बिहार विद्यालय परीक्षा समिति

BIHAR SCHOOL EXAMINATION BOARD

SYSTEM REQUIREMENT SPECIFICATION (SRS)

For Development of Mobile Applications for students

Prepared by
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Table of Contents

Abbreviations

API	:	Application Programming Interface
BSEB	:	Bihar School Examination Board
CMS	:	Content Management System
DOB	:	Date of Birth
DMS	:	Document Management System
FAQ	:	Frequently Asked Questions
FR	:	Functional Requirement
HTTPS/TLS	:	Hypertext Transfer Protocol Secure / Transport Layer Security
KYC	:	Know Your Customer
LMS	:	Learning Management System
O&M	:	Operations & Maintenance
OTP	:	One Time Password
PDF	:	Portable Document Format
PG	:	Payment Gateway
SLA	:	Service Level Agreement
SMS	:	Short Message Service
SRS	:	Software Requirement Specification
UDISE	:	Unified District Information System for Education
UI/UX	:	User Interface / User Experience
UPI	:	Unified Payments Interface

1. Introduction

The purpose of this SRS is to define the functional and non-functional requirements for the Student Mobile Application of BSEB. This document ensures that all stakeholders (BSEB, students and administrators) have a clear understanding of the app features, workflows, validations, and performance expectations.

2. Scope

The Student App will serve as a digital hub for students:

- View personal exam information (profile, schedule, center).
- Apply for examinations online.
- Access admit cards.
- View/download results and certificates.
- Receive official announcements, notifications, and news.
- Access academic resources (syllabus, books, mock tests).
- Get help via FAQs and Helpdesk.

Language: Hindi and English
Platforms: Android & iOS.
Architecture: API-driven, integrated with BSEB back-end systems.

3. Technology Stack

Frontend: Flutter (Dart) for cross-platform mobile UI.
Platforms: Android and iOS.
Backend: Integrated with BSEB APIs (DMS remains unaffected).
Storage: Local caching for offline access and cloud-based backend for real-time data.
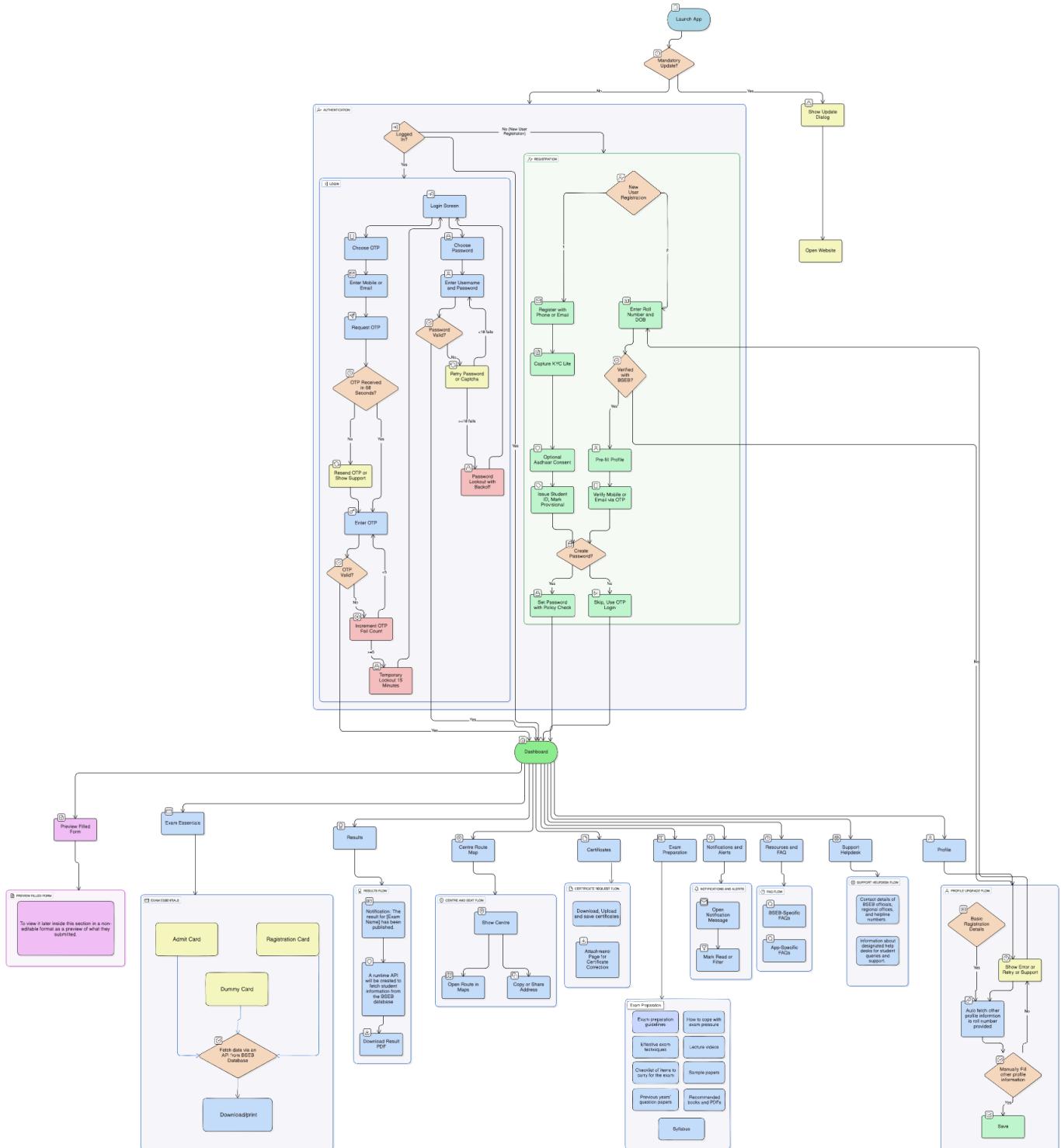
The Student App is part of a three-app ecosystem (Student App, Academic App, Recording & Tracking App). It directly interacts with BSEB's back-end databases via REST APIs/JSON, with secure authentication.

