



National University
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Deliverable 1

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Software Engineering

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**BS(CS)
SECTION-E**

CodeFast Web Application

Software Requirement Specification & Project Documentation Report

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Table Of Contents

CodeFast Web Application	2
<i>Software Requirement Specification & Project Documentation Report</i>	<i>2</i>
1. Introduction.....	3
2. Project Vision	3
3. Intended Use of the System	3
3.1 Users and Usage	3
3.2 Stakeholders and Their Needs	4
4. Features and Overall Functionality.....	4
5. User Stories.....	5
6. Structured Specifications for User Stories.....	5
User Story 1: User Registration.....	5
User Story 2: User Login	6
User Story 3: Password Reset	6
User Story 4: Profile Management	6
User Story 5: Course Enrollment	6
User Story 6: Course Completion Certification	7
User Story 7: Quiz Participation	7
User Story 8: View Performance Leaderboard.....	7
User Story 9: Provide Student Feedback	7
User Story 10: Analyze Student Performance.....	8
User Story 11: Offer Internship.....	8
User Story 12: Manage Internship/Job Students	8
User Story 13: Manage Registrations.....	8
User Story 14: View CodeFast Analytics	9
User Story 15: View Course Content	9
User Story 16: Report Bugs and Issues.....	9
User Story 17: Access Study Material with Premium Membership.....	9

User Story 18: Store User Credentials Securely.....	10
User Story 19: Enable Dark Mode	10
User Story 20: Approve Course Enrollment Requests	10
User Story 21: Manage Users.....	10
User Story 22: Student Filtering.....	10
User Story 23: Manage a New Internship.....	11
User Story 24: Send Interview Invitation	11
User Story 25: View Applied Jobs	11
7. Scrum Board.....	12
8. Non-Functional Requirements Specification.....	12
9. Iteration 1 Implementation Screenshots	13
10. Work Division.....	14

1. Introduction

The purpose of this document is to define clearly the scope, vision, functionality, and specifications of the **CodeFast Web Application**, a robust and interactive online coding platform for FAST University students and industry representatives.

2. Project Vision

CodeFast aims to bridge the gap between academia and industry by offering a centralized platform for interactive learning, skill evaluation, career readiness, and direct industry engagement through internships and job opportunities.

3. Intended Use of the System

3.1 Users and Usage

- **Students:** Access learning materials, enroll in courses, participate in quizzes and coding contests, and apply for internships or jobs.
- **Industry Representatives:** Post internships/jobs, evaluate student performance, send interview invitations, and manage applicants.
- **Administrators:** Manage users, course enrollments, requests, system analytics, and overall platform operations.

3.2 Stakeholders and Their Needs

Stakeholders	Identified Needs
University Students	Practical coding exercises, performance feedback, internships/jobs, certifications
Industry Representatives	Easy talent discovery, managing interns/applicants, performance insights
System Administrators	Effective platform management, user control, data security
University Management	Improved student career readiness and academic performance tracking

4. Features and Overall Functionality

CodeFast Web Application offers:

- User registration and secure login
- Interactive course content and enrollment management
- Automated quizzes and competitive coding challenges
- Real-time performance analytics and leaderboards
- Industry engagement via internship/job postings and interview invites
- Premium membership benefits and gamification features
- Robust administrative controls and user management
- Secure data handling and user profile customization

This functionality enhances user efficiency, promotes active learning, and streamlines industry-academia collaboration.

