Software Requirements Specification (SRS) for AI-Powered PrepApp for DU Students

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***Abstract*—This Software Requirements Specification (SRS) defines an AI-Powered Preparation Application for Delhi University students. The app offers AI-generated mock tests, customizable test series, resume scoring with ATS compliance, and resume versioning. It also includes a placement tracker with reminders and shareable resume links to support career readiness. The system operates on a subscription model via Razorpay, with an admin portal for managing tests and resources. Designed for mobile and web platforms, the application emphasizes scalability, security, and high availability.**

I. Introduction

A. Purpose

The purpose of the AI-Powered Prep App for DU students is to provide a comprehensive digital platform that supports students in preparing for placement tests, internships, and recruitment opportunities. The application addresses the key challenges faced by students during their preparation journey by offering the following:

- **AI-Powered Mock Tests and Test Series:** Students can practice using dynamically generated mock tests that ensure question variety, non-repetition, and coverage of weak areas through adaptive testing.
- **Resume Management:** The system guides students in creating professional resumes by providing ATS-based scoring, identifying mistakes, and offering resume versioning for different job roles.
- **Placement and Internship Tracker:** Students can maintain a structured database of applications, recruiters, and companies they reach out to, along with automated reminders for follow-up emails and deadlines.
- **All-in-One Platform:** The app integrates preparation, career management, and placement tracking into a single ecosystem, helping students remain organized, motivated, and better prepared for opportunities.

Overall, the system aims to reduce the uncertainty and inefficiencies of traditional preparation methods, ensuring students have access to personalized, AI-driven, and industry-aligned tools that improve their placement readiness.

B. Scope

The AI-Powered Prep App is designed as a comprehensive preparation and career management platform for DU students. It combines AI-driven assessments, resume building, and placement tracking into one unified system. The scope of the system includes the following:

- **AI-Generated Mock Tests:** Personalized mock tests and test series dynamically generated using AI, ensuring non-repetitive questions, difficulty customization, and performance-based improvement tracking.
- **Custom Test Series and Free Tests:** Students can access curated test series and free tests provided by the admin to enhance their preparation for specific subjects or companies.
- **Resume and ATS Scoring:** Automated resume evaluation against ATS standards, highlighting strengths, weaknesses, and providing actionable feedback to improve resume quality.
- **Resume Versioning and Sharing:** Students can create multiple role-specific resume versions and generate sharable links for easy recruiter access.
- **Placement and Internship Tracker:** A centralized database where students can log applications, recruiter contacts, and track follow-ups with reminders and notifications.
- **Admin Panel:** Admins can manage test series, add new tests, and control free vs premium content.
- **Subscription Model:** The system offers a free tier with limited features and a Pro Membership (enabled via Razorpay) that provides full access to advanced features such as unlimited mock tests, premium test series, complete resume versioning, and placement tracker tools.

C. Definitions, Acronyms, and Abbreviations

List of terms (e.g., ATS, CV, DU, Razorpay, Admin, Pro Membership).

D. References

The following references were used in defining the requirements for this system:

- Razorpay API Documentation: https://razorpay.com/docs/api/
- OpenAI/LLM API Documentation (for AI-powered mock test generation and resume scoring).
- React Developer Documentation: https://developer.android.com/docs
- Next.js Developer Documentation: https://developer.apple.com/documentation
- Cloud Service Provider Documentation - Vercel.

II. Overall Description

A. Product Perspective

The AI-Powered Prep App is a new, self-contained product designed specifically for DU students preparing for placement and internship opportunities. It functions as an integrated digital solution that consolidates exam preparation, resume management, and placement tracking into a single platform.

The system consists of two main components:

- **Student Module:** Provides access to AI-generated mock tests, test series, resume management tools, placement tracker, and reminders. Students can use either the free tier with limited features or upgrade to the Pro Membership for full access.
- **Admin Module:** Allows administrators to create and manage test series, free tests, and premium mock tests, while monitoring user activity and subscription data.

