, phone number, and email address.
     - Assign trainers to specific topics.
     - Assign courses to trainees.

3.Trainer's Role:
   - Upon registration by the administrator, the trainer should have access to the system with the ability to:
     - Update profile information including Trainer name, External or Internal Type, education, working place, phone number, and email address.
     - Browse courses that are associated with topics to which they have been assigned.

These function requirements are crucial for ensuring smooth operations within the human resources department, facilitating efficient management of training programs, trainers, and trainees within the organization.

1.2 Product Scope

This software is tailored to meet the needs of the education sector, aiming to enhance efficiency and organization across various educational roles. Its core functionalities revolve

around simplifying the management of student accounts, overseeing instructor administration, maintaining a comprehensive course catalog, facilitating course management, and ensuring seamless topic allocation to courses and instructors. Additionally, it prioritizes effective communication among all stakeholders, promoting harmonious interaction within the educational ecosystem.

1.3 Intended Audience and Document Overview

The primary target audience for this endeavor encompasses individuals who will actively engage with the system in various capacities. This includes administrators tasked with overseeing its management, training personnel utilizing it for educational purposes, and the trainers themselves who will leverage the system to conduct training sessions. Moreover, this document holds significance for pivotal figures involved in the software's conception and development, such as software engineers overseeing its implementation, technical architects orchestrating its architectural design, and project managers coordinating its development and deployment.

The central focus of this document revolves around the development and utilization of a web-based system tailored to efficiently manage the "Training" activities essential to FPT's internal training program. Within this context, an internal trainer is elucidated as an FPT employee entrusted with additional responsibilities either by managerial delegation or voluntary commitment to meet specific business needs. These internal trainers play a crucial role in delivering educational content and contribute significantly to the success of FPT's internal training initiatives, underscoring the system's importance in facilitating their workflow and administrative processes.

1.4 Definitions, Acronyms and Abbreviations

Internal training, commonly facilitated by learning and development officers within organizations, serves as a crucial means to impart knowledge and skills to employees. It's a specialized form of education tailored specifically for commercial enterprises and corporate learning, setting it apart from traditional academic institutions.

Training entails the purposeful instruction of individuals, aimed at equipping them with specific and practical competencies. Its goals encompass enhancing capabilities, boosting productivity, and improving overall performance. Training forms the bedrock of apprenticeships and provides essential curriculum content for technical colleges, polytechnics, and similar educational establishments. Moreover, beyond initial skill acquisition, training extends into ongoing efforts for skill maintenance, enhancement, and updates throughout one's professional journey, often termed as professional development. Furthermore, training may also encompass physical fitness development related to particular competencies, such as sports, martial arts, military applications, and specific occupational pursuits.

In higher education systems across countries like Canada, Nigeria, and the United States, a course represents a distinct unit of instruction typically spanning a single academic term. These courses are led by one or more instructors, such as teachers or professors, and comprise a fixed roster of enrolled students. Each course revolves around a specific subject matter and adheres to a predetermined schedule of sessions, conducted weekly during the academic term,

commonly referred to as lessons or classes. Upon successful completion of a course, students may receive a grade and academic credit as recognition of their accomplishments.

1.5 Document Conventions

This document adheres to the IEEE formatting guidelines, employing Calibri size 12, set number of the pages and use multiple line spacing at 1.3. Margins must be: left: 1.25 cm; right: 1 cm; top: 1 cm and bottom: 1 cm. The reference follows Harvard referencing system. Section and subsection titles are formatted in accordance with the provided template to ensure consistency and readability.

1.6 References and Acknowledgments

Society for Human Resource Management (SHRM): This website provides various materials and articles on training and development management in organizational settings.
Visit: https://www.shrm.org/

Training Industry: This is a leading resource for information and trends in the field of training and development. The website offers articles, research reports, and other resources on training management in enterprises.
Visit: https://www.trainingindustry.com/

Association for Talent Development (ATD): ATD is an international organization specializing in training and development. Their website provides articles, research, and other resources on training and development management in organizations.
Visit: https://www.td.org/

2 Overall Description (P1)

2.1 Product Overview

Product Name: FPT Training Management System

Description: The training management system is a web application designed for the HR department of FPT Company, aimed at managing the company's internal training activities.

Key Features:

- **Administrator:**
  + Login to the system.
  + Create/edit/delete user accounts for trainers and training staff.
- **Training Staff:**
  + Login to the system.
  + Create trainee accounts by entering details and storing them in the database.
  + Manage trainee list: view, search, update, delete.
  + Manage course categories: add, update, delete.
  + Manage courses: add, update, delete.
  + Add topics to courses, assign courses to categories.
  + Manage trainer profiles: add, update, delete.
  + Assign trainers to topics.
  + Assign trainees to courses.
- **Trainer:**
  + Login to the system.
  + Update personal profile: name, type (internal or external), education, working place, phone number, email.
  + View courses assigned to them.

Additional Features:

- The system ensures information security and access control based on user roles.
- User-friendly interface for all users.
- Database designed to store information of trainees, courses, topics, and trainers.
- Support search and filter functionality for quick access to required information.

This product will provide an efficient solution for managing training activities within FPT Company, optimizing the organization and execution of internal training courses.

2.2 Product Functionality

1. **User Authentication:**
   - Allow users to securely log in with their credentials (username and password).
   - Implement role-based access control to ensure appropriate access levels for administrators, training staff, and trainers.
2. **Administrator Functions:**
   - Create, edit, and delete user accounts for trainers and training staff.

- Manage user roles and permissions.
- System configuration and settings management.