5. User Stories

Key user stories include:

Story ID	User Story Title	Priority
1	User Registration	High
2	User Login	High
3	Password Reset	Medium
4	Profile Management	Medium
5	Course Enrollment	High
6	Course Completion Certification	Medium
7	Quiz Participation	High
8	View Performance Leaderboard	Medium
9	Provide Student Feedback	High
10	Analyze Student Performance	High
11	Offer Internship	High
12	Manage Internship/Job Students	Medium
13	Manage Registrations	High
14	View CodeFast Analytics	Medium
15	View Course Content	High
16	Report Bugs and Issues	Medium
17	Premium Membership Access	High
18	Store User Credentials Securely	Low
19	Enable Dark Mode	Low
20	Approve Course Enrollment Requests	Medium
21	Manage Users	High
22	Student Filtering	Medium
23	Manage a New Internship	Medium
24	Send Interview Invitation	High
25	View Applied Jobs	Medium

6. Structured Specifications for User Stories

Each user story includes clearly defined acceptance criteria for functionality validation. For example:

User Story 1: User Registration

- **Description:** As a new user (student or industry), I want to register an account so that I can access the platform's features.
- **Priority:** High
- **Acceptance Criteria:**
 - User provides valid details (name, email, password).

- User confirms their password.
 - System creates the account.
 - Confirmation email sent to the user's email address.
-

User Story 2: User Login

- **Description:** As a user, I want to log into my account to access my profile and courses.
 - **Priority:** High
 - **Acceptance Criteria:**
 - User enters valid credentials (email, password).
 - System grants access upon successful authentication.
 - User redirected to their personalized dashboard.
-

User Story 3: Password Reset

- **Description:** As a user, I want to reset my password so that I can regain account access if forgotten.
 - **Priority:** Medium
 - **Acceptance Criteria:**
 - User selects "Forgot Password."
 - User provides their registered email.
 - System sends a password reset link via email.
 - User successfully sets a new password.
-

User Story 4: Profile Management

- **Description:** As a user, I want to update my profile information to keep details current.
 - **Priority:** Medium
 - **Acceptance Criteria:**
 - User edits information (name, bio, profile picture).
 - Changes are saved successfully.
 - Updated information reflected immediately.
-

User Story 5: Course Enrollment

- **Description:** As a student, I want to enroll in a course to access its content and assignments.
- **Priority:** High
- **Acceptance Criteria:**

- User clicks "Enroll" on a course page.
 - User confirms enrollment.
 - Access to course content is granted immediately.
-

User Story 6: Course Completion Certification

- **Description:** As a student, I want to receive a certificate upon course completion to showcase my achievements.
 - **Priority:** Medium
 - **Acceptance Criteria:**
 - User completes all modules and assessments.
 - System generates a digital certificate.
 - User can download the certificate from their profile.
-

User Story 7: Quiz Participation

- **Description:** As a student, I want to participate in quizzes to improve my skills.
 - **Priority:** High
 - **Acceptance Criteria:**
 - User selects a quiz and completes it.
 - System evaluates responses immediately.
 - Quiz results displayed instantly.
-

User Story 8: View Performance Leaderboard

- **Description:** As a user, I want to view the performance leaderboard to see student rankings.
 - **Priority:** Medium
 - **Acceptance Criteria:**
 - Leaderboard accessible from the performance page.
 - Rankings clearly displayed based on scores.
 - Updated dynamically with each quiz and contest.
-

User Story 9: Provide Student Feedback

- **Description:** As a student, I want feedback on performance to improve my skills.
- **Priority:** High
- **Acceptance Criteria:**

- User navigates to the feedback tab.
 - Personalized feedback displayed based on quiz or contest performance.
 - General guidance provided if no recent activities found.
-

User Story 10: Analyze Student Performance

- **Description:** As an admin or industry representative, I want to analyze student performance to provide feedback or make hiring decisions.
 - **Priority:** High
 - **Acceptance Criteria:**
 - Performance analytics accessible via admin or industry dashboard.
 - Detailed performance reports generated.
 - Informative message displayed if no data available.
-

User Story 11: Offer Internship

- **Description:** As an industry representative, I want to offer internships to recruit potential talent.
 - **Priority:** High
 - **Acceptance Criteria:**
 - User selects student(s) from the internship/job tab.
 - Internship offer sent directly through the system.
 - Student notified and able to accept or reject the offer.
-