The product interacts with the following external systems:

- **Razorpay Payment Gateway:** For processing subscription payments and managing Pro Membership access.
- **AI/ML Services:** Used for generating mock test questions, adaptive learning, and resume/ATS scoring.
- **Database System:** Cloud-hosted database to store user information, test results, resumes, placement tracker entries, and subscription status.
- **Notification Services:** Push notifications, emails and reminders for follow-ups, deadlines, and placement activities.

The application will be available as a cross-platform solution, accessible on both mobile (Android/iOS) and web platforms. It is designed to operate as a standalone system but can be extended in the future to integrate with university portals, placement cells, and third-party job platforms.

B. Product Functions

The AI-Powered Prep App provides the following core functionalities:

- **AI-Generated Mock Tests:** Automatically generate non-repetitive and adaptive mock tests based on student performance, with difficulty level customization.
- **Custom Test Series and Free Tests:** Students can access curated test series and free practice tests provided by the Admin for subject-specific or company-specific preparation.
- **Resume and ATS Scoring:** Evaluate resumes against industry-standard Applicant Tracking Systems (ATS), providing scoring, feedback, and improvement suggestions.
- **Resume Versioning and Sharing:** Create multiple resume versions tailored for different job roles and share them using unique, secure links.
- **Placement and Internship Tracker:** Maintain a centralized record of job/internship applications, recruiter contacts, deadlines, and follow-up reminders.
- **Reminder and Notification System:** Automated reminders for placement activities, resume submissions, and pending follow-ups via push notifications and in-app alerts.
- **Admin Panel:** Allows administrators to add new test series, mock tests, and free tests, and manage subscription-based access to premium features.
- **Subscription and Payment System:** Integration with Razorpay to manage Pro Membership, enabling access to advanced features such as unlimited mock tests, premium test series, and complete resume management.

Together, these functions provide an end-to-end solution for exam preparation, career readiness, and placement tracking for DU students.

C. User Classes and Characteristics

The system identifies two primary user classes:

- **Students (End Users):**
  - Includes undergraduate and postgraduate students of Delhi University (DU) preparing for placements, internships, and competitive assessments.
  - Divided into two categories:
    1) **Free Users:** Have access to limited mock tests, free test series, and basic resume scoring features.
    2) **Pro Users:** Paid subscribers with access to unlimited AI-generated mock tests, premium test series, full resume versioning, ATS scoring, and placement tracker with reminders.
  - Characteristics:
    * Typically possess basic to intermediate digital literacy.
    * Expect user-friendly interfaces with minimal technical complexity.
    * Require mobile and web accessibility due to varied device usage.
- **Admins:**
  - Responsible for managing the system's backend, including uploading new test series, free practice tests, and mock exams.
  - Manage subscription models, monitor student activity, and handle user support.
  - Characteristics:
    * Technically proficient with administrative controls.
    * Require a secure, efficient interface to update and manage test content.
    * Limited number of users compared to students.

D. Operating Environment

The AI-Powered Prep App will be developed as a cross-platform solution to maximize accessibility for DU students. The operating environment is defined as follows:

- **Client Platforms:**
  - Mobile application for Android (minimum version: Android 8.0 Oreo).
  - Mobile application for iOS (minimum version: iOS 13).

  - Web application accessible via modern browsers (Chrome, Firefox, Edge, Safari).
- **Server Environment:**
  - Cloud-hosted backend (AWS Amplify or Vercel) for scalability and reliability.
  - PostgreSQL database for managing user profiles, test results, resumes, and subscription data.
  - API integrations for Razorpay (payment), AI/ML services (mock test generation, ATS scoring), and notification services.
- **Network Requirements:**
  - Stable internet connectivity required for test generation, resume scoring, and database synchronization.
  - Limited offline support (e.g., saving previously attempted tests for review).

