

American International University-Bangladesh (AIUB)  
 **Department of Computer Science  
 Faculty of Science & Technology (FST)**

**Title: “Student Skill Bridge.”**

**(Group-1)**

A Software Engineering Project Submitted

By

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Semester: Summer 24-25** | | **Section:** | **Group Number:** | |
| **SL** | **Student Name** | **Student ID** | **Contribution (CO3+CO4)** | Individual Marks |
| 1 | Md.Mahabub Al Hashan Sourov | 23-50693-1 | 50% |  |
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| 4 |  |  |  |  |
| 5 |  |  |  |  |

The project will be evaluated for the following Course Outcomes



|  |  |  |
| --- | --- | --- |
| ***CO3 (PO-g-1)***  ***Select appropriate software engineering models, project management roles and their associated skills for the complex software engineering project and evaluate the sustainability of developed software, taking into consideration the societal and environmental aspects*** | Total Marks | |
|  | |
| Selection of Software Engineering Models: Process model selection and presents sufficient evidence to support argument for the model selection | [5 Marks] |  |
| Role identification and Responsibility Allocation: Well-planned project with proper role identification and responsibility allocation in the project management activities | [5Marks] |  |
| Formatting and Submission: Submission, Defense, Completeness, Spelling, grammar, and Organization of the Project report | [5Marks] |  |
| Impact identification: Analysis of the impact of societal, health, safety, legal, and cultural issues | [5Marks] |  |
| ***CO4 (PO-k-1)***  ***Apply engineering management principles and economic decision making to develop software engineering project management plan.*** | Total Marks | |
|  | |
| Project WBS and Testcases: Relevant WBS (project task list) and testcases for the proposed project are stated properly. | [5Marks] |  |
| Effort Estimation and Scheduling: Project estimation was described using proper effort estimation or schedules based on available project resources | [5Marks] |  |
| Risk Management: Sufficient and appropriate risks are identified, analyzed, and properly categorized or prioritized. | [5Marks] |  |



# PROJECT PROPOSAL

## Background to the Problem

In Bangladesh, many students look for part-time jobs and internships to gain experience and support their education. However, most job platforms are made for professionals and don’t match opportunities based on a student’s background, skills, or interests. As a result, students often struggle to find the right internships or part-time work. The process is unorganized and lacks helpful features like video resumes, easy online applications, and virtual interviews. This project aims to create a platform designed for Bangladeshi students, making it easier for them to find suitable jobs and internships that match their profile.

## Root Cause and Importance of the Problem:

Most job platforms in Bangladesh are made for professionals, not students. They don’t match jobs or internships based on a student’s education, skills, or need for flexible hours. This makes it hard for students to find suitable opportunities. The problem is important because many students rely on part-time work and internships to support their education and gain experience.Without the right platform, they miss out on chances to grow, earn, and prepare for their future careers.

## Solution to the Problem and Process Model Selection

## Project Scope and Features:

The **Student Skill Bridge** is an **AI-powered job and internship portal** targeted at Bangladeshi students. It addresses the gap where existing job platforms are not tailored for student needs.

**Key Features:**

* AI-based personalized job and internship recommendations.
* Student-friendly profiles highlighting academics & achievements.
* Upload and share **video resumes**.
* **Direct application** to client-posted jobs.
* **Online/physical interview scheduling** via integrated tools.
* **Smart dashboard** for students (applications, status) and employers (job posts, applicants).
* **Secure messaging system** (encrypted chat between student and employer).
* **Admin portal** for compliance, monitoring, and analytics.

**User Story Table:**

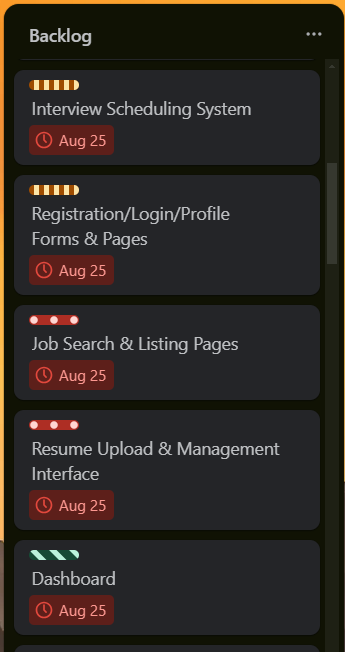
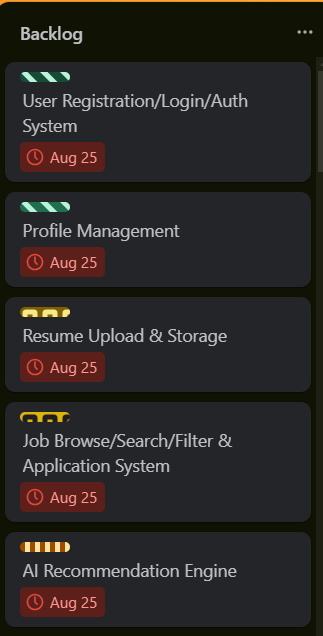
|  |  |  |  |
| --- | --- | --- | --- |
| **User Role** | **As a...** | **I want to...** | **So that...** |
| Student | register and create a profile | employers can see my education, skills, and achievements | I can get matched to jobs |
| Student | upload video & written resumes | employers understand me better | I stand out to recruiters |
| Student | apply for jobs directly | I can get internships/part-time work | without using multiple platforms |
| Student | receive AI recommendations | jobs are based on my skills/preferences | I don’t waste time |
| Student | schedule/join online interviews | I can connect with employers | without leaving the platform |
| Employer | post job/internship circulars | students can apply | I can hire quickly |
| Employer | review student applications | I can shortlist candidates | faster than traditional hiring |
| Employer | send messages/feedback | I can communicate with applicants | in one secure system |
| Admin | monitor user accounts & jobs | maintain compliance and quality | users trust the platform |

## User Story Board (Trello):

Trello board with following **columns**:

* **Backlog** – AI recommendation engine, Secure messaging.

**Screenshot (User Story Bord-Trello):**



A screenshot of a phone

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**Existing Software Solutions:**

|  |  |  |
| --- | --- | --- |
| **Platform** | **Focus** | **Limitation for Students** |
| BDjobs | Bangladesh job market | Focused on full-time, not student jobs |
| Internshala | Internships (mainly India) | Limited for Bangladeshi students |
| LinkedIn | Global professional networking | Not tailored for part-time/student jobs |
| Fiverr/Upwork | Freelancing | Not designed for student internships |

### Selected Software Development Process Model:

**Chosen Model: Agile – SCRUM**

**Justification:**

* **Flexibility:** Requirements may change based on student/employer feedback.
* **Incremental delivery:** Features like AI, video resumes, messaging can be built sprint by sprint.
* **Continuous feedback:** Students and employers provide feedback after each sprint.
* **Team size fit:** Works well for a small team of 3–4 members.
* **Risk management:** Frequent testing reduces failure risk.

## Project Environment & Requirement Stability:

* **Environment:** Web + cloud-based with mobile-friendly UI.
* **Requirements:**
  + **Stable:** Core features like registration, login, resume upload.
  + **Likely to change:** AI recommendations, UI/UX improvements, interview modules.
* **Implication:** Agile Scrum supports changing requirements.

## Support for Team & Feasibility:

* **Team Size Fit:** Roles assigned – Product Owner, Scrum Master, Development Team.
* **Communication:** Daily stand-ups, sprint reviews, backlog grooming.
* **Feasibility:** Timeline ≤ 9 weeks (each sprint ~2–3 weeks) → achievable.

## Flexibility of Scrum Model:

* Easily adapts to **scope changes** (e.g., add gamified learning tasks).
* Supports **technology changes** (DB migration, new APIs).
* Responds to **user requirement changes** from feedback.

### Creative Insight – Real-Life Problem Solution:

* Current job portals **ignore student flexibility**.
* Student Skill Bridge introduces **AI matching**, **video resumes**, and **local internship targeting**, bridging the **education-to-work gap**.

## Target Group & Benefits:

**Target Users:**

* **Students (Bangladesh)** → find internships/part-time work.
* **Employers (local businesses/organizations)** → find skilled students quickly.