4. System Flowchart

The following flowchart illustrates the overall working of the BSEB Student Mobile Application, showing the navigation from login to various modules such as exam application, results, and support services.

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5. Screen-by-Screen Details
The following screens correspond to the flow chart provided above and illustrate, step by step, how the system will function

5.1. Launch App Screen
Shows app splash/logo.
After loading, moves to the Announcement/Update page.

5.2.Announcement / Update Screen
Shows important announcements or updates.
User can:
Click on it → open detail/update page.
Skip → go to Login/Register page.

5.3. Login / Register Screen
If user already has an account → Login using OTP or Password.
If new user → Register with details.

5.4. Login Flow (Screen by Screen)

5.3.1. Login Screen
Options:
Choose OTP (login with mobile/email + OTP)
Choose Password (login with username/email + password)

5.3.2. OTP Login Flow
Enter Mobile Number / Email → Request OTP
OTP Received? (within 60 sec)
If Yes → Enter OTP
If No → Option to Resend OTP or Contact Support
Validate OTP
If valid → Login successful → Go to Home
If invalid → Increment fail count
After repeated failures → Temporary Lockout (15 mins)

5.3.3. Password Login Flow
Enter Username / Email + Password
Check Validity:
If password correct → Login successful → Go to Home
If password incorrect:
Retry with password or captcha (up to 3 attempts)
After 3+ failures → Password Lockout with Backoff

Once you successfully log in, you will be redirected to the dashboard.

6. New User Registration Flow

6.1. Registration Screen
Options:
Register with Phone / Email
(fill the Registration Form)

Registration Process (Simplified)
During registration, we will only collect the minimum required details. Students can later complete the rest of their profile by logging in and editing their information.

Details required at the time of registration:

- Class
- Full Name
- Email
- Phone Number
- Gender (use full form: Male / Female / Others)
- Date of Birth
- School Name
- Roll Code / Roll Number (Optional)
- Password
- Photo
- Signature

Additional details can be filled in later from the student's profile section.

6.2. KYC / Identity Verification
If phone/email → Capture KYC Lite
If roll number/DOB → Verify with BSEB database

6.3. Aadhaar Consent (Optional)
User may give Aadhaar consent (optional step).

6.4. Profile Setup
Pre-fill profile details from verified source.
Issue Student ID (Provisional).
Verify mobile/email via OTP.

6.5. Password Creation
User chooses:
Set Password (with policy check)
OR Skip → Use OTP login option

Once you have successfully registered, you will be redirected to the dashboard.

