



National University
Of Computer and Emerging Sciences

Software Requirement Specification (SRS)

An Assignment presented to

Sir Basharat Hussain

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of the requirement for the course of**

Software Engineering

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**BS(CS)
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1. System Requirements

1.1 Functional Requirements

The functional requirements of the **CodeFast Web Application** define the specific behaviors and functionalities that the system must support in order to meet the business and user needs. These are outlined as follows:

1. **User Authentication and Authorization**
 - The system shall allow users (students, industry representatives, and administrators) to register, log in, log out, and reset passwords securely.
 - The system shall support role-based access control, granting specific permissions based on user roles.
2. **Profile Management**
 - Users shall be able to view and update their personal profiles, including profile pictures, bio, contact information, and password.
3. **Course Management**
 - Students shall be able to view available courses, enroll in them, and access course content such as videos, assignments, and quizzes.
 - Administrators shall approve or reject course enrollment requests.
 - Upon course completion, the system shall generate and issue a downloadable certificate.
4. **Quiz and Contest Participation**
 - Students shall be able to participate in quizzes and contests associated with their enrolled courses.
 - The system shall automatically evaluate quiz responses and contest submissions, providing immediate feedback and scores.
5. **Performance Analysis and Feedback**
 - The system shall generate detailed performance reports based on student activity in quizzes and contests.
 - Students shall be able to view their feedback and leaderboard rankings, while admins and industry users can analyze performance metrics.
6. **Industry Engagement**
 - Industry users shall be able to post internship/job opportunities and manage applications.
 - Students shall be able to apply for these opportunities and track their application status.
 - Industry users shall be able to send interview invites to selected candidates.
7. **Gamification and Premium Membership**
 - The system shall implement a badge and reward system to encourage user engagement.
 - Students with premium memberships shall have access to exclusive learning materials.
8. **Admin Panel and Request Handling**
 - Administrators shall manage user data, approve/reject requests, view platform statistics, and oversee all operations.

9. Notification and Alerts

- The system shall notify users about upcoming contests, new internships, application status, and other relevant events.

10. Support and Issue Tracking

- Users shall be able to report bugs or issues through a dedicated support section.
-

1.2 Non-Functional Requirements

The non-functional requirements describe the system's quality attributes and constraints. These are categorized into product, organizational, and external requirements.

1.2.1 Product Requirements

1. Performance

- The system shall respond to user actions (e.g., loading dashboard or course content) within 1 second.
- The system shall support a minimum of 200 concurrent users without performance degradation.

2. Reliability

- The platform shall maintain an uptime of at least 99.8% during operational hours.
- The system shall ensure data consistency during concurrent operations such as quiz submissions or profile updates.

3. Usability

- The interface shall be user-friendly and require minimal training.
- The system shall provide visual feedback for all actions (e.g., successful form submission, error messages).

4. Scalability

- The system architecture shall be designed to scale horizontally to support increased user load and additional features.

5. Security

- User credentials and sensitive data shall be stored using secure encryption protocols (e.g., SHA-256).
- All data exchanges between client and server shall be secured with SSL/TLS.
- Role-based access shall prevent unauthorized access to restricted features.

6. Portability

- The web application shall be accessible from all major browsers and operating systems (Windows, macOS, Linux).
- The system shall be responsive and fully functional across desktop and mobile devices.

7. Maintainability

- The system codebase shall follow modular design principles to facilitate easy debugging, testing, and future updates.
- Clear documentation and naming conventions shall be maintained throughout the code.

8. Accessibility

- The platform shall support accessibility standards (e.g., keyboard navigation, color contrast) to cater to diverse user needs.
- Dark mode shall be available as an optional user preference.

1.2.2 Organizational Requirements

1. Development Process

- The system shall be developed using the Scrum methodology with defined sprints, daily stand-ups, and sprint retrospectives.
- All project-related activities shall be tracked using Trello, and version control shall be managed via GitHub.

2. Team Collaboration

- Team communication shall occur primarily over WhatsApp (instant updates), with formal discussions via email and weekly in-person meetings.
- Branching strategies and code reviews shall be enforced through GitHub workflows to ensure collaboration and quality assurance.

3. Deployment & Maintenance

- The system shall be deployed on a secure cloud hosting platform supporting Node.js, MongoDB, and scalable backend services.
- Scheduled maintenance shall be communicated in advance, and system updates shall be versioned and documented.