**Benefits:**

* Students → gain experience, income, career prep.
* Employers → access to a large student pool at low hiring cost.

## Contribution to Scientific Results:

* **Advances AI:** Personalized job matching.
* **Improves EdTech:** Integrating AI + career features.
* **New Model:** Student-centered hiring portal → filling research & market gap.

## Evidence for Model Selection:

* Case studies: LinkedIn, Internshala, Upwork successfully use Agile Scrum.
* Industry research: Agile improves **delivery speed, reduces risks, and ensures quality**.

## Risk Management in Scrum:

* **Requirement Risk:** handled via backlog grooming.
* **Technical Risk:** mitigated with early sprint testing.
* **User Adoption Risk:** reduced with continuous feedback integration.

## Scrum & Project Schedule:

* **Sprint 1:** User registration & authentication.
* **Sprint 2:** Student profiles, resume uploads.
* **Sprint 3:** Employer module (post jobs, review apps).
* **Sprint 4:** AI recommendation engine.
* **Sprint 5:** Messaging & interview scheduling.
* **Sprint 6:** Admin panel & final testing.

Scrum ensures **timely delivery**, focusing on most critical features first.

**Justification of Scrum vs. Alternatives:**

|  |  |
| --- | --- |
| **Model** | **Why Not Suitable** |
| **Waterfall** | Too rigid, no room for evolving requirements. |
| **V-Model** | Testing-focused, lacks flexibility for ongoing changes. |
| **Spiral** | Too complex & resource-heavy for student project. |
| **SCRUM** | Iterative, flexible, team-friendly, risk-managed. |

**Conclusion:** **SCRUM is the most suitable model** for Student Skill Bridge.

# 1.3 Project Role Identification and Responsibilities

## Main Roles in the Project:

The **Student Skill Bridge** project is carried out by a **small Agile Scrum team**. Roles cover both **development** and **management** aspects:

* **Product Owner (PO)**
* **Scrum Master (SM)**
* **Development Team (Dev Team)**
* **Quality Assurance (QA) Engineer**
* **Project Manager (PM)**
* **Stakeholders (Students & Employers)**

**Responsibilities at Key Stages:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Stage** | **Product Owner (PO)** | **Scrum Master (SM)** | **Development Team** | **QA Engineer** | **Project Manager (PM)** |
| **Requirements Gathering** | Define product vision, gather user needs, prioritize backlog | Facilitate discussions, ensure Agile principles | Provide technical input, estimate effort | Ensure requirements are testable | Align requirements with resources & timeline |
| **System Design** | Approve user stories & high-level design decisions | Guide collaboration, remove blockers | Create system architecture, UI/UX design, DB schema | Review design for testability | Ensure design fits budget & time |
| **Implementation** | Validate features match business goals | Ensure smooth sprint execution | Write code, integrate modules (frontend/backend/AI) | Prepare test cases in parallel | Monitor progress, allocate resources |
| **Testing** | Accept/reject deliverables | Ensure testing is integrated in sprints | Perform unit & integration tests | Execute functional, security, performance tests | Ensure quality standards are met |
| **Deployment** | Decide release readiness | Coordinate release sprint | Deploy system, fix bugs | Validate final release against requirements | Manage deployment risks & oversee release |

## Roles for Decision-Making, QA, and Resource Management:

* **Decision-Making:**
  + **Product Owner** – decides feature priority and business alignment.
  + **Scrum Master** – process-related decisions.
  + **Project Manager** – resource allocation and major project-level decisions.
* **Quality Assurance:**
  + **QA Engineer** (primary).
  + **Development Team** (unit/integration tests).
  + **Scrum Master** ensures QA practices are followed.
* **Resource Management:**
  + **Project Manager** – human, financial, and technical resources.
  + **Scrum Master** – ensures efficient use of development resources.

**Distribution of Responsibilities Among Team Members:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Team Member** | **Role(s)** | **Key Responsibilities** | **Justification (Skills & Expertise)** |
|  | Product Owner | Define vision, gather requirements, maintain backlog | Strong in **requirement analysis & user communication** |
|  | Scrum Master | Facilitate sprints, remove blockers, ensure Agile practices | Skilled in **UI design & system interface**; good facilitator |
|  | Developer + Project Manager | System architecture, DB design, project scheduling, COCOMO, Gantt chart | Strong in **estimation, scheduling, and planning** |
|  | QA Engineer & Developer | Test planning, execution, bug tracking, deployment support | Experienced in **test cases & test planning** |

## Justification of Allocation

* **Requirement Gathering & Business Vision → Product Owner ():** He worked on requirement analysis in earlier project stages.
* **Agile Process & UI → Scrum Master ():** His UI/UX expertise ensures smooth sprint planning.
* **Scheduling, COCOMO, Management → Project Manager ():** His previous work on Gantt charts and estimation makes him fit for PM.
* **Testing & Deployment → QA Engineer ():** He designed test cases & test plans, making him responsible for quality.

## 2. SOFTWARE REQUIREMENTS SPECIFICATIONS (SRS) / PRODUCT REQUIREMENTS DOCUMENT (PRD)

## 2.1 Functional Requirements:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item No.** | **Feature** | **Specification** | **Screen Definition** | **User Story** | **Acceptance Criteria** |
| 01 | Student Registration & Login | Students can create accounts and log in securely. | Registration/Login screen with fields (name, email/phone, password). | As a student, I want to register/login with email/phone so that I can access the platform. | Registration succeeds only if all fields are valid, password meets complexity rules, and account data is securely stored. |
| 02 | Profile Management | Students can create and update their academic, skill, and achievement details. | Profile page with editable sections for personal, academic, and skill details. | As a student, I want to build a profile so that employers can view my qualifications. | Profile is saved correctly, visible to employers, and editable anytime. |
| 03 | Resume Upload (Video & Written) | Students can upload written (PDF/DOCX) and video (MP4) resumes. | Resume upload section with file chooser and preview. | As a student, I want to upload resumes so that I can showcase my skills better. | Only supported formats are accepted, invalid files are rejected, and resumes are linked to the student profile. |
| 04 | AI Job Recommendations | AI suggests relevant jobs based on student profiles. | Dashboard screen displaying recommended jobs. | As a student, I want AI-based job suggestions so that I can find relevant opportunities easily. | Recommendations match student skills/location and appear within 5 seconds. |
| 05 | Job Application | Students can apply for jobs directly from the portal. | Job details screen with an “Apply” button. | As a student, I want to apply for jobs so that I can secure part-time work/internships. | Applications are stored in the database and appear in “My Applications” dashboard. |
| 06 | Interview Scheduling | Employers and students can schedule interviews. | Calendar popup with options for online/physical interviews. | As a student/employer, I want to schedule interviews so that meetings are organized. | Valid date/time/location required, confirmation sent, online interviews open video link. |
| 07 | Application Tracking & Feedback | Students can track job application status and feedback. | Dashboard with status tracker and employer comments. | As a student, I want to track applications so that I know my progress. | Status updates (Applied, Shortlisted, Rejected, Hired) and feedback stored/displayed. |
| 08 | Messaging System | Students and employers can securely communicate. | Messaging interface with inbox, chat window. | As a user, I want to message securely so that I can communicate with others. | Messages are encrypted, delivered in real time, and only visible to sender/recipient. |
| 09 | Employer Job Posting | Employers can create and publish job/internship circulars. | Job posting form (title, description, requirements, deadline). | As an employer, I want to post jobs so that students can apply. | Posts must include valid details before publishing and are visible to students once approved. |
| 10 | Admin Management | Admins can monitor and manage users and job posts. | Admin dashboard with user/job controls. | As an admin, I want to manage accounts and posts so that the platform remains safe. | Admin can activate/suspend/delete accounts; approve/reject posts; all actions logged. |