3. **Training Staff Functions:**
   - Create trainee accounts by entering details such as name, age, education, etc.
   - View, search, update, and delete trainee accounts.
   - Manage course categories: add, update, delete.
   - Manage courses: 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.
   - Generate reports on training activities and trainee progress.
4. **Trainer Functions:**
   - Update personal profile details such as name, education, contact information, etc.
   - View courses assigned to them.
   - Access course materials and resources.
   - Track trainee progress and performance.
5. **Data Management:**
   - Store and manage information related to users, trainees, courses, topics, and trainers in a secure database.
   - Ensure data integrity and consistency through proper validation and verification mechanisms.
6. **Search and Filter:**
   - Provide search functionality to quickly find specific users, trainees, courses, or topics.
   - Implement filters to refine search results based on various criteria such as course category, trainer, etc.
7. **Notifications and Reminders:**
   - Send notifications and reminders to users for upcoming training sessions, deadlines, or important updates.
   - Allow users to customize notification preferences.
8. **Reporting and Analytics:**
   - Generate comprehensive reports on training activities, course enrollment, completion rates, etc.
   - Analyze data to identify trends, assess training effectiveness, and make informed decisions for future training programs.
9. **Security:**
   - Implement robust security measures to protect sensitive data and prevent unauthorized access.
   - Utilize encryption techniques to secure data transmission over the network.
   - Regularly audit and update security protocols to address emerging threats and vulnerabilities.
10. **User Interface:**
    - Design an intuitive and user-friendly interface with easy navigation and clear instructions.
    - Ensure responsiveness across different devices and screen sizes for optimal user experience.

By incorporating these functionalities, the FPT Training Management System will effectively streamline the training processes, enhance collaboration among stakeholders, and facilitate continuous learning and development within the organization.