1.2.3 External Requirements

1. Regulatory Compliance

- The system shall comply with academic data privacy policies set by FAST University.
- The platform must ensure that user data is not shared with third parties without consent.

2. Integration Interfaces

- The system shall integrate with external email APIs for notifications and password resets.
- External collaboration tools or APIs (e.g., calendar for interviews, file upload for resume sharing) may be integrated as needed.

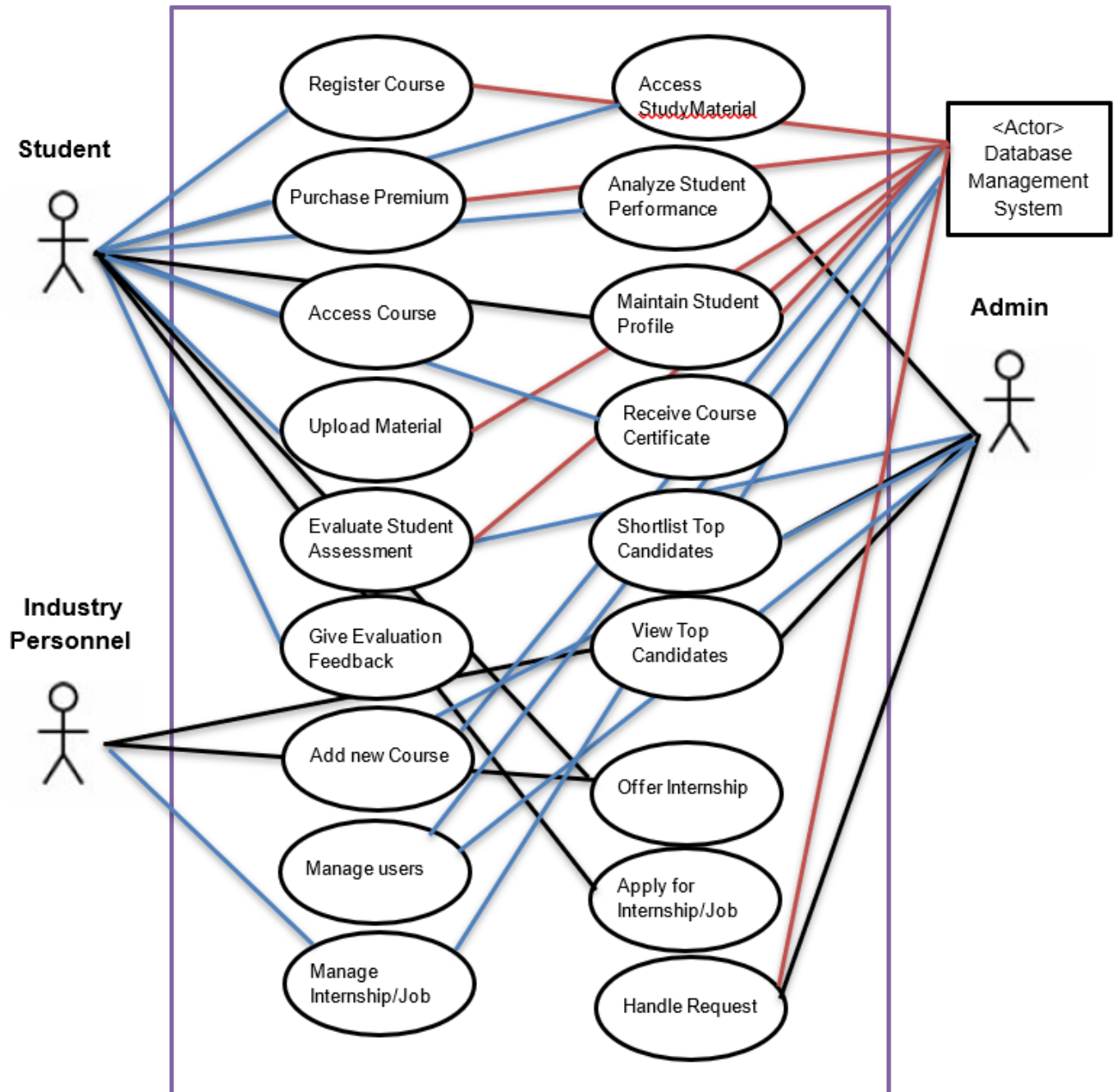
3. Browser and Device Compatibility

- The application must be compatible with major browsers (Chrome, Firefox, Safari, Edge) and support responsive behavior on mobile and tablet devices.