## 2.2 Non-Functional Requirements:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item No.** | **Feature** | **Specification** | **Screen Definition** | **User Story** | **Acceptance Criteria** |
| NFR-01 | Performance | System must support ≥500 concurrent users with fast response. | All screens (dashboard, job search, messaging). | As a student, I want the system to respond quickly so that I don’t waste time waiting. | Most operations complete in ≤3 seconds; AI recommendations load within 5 seconds. |
| NFR-02 | Reliability | System must remain stable with high uptime and backup support. | Login, dashboard, job posting, and admin screens. | As an employer, I want the system always available so that I can manage my postings anytime. | ≥99.5% uptime; automatic recovery; daily backups tested. |
| NFR-03 | Integrity & Security | Protect user data with encryption, authentication, and role-based authorization. | Login screen, messaging system, admin panel. | As a student, I want my personal data to be secure so that I can trust the platform. | All sensitive data encrypted; HTTPS enforced; access restricted by role. |
| NFR-04 | Usability | The platform must be mobile-friendly, accessible, and easy to use. | Responsive design across all screens. | As a user, I want a clean and simple interface so that I can use it without technical skills. | All core functions usable on mobile; interface passes WCAG accessibility checks. |
| NFR-05 | Maintainability | System should be modular and easy to update or fix. | Developer/admin tools, backend APIs. | As an admin/developer, I want modular code so that I can apply updates or bug fixes quickly. | Code structured in modules; documentation available; version control in Git. |
| NFR-06 | Scalability | Platform must grow with users, jobs, and data over time. | Database, dashboard, and job listings. | As an admin, I want the system to handle growth so that we can support thousands of users. | Database supports horizontal scaling; cloud hosting enables expansion without downtime. |

# 3. PROJECT ESTIMATION AND SCHEDULING

## 3.1 Effort and Cost Estimation

### Project Scope Definition:

The document doesn't explicitly define the project's scope. However, it does outline the project's objectives in a "Project Proposal" section. The project's scope can be inferred from the system's functional requirements, such as student and employer registration, job recommendations, and interview scheduling.

**Effort estimation:**

Software Project Type=Organic

LOC :Source Lines of Code=14,000

E : Effort in person-months or person-years.

t : Project duration in months or years=0.38 B : Productivity Factors=2.4 P : Productivity Parameter = 1.05 A dynamic multivariable model for effort estimation  
 E = [LOC x B0.333/P]3 x (1/t4) =38.34

**COCOMO:**

Effort = PM = Coefficient<Effort Factor>\*(SLOC/1000)^P

=2.4\*(14000/1000)^1.05

=38.34

Development time = DM = 2.50\*(PM)^T

=2.50\*(38.34)^0.38

=9.48≈10

Required number of people = ST

= PM/DM==38.34/9.48

=4.04≈4

### Assumptions and Variations:

The document explicitly mentions several assumptions and variations, particularly in the Risk Management Plan, which is related to project uncertainty. It also notes that the estimations are subject to variation, stating that a "tight 9-week deadline" could lead to "reduced quality" and "missed goals". The report also highlights risks such as "delay in MERN stack development due to technical complexity" and "concurrent user traffic above 500 crashes the system," which could impact the effort and schedule. This shows an awareness of the factors that can cause variations in the estimation results.

## 3.2 Project Scheduling

**Task Breakdown and Responsibilities** :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task | Task Breakdown | Plan Effort (Person-Days) | Actual Effort (Person-Days) | Complete |
| 1 | User Registration/Login/Auth System | 5 | 7 | Yes |
| 2 | Profile Management | 4 | 6 | Yes |
| 3 | Resume Upload & Storage | 6 | 9 | Yes |
| 4 | Job Browse/Search/Filter & Application System | 8 | 11 | Yes |
| 5 | AI Recommendation Engine | 5 | 8 | Yes |
| 6 | Interview Scheduling System | 4 | 6 | Yes |
| 7 | Registration/Login/Profile Forms & Pages | 7 | 10 | Yes |
| 8 | Job Search & Listing Pages | 6 | 8 | Yes |
| 9 | Resume Upload & Management Interface | 5 | 7 | Yes |
| 10 | Dashboard | 7 | 10 | Yes |
| 11 | Employer Registration/Login/Auth | 3 | 4 | Yes |
| 12 | Job/Internship Posting Management (CRUD) | 5 | 7 | Yes |
| 13 | Candidate Profile & Resume Viewing | 4 | 6 | Yes |
| 14 | Interview Scheduling & Feedback System | 5 | 7 | Yes |
| 15 | Integration with shared Messaging module | 3 | 5 | Yes |
| 16 | Dashboard for posting jobs and viewing applicants | 8 | 11 | Yes |
| 17 | Candidate Review & Profile Interface | 5 | 7 | Yes |
| 18 | Interview Management UI | 5 | 7 | Yes |
| 19 | Admin Auth & Privileges | 2 | 3 | No |
| 20 | User Account Management (Activate/Suspend/Delete) | 4 | 6 | No |
| 21 | Job Post Monitoring & Takedown | 3 | 5 | No |
| 22 | Basic Analytics Data Aggregation | 3 | 5 | No |
| 23 | Admin Dashboard with overview and controls | 6 | 8 | No |
| 24 | User Management & Report Views | 4 | 6 | No |
| 25 | Real-time Messaging System (WebSockets) | 10 | 15 | No |
| 26 | Database Schema Design & Setup | 5 | 7 | No |
| 27 | Shared UI Components (Header, Nav, etc.) | 3 | 5 | No |
| 28 | Messaging Interface Component | 2 | 4 | No |
| 29 | Testing (Unit, Integration, E2E) | 10 | 15 | No |
| 30 | Deployment Setup & CI/CD Pipeline | 5 | 8 | No |
| 31 | Project Management & Communication | 5 | 8 | No |

### Budget and Costs

* **Budget at Completion (BAC):** 113 person-days
* **Budgeted Cost at Work Scheduled (BCWS):** 95 person-days
* **Budgeted Cost at Work Performed (BCWP):** 95 person-days
* **Actual Cost at Work Performed (ACWP):** 136 person-days

### Performance Metrics

* **Schedule Performance Index (SPI):** SPI=BCWP/BCWS=95/95=1. This means the project is **on schedule**.
* **Schedule Variance (SV):** SV=BCWP−BCWS=95−95=0 person-days. This confirms there is **no schedule variance**.
* **Cost Performance Index (CPI):** CPI=BCWP/ACWP=95/136≈0.70. A CPI less than 1 indicates the project is **over budget**.
* **Cost Variance (CV):** CV=BCWP−ACWP=95−136=−41 person-days. The negative value shows a **cost overrun**.

### Project Progress

* **Percent scheduled for completion:** (BCWS/BAC)×100%=(95/113)×100%≈84.07%.
* **Percent complete:** (BCWP/BAC)×100%=(95/113)×100%≈84.07%.

### Effort Allocation (40-20-40 Rule)

Based on a total effort of **38.34 person-months**:

* **Analysis & Design (40%):** 0.40×38.34=15.34 person-months.
* **Coding & Implementation (20%):** 0.20×38.34=7.67 person-months.
* **Testing & Deployment (40%):** 0.40×38.34=15.34 person-months. The total effort in hours is approximately **6,134.4 hours** (assuming 160 hours per person-month).

**Timeline Charts:**

A screenshot of a computer screen

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* R&S: System Interface Design
* P:Work Breakdown Structure.
* T: Risk Management Plan.
* Q:Software cost estimation.
* V:Gantt Chart.
* W:Test Cases.
* U:Test Plan.

A screen shot of a chart

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To prevent future delays, address these potential causes:

* **Unrealistic Deadlines:** Your initial effort estimates were too low. Revise the remaining plan based on the actual time spent.
* **Technical/Human Issues:** The extra effort suggests a need to identify technical challenges or improve team efficiency and communication.
* **Changing Requirements:** The cost overrun could be a symptom of scope changes or unclear requirements that led to extra work.