2.3 Design and Implementation Constraints

1. Database diagram

Figure 1: Database diagram

2. General use case

Figure 2: General use case

3. Decomposed use case

a) Decomposition of the “admin” use case

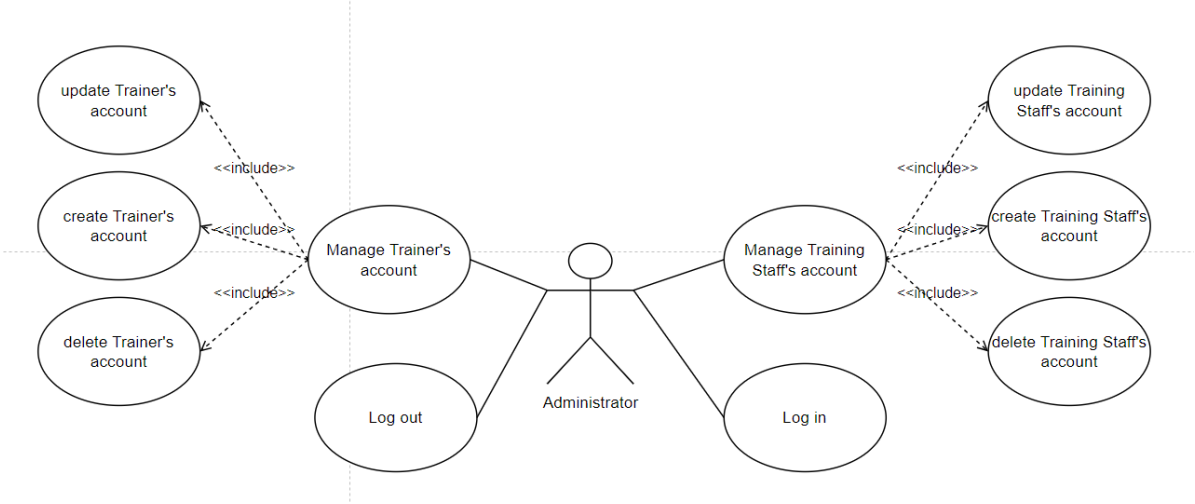

Figure 3: Admin use case

b) Decomposition of the “training staff” use case

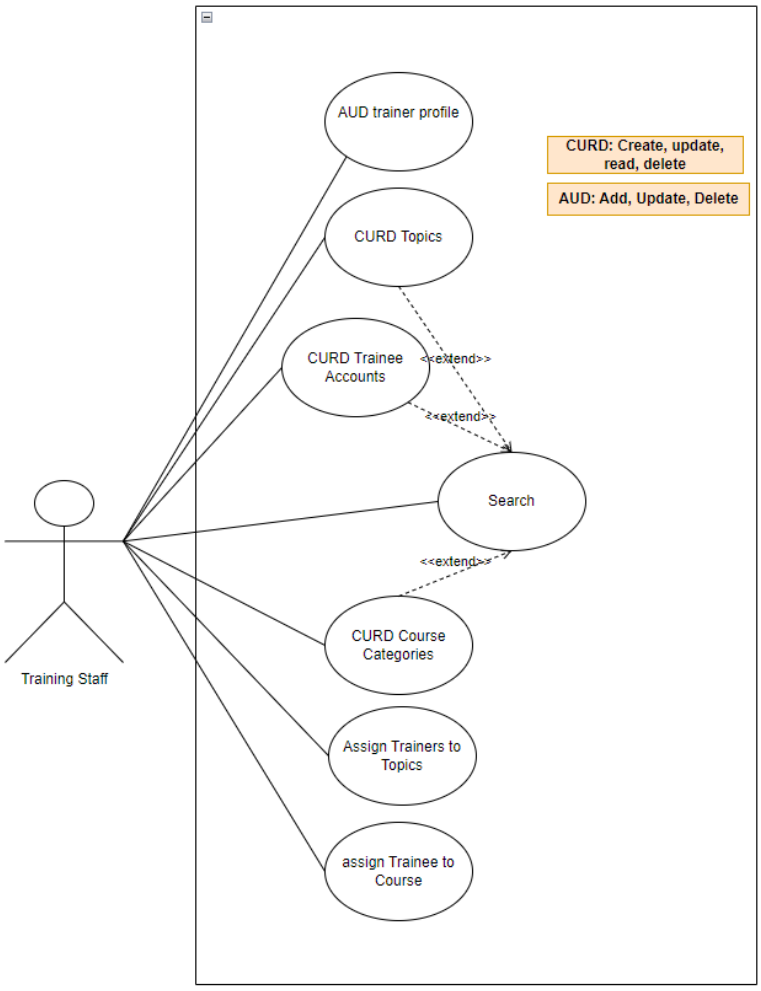

Figure 4: Training staff use case

c) Decomposition of the “trainer” use case

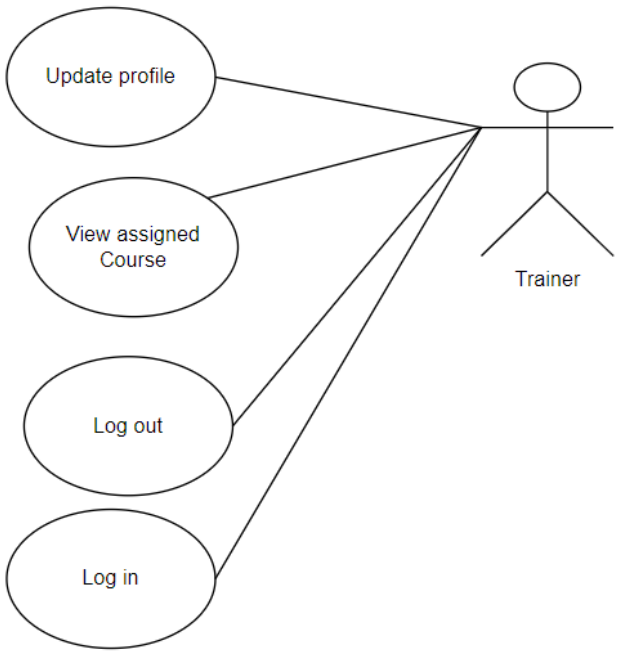

Figure 5: Trainer use case

4. Business process

Trainee will be provided an account . Then they can log in to use the software's functions. If you don’t have account you will cannot log in to the app.

After successfully logging into the system, users can use functions such as viewing and updating their personal information, changing their password, and other functions within their assigned scope by the system

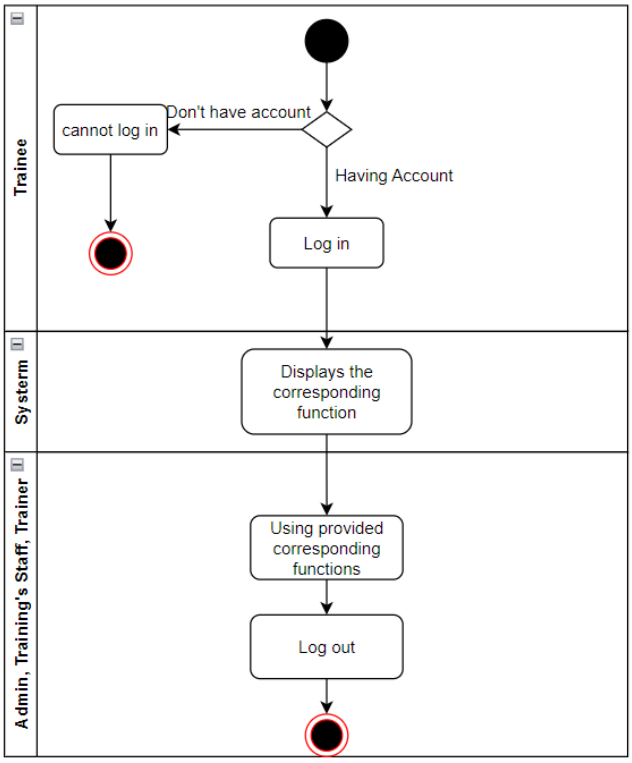

Figure 6: Business process

a) Manage course:

Training staff can manage course through the following steps: Training staff search for course, provide search information, and view the information of those course. Training staff can also add new course