User Story 12: Manage Internship/Job Students

- **Description:** As an industry representative, I want to manage hired students for tracking purposes.
 - **Priority:** Medium
 - **Acceptance Criteria:**
 - Industry user views the list of hired students.
 - User can remove students from their internship/job.
 - Removed students lose access and cannot reapply.
-

User Story 13: Manage Registrations

- **Description:** As an admin, I want to manage registration requests efficiently.
- **Priority:** High

- **Acceptance Criteria:**
 - Admin views all pending registration requests.
 - Admin can approve or reject registrations.
 - System notifies users about the approval or rejection.
-

User Story 14: View CodeFast Analytics

- **Description:** As an admin or industry representative, I want insights into platform activity.
 - **Priority:** Medium
 - **Acceptance Criteria:**
 - Dashboard displays detailed platform analytics.
 - Data visualizations provided via bar and pie charts.
 - Error handling for any data retrieval issues.
-

User Story 15: View Course Content

- **Description:** As a student, I want to access course materials to meet learning objectives.
 - **Priority:** High
 - **Acceptance Criteria:**
 - Course contents (videos, readings, assignments) displayed upon selection.
 - Content organized clearly and sequentially.
-

User Story 16: Report Bugs and Issues

- **Description:** As a user, I want to report platform issues for prompt resolution.
 - **Priority:** Medium
 - **Acceptance Criteria:**
 - Bug reporting available in a dedicated support area.
 - Issue reports assigned priority levels by severity.
 - Admin notified immediately upon submission.
-

User Story 17: Access Study Material with Premium Membership

- **Description:** As a premium student, I want exclusive study materials to enhance learning.
- **Priority:** High
- **Acceptance Criteria:**
 - Exclusive materials accessible only to premium members.
 - Non-premium users prompted to upgrade membership.

User Story 18: Store User Credentials Securely

- **Description:** As a user, I want secure credential storage to simplify repeated logins.
- **Priority:** Low
- **Acceptance Criteria:**
 - Secure encryption of stored credentials (e.g., cookies).
 - Persistent login until manual logout or cookie deletion.

User Story 19: Enable Dark Mode

- **Description:** As a user, I want a dark mode option to minimize eye strain.
- **Priority:** Low
- **Acceptance Criteria:**
 - Dark mode toggle available in settings.
 - User preference remembered across sessions.

User Story 20: Approve Course Enrollment Requests

- **Description:** As an admin, I want to control course enrollments to maintain standards.
- **Priority:** Medium
- **Acceptance Criteria:**
 - Admin can view and manage enrollment requests.
 - Approvals or rejections communicated automatically.

User Story 21: Manage Users

- **Description:** As an admin, I want to add/remove users to maintain platform integrity.
- **Priority:** High
- **Acceptance Criteria:**
 - User management controls provided.
 - Ability to remove users, updating database immediately.
 - Archived data of removed users for security.

User Story 22: Student Filtering

- **Description:** As a user, I want leaderboard filters for refined performance views.

- **Priority:** Medium
 - **Acceptance Criteria:**
 - Leaderboards filterable by course, contest, or global rankings.
 - Rankings updated dynamically per selected filter.
-

User Story 23: Manage a New Internship

- **Description:** As an industry representative, I want internship posting management.
 - **Priority:** Medium
 - **Acceptance Criteria:**
 - Ability to create and list new internships.
 - Details include role, duration, and requirements clearly displayed.
-