# SOFTWARE DESIGN

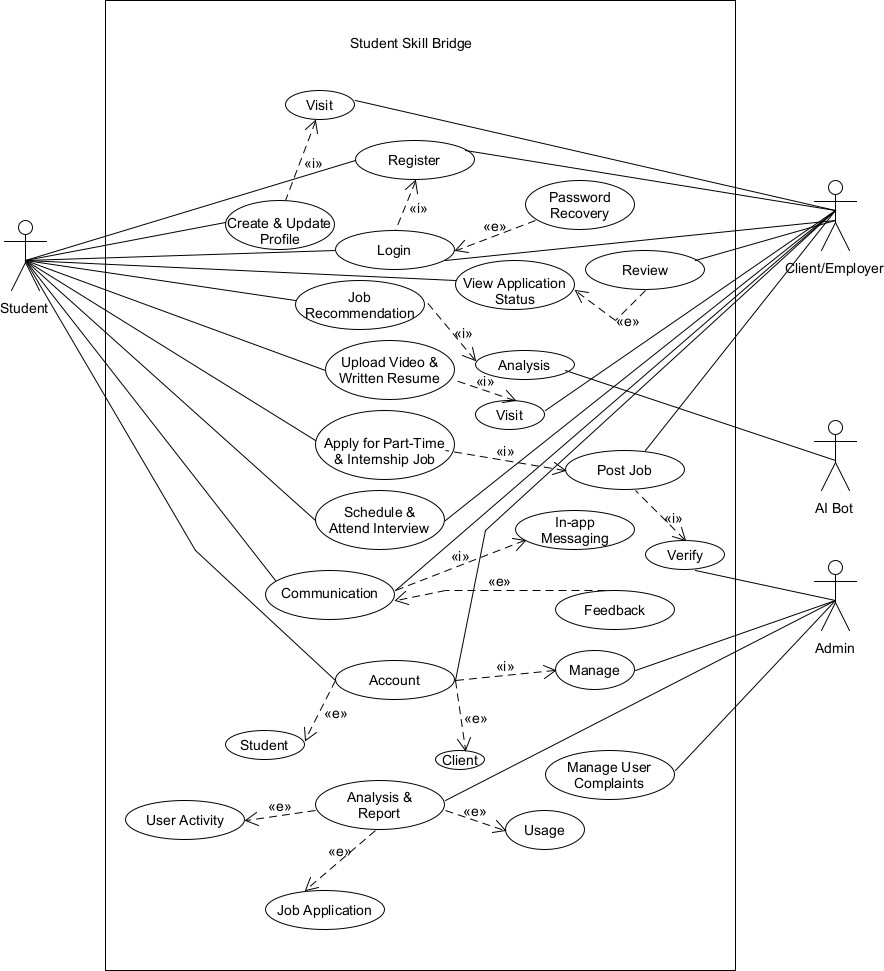
## System Design

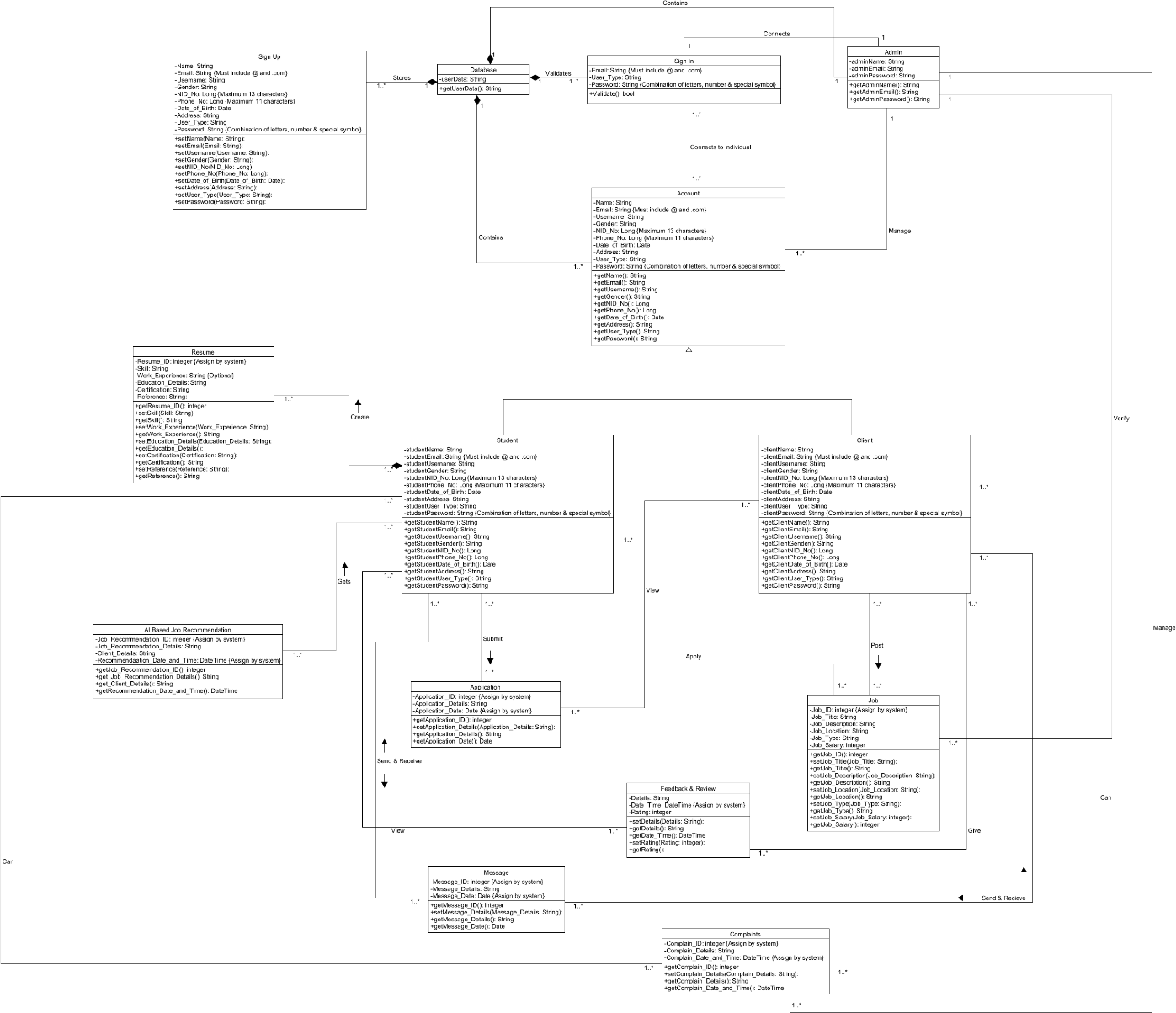
**Work Breakdown Structure:**



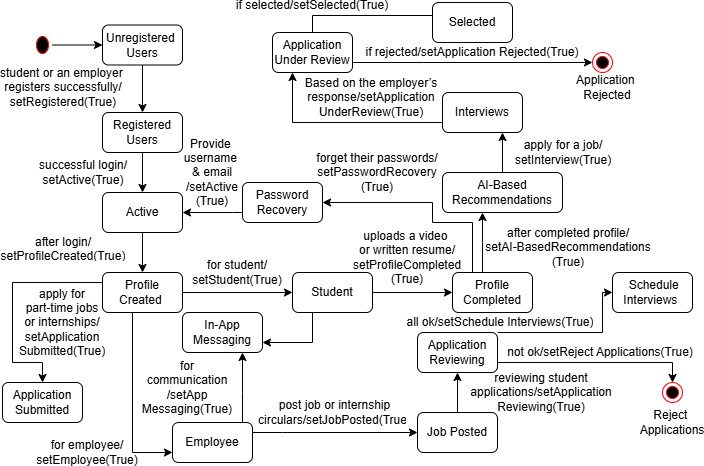
# Diagrams

**Use Case Diagram:**

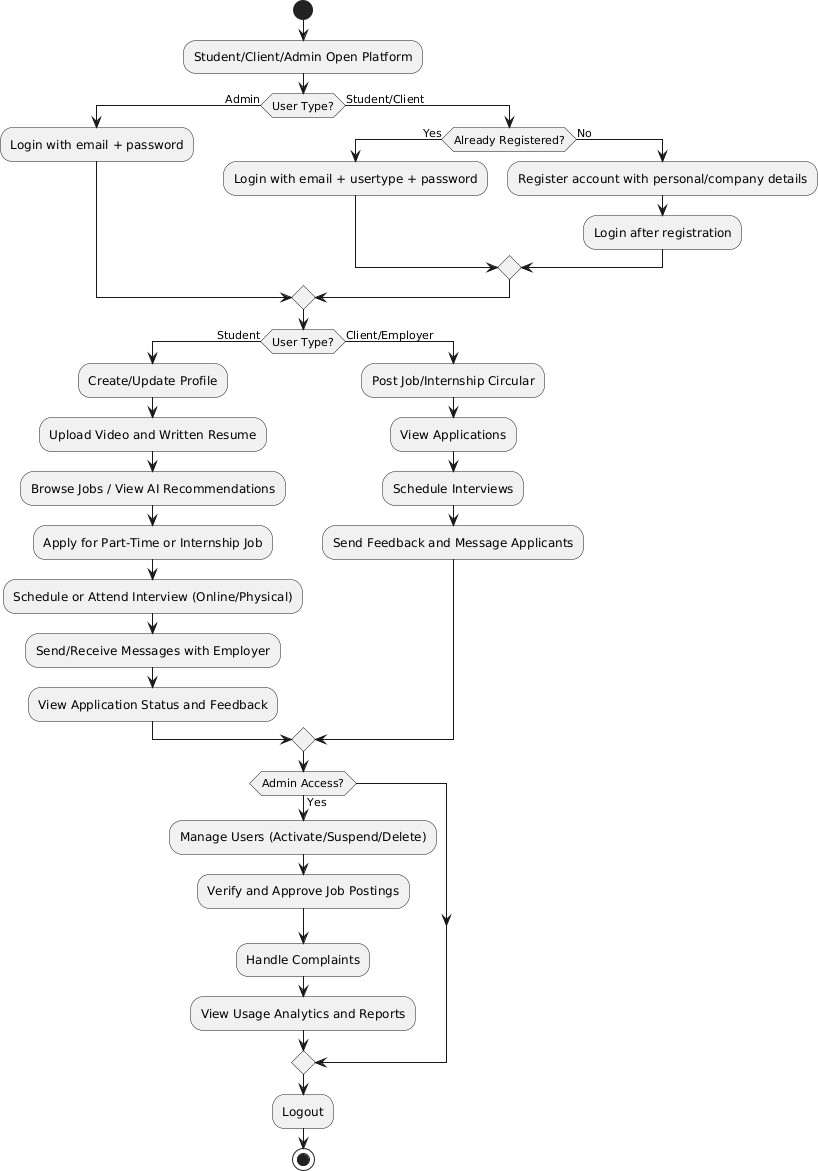
****

**Class Diagram:**

**State Diagram:**

****

**Activity Diagram:**

****

**Sequence Diagram:**

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**4.2 UI / Wireframe Design**

**Screensorts of Clickable Prototype(Figma):**

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**A screenshot of a computer screen

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**A screenshot of a web page

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# GIT WORKFLOW

**Github Link:** <https://github.com/MahabubSourov/-Student-Skill-Bridge->

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Figure: Branches of all team members

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Figure: Screenshot of Repository

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Figure: Screenshot of some commits

We have four branches main,,Dristy, Mahbub, Moumita

**1. Clone the Repository**

git clone <https://github.com/MahabubSourov/-Student-Skill-Bridge->

cd SoftwareAcademicProject

**2. Check Existing Branches**

git branch

This shows all local and remote branches: main,Dristy, Mahbub, Moumita

**3. Switch to Your Branch**

Each member works in their own branch:

git checkout mahbub       # Mahabub’s branch

git checkout Dristy      # Dristy’s branch

git checkout Moumita      # Moumita ’s branch

**4. Add and Commit Changes**

**Stage files:**

git add .

**Commit with a message:**

git commit -m "Add feature XYZ"

**5. Push Branch to Remote**

git push origin mahabub       # Mahabub pushes his branch

git push origin Dristy       # Dristy pushes her branch

# TESTING

* 1. The system shall allow students to register by providing their full name, email, username, gender, NID no, phone number, address, date of birth, user type (student), and password (must be 8 characters with a combination of letters, numbers, and special symbols).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_1  Test Priority (Low, Medium, High): Medium | | | Test Designed date: 10-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Student Registration  Test Title: Verify student registration with required fields and password validation | | | Test Execution date: 10-09-2025 | | |
| Description: Ensure the system allows student users to register using a valid form with all required details and enforces password complexity | | | | | |
| Precondition (If any):   * User must not already be registered * Registration form must be accessible | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Navigate to the registration page |  | Registration form should be displayed | | As expected | Pass |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2. Enter full name | Md. Mahabub Al Hashan Sourov | Name should be accepted | As expected | Pass |
| 3. Enter email | [mahabubsourov@gmail.com](mailto:mahabubsourov@gmail.com) | Email should be validated and accepted | As expected | Pass |
| 4. Enter username | Hashan Sourov | Username should be unique and accepted | As expected | Pass |
| 5. Select gender | Male | Gender should be selected successfully | As expected | Pass |
| 6. Enter NID number | 56733234 | NID should be numeric and accepted | As expected | Pass |
| 7. Enter phone number | 01836452333 | Phone number  should be validated and accepted | As expected | Pass |
| 8. Enter address | Dhaka | Address should be accepted and stored | As expected | Pass |
| 9. Enter date of birth | 05/01/2001 | Date of birth should be valid and stored | As expected | Pass |
| 10. Select user type | Student | User type should be selected as "Student | As expected | Pass |
| 11. Enter password | 12345678 | Password should be minimum 8 characters and meet complexity requirements | As expected | Pass |