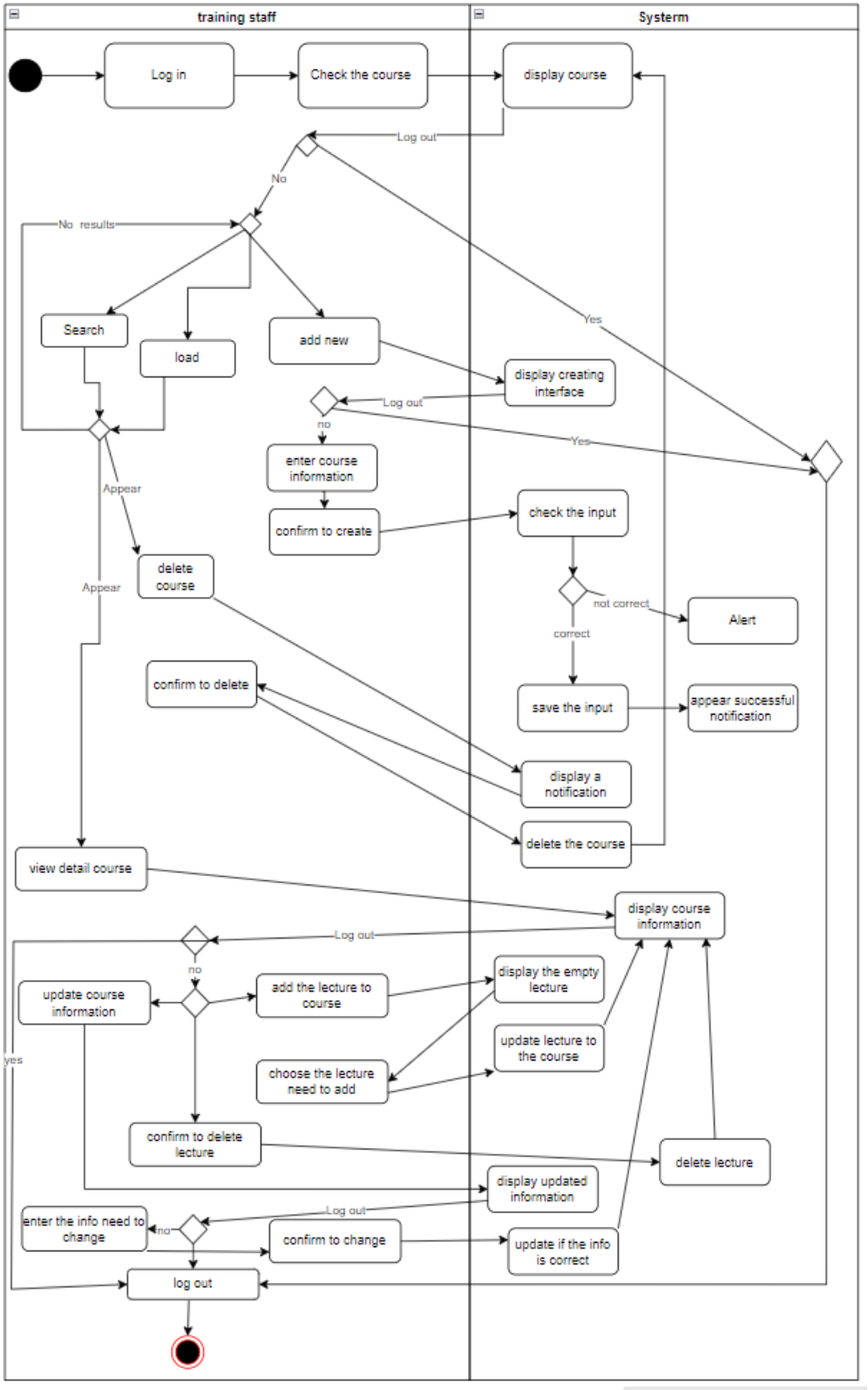

Figure 7: Manage course

b) Manage course category:

Training staff can manage course category through the following steps: Training staff search for course category, provide search information, and view the information of those course. Training staff can also add new course category

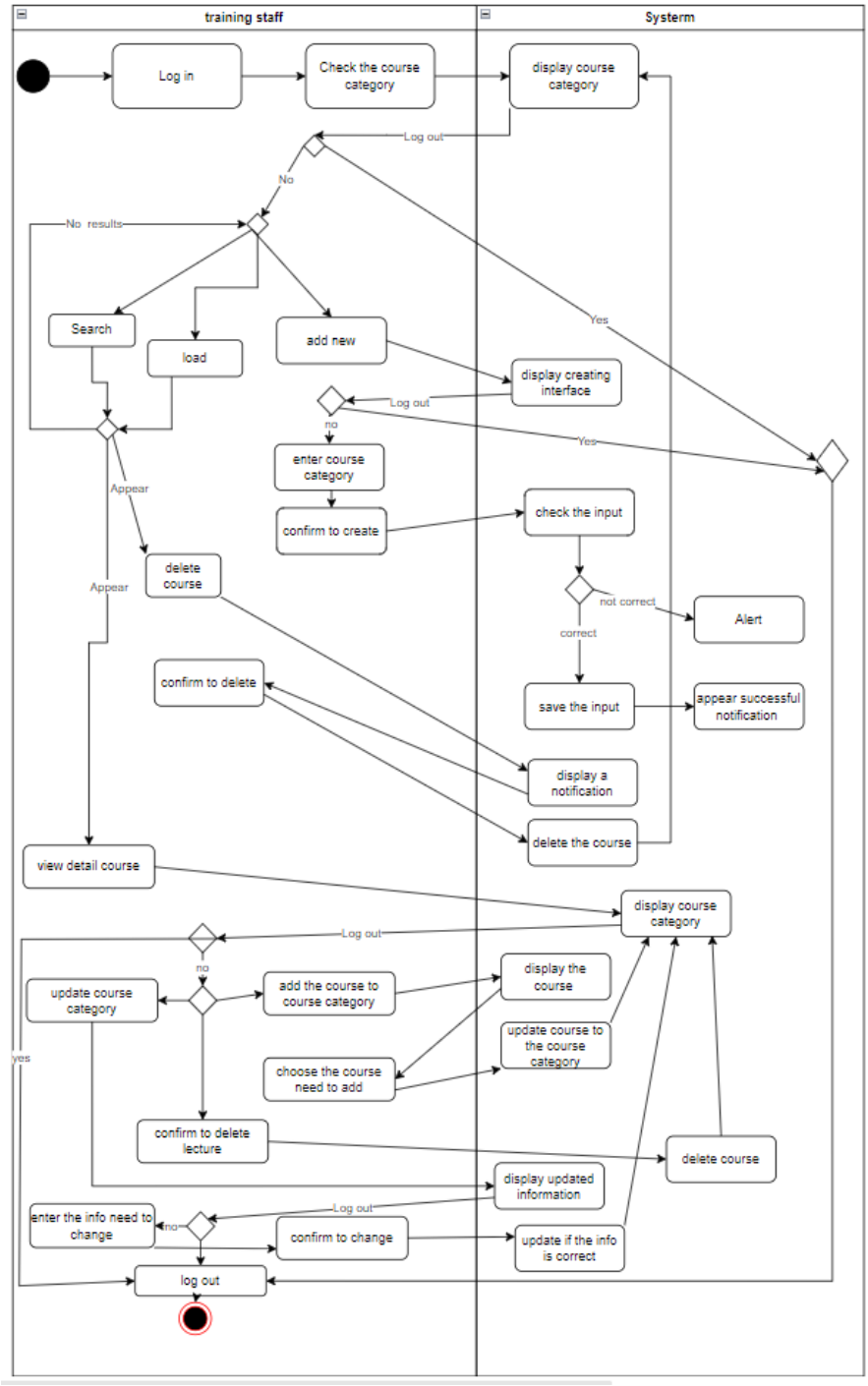

Figure 8: Manage course category

c) Manage topic:

Training staff can manage topic through the following steps: Training staff search for topic, provide search information, and view the information of those topic. Training staff can also add new topic

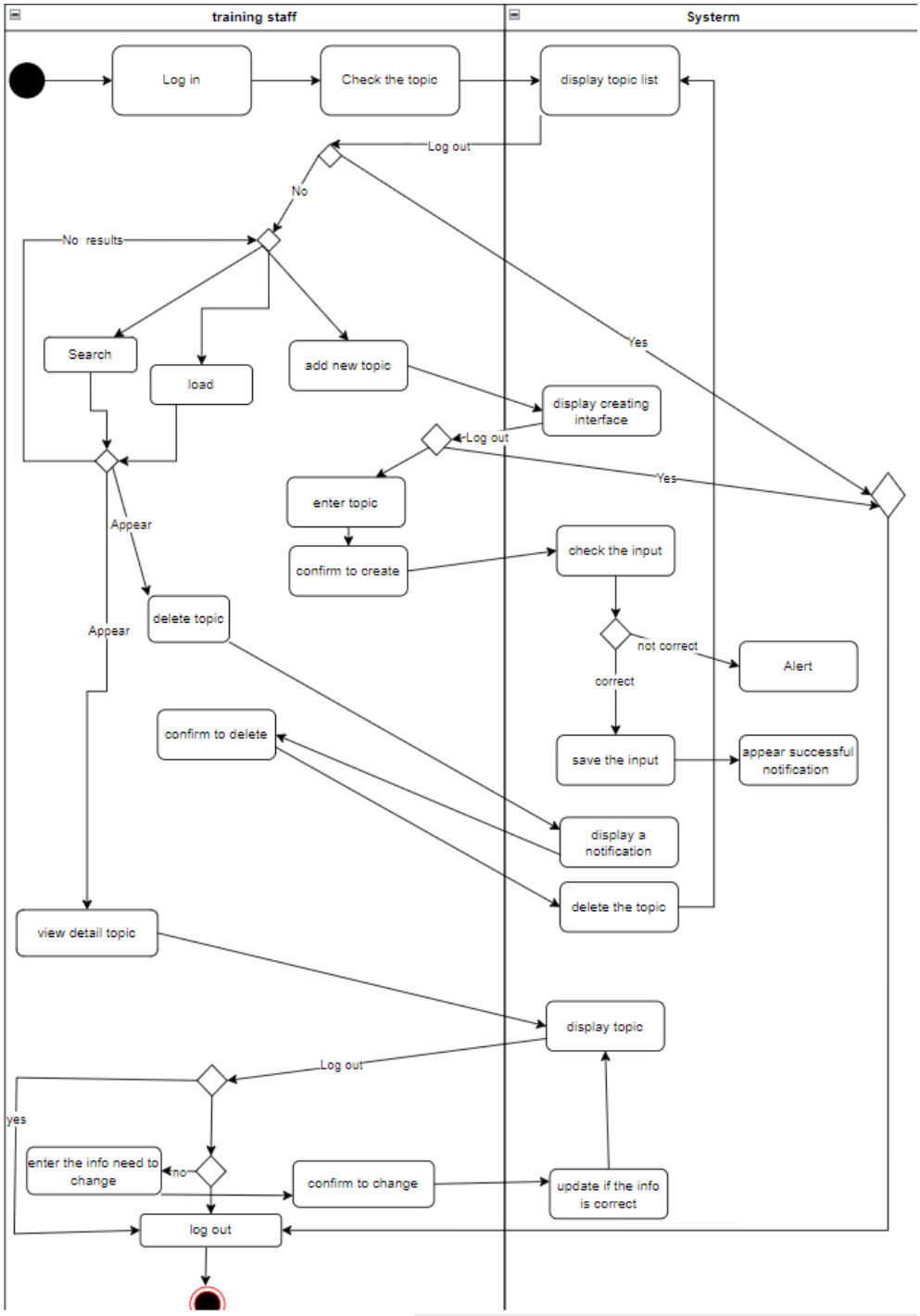

Figure 9: Manage topic

d) Manage trainee's account:

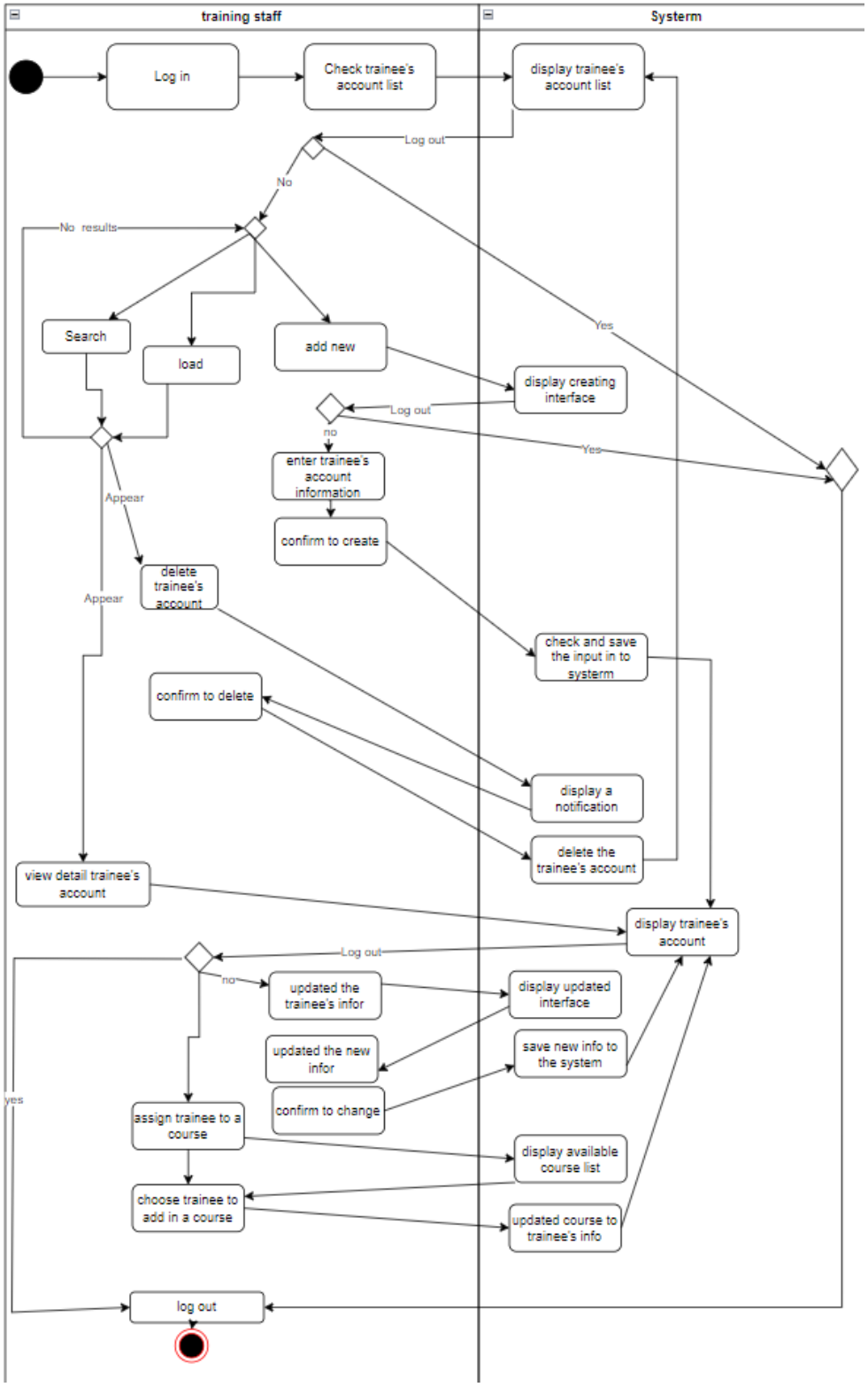

Figure 10: Manage trainee's account

e) Manage trainer's account:

Training staff can manage trainer's account through the following steps: Training staff search for trainer's account, provide search information, and view the information of those users. Training staff can also edit trainer's account and assign trainer to topic