User Story 24: Send Interview Invitation

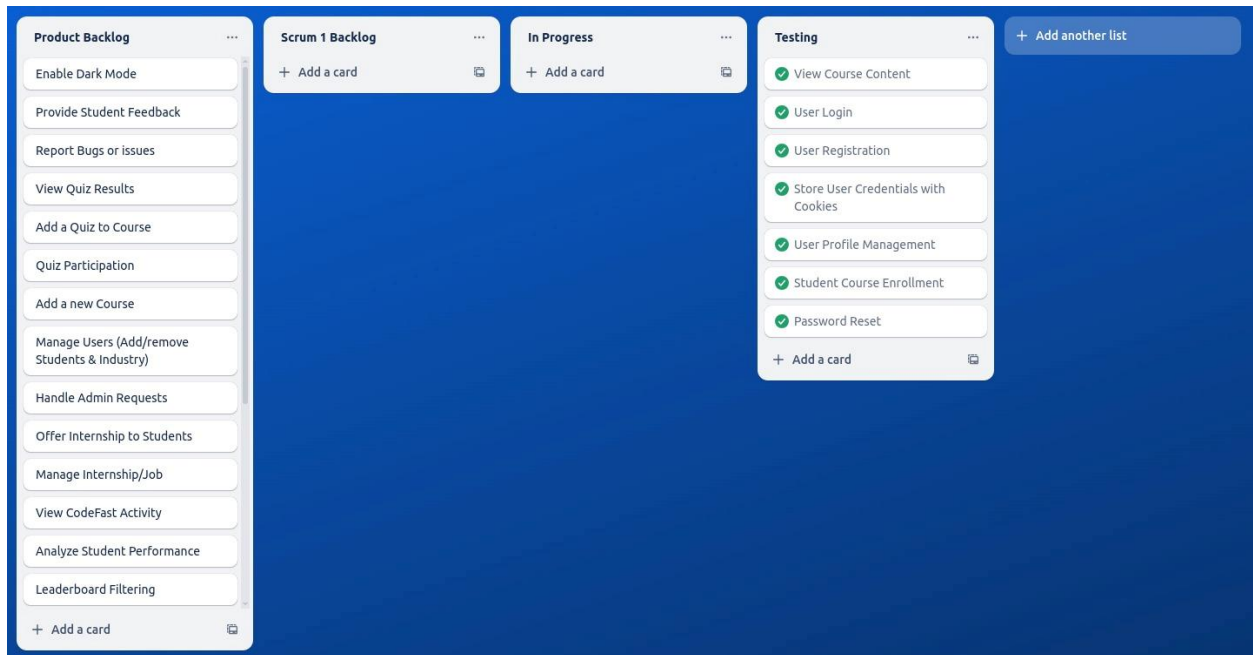
- **Description:** As an industry representative, I want to invite candidates for interviews.
 - **Priority:** High
 - **Acceptance Criteria:**
 - Interview invites include scheduling details (date, time, meeting link).
 - Notifications sent instantly to candidates.
-

User Story 25: View Applied Jobs

- **Description:** As a student, I want to track my job applications.
 - **Priority:** Medium
 - **Acceptance Criteria:**
 - "My Applications" section displays status clearly (Pending, Accepted, Rejected).
-

7. Scrum Board

The Scrum Board clearly tracks project tasks and their status:



8. Non-Functional Requirements Specification

Performance:

- System responds within 1 second per action, supporting 200+ concurrent users.

Reliability:

- 99.8% uptime, data consistency guaranteed during concurrent operations.

Usability:

- Minimal training needed, intuitive UI with immediate action feedback.

Security:

- Secure encryption (SHA-256, SSL/TLS), role-based access control.

Scalability:

- Supports future growth, easily expands for increased load.