| 12. Confirm password | 12345678 | Confirmed password should be matched with the entered password | As expected | Pass |
| 13. Click on Submit |  | Registration should be successful and confirmation message should be displayed or user redirected | As expected | Pass |
| Post Condition:   * Student is registered in the database * User credentials are securely stored (e.g., hashed password) * Student can now log in using registered credentials | | | | |

* 1. The system shall allow students to login using their registered email, username, or phone number along with their password.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_2  Test Priority (Low, Medium, High): Medium | | | Test Designed date: 10-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Student Login  Test Title: Verify student login with email, username, or phone number | | | Test Execution date: 10-09- 2025 | | |
| Description: Ensure students can log in using any of the registered identifiers (email, username, or phone number) with a valid password | | | | | |
| Precondition (If any):   * Student must already be registered * Credentials must exist in the database | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Navigate to the login page |  | Login form should be displayed | | As expected | Pass |
| 2. Enter registered username and correct password | Username: hashansourov Password:12345678 | User should be logged in and redirected to  dashboard | | As expected | Pass |
| 3. Enter incorrect password | Username: hashansourov Password:12345687 | There should be error message | | As expected | Pass |
| 4.Enter unregistered username | Username: hashansourov Password:12345687 | There should be error message | | As expected | Pass |
| Post Condition: User is validated with database and successfully login to account. The account session details are logged in the database. | | | | | |

* 1. The system shall allow students to create and update profiles containing academic information, skills, and achievements.

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| Project Name: Student Skill Bridge | Test Designed by: Md. Mahabub Al Hashan Sourov |
| Test Case ID: FR\_3  Test Priority (Low, Medium, High): Medium | Test Designed date: 10-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov |
| Module Name: Login Session  Test Title: verify login with valid username and password | Test Execution date: 10-09-2025 |

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| Description: Test website login page | | | | |
| Precondition (If any): User must have valid username and password | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1.Navigate to the user profile page |  | Profile page should be displayed | As expected | Pass |
| 2. Click on “Edit Profile” or “Create Profile” |  | Editable form should appear | As expected | Pass |
| 3. Enter academic information | Degree: B.Sc in CSE  Institute: ABC University CGPA: 3.75 | Academic info should be accepted and stored | As expected | Pass |
| 4. Enter skills | Skills: Java, Python, HTML | Skills should be accepted and stored | As expected | Pass |
| 5. Enter achievements | Achievements: Hackathon 2023 Winner | Achievements should be accepted and stored | As expected | Pass |
| 6. Click on “Save” |  | Profile data should be saved successfully,  success message should appear | As expected | Pass |
| 7. Re-navigate to profile page |  | Previously saved data should be visible | As expected | Pass |
| 8. Update academic info | CGPA: 3.85 | Updated academic info should replace previous entry | As expected | Pass |
| 9. Add additional skil | Skill: React.js | New skill should be added without  affecting existing ones | As expected | Pass |
| 10. Update achievement | Achievement: Added “Internship at XYZ Ltd” | New achievement should be added | As expected | Pass |
| Post Condition: Profile data is saved and synced with the user database. Student can view and modify profile information at any time. | | | | |