7. Dashboard - Main Options

Once the user successfully logs in/ registers, they are redirected to the Dashboard.
From here, they can access the following features:

- Profile
  View and update user profile (personal info, credentials, settings).
- Results
  Check published exam results.
- Exam Essentials
  Download/print Admit card, Registration Card, Dummy Card   for examinations.
- Centre Route Map
  View allocated exam centre and navigation route.
- Certificates
  Access/download academic certificates.
- Exam Preparation
  Links to study material and exam preparation portal.
  (Syllabus, E-Library, Video Lectures, Question Bank, Previous years' question papers, How to cope with exam pressure, Exam preparation guidelines, Effective exam techniques, Checklist of items to carry for the exam, Sample papers)
- Notification and Alerts
  The Notifications and Alerts section will display all notifications in a structured way.
- Preview Filled Form
  Students will be able to preview the form they have filled. If any details are incorrect, the process to get them corrected will be available right there.
- Resources and FAQ
  Help articles, guides, and frequently asked questions.
- Support / Helpdesk
  Contact support team.

7.1 Profile Section

7.1.1. Profile Section Features
- After registration, if the student has provided a Roll Number and Roll Code, we will automatically fetch the remaining details from the BSEB database.
- If the Roll Number and Roll Code are not provided, the student can manually enter the remaining details in their profile in the Edit Profile section.

7.1.2. Edit Profile Section
- Users can manually update their profile details.
- An "Upgrade Class" button should be available to initiate the class upgrade process.
- Students should have the option to upgrade their class.
- For upgrading, they must provide new credentials (e.g., registration number, roll number, school).
- The class can be updated (e.g., from 10th to 12th).
- Once entered, the changes must be saved to update the profile.

7.2 Exam Essentials

Under Exam Essentials, students can download the Admit Card, Registration Card, and Dummy Card

Result, Admit Card, Registration Card, and Certificate

- A runtime API will be created to fetch student information from the BSEB database.
- Using this API, the app will display student results directly within the application.
- BSEB will provide the required database along with a template for each document (Result, Admit Card, Registration Card, and Certificate).
- We can customize or redesign the provided template and display it in the app.

Important Notes:

- BSEB will not provide direct URLs for these documents.
- However, if in any case a URL is required (for example, to download an Admit Card or Result), the link will be published in the Notification/Announcement section, so students can easily access and download it.

7.3 Centre Route Map Flow
- Show Centre
  User can view the allocated exam centre.
- Options for Navigation
  Open Route in Maps → Opens navigation in Maps.
  Copy or Share Address → Allows user to copy address or share it.

7.4 Certificates

- A digital vault will be created where students can upload and securely store their certificates.
- In case there is any error in a certificate, there should be a "Certificate Correction" section.
  When students click on this section, an attachment/page should open that provides complete details and the step-by-step process for certificate correction.

  Certificate Vault & Correction

- Students can upload their certificates into a secure digital vault.
- A "Certificate Correction" section will be available in case of errors, where students can view the correction process and required details.

7.5 Exam Preparation
when a student selects Exam Preparation, under Exam Preparation, they will also get access:-
Based on the class selected by the student, the following resources will be available:

- Syllabus
- E-Library
- Video Lectures

- Question Bank
- Previous years' question papers
- How to cope with exam pressure
- Exam preparation guidelines
- Effective exam techniques
- Checklist of items to carry for the exam
- Sample papers

7.6 Notifications and Alerts

- The Notifications and Alerts section will display all notifications in a structured way.
- When a student opens this section, they will first see a short summary of each notification.
- By clicking on the notification, students can view the full details or access the attachment, which will be placed directly under the short summary.

7.6.1 Admin Notification Template

- A notification template will be provided in the backend to make it simple for the admin to create and publish notifications or announcements.
- The admin will be able to enter a Short Summary, write the Full Notification/Announcement, and optionally upload an Attachment.
- The backend dashboard will have a three-section template for creating notifications:

  1. Subject
  2. Body
  3. Attachment

7.7 Preview Filled Form

- Students will not fill any forms directly within the app. Instead, any official exam form will be filled through a redirected URL, which will be shared in the Notifications and Alerts section.

7.7.1 Functionality:

- Once a student submits a form, they will be able to view it later inside this section in a non-editable format as a preview of what they submitted.

7.7.2 Integration with BSEB Database:

- The submitted form data will be fetched via the same API that connects to the BSEB database.
- The design of this feature will be highly configurable, ensuring smooth integration with BSEB's database without requiring a complete rewrite of the API.

- If the database location changes to a different server, only the location ID will need to be updated.
- In case of a firewall block, a request must be made to BSEB to whitelist or clear the restriction.