4. Backup and Recovery

- The database shall have daily automated backups and support recovery in the event of data loss or system crash.
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2. Use Case Diagram



3. Extended Use Stories

Story ID: 1 Story Title: User Registration

User Story:

As a: New User (Industry or Student)

I want: Register an account

So that: I can access the platform's features

Importance:

High

Estimate:

3

Acceptance Criteria:

Given the user is on the registration page

When they enter valid details (name, email, password)

And they confirm the password

Then the system creates a new account

And sends a confirmation email

Type: Workflow

Story ID: 2 Story Title: User Login

User Story:

As a: User

I want: Log into my account

So that: I can access my profile and courses

Importance:

High

Estimate:

2

Acceptance Criteria:

Given the user is on the login page

When they enter valid credentials (email, password)

And click the login button

Then the system grants access

And redirects them to the dashboard

Type: Workflow

Story ID: 3 Story Title: Password Reset

User Story:

As a: User

I want: Reset my password

So that: I can regain access to my account if I forget it

Importance:

Medium

Estimate:

2

Acceptance Criteria:

Given the user is on the login page
When they click the “Forgot Password” link
And provide their registered email
Then the system sends a password reset link
And allows them to set a new password

Type: Workflow

Story ID: 4 Story Title: Profile Management

User Story:

As a: User

I want: Update my profile information

So that: I can keep my details up to date

Importance:

Medium

Estimate:

3

Acceptance Criteria:

Given the user is on the profile page
When they edit their information (name, bio, profile picture)
And save the changes
Then the system updates their profile

Type: Mange Data

Story ID: 5 Story Title: Course Enrollment

User Story:

As a: Student

I want: Enroll in a course

So that: I can access its content and assignments

Importance:

High

Estimate:

3

Acceptance Criteria:

Given the user is on the course page

When they click the “Enroll” button

And confirm their enrollment

Then the system grants them access to the course

Type: Workflow

Story ID: 6 Story Title: Course Completion Certification

User Story:

As a: Student

I want: Receive a certificate after completing a course

So that: I can showcase my achievements

Importance:

Medium

Estimate:

4

Acceptance Criteria:

Given the user has completed all course modules

When they finish the final assessment successfully

Then the system generates a certificate

And allows them to download it

Type: Report/View

Story ID: 7 Story Title: Quiz Participation

User Story:

As a: Student

I want: Participate in quizzes related to courses

So that: I can improve my course skills

Importance:

Medium

Estimate:

5

Acceptance Criteria:

Given the user is on the course page

When they select a quiz and solve it

Then the system evaluates their submission

And displays the results

Type: Workflow

Story ID: 8 Story Title: View Performance Leaderboard

User Story:

As a: User

I want: View the Performance leaderboard of top candidates

So that: I can see rankings of students

Importance:

Medium

Estimate:

3

Acceptance Criteria:

Given the user is on the Performance page

When the user accesses the leaderboard

Then the system displays rankings based on scores

Type: Report/View

Story ID: 9 Story Title: Provide Student Feedback

User Story:

As a: Student
I want: To receive feedback on my performance
So that: I can improve my skills and track my progress

Importance:

High

Estimate:

3

Acceptance Criteria:

Given the student is logged in
When they navigate to the feedback tab
Then the system retrieves and displays performance feedback
And if the student has not participated in quizzes or contests, the system provides general feedback

Type: Feedback Management

Story ID: 10 Story Title: Analyze Student Performance

User Story:

As a: Admin or Industry Representative
I want: To analyze student performance
So that: I can provide feedback or make hiring decisions

Importance:

High

Estimate:

4

Acceptance Criteria:

Given the user is logged in as an admin or industry representative
When they select the performance analysis option
Then the system retrieves student performance data and generates a detailed report
And if no performance data is available, the system displays a message indicating the absence of records

Type: Performance Analysis

Story ID: 11 Story Title: Offer Internship

User Story:

As a: Industry Representative
I want: To offer internships to students
So that: I can recruit potential talent for my organization

Importance:

High

Estimate:

5

Acceptance Criteria:

Given the industry user is logged in
When they navigate to the internship/job tab and select a student
Then the system allows them to send an internship offer
And the student can accept or reject the internship offer
And if a student was previously rejected, they cannot apply again