* 1. The system shall allow students to upload video resumes and written resumes in supported formats.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_4  Test Priority (Low, Medium, High): Medium | | | Test Designed date: 10-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Resume Upload  Test Title: Verify upload of video and written resumes | | | Test Execution date: 10-09-2025 | | |
| Description: Ensure students can upload both video and written resumes using supported file formats (e.g., .pdf, .docx, .mp4, .mov) | | | | | |
| Precondition (If any):   * Student must be logged in * Resume upload page must be accessible | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Navigate to Resume Upload page |  | Upload page should be displayed | | As expected | Pass |
| 2. Click on “Upload Written Resume” |  | File browser should open | | As expected | Pass |
| 3. Upload written resume in supported format | File: resume.pdf | File should be uploaded successfully | | As expected | Pass |
| 4. Upload written resume in unsupported format | File: resume.txt | System should show error: "Unsupported file format" | | As expected | Pass |
| 5. Click on “Upload Video Resume” |  | File browser should open | | As expected | Pass |
| 6. Upload video resume in supported format | File: resume.mp4 | File should be uploaded successfully | | As expected | Pass |
| 7. Upload video resume in unsupported format | File: resume.mkv | System should show error:  "Unsupported video format" | | As expected | Pass |
| 8. Attempt to upload a file exceeding allowed size | File: 300MB video | System should show error: "File size exceeds limit" | | As expected | Pass |
| 9. Verify uploaded resumes are listed/viewable |  | Uploaded files should appear on user profile or resume list | | As expected | Pass |

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| 10. Replace an existing uploaded file | Upload new resume.pdf | New file should overwrite the old one | As expected | Pass |
| Post Condition: Valid video and written resumes are stored in the user profile and linked to the user account in the database. User can re-upload or update resumes anytime | | | | |

* 1. The system shall allow students to browse and apply for part-time jobs or internships listed on the platform.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_5  Test Priority (Low, Medium, High): Medium | | | Test Designed date: 10-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Job/Internship Application  Test Title: Verify student can browse and apply for part- time jobs or internships | | | Test Execution date: 10-09-2025 | | |
| Description: Validate functionality that allows students to browse available opportunities and apply to relevant jobs/internships | | | | | |
| Precondition (If any): User must be logged in as a registered student | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as a student | Username: hashansourov  Password: 12345678 | Student should be logged in and redirected to the dashboard | | As expected | Pass |
| 2. Navigate to “Job Opportunities” or “Internships” section |  | List of available part-time jobs/internships should be displayed | | As expected | Pass |
| 3. Browse the list of jobs/internships |  | Job titles, descriptions, and application  buttons should be visible | | As expected | Pass |
| 4. Click on a job/internship post | Selected Job ID: PTJ001 | Detailed job/internship information should be displayed | | As expected | Pass |
| 5. Click on “Apply”  button | Job ID: PTJ001 | Application form or | | As expected | Pass |

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|  |  | confirmation should appear |  |  |
| 6. Submit application | Resume: resume.pdf Cover Letter: optional | Success message or notification should confirm application submission | As expected | Pass |
| 7. Verify application appears in "My Applications" section |  | The job/internship should be listed in the student’s applications | As expected | Pass |
| Post Condition: The student’s job/internship application is stored in the database and visible  in their profile/application history. | | | | |

* 1. The system shall display AI-based job recommendations to students based on their profile data and preferences.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_6  Test Priority (Low, Medium, High): High | | | Test Designed date: 10-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: AI-Based Job Recommendations Test Title: Verify AI-based job recommendations for students | | | Test Execution date: 10-09-2025 | | |
| Description: To ensure the system displays personalized job/internship recommendations | | | | | |
| Precondition (If any):   * Student must be logged in * Profile must be completed with relevant academic and skill information | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as a student | Username: hashansourov  Password: 12345678 | Student should be logged in  and redirected to dashboard | | As expected | Pass |
| 2. Ensure student profile is filled with  academic background, skills, and preferences | e.g. Skill: Python Interest: Data  Science Location: Dhaka | Profile should be saved and  preferences stored | | As expected | Pass |
| 3. Navigate to "Recommended Jobs" section |  | Recommended job list based on student profile | | As expected | Pass |

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|  |  | should be displayed |  |  |
| 4. Verify relevance of recommended jobs | Profile: Python, Data Science Job Title: Data Analyst Intern | Jobs shown should match student’s skills and preferences | As expected | Pass |
| 5. Click on a recommended job | Job ID: AIJ001 | Job detail page should open with complete job information | As expected | Pass |
| 6. Apply for the recommended job | Job ID: AIJ001  Resume uploaded | Application should be submitted  successfully | As expected | Pass |
| Post Condition:   * Recommended job list is updated in real-time based on profile changes. * Application appears in the “My Applications” section. * AI module logs feedback for future recommendation improvements. | | | | |

* 1. The system shall allow students to schedule or attend online/physical interviews with employers.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_7  Test Priority (Low, Medium, High): High | | | Test Designed date: 10-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Interview Scheduling  Test Title: Verify student can schedule and attend online/physical interviews | | | Test Execution date: 10-09-2025 | | |
| Description: Validate that students are able to schedule and join interviews (online or physical)  as per employer’s availability | | | | | |
| Precondition (If any):   * Student must be logged in * Student must have applied to at least one job/internship * Employer must have sent an interview invitation | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as a student | Username: hashansourov Password: 12345678 | Student should be redirected to dashboard | | As expected | Pass |
| 2. Navigate to “Interview Invitations” section |  | List of interview | | As expected | Pass |

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|  |  | requests should be displayed |  |  |
| 3. View interview details | Interview ID: INT001  Type: Online Date: 2025-09-  17  Time: 11:00 AM | Interview details should be shown clearly | As expected | Pass |
| 4. Choose interview slot (if scheduling is allowed) | Slot: 2025-09-17  at 11:00 AM | Interview should be confirmed and added to student’s  schedule | As expected | Pass |
| 5. Click “Join” for online interview at scheduled time | Platform: Zoom/Integrated video  Join link provided | Video call interface should open and allow interview  session | As expected | Pass |
| 6. Attend physical interview | Location: Dhaka Office, 4th Floor Time: 3:00 PM | Physical interview details should be displayed with a map/directions | As expected | Pass |
| 7. Check interview status post-attendance | Status: Completed / Pending Feedback | Interview should be marked as  attended or pending review | As expected | Pass |
| Post Condition:   * Interview participation is logged in the database. * Employer can provide feedback or change interview status. * Student receives notifications/reminders before interviews. | | | | |

* 1. The system shall enable students to view the status of their applications and feedback provided by employers.