E. Design and Implementation Constraints

The system must adhere to the following design and implementation constraints:

- **Payment Gateway Constraint:** Integration with Razorpay must comply with its API standards, security policies, and RBI/PCI-DSS regulations.
- **AI/ML Model Constraint:** The AI models for mock test generation and resume scoring must be optimized for accuracy, fairness, and non-repetition of questions.
- **Platform Constraint:** Applications must be responsive and provide a consistent user experience across Android, iOS, and web platforms.
- **Data Privacy Constraint:** User data, including resumes and placement details, must be stored securely and comply with applicable data protection regulations.
- **Resource Constraint:** The system should be lightweight enough to run smoothly on mid-range smartphones commonly used by students.
- **Localization Constraint:** The app should support English as the primary language, with scope for future multilingual support.

F. Assumptions and Dependencies

The successful operation of the AI-Powered Prep App depends on the following assumptions and external dependencies:

- **Assumptions:**
  - Students have access to smartphones or personal computers with internet connectivity.
  - Users possess basic digital literacy to navigate mobile and web applications.
  - Placement preparation content provided by the Admin is accurate, up-to-date, and relevant to DU students.
  - Students are willing to adopt subscription-based services for premium features.
  - Notifications and reminders will be effective only if users allow app permissions (push notifications, email alerts).
- **Dependencies:**
  - **Payment Gateway:** Dependence on Razorpay for subscription management and payment processing.
  - **AI/ML Services:** Dependence on external AI/ML models for mock test generation and resume/ATS scoring.
  - **Cloud Infrastructure:** Dependence on cloud service providers (e.g., AWS, GCP, Azure) for hosting, storage, and scalability.
  - **Notification Services:** Dependence on third-party services (Firebase, AWS SNS, or equivalent) for delivering reminders and alerts.
  - **External Content Updates:** System requires periodic updates of test series and placement-related data from Admin.

III. Specific Requirements

A. Functional Requirements

The system shall provide the following functional requirements:

1) AI-Generated Mock Tests:

- **FR1.1:** The system shall generate non-repetitive mock test questions dynamically using AI.
- **FR1.2:** The system shall allow students to customize tests based on subject, difficulty level, and duration.
- **FR1.3:** The system shall provide performance analytics, highlighting strong and weak areas.
- **FR1.4:** The system shall allow students to review past tests with detailed solutions and explanations.

2) Custom Test Series and Free Tests:

- **FR2.1:** The system shall allow the Admin to upload predefined test series and free tests.
- **FR2.2:** The system shall make free tests accessible to all students without requiring a subscription.
- **FR2.3:** The system shall restrict access to premium test series for Pro members only.

3) Resume and ATS Scoring:

- **FR3.1:** The system shall allow students to upload or create resumes within the platform.
- **FR3.2:** The system shall evaluate resumes against ATS standards and generate a score.
- **FR3.3:** The system shall provide detailed feedback highlighting mistakes, strengths, and improvement suggestions.

4) Resume Versioning and Sharing:

- **FR4.1:** The system shall allow students to create multiple resume versions tailored for different roles.
- **FR4.2:** The system shall generate secure sharable links for each resume version.
- **FR4.3:** The system shall allow students to download resumes in standard formats (PDF/DOCX).

5) Placement and Internship Tracker:

- **FR5.1:** The system shall allow students to log details of job and internship applications (company name, role, application date, status).
- **FR5.2:** The system shall allow students to maintain a recruiter contact list for outreach and cold emailing.
- **FR5.3:** The system shall provide reminders for follow-ups, interviews, and application deadlines.

6) Admin Panel:

- **FR6.1:** The system shall allow Admins to create, edit, and delete test series, mock tests, and free tests.
- **FR6.2:** The system shall allow Admins to manage user subscriptions and monitor Pro Membership status.
- **FR6.3:** The system shall provide Admins with dashboards for analytics (e.g., number of active users, test attempts, subscription data).

7) Subscription and Payment System:

- **FR7.1:** The system shall integrate with Razorpay to handle subscription payments.
- **FR7.2:** The system shall restrict premium features (unlimited mock tests, premium test series, full resume tools, placement tracker) to Pro users only.
- **FR7.3:** The system shall send confirmation and receipts for successful payments to users via email and in-app notifications.