Type: Workflow

Story ID: 12 Story Title: Manage Internship/Job Students

User Story:

As a: Industry Representative
I want: To manage my hired students and employees
So that: I can track and remove interns if needed

Importance:

Medium

Estimate:

3

Acceptance Criteria:

Given the industry user is logged in
When they navigate to the manage job/internship tab
Then the system displays a list of hired students
And the industry user can remove students from their organization
And once removed, the student cannot reapply

Type: Industry Management

Story ID: 13 Story Title: Manage Registrations

User Story:

As a: Admin

I want: To manage industry-related registration requests

So that: I can approve, reject, or update requests efficiently

Importance:

High

Estimate:

5

Acceptance Criteria:

Given the admin is logged in

When they navigate to the request management page

Then the system displays pending requests

And the admin can approve, reject, or update requests (e.g., student registrations, course enrollments, premium plan requests)

Type: Workflow

Story ID: 14 Story Title: View CodeFast Analytics

User Story:

As a: Admin or Industry Representative

I want: To view platform activity and insights

So that: I can make informed decisions

Importance:

High

Estimate:

3

Acceptance Criteria:

Given the user is logged in as an admin or industry representative

When they navigate to the dashboard

Then the system retrieves and displays platform activity data (total registered students, industries, courses, contests, quizzes, etc.)

And the system presents the data using bar charts and pie charts

And if data retrieval fails, an error message is displayed

Type: Report/View

Story ID: 15 Story Title: View Course Content

User Story:

As a: Student
I want: To view course content
So that: I can learn and complete the course requirements

Importance:

Medium

Estimate:

3

Acceptance Criteria:

Given the student is logged in
When they select a course
Then the system displays the course content, including video lectures, reading materials, and assignments

Type: Course Management

Story ID: 16 Story Title: Report Bugs and Issues

User Story:

As a: User (Student or Industry)
I want: To report bugs or issues in the platform
So that: The development team can address and resolve them

Importance:

Medium

Estimate:

3

Acceptance Criteria:

Given the user is logged in
When they navigate to the support section and submit a bug report
Then the system records and forwards the issue to the admin
And the system assigns a priority level based on severity

Type: Support & Issue Tracking

Story ID: 17 Story Title: Access Study Material with Premium Membership

User Story:

As a: Student

I want: To access study material for my registered courses if I have a premium membership

So that: I can get exclusive learning resources to improve my skills

Importance:

High

Estimate:

4

Acceptance Criteria:

Given the student is logged in and has an active premium membership

When they navigate to a registered course

Then the system grants access to study material

And if the student does not have a premium membership

Then the system restricts access and displays an upgrade option

Type: Membership Management

Story ID: 18 Story Title: Store User Credentials Securely

User Story:

As a: User (Student, Admin, Industry)

I want: The platform to store my credentials

So that: I do not have to enter my login details repeatedly

Importance:

Low

Estimate:

3

Acceptance Criteria:

Given the user logs into CodeFast and selects “Remember Me”

Then the system stores credentials securely in cookies

And the user remains logged in until they manually log out or clear cookies

Type: Authentication/Security

Story ID: 19 Story Title: Enable Dark Mode

User Story:

As a: User

I want: To enable dark mode

So that: I can reduce eye strain while using the platform

Importance:

Low

Estimate:

2

Acceptance Criteria:

Given the user is logged in

When they navigate to settings

Then they can toggle dark mode

And the system saves the preference for future sessions

Type: User Preferences

Story ID: 20 Story Title: Approve Course Enrollment Requests

User Story:

As a: Admin

I want: To approve or reject student course enrollment requests

So that: Only eligible students can access the courses

Importance:

Medium

Estimate:

3

Acceptance Criteria:

Given the admin is logged in

When they navigate to course requests

Then the system displays pending requests

And the admin can approve or reject requests based on eligibility

Type: Course Management

Story ID: 21 Story Title: Manage Users (Add/Remove Students & Industry)

User Story:

As a: Admin

I want: To add or remove students and industry users from the platform

So that: I can maintain the integrity and security of the

Importance:

High

Estimate:

4

Acceptance Criteria:

Given the admin is logged in

When they access the user management panel

Then the system allows them to add new users

And if the admin selects a user (student or industry) and clicks remove

Then the system removes that user and updates the database

And removed users lose access to their accounts, and related data is archived for security purposes