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| Project Name: Student Skill Bridge | Test Designed by: Md. Mahabub Al Hashan Sourov |
| Test Case ID: FR\_8  Test Priority (Low, Medium, High): High | Test Designed date: 10-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov |
| Module Name: Application Tracking & Feedback  Test Title: Verify student can view application status and employer feedback | Test Execution date: 10-09-2025 |

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| Description: Ensure that students can track the progress of their applications and view any feedback left by employers | | | | |
| Precondition (If any):   * Student must be logged in * Student must have applied for at least one job/internship * Employer must have updated the status or left feedback | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Login as a student | Username: hashansourov  Password: 12345678 | Student dashboard should be displayed | As expected | Pass |
| 2. Navigate to “My Applications” section |  | List of applied jobs/internships should be shown | As expected | Pass |
| 3. Select an application to view details | Application ID: APP123 | Application details (job title, company, applied date) should be  visible | As expected | Pass |
| 4. Check current application status | Status: Under Review / Shortlisted /  Rejected / Hired | System should show updated application  status | As expected | Pass |
| 5. Check for employer feedback | Feedback: “Strong portfolio, but need more team project experience.” | Feedback section should display message left by employer | As expected | Pass |
| 6. Return to dashboard or browse other applications |  | Navigation should be smooth and persistent login maintained | As expected | Pass |
| Post Condition:   * Students are informed of application progress and employer comments. * Data is stored and visible until the application process concludes. * Students can use feedback to improve future applications. | | | | |

* 1. The system shall provide secure in-app messaging functionality for students to communicate with employers.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_9  Test Priority (Low, Medium, High): High | | | Test Designed date: 10-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: In-App Messaging  Test Title: Verify secure messaging between student and employer | | | Test Execution date: 10-09-2025 | | |
| Description: Ensure students can securely send and receive messages to/from employers within the platform | | | | | |
| Precondition (If any):   * Student and employer must both be registered users * Student must have applied to at least one job or have an ongoing interview/application * Both users must be logged in | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as a student | Username: hashansourov Password: 12345678 | Student dashboard is displayed | | As expected | Pass |
| 2. Navigate to  “Messages” or “Inbox”  section |  | Messaging  interface should load | | As expected | Pass |
| 3. Open conversation with employer | Employer ID: EMP1002 | Chat history should load securely with timestamps | | As expected | Pass |
| 4. Type and send a message | “Hello, I’m excited about the opportunity!” | Message should be sent and appear instantly in chat | | As expected | Pass |
| 5. Receive response from employer | Message: “Thanks for your interest. Let’s  schedule a call.” | Employer message should appear in real-  time | | As expected | Pass |
| 6. Attempt to send a message to an unauthorized employer | Employer not linked to student application | Error message or restriction should be shown | | As expected | Pass |
| 7. Refresh or log out and log back in |  | All previous messages should persist securely | | As expected | Pass |

Post Condition:

* Messages are encrypted during transmission
* Only involved users can view the conversation
* No messages are accessible from outside the app or by unauthorized users
  1. The system shall allow user to recover their password by providing their username/email.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_10  Test Priority (Low, Medium, High): High | | | Test Designed date: 10- 09-2025  Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Password Recovery  Test Title: Verify password recovery via username or email | | | Test Execution date: 10- 09-2025 | | |
| Description: Ensure users can securely recover their account by initiating a password reset using their registered email or username | | | | | |
| Precondition (If any):   * User must be registered on the platform * User must have access to the registered email address | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Navigate to the login page |  | Login form should be displayed | | As expected | Pass |
| 2. Click “Forgot Password” link |  | Password recovery page should appear | | As expected | Pass |
| 3. Enter registered email | Email: [mahabubsourov@gmail.com](mailto:mahabubsourov@gmail.com) | System should validate email and send  recovery instructions | | As expected | Pass |
| 4. Enter registered username (alternative test) | Username: hashansourov | System should validate username and send recovery instructions to | | As expected | Pass |

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|  |  | associated email |  |  |
| 5. Check email inbox for recovery link | Email received from: [support@studentskillbridge.com](mailto:support@studentskillbridge.com) | Email with password reset link/code should be received | As expected | Pass |
| 6. Click reset link and enter new password | New Password: P@ssw0rd9 | Password should meet security rules and be updated | As expected | Pass |
| 7. Login with new password | Username: hashansourov Password: P@ssw0rd9 | Login should succeed with the  new password | As expected | Pass |
| 8. Attempt with invalid email/username | Email: [fakeuser@mail.com](mailto:fakeuser@mail.com) | System should show error: “User not found” | As expected | Pass |
| Post Condition: User is validated with database and successfully login to account. The account session details are logged in the database. | | | | |

2.1.The system shall allow employers to register by providing their company name, email, username, gender, nid no, phone number, address, date of birth, user type (employer/client), and password (must be 8 characters with a combination of letters, numbers, and special symbols).

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_21  Test Priority (Low, Medium, High): High | | | Test Designed date: 08-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Employer Registration  Test Title: Verify employer registration with required information | | | Test Execution date:08-09-2025 | | |
| Description: Ensure the system allows employer registration using all required fields with validation and secure password rules | | | | | |
| Precondition (If any): Employer is not yet registered in the system | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |

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| --- | --- | --- | --- | --- |
| 1. Navigate to registration page |  | Employer registration form should be displayed | As expected | Pass |
| 2. Enter company name | CodeTech Ltd. | Company name should be accepted | As expected | Pass |
| 3. Enter email | [codetech.hr@gmail.com](mailto:codetech.hr@gmail.com) | Valid and unique email should be accepted | As expected | Pass |
| 4. Enter username | codetech2025 | Unique username should be  accepted | As expected | Pass |
| 5. Select gender | Male | Gender should be recorded | As expected | Pass |
| 6. Enter NID number | 78945612 | Numeric NID should be accepted | As expected | Pass |
| 7. Enter phone number | 01912345678 | Valid phone number format should be accepted | As expected | Pass |
| 8. Enter address | Gulshan, Dhaka | Address should be saved | As expected | Pass |
| 9. Enter date of birth | 01/01/1985 | Date should be valid | As expected | Pass |
| 10. Select user type | Employer | “Employer” user type should be selected successfully | As expected | Pass |
| 11. Enter password | Codetech@2025 | Password should meet complexity rules (min 8 characters, mix of letters, numbers,  symbols) | As expected | Pass |
| 12. Confirm password | Codetech@2025 | Passwords should match | As expected | Pass |
| 13. Submit the registration form |  | Employer should be registered successfully and receive a confirmation message or redirection | As expected | Pass |

Post Condition:

* Employer account is created and stored in the database
* Employer can now log in and access employer-specific dashboard
* System ensures secure handling of password (e.g., hashing)

2.2The system shall allow employers to login using their registered email, username, or phone number along with their password.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_22  Test Priority (Low, Medium, High): High | | | Test Designed date:08-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Login Session  Test Title: Verify employer login using email, username, or phone number | | | Test Execution date:08-09-2025 | | |
| Description: Validate that registered employers can log in using their email, username, or phone number with the correct password | | | | | |
| Precondition (If any):   * Employer must be registered * Correct login credentials must exist in the database | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Navigate to login page |  | Login form should be displayed | | As expected | Pass |
| 2. Login with email and password | Email: [codetech.hr@gmail.com](mailto:codetech.hr@gmail.com) Password: Codetech@2025 | Employer should be logged in and redirected to dashboard | | As expected | Pass |
| 3. Login with username and password | Username: codetech2025 Password:  Codetech@2025 | Employer should be logged in  successfully | | As expected | Pass |
| 4. Login with phone number and password | Phone: 01912345678  Password: Codetech@2025 | Employer should be logged in successfully | | As expected | Pass |
| 5. Attempt login with incorrect password | Email: [codetech.hr@gmail.com](mailto:codetech.hr@gmail.com) Password: WrongPass123 | System should display an error message: | | As expected | Pass |

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|  |  | "Invalid credentials" |  |  |
| 6. Attempt login with unregistered email | Email: [fake@unknown.com](mailto:fake@unknown.com) Password: Any | System should show error: "User not found" or "Invalid credentials" | As expected | Pass |
| 7. Attempt login with blank fields |  | System should prompt user to enter required  login fields | As expected | Pass |
|  |  |  | As expected | Pass |
| Post Condition:   * On successful login, employer session is created and user is redirected to the employer dashboard * On failed login, access is denied with appropriate error feedback | | | | |

2.3.The system shall allow employers to post job/internship circulars with details such as title, description, requirements, and deadlines.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_23  Test Priority (Low, Medium, High): High | | | Test Designed date:08-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Job Posting  Test Title: Verify job/internship circular posting by employer | | | Test Execution date:08-09-2025 | | |
| Description: Ensure the employer can post a job/internship circular with all required information (title, description, requirements, deadline) | | | | | |
| Precondition (If any):   * Employer must be logged into the system * Employer must have access to job posting functionality | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as employer | Username: codetech2025 Password: Codetech@2025 | Employer dashboard should be displayed | | As expected | Pass |
| 2. Navigate to “Post Job/Internship” section |  | Job posting form should be displayed | | As expected | Pass |

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| --- | --- | --- | --- | --- |
| 3. Enter job/internship title | Software Intern | Title field should accept and store the text | As expected | Pass |
| 4. Enter job description | Knowledge of Python, Git, problem solving skills | Requirements should be accepted and listed clearly | As expected | Pass |
| 6. Set application deadline | 19/09/2025 | Deadline should be valid future date and stored | As expected | Pass |
| 7. Submit job post |  | System should validate input and post the  job successfully | As expected | Pass |
| 8. View posted job |  | Job should appear under employer’s “My Posts” section and be visible to students | As expected | Pass |
| Post Condition:   * Job/internship circular is saved in the database * It is published on the platform and visible to students * Employer can edit or delete the post later if needed | | | | |

2.4The system shall enable employers to review student applications, including resumes and profiles.