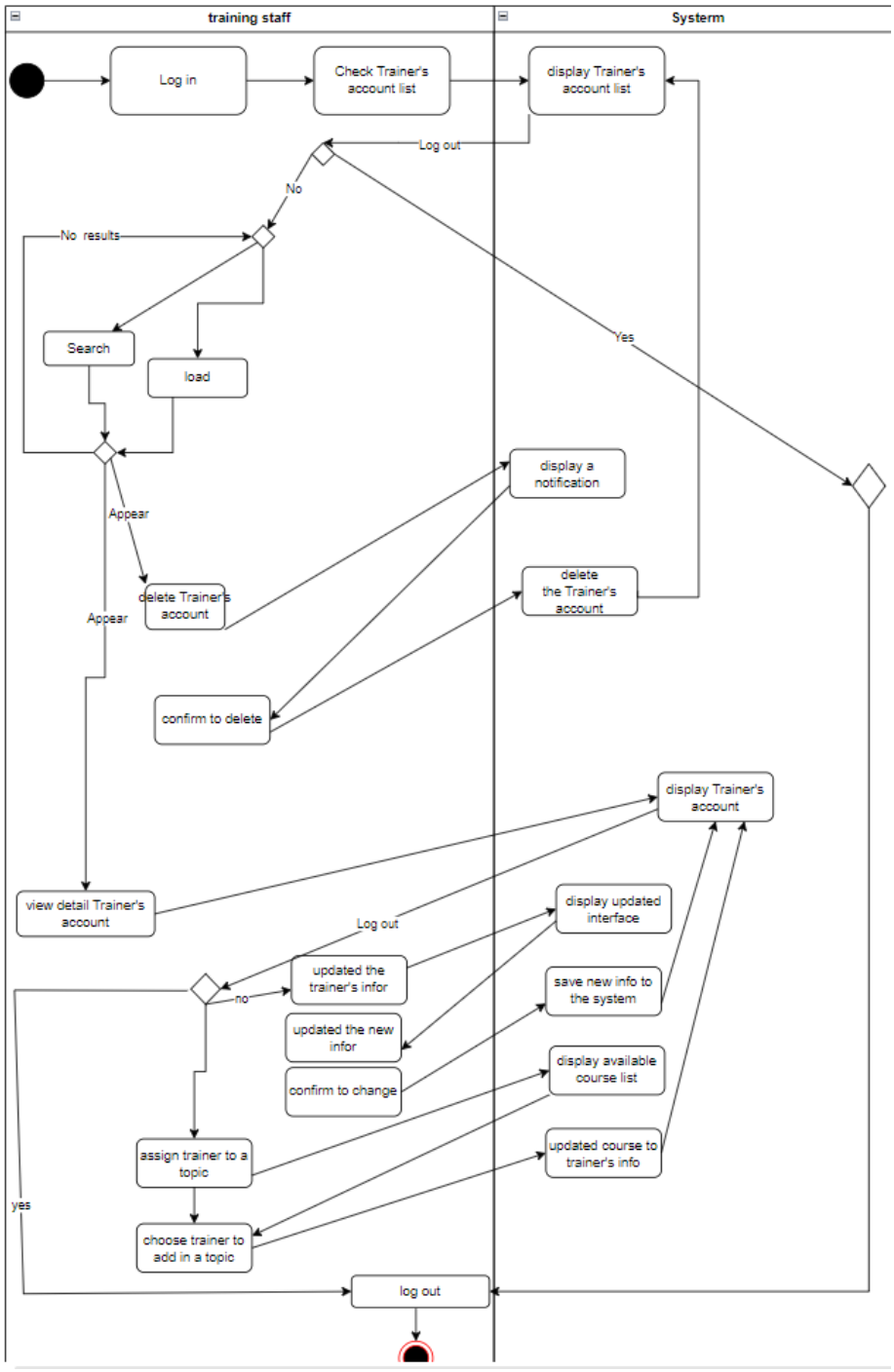

Figure 11: Manage trainer's account

5. UML

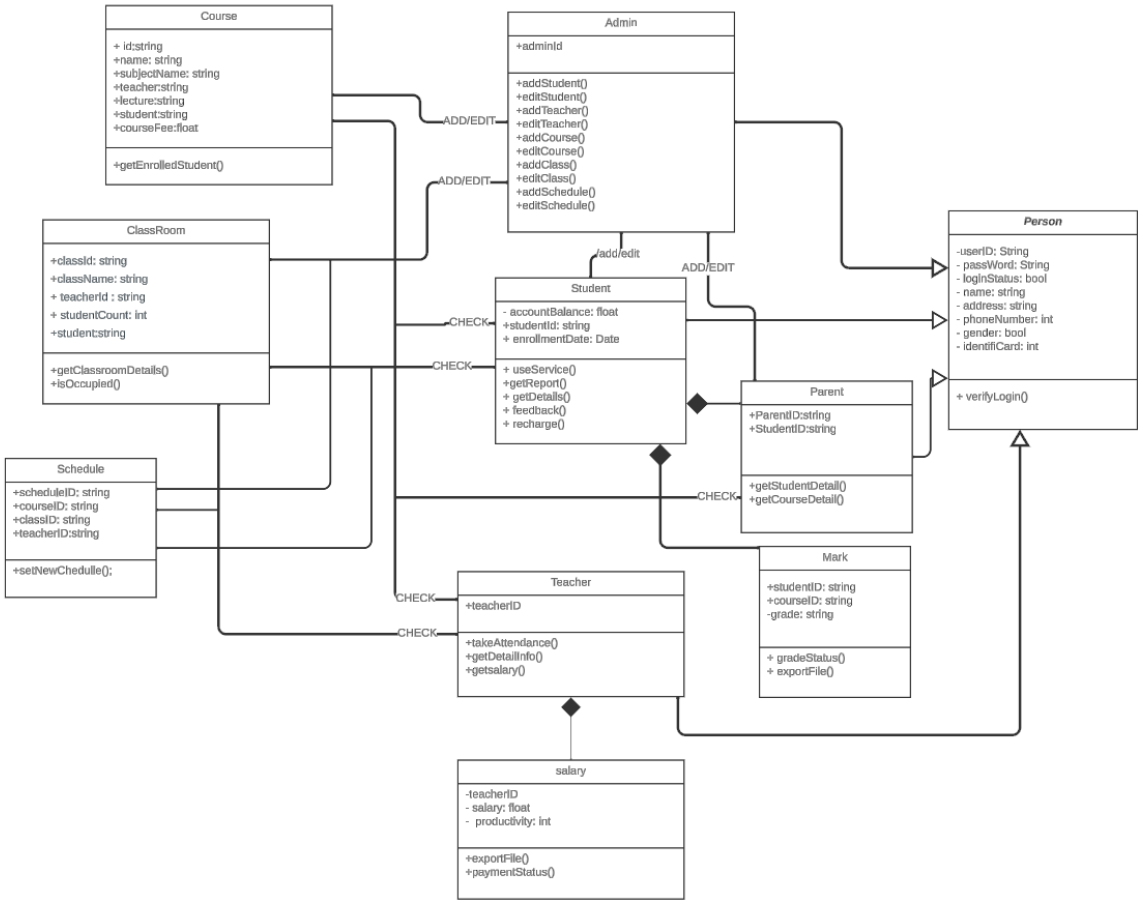

Figure 12: UML

2.4 Assumptions and Dependencies

1. **Assumptions:**

- **Stable Internet Connection:**

  It is assumed that users will have access to a stable internet connection to use the web-based training management system without interruptions.

- **User Availability:**

  The system assumes that users (administrators, training staff, and trainers) will be available and responsive during system usage for necessary actions and communications.

- **User Training:**

  Users are assumed to have the necessary training and understanding of the system's functionalities to effectively utilize it for their respective roles.

- **Data Accuracy:**

The accuracy of data entered into the system by users (such as trainee details, course information, etc.) is assumed. Any inaccuracies may affect system operations and reporting.

- **System Security:**

  It is assumed that the implemented security measures (authentication, access control, encryption, etc.) will effectively protect the system and its data from unauthorized access and breaches.