Type: User Management

Story ID: 22 Story Title: Student Filtering

User Story:

As a: Industry Representative

I want: To filter leaderboards based on criteria

So that: I can view rankings by course, contest, or performance category

Importance:

Medium

Estimate:

3

Acceptance Criteria:

Given the user is on the leaderboard page

When they apply filters (e.g., course-based, quiz-based, global rankings)

Then the system updates the leaderboard accordingly

Type: Performance Ranking

Story ID: 23 Story Title: Manage a New Internship

User Story:

As a: Industry Representative

I want: To add or remove a new internship opportunity

So that: Students can apply for internships within my organization

Importance:

High

Estimate:

4

Acceptance Criteria:

Given the industry representative is logged in,
When they navigate to the internship management section
Then the system provides an option to add a new internship.

Type: Internship Management

Story ID: 24 Story Title: Send Interview Invitation

User Story:

As a: Industry Representative

I want: To send interview invitations to shortlisted candidates

So that: I can assess and hire the best candidates

Importance:

High

Estimate:

4

Acceptance Criteria:

Given the industry representative is logged in
When they navigate to the job applications section and select a candidate
Then the system allows them to send an interview invitation with date, time, and meeting link

Type: Workflow

Story ID: 25 Story Title: View Applied Jobs

User Story:

As a: Student

I want: To see the jobs I have applied for

So that: I can track my applications and responses

Importance:

Medium

Estimate:

3

Acceptance Criteria:

Given the student is logged in

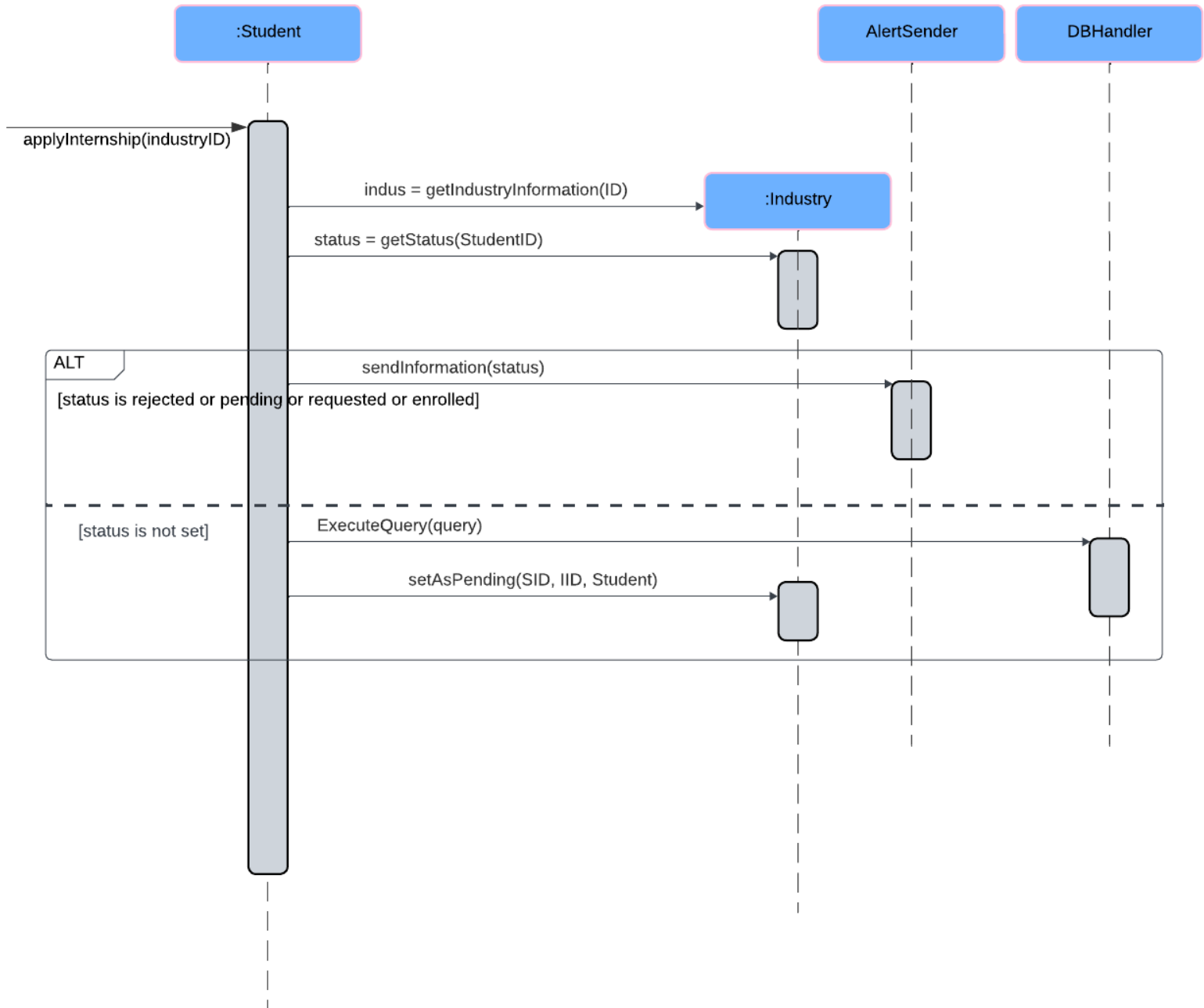
When they navigate to the "My Applications" section