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| Project Name: Student Skill Bridge | Test Designed by: Md. Mahabub Al Hashan Sourov |
| Test Case ID: FR\_24  Test Priority (Low, Medium, High): High | Test Designed date:08-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov |
| Module Name: Application Review  Test Title: Verify employer can review student applications | Test Execution date:08-09-2025 |
| Description: Ensure the system allows employers to access and review student-submitted applications, resumes, and profile details | |
| Precondition (If any):   * Employer must be logged in | |

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| * Students must have applied to at least one of the employer's posted jobs | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Login as employer | Username: codetech2025 Password: Codetech@2025 | Employer dashboard should be displayed | As expected | Pass |
| 2. Navigate to “Applications” or “Received Applications” section |  | List of student applications for posted jobs should be displayed | As expected | Pass |
| 3. Select a job posting to view applications | Job ID: JOB321 | All applicants for  the selected job should be listed | As expected | Pass |
| 4. Click on a student’s name to view profile | Student: Md. Mahabub Al Hashan Sourov | Full profile with educational info, skills, and experience should load | As expected | Pass |
| 5. Open attached resume | Resume file: Faysal\_CV.pdf | Resume should open or download for review | As expected | Pass |
| 6. View application date and message (if any) | Application Date: 01/09/2025 | Application details should be clearly shown | As expected | Pass |
| 7. Mark or rate application (optional) | Status: Reviewed  / Shortlisted | Employer can update status or leave internal notes | As expected | Pass |
| Post Condition:   * Employer has reviewed student applications and can filter or act on them * System logs employer views and actions for tracking | | | | |

2.5The system shall allow employers to schedule interviews (live video or physical) with applicants.

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| Project Name: Student Skill Bridge | Test Designed by: Md. Mahabub Al Hashan Sourov |
| Test Case ID: FR\_25  Test Priority (Low, Medium, High):High | Test Designed date:08-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov |
| Module Name: Interview Scheduling  Test Title: Verify employer can schedule interviews with applicants | Test Execution date:08-09-2025 |
| Description: Ensure the system allows employers to schedule online or physical interviews with student applicants | |

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| Precondition (If any):   * Employer and student must be registered * Student must have applied to the employer’s job/internship | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Login as employer | Username: codetech2025 Password: Codetech@2025 | Employer dashboard should be displayed | As expected | Pass |
| 2. Navigate to  “Applications” section |  | List of received applications should be  shown | As expected | Pass |
| 3. Select a student application | Applicant: Md. Mahabub Al Hashan Sourov | Application details should be displayed | As expected | Pass |
| 4. Click “Schedule Interview” |  | Interview scheduling form should appear | As expected | Pass |
| 5. Select interview type | Type: Live Video / Physical | Options should be selectable and properly recorded | As expected | Pass |
| 6. Set date, time, and (if applicable) location or video link | Date: 08/09/2025 Time: 11:00 AM  Location: Banani Office Link: Zoom/Google Meet | Interview details should be validated and saved | As expected | Pass |
| 7. Submit interview invite |  | Student should receive notification and interview should be  logged | As expected | Pass |
| 8. View scheduled interviews in dashboard |  | Employer can see upcoming scheduled interviews with status | As expected | Pass |
| Post Condition:   * Interview is scheduled and stored in database * Student is notified via the system (and possibly email) * Employer can reschedule or cancel if necessary | | | | |

2.6The system shall allow employers to send feedback and communicate with applicants via secure in-app messaging.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_26  Test Priority (Low, Medium, High): High | | | Test Designed date:08-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: In-App Messaging & Feedback Test Title: Verify employer can send feedback and communicate with applicants securely | | | Test Execution date:08-09-2025 | | |
| Description: Ensure that employers can send messages and feedback to student applicants through a secure messaging system | | | | | |
| Precondition (If any):   * Employer and student must both be registered * Student must have applied to a job posted by the employer | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as employe | Username: codetech2025  Password: Codetech@2025 | Employer dashboard should load | | As expected | Pass |
| 2. Navigate to  “Applications” section |  | List of student applications should be displayed | | As expected | Pass |
| 3. Select a student from the list | Applicant: Md. Mahabub Al Hashan Sourov | Application details and contact options should appear | | As expected | Pass |
| 4. Click on “Message” or “Send Feedback” |  | Secure messaging window should  open | | As expected | Pass |
| 5. Type and send message/feedback | Message: "Your resume looks good. Let's discuss further." | Message should be sent and logged in system | | As expected | Pass |
| 6. Student responds to message |  | Employer receives message in real-time  within platform | | As expected | Pass |

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| 7. View message history |  | Full conversation should be visible and secure | As expected | Pass |
| 8. Attempt to message unrelated student | Student not applied to employer job | System should restrict access and show error | As expected | Pass |
| Post Condition:   * Messages are encrypted and securely stored * Only employer and relevant applicant can access the conversation * Feedback and message logs are maintained for audit and reference | | | | |

2.7.The system shall allow user to recover their password by providing their username/email

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_27  Test Priority (Low, Medium, High): High | | | Test Designed date:08-09- 2025  Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Password Recovery  Test Title: Verify employer password recovery via username/email | | | Test Execution date:08-09- 2025 | | |
| Description: Ensure employers can securely recover their password using registered username or emai | | | | | |
| Precondition (If any):   * Employer account must exist * Email must be accessible by the employer | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Navigate to login page |  | Login form should be displayed | | As expected | Pass |
| 2. Click on “Forgot Password” |  | Password recovery  page should appear | | As expected | Pass |
| 3. Enter registered email | Email: [codetech.hr@gmail.com](mailto:codetech.hr@gmail.com) | System should validate and send reset link | | As expected | Pass |
| 4. Alternatively, enter registered username | Username: codetech2025 | Reset link should be sent to | | As expected | Pass |

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|  |  | associated email |  |  |
| 5. Check email for recovery link | Email received: subject "Reset Your Password" | Link should direct to password reset page | As expected | Pass |
| 6. Enter and confirm new password | New Password: Codetech@2026 | Password should meet complexity rules and be updated | As expected | Pass |
| 7. Login with new password | Username: codetech2025 Password:  Codetech@2026 | Login should be successful with new  credentials | As expected | Pass |
| 8. Try reset with invalid username/email | Email: [wrong@mail.com](mailto:wrong@mail.com) | Error: “User not found” or similar message | As expected | Pass |
| Post Condition: |  |  |  |  |
| * Password is securely updated * Employer can log in using the new password * Old reset links expire automatically for security | | | | |

* 1. The system shall allow administrators to manage user accounts (students/employers), including activation, suspension, or deletion.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_31  Test Priority (Low, Medium, High): High | | | Test Designed date:09-069-2025 Test Executed by: Md. Faysal Khan | | |
| Module Name: User Account Management (Admin) Test Title: Verify administrator can manage user accounts | | | Test Execution date:09-09-2025 | | |
| Description: Ensure administrators can view, activate, suspend, or delete student and employer accounts | | | | | |
| Precondition (If any):   * Administrator must be logged in * User accounts must exist in the system | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as administrator | Username: admin Password: Admin@123 | Admin dashboard should load | | As expected | Pass |

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| --- | --- | --- | --- | --- |
| 2. Navigate to “User Management” section |  | List of all registered users should be displayed | As expected | Pass |
| 3. Search for a user account | Username: hashansourov (student) | Matching user profile should be shown | As expected | Pass |
| 4. Select action: Suspend user | Action: Suspend | User account should be marked as suspended and access disabled | As expected | Pass