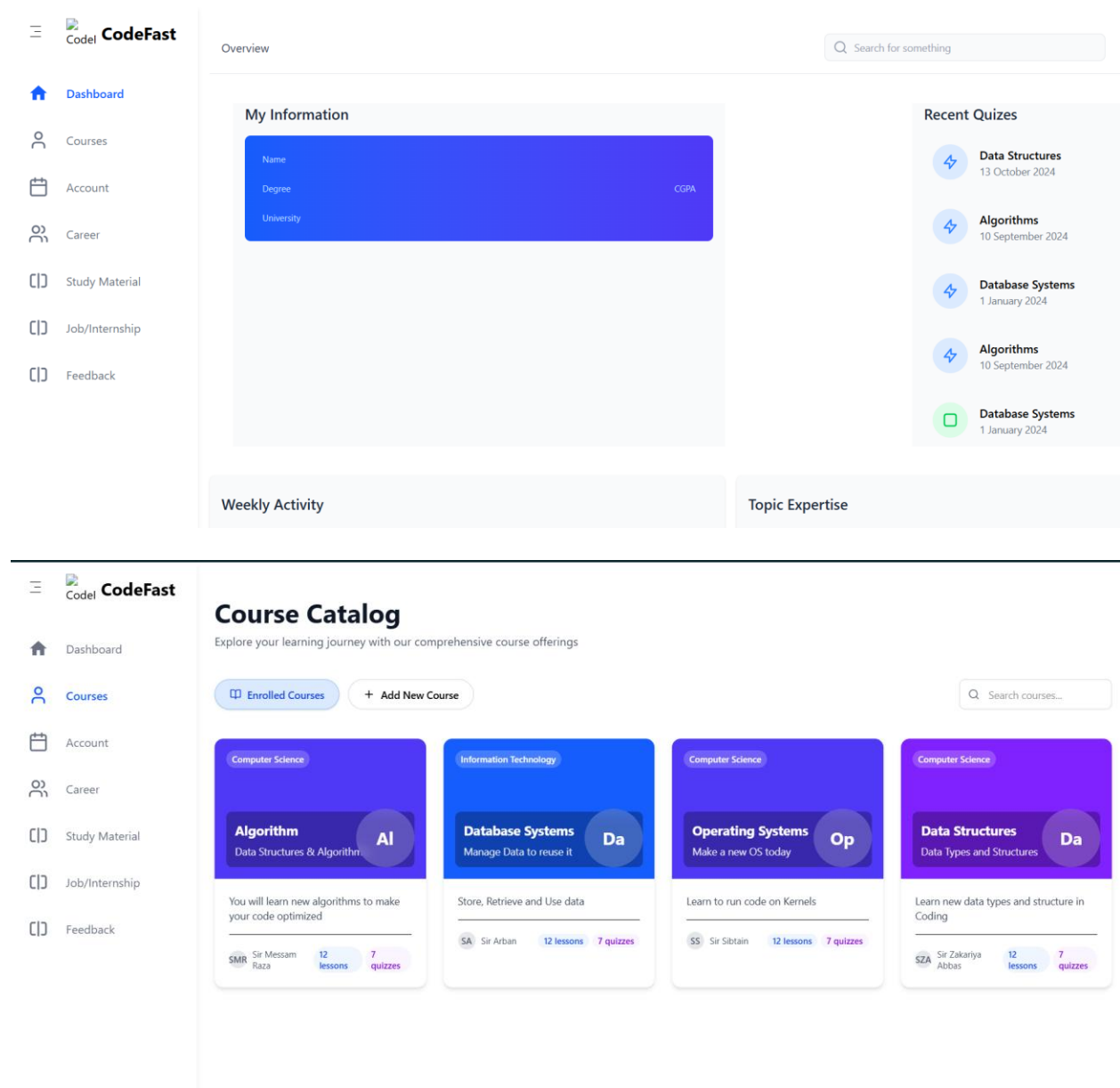
Maintainability:

- Modular code, structured documentation for ease of updates.

Accessibility:

- Compliant with accessibility standards, optional dark mode.

9. Iteration 1 Implementation Screenshots



10. Work Division

Team Member	Roles	Responsibilities
Zakariya Abbas	Product Owner, Analyst/Architect	Requirements management, system design, project vision
Arban Arfan	Scrum Master, UI/UX Designer	Scrum adherence, UI/UX design, team coordination
Messam Raza	Developer, Tester	Feature implementation, code testing, debugging