Then the system displays a list of all job applications with their current status (Pending, Accepted, Rejected)

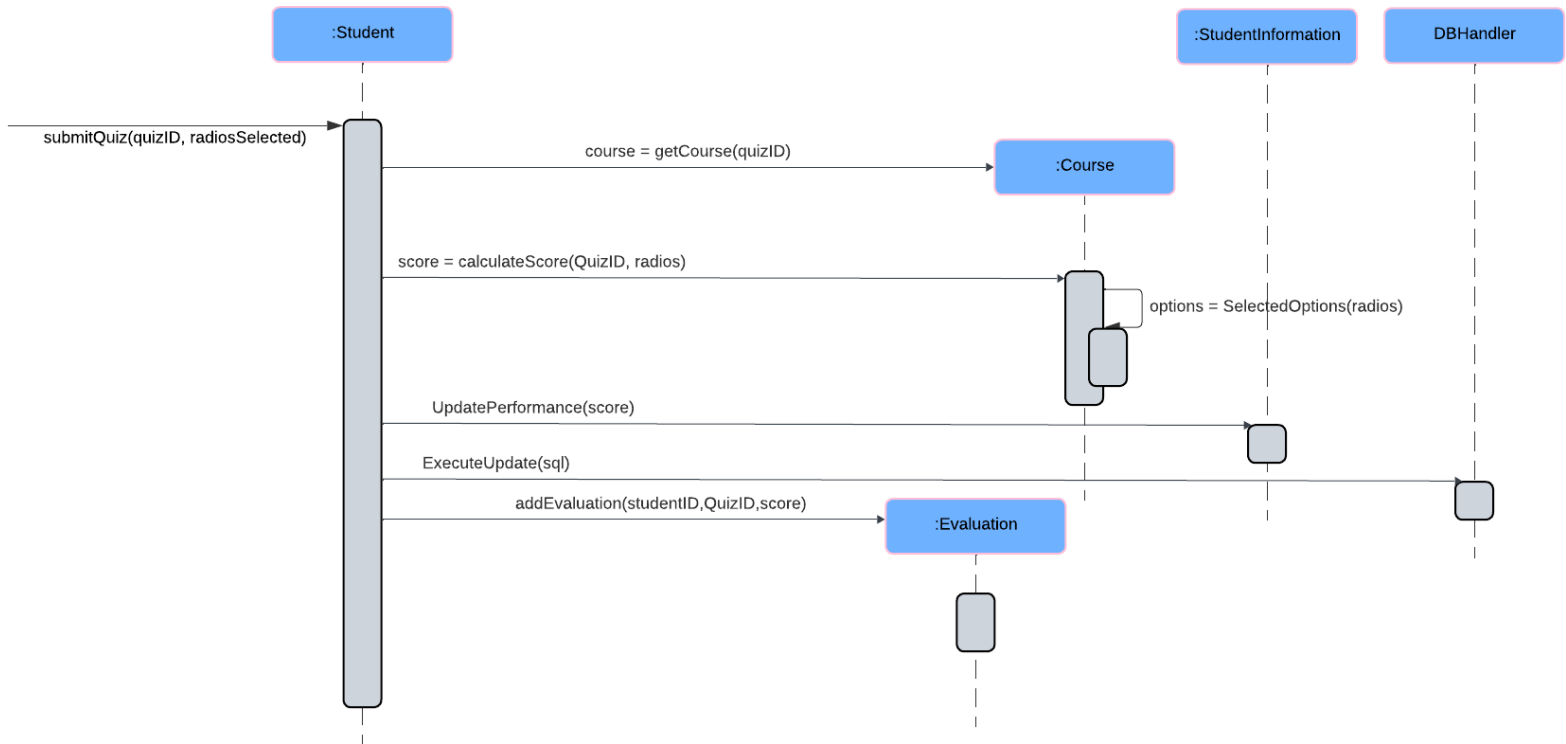
Type: Workflow