7.8 FAQs (Frequently Asked Questions)
The app will include a dedicated FAQs section to help students quickly resolve common issues. This section will be divided into two parts:

7.8.1 BSEB-Specific FAQs
Covers common queries related to the Bihar School Examination Board (BSEB).
Examples:
What should I do if there is an error in my marksheet?
How can I correct mistakes in my certificate?
Where can I check my admit card or result?

7.8.2 App-Specific FAQs
Covers common queries related to using the app.
Examples:
How do I log in with my email or phone number?
How can I upload my certificates in the vault?
Where can I find my syllabus, e-library, or video lectures?

7.9 Support Helpdesk
- Contact details of BSEB officials, regional offices, and helpline numbers.
- Information about designated help desks for student queries and support.

8. Product Functions

- Dashboard summarizing all student services.
- Secure login/Registration via OTP.
- Profile management.
- Admit card generation.
- Results retrieval and PDF download.
- Certificate Vault.
- Notifications, news, FAQs.
- Support

8.1 User Classes and Characteristics

- **Primary Users:** Students (9th,10th,11th,12th and others).

Role	Description	Access Level
Student	Primary user of the app; accesses personal records, exam information, and resources	Basic
Admin	BSEB officials managing content, notifications, users, and queries	Full

8.2 Operating Environment

- Android 9.0+
- iOS 13.0+
- Requires internet (some offline caching for read pages).
- Secure backend APIs hosted on BSEB's infrastructure with HTTPS/TLS.

8.3 Design and Implementation Constraints

- Security compliance (CERT-In).
- Load: must support up to 500,000 concurrent users during peak exam result time.
- Response time ≤ 2 seconds for typical views, ≤ 30 seconds for heavy loads.

8.4 Assumptions and Dependencies

- Reliable internet connectivity assumed.
- SMS delivery for OTP depends on telecom providers.
- Payment confirmation depends on PG callbacks.

9. Specific Requirements

9.1. Functional Requirements

9.1.1. Sign-in Options

Description: The app shall support two sign-in paths:

1. OTP Login (Password less) using mobile number or email.
2. Username/Password Login for users who created a password during registration (optional but recommended for repeat users).
3. If a student enters the roll number or roll code, the remaining details will be auto-fetched from the database of BSEB.

Acceptance criteria

- OTP delivered within ≤ 60s; max 5 resend attempts; 5 wrong-OTP lockout for 15 minutes.

- Password login enforces lockout after 10 failed attempts with exponential backoff.
- All authentication attempts are securely logged (user ID, device, IP, time, outcome) to track, review, and ensure accountability.

9.1.2. Registration Options

Description: The app shall let users register via either:

- A) Connect BSEB Credentials (if available): Roll No + DOB (+ School/UDISE or School Code as needed).
- B) Register with Phone/Email (for users without roll numbers yet, e.g., Class 9).

The system must not block students who do not have a roll number yet.

Acceptance criteria

- If Path A is chosen and BSEB credentials validate, the user profile pre-fills known fields; user confirms and completes missing fields.
- If Path B is chosen, the user completes KYC-lite (see FR-AUTH-03) and is allowed to use services appropriate to their class/status.

In case of registration-Registration Data (Fields to Capture)

To support both with/without-roll scenarios, collect a minimal, privacy-aware dataset. Fields are tagged as **M** = Mandatory, **C** = Conditional, **O** = Optional.

Group	Field	M/C/O	Notes / Validation
Identity	First Name, Middle (O), Last Name	M	Unicode; 2–50 chars each
Identity	Date of Birth	M	Past date; ≥ 10 years old typical
Identity	Gender	M	Select (M/F/O)
Identity	Father's Name, Mother's Name	C	Mandatory if no Roll No
Contact	Mobile Number	M	10 digits; OTP-verified
Contact	Email	O (M if choosing email login)	RFC email; OTP-verified if used

Address	State, District, Block	M	From master lists
Address	Full Address	O	10–200 chars
Education	Class/Grade	M	e.g., 9, 10, 12
Education	Stream/Subjects	C	Required for exam application flows
Institution	School Name	M	Pick from list
Institution	UDISE Code	C	Mandatory if no Roll No (to uniquely link school)
BSEB Link	Roll No	C	If available; format validated
BSEB Link	Registration No	C	As applicable
ID Proof	Aadhaar (see FR-AUTH-04)	O	If provided, follow masking/consent rules
Media	Photo (Passport)	M	JPG/PNG (40kb – 100kb) DIMENSION – 3.5cm x 3cm
Credentials	Create Password or 6–8 digit PIN	O	Strong policy (min 8 chars, 1 number, 1 letter)
Adhar Number	12 digit number	O	12 digits

Why these fields?

