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TASK-1:

• Problem Statement Development

Application/Software Name:

• Online course reservation system

A basic application developed which makes the process of taking courses easy and should be done right till the course is begun. It should also solve numerous problems that add up to its. Among those are building a course catalog: A comprehensive one supporting search and filtering with high precision; User authentications with data management are secured; Payment processing feature to reliable payment checks; such design in a way that it is a fully functioning, secure application that allows seamless browsing, selection, and booking of courses, finalizing at high standards of usability and performance for users.

• Preparation of Software Requirement Specification Documents, Design Documents, and documents related to the Testing Phase.

Software Requirement Specification (SRS)

1. Introduction

- Scope:

The Online Course Reservation System shall provide the functionality for the user to search, view, and reserve educational courses online. The system shall be a support of multiple user roles like student, instructor, and admin. The system will handle user registration, course content management, reservation processing, and handling a secure payment.

- Definitions, Acronyms, and Abbreviations:

• SRS: Software Requirement Specification

• MFA: Multi-Factor Authentication

• PCI-DSS: Payment Card Industry Data Security Standard

• User: Any Person who avails the system (student, instructor, administrator)

• Admin: Any person who has the privilege to administer the system

2. General Description

- Product Perspective

The Online Course Reservation System is a Web-oriented application that interacts with payment gateways and is responsible for the reservation of courses by the system's users. It shall be regarded as an autonomous system with the options of more integration with any other learning system

- Product Functions

• User Management: Signup, login, and profile management.

• Course Catalog: Browsing, searching, and viewing of details of course

• Course Reservation: course reservation and payment

• Notification: Upon confirmation, a confirmation and reminder shall send

• Admin Functions: course information update, user information update and reservation update.

- User Classes and Characteristics

• Students: Guest of site browsing searching and bookings of courses and management of their account such as reservation and payment

• Instructors: Authority or control of information related to course-->

• Administrators: Functionality of site management for users and assignment of course.

-OPERATING ENVIRONMENT

• Hardware: Web server, database server, user devices like desktop, tablet, and mobile.

• Software: Web server software like Apache, Nginx, database management system, like PostgreSQL, and web browsers.

- Design and Implementation Constraints

• Compliance: Implementation of PCI-DSS for payment processing and data breach regulations like GDPR.

• Scalability: System needs to be scalable for more users and courses incoming.

- Assumptions and Dependencies

• Payment Gateway: The application will include payment processing from the user and link the payment with.

• User Devices: Users access the system by the use of prevalent browsers.

3. Functional Requirements

- User Management

• Registration/Login: Users must be allowed to register, login into the system, and maintain their profile with the use of a username and password. Multi-factor authentication can also be enacted if the user so desires.

• Profile Management: Users have the ability to update their profile information and view their reservation history.

- Course Catalog

• Search: User can view and search courses from catalogues by category, date, or instructor.

• Course Information: Details of each course will include its description, schedule, details of the instructor, and availability status.

- Reservation for the Course

• Enrollment: Customers will be able to reserve a seat to the course and manage the booking. The system will instantly check the seats' availability to a certain number started after booking time.

• Payment Gateway: This secured system will be covering the process efficient frequent payments owing to its embedded payment gateway complying with PCI-DSS levels.

• Automatic Notification: The system will confirm the booking to the customer through emails or as well as in the form of SMS that includes reservation information, offers, reminders, and booking alteration.

• Admin SECTION

• Course Management: Add, update and remove course, manage the course schedules, and track the reservation of the courses

• Online course reservation system: User account management by admins, hence able to activate/deactivate user account. Thus the admin to be can respond to the user question.

4. Non-Functional Requirements

- Performance Requirements

• Response Time: To be able to respond to the user's queries but not more than 2 seconds

• Scalability: To be able to handle up to 10,000 concurrent users

- Security Requirements

• Data Protection: Personal and payment information have to be.

• Access Control: Role-based access control to limit access to critical functionality.

- Usability Requirements

• User Interface: Intuitive, as well as being responsive and multi-device compatible.

• User Experience: Easy Navigation and fewer steps to perform course booking

 - Online Reservation of Courses

• Uptime: Availability of the system should be 99.9%.

• User data and system configuration should be backed up at regular intervals.

• Compliance Requirements

• Data Protection: Guarantee that the application will adhere to the GDPR and any other data protection based directive.

• Payment Security: Application to ensure the compliance with the Payment Card Industry Data Security Standard for payment

- User Interfaces

• Web Application: A responsive web interface developed to access through modern browsers.

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Software Interfaces

• Payment Gateway: Third-party services to be integrated for payment- by-payment processing.

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Communication Interfaces

• Email/SMS: Third-party integration of email and SMS for notifications

6. System Features

- User Registration and Login

- Course Reservation

- Admin Dashboard

7. Other Requirements

Database Requirements

• Schema: Develop a database schema design and implementation to store data of user, course, and reservation.

• Security: Data to be in an encrypted form at the database side, and the credentials to be hashed.

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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.