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**TASK-1:**

* **Development of Problem Statement**

**Application/Software Name:**

* Online course reservation system

An application designed to streamline the process of enrolling in educational courses through a user-friendly platform. It should also address several challenges to ensure its effectiveness and efficiency. These include developing a comprehensive course catalog with accurate search and filtering capabilities, implementing secure user authentication and data management, and integrating reliable payment processing features. The goal is to create a functional and secure application that provides users with a seamless experience in browsing, selecting, and reserving courses while maintaining high standards of usability and performance.

**TASK-2:**

* **Preparation of Software Requirement Specification Documents, Design Documents, and Testing Phase related documents.**

**Software Requirement Specification (SRS)**

***1. Introduction***

* **Scope**:

The Online Course Reservation System is designed to enable users to search, view, and reserve educational courses online. The system will include features for user registration, course catalog management, reservation processing, and secure payment handling. It will support multiple user roles including students, instructors, and administrators.

* **Definitions, Acronyms, and Abbreviations:**
* **SRS**: Software Requirement Specification
* **MFA**: Multi-Factor Authentication
* **PCI**-**DSS**: Payment Card Industry Data Security Standard
* **User**: Any individual interacting with the system (student, instructor, administrator)
* **Admin**: System administrator with management privileges

***2. Overall Description***

* **Product Perspective**

The Online Course Reservation System is a web-based application that integrates with payment gateways and handles user interactions for course reservations. It will be a standalone system with future potential for integration with other educational platforms.

* **Product Functions**
* *User Management*: Registration, login, and profile management.
* *Course Catalog*: Browsing, searching, and viewing course details.
* *Course Reservation*: Booking courses and processing payments.
* *Notifications*: Sending confirmation and reminder notifications.
* *Admin Functions*: Managing course listings, user accounts, and reservations.
* **User Classes and Characteristics**
* *Students*: Individuals who search for and reserve courses. Require account management and payment processing.
* *Instructors*: Course providers who manage course details and schedules.
* *Administrators*: Users who oversee system operations, including user and course management.
* **Operating Environment**
* *Hardware*: Web server, database server, user devices (desktop, tablet, mobile).
* *Software*: Web server software (e.g., Apache, Nginx), database management system (e.g. PostgreSQL), web browsers.
* **Design and Implementation Constraints**
* *Compliance*: Adherence to PCI-DSS for payment processing and data protection regulations (e.g., GDPR).
* *Scalability*: The system should be scalable to handle increasing numbers of users and courses.
* **Assumptions and Dependencies**
* *Payment Gateway*: Integration with third-party payment gateways for processing transactions.
* *User Devices*: Users will access the system through modern web browsers.

***3. Functional Requirements***

* **User Management**
* *Registration/Login*: Users must be able to create accounts, log in, and manage their profiles using username and password, with optional MFA.
* *Profile Management*: Users can update their personal information and view their reservation history.
* **Course Catalog**
* *Search*: Users can search for courses by category, date, or instructor and view course details.
* *Course**Details*: Each course listing will display a description, schedule, instructor information, and availability status.
* **Course Reservation**
* *Booking*: Users can select courses, reserve spots, and manage bookings. The system will check for seat availability and handle reservation conflicts.
* *Payment Processing*: Secure processing of payments via integrated payment gateways, complying with PCI-DSS standards.
* **Notifications**
* *Automated Alerts*: System will send email or SMS notifications for reservation confirmations, offers, reminders, and any changes to bookings.
* **Admin Features**
* *Course Management*: Administrators can add, update, or remove courses, manage schedules, and track reservations.
* *Online course reservation system*: Admins can manage user accounts, including activating/deactivating accounts and handling user queries.

***4. Non-Functional Requirements***

* **Performance Requirements**
* *Response**Time*: System should respond to user requests within 2 seconds.
* *Scalability*: Ability to handle up to 10,000 concurrent users.
* **Security Requirements**
* *Data Protection*: Encryption of personal and payment information, both in transit and at rest.
* *Access Control*: Role-based access control to restrict access to sensitive features.
* **Usability Requirements**
* *User Interface*: Intuitive and responsive design, accessible on various devices.
* *User Experience*: Clear navigation and minimal steps required for course reservation.
* Online course reservation system
* *Uptime*: System should have 99.9% uptime.
* *Backup*: Regular backups of user data and system configurations.
* **Compliance Requirements**
* *Data Protection*: Compliance with GDPR and other relevant data protection regulations.
* *Payment Security*: Adherence to PCI-DSS standards for payment transactions.

***5. External Interface Requirements***

* User Interfaces
* *Web Application*: Design for a responsive web interface accessible via modern browsers.
* **Software Interfaces**
* *Payment Gateway*: Integration with third-party payment processing services.
* **Communication Interfaces**
* *Email/SMS*: Integration with email and SMS services for notifications.

***6. System Features***

* *User Registration and Login*
* *Course Reservation*
* *Admin Dashboard*

***7. Other Requirements***

- **Database Requirements**

* *Schema*: Design and implementation of a database schema to store user, course, and reservation data.
* *Security*: Data stored in the database should be encrypted, and credentials should be hashed
* **Performance Requirements**
* *Load**Handling*: System must handle peak loads without significant performance degradation.
* **Security Requirements**
* *Vulnerability* Testing: Regular security assessments to identify and mitigate potential vulnerabilities.