- Students without roll no (e.g., Class 9) can still register using Name + DOB + Parent's Name + School/UDISE + District. This tuple gives sufficient uniqueness for later linkage when roll numbers are issued.
- UDISE Code guarantees school uniqueness statewide.
- Contact OTP verification ensures account recovery works even without passwords.

Account Recovery ("Forgot Password" / "Can't Sign In?"/ "Change Password")

Description: Provide two recovery paths from a single "Can't sign in?" entry point:

1. Forgot Password (for users who set a password/PIN):
   Verify via OTP sent to registered mobile/email → reset password/PIN.
2. No Password (OTP users):
   "Sign in with OTP instead" (guides to OTP flow).

Change Password (Logged-in)

- In Profile ➜ Security, user can change the password:
  Re-auth with current password or OTP.
  Enforce password policy and history check.
  password policy example:
  Minimum 8 characters
  At least 1 uppercase, 1 lowercase, 1 number, and 1 special character
  Example valid password: Rohan@123
  On success, revoke other active sessions (optional).

Edge cases

- Changed/No access to mobile/email: show "Contact Helpdesk" with a form. Support verifies identity via Name + DOB + Parent's Name + School/UDISE + District and can initiate a secure number/email change workflow.

Acceptance criteria

- Password reset link/code expires in 30 minutes; one-time use.
- Minimum password policy enforced.
- Full audit trail of recovery events.

Security Controls (All Auth/Reg Flows)

- Rate limiting: e.g., max 5 OTP requests per hour per user/device; global caps with cooling-off.
- Device binding (optional): flag new device → force OTP even if password exists.
- ReCaptcha/human verification after repeated failures.

9.1.3. Dashboard

The dashboard will include the following sections:

- Profile
- Result
- Exam Essentials
- Exam Center Location
- Certificate
- Exam Preparation
- Notifications & Alerts
- Preview Filled Form
- FAQs
- Support

9.1.4. Profile

- CRUD (Create, Read, Update, Upgrade Class and Delete student profile data) operations for student profile.
- Upload a photo (40kb – 100kb JPG/PNG).
- signature (20kb – 60kb JPG/PNG).

9.1.5. Exam Essentials

- Admit Card
- Registration Card
- Dummy Card
- Downloadable

9.1.6. Results

- Allows roll/registration input.
- Fetches results (marks, grades, status).
- Download as PDF.
- Verifiable via API.

9.1.7. Certificates

- Download/Upload certificates.

9.1.8. Notifications

- Inbox for push notifications.

9.1.9. FAQ

- FAQs.

9.1.10. Video Lectures

The app shall provide a Video Lecture module where students can watch subject-wise recorded and live sessions by teachers.
Upload PDFs, notes, or short videos.
Announcements from teachers visible to their students.

9.1.11. Systematic Notifications

Description:
 The app shall provide systematic delivery of notifications with hierarchy.

- Priority-based notification queue (High = Exam date, Medium = Syllabus, Low = General updates).
- Notification logs in profile.

9.1.12. Support / Helpdesk

- Contact details of BSEB officials, regional offices, and helpline numbers.

10. External Interface Requirements

10.1. User Interfaces

- Splash screen → Login → Dashboard → Modules.
- Consistent design system (colors, typography, icons).

10.2. Hardware Interfaces

- Camera (live photo capture).
- Storage (for downloads).
- Notifications (via FCM/APNs).

10.3. Software Interfaces

- REST APIs (JSON).
- Payment Gateway API (If needed while showing the payment status).
- LMS Integration API.

10.4. Communication Interfaces

- HTTPS with TLS 1.2+.
- Push notifications via Firebase/APNs.

11. Other Requirements

- App must pass CERT-In security audit. (By Agency)
- Source code, documentation, and IP belong to BSEB.
- Vendor to provide maintenance & minor enhancements for O&M period.

This Software Requirements Specification (SRS) document for the *Mobile Applications for* students for BSEB has been reviewed and approved by the undersigned stakeholders.

By signing this document, the parties agree that it accurately reflects the requirements of the Bihar School Examination Board (BSEB) and will serve as the baseline for design, development, and implementation. Any modifications to the requirements will be managed through a formal change request and approval process.

Organization	Signature
Bihar School Examination Board (BSEB)	
Cyberica Net Technologies Pvt. Ltd. Project Manager	