8) Reminder and Notification System:

- **FR8.1:** The system shall send push notifications and in-app alerts for upcoming deadlines, interviews, and placement activities.
- **FR8.2:** The system shall allow users to customize notification preferences (email, push, in-app).
- **FR8.3:** The system shall store notification history for student reference.

B. External Interface Requirements

1) User Interface:

- **UI1:** The system shall provide a mobile-friendly interface for Android and iOS users with a simple and intuitive navigation structure.
- **UI2:** The system shall provide a responsive web interface accessible through major browsers (Chrome, Firefox, Edge, Safari).
- **UI3:** The student interface shall include dashboards for mock tests, resume management, placement tracker, and notifications.
- **UI4:** The Admin interface shall provide tools for uploading test series, monitoring users, and managing subscriptions.

2) Hardware Interfaces:

- **HW1:** The system shall run on smartphones (Android/iOS) with at least 2 GB RAM and stable internet connectivity.
- **HW2:** The web application shall be accessible on laptops or desktops with standard input/output devices (keyboard, mouse, display).
- **HW3:** The backend shall be hosted on cloud servers with sufficient scalability to handle concurrent student activity.

3) Software Interfaces:

- **SW1:** The system shall integrate with Razorpay APIs for payment and subscription handling.
- **SW2:** The system shall integrate with AI/ML services (e.g., OpenAI, Ollama, or custom models) for generating mock tests and resume/ATS scoring.
- **SW3:** The system shall connect with cloud-hosted databases for storing user data, test results, resumes, and placement tracker entries.
- **SW4:** The system shall use third-party notification services (Ahasend, AWS SES) for reminders and alerts.

4) Communication Interfaces:

- **CI1:** The system shall communicate over secure HTTPS protocols to ensure data privacy and integrity.
- **CI2:** The system shall support email services (SMTP/third-party APIs) for sending confirmations, receipts, and follow-up reminders.
- **CI3:** The system shall synchronize mobile and web applications with the backend through RESTful or GraphQL APIs.

C. Performance Requirements

- **PR1: Scalability** – The system shall support at least 1000 concurrent users with the ability to scale further based on demand.
- **PR2: Response Time** – The system shall provide responses to user actions (mock test loading, resume scoring, placement tracker update) within 3 seconds under normal load.
- **PR3: Uptime** – The system shall maintain at least 99.5% uptime annually to ensure continuous availability for students and administrators.

D. Logical Database Requirements

The system shall maintain a centralized cloud-hosted relational database. The primary entities and their relationships are as follows:

- **Users Table:** Stores user profiles, login credentials, subscription status.
- **Resumes Table:** Stores multiple resume versions linked to each user, with ATS scoring data.
- **Test Results Table:** Stores user test attempts, scores, weak areas, and history of mock tests.
- **Subscriptions Table:** Stores payment records, membership start/end dates, plan details.
- **Reminders Table:** Stores placement tracker entries, follow-up mail reminders, and alert schedules.

E. Design Constraints

- **DC1: UI Consistency** – The design shall follow a uniform color scheme, typography, and navigation pattern across web and mobile platforms.

- **DC2: Cross-Platform Compatibility** – The application shall be developed to run seamlessly on Android, iOS, and modern web browsers.
- **DC3: Security** – The system shall comply with OWASP standards, implement SSL/TLS encryption, and secure all sensitive data (e.g., payment information, resumes).

F. Software System Attributes

- **Reliability:** The system shall recover gracefully from failures and ensure no data loss in case of unexpected shutdowns.
- **Availability:** The system shall be accessible 24/7, except during scheduled maintenance. Redundant cloud infrastructure shall be used to minimize downtime.
- **Security:** User data, resumes, and payment details shall be encrypted at rest and in transit. Role-based authentication shall prevent unauthorized access.
- **Maintainability:** The system shall follow modular architecture with well-documented code, allowing easy updates, bug fixes, and feature enhancements.

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