4. Sequence Diagrams

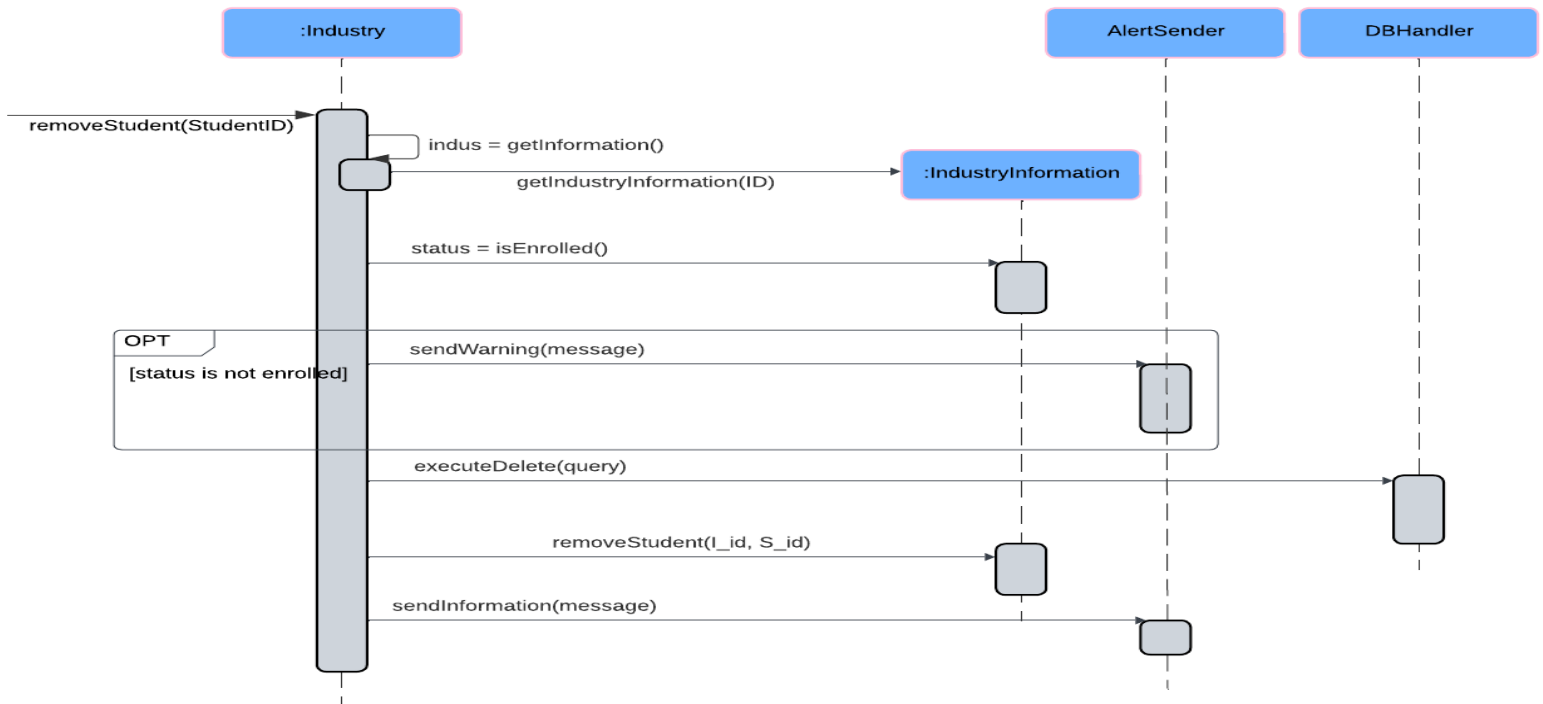
4.1 Apply for Internship/job



4.2 Submit Quiz



4.3 Remove Students



5. Class Diagram