2. Dependencies:

- **Hardware Infrastructure:**

  Availability of appropriate hardware infrastructure including servers, databases, and network devices is crucial for hosting and running the web-based system.

- **Software Components:**

  Dependencies on third-party software components or libraries for functionalities such as user authentication, database management, and reporting may exist.

- **Development Tools and Technologies:**

  Availability of development tools and technologies (programming languages, frameworks, IDEs, etc.) needed for building and maintaining the system is essential.

- **Data Integration:**

  Integration with existing systems or databases within the FPT Company for accessing user information, organizational data, etc., may be required.

- **Regulatory Compliance:**

  Compliance with relevant regulatory requirements and industry standards (such as data protection regulations) may impact system design and implementation.

- **User Acceptance Testing (UAT):**

  User acceptance testing by stakeholders to validate system functionalities, usability, and performance is necessary before deployment.

- **Training and Support:**

  Provision of training sessions and ongoing support for users to familiarize them with the system and address any issues or questions they may have.

- **Continuous Improvement:**

  Dependence on a process for gathering feedback from users and stakeholders to identify areas for improvement and implement updates or enhancements to the system over time.

Identifying and managing these assumptions and dependencies is essential for the successful planning, development, and deployment of the FPT Training Management System.

3 Other Non-functional Requirements (P2)

3.1 Performance Requirements

- The FPT training management system must respond to user actions, such as logging in, retrieving and sending data within 1.5 seconds to ensure a smooth and efficient user experience.
- All computationally intensive processes, such as generating reports or processing large datasets, must be completed within 10 seconds to maintain real-time performance and user satisfaction.
- The FPT training management system must be able to handle a minimum of 200 concurrent users without significant performance degradation to ensure scalability and responsiveness.
- Response times for critical system events, such as assigning trainers to topics or enrolling students in courses, must be less than 100 milliseconds to maintain system responsiveness. system.
- The FPT training management system must support access from many different web browsers (e.g. Chrome, Firefox, Safari) and devices (desktops, tablets, mobile devices) with Consistent performance and display quality.

3.2 Safety and Security Requirements

- The FPT training management system must deploy SSL/TLS encryption protocols to secure data transmission over the internet and protect sensitive information from interception.
- User authentication must include multi-factor authentication mechanisms to verify user identity and prevent unauthorized access to the system.
- Access control mechanisms must be implemented to limit users' access to specific functions and data based on their roles and permissions.
- User data must be securely stored using encryption and hashing techniques to prevent unauthorized access and data breaches.
- The system must have a built-in mechanism to detect and alert users about any suspicious activity, such as unauthorized login attempts or data breaches.
- Must ensure compliance with international data protection laws and regulations, such as GDPR and CCPA, to protect user privacy and facilitate secure online transactions.

3.3 Software Quality Attributes

- **Usability:** The FPT training management system must have an intuitive and user-friendly interface, allowing users to navigate easily and perform tasks effectively.
- **Functionality:** All system features and functions must function as intended, without errors or omissions, providing users with a seamless experience.
- **Performance:** The system must load quickly and respond promptly to user interactions, even under high traffic conditions, to maintain optimal performance.

- **Scalability:** The system architecture must support horizontal and vertical scalability to accommodate growing user needs and additional features without compromising performance.
- **Availability:** The system must have high availability, minimal downtime to ensure users can access it whenever needed.
- **Reliability:** Users can rely on the system to operate stably and reliably without experiencing system failures or crashes.
- **Security:** Systems must implement strong security measures to protect user data and prevent unauthorized access or data breaches.
- **Maintainability:** The system must be easy to update, manage, and maintain to resolve bugs, add new features, and ensure long-term viability.
- **Accessibility:** The system must comply with accessibility standards, make the system usable and accessible to users with disabilities, and be compatible with a variety of devices and assistive technologies.

3.4 Risk Assessment

- **Technical Risks:** Potential challenges related to system integration, compatibility issues, and scalability limitations should be identified and addressed proactively to minimize disruptions during development and deployment phases.
- **Security Risks:** Threats such as data unauthorized access, and cyber attacks pose significant risks to system integrity and user confidentiality. Robust security measures and proactive monitoring strategies should be implemented to mitigate these risks effectively.
- **Compliance Risks:** Failure to comply with relevant regulations and industry standards, such as data protection laws (e.g., GDPR, CCPA) and security protocols (e.g., PCI DSS), could result in legal consequences and reputational damage for FPT Company. Ensuring compliance with regulatory requirements is essential to mitigate compliance-related risks.
- **Operational Risks:** Factors such as system downtime, performance bottlenecks, and inadequate user training could impact the system's operational efficiency and user satisfaction. Implementing contingency plans, conducting regular system maintenance, and providing comprehensive user training can help mitigate operational risks.
- **Financial Risks:** Budget overruns, resource constraints, and unforeseen expenses may pose financial risks to the project. Effective cost management strategies, transparent budgeting practices, and regular financial monitoring are essential to mitigate financial risks and ensure project sustainability.
- **Stakeholder Risks:** Misalignment of stakeholder expectations, communication breakdowns, and conflicting priorities may impede project progress and jeopardize stakeholder relationships. Establishing clear channels of communication, fostering stakeholder engagement, and addressing concerns proactively can help mitigate stakeholder-related risks.

Appendix A – Data Dictionary

<Data dictionary is used to track all the different variables, states and functional requirements that you described in your document. Make sure to include the complete list of all constants, state variables (and their possible states), inputs and outputs in a table. In the table, include the description of these items as well as all related operations and requirements.>

Appendix B - Group Log

<Please include here all the minutes from your group meetings, your group activities, and any other relevant information that will assist in determining the effort put forth to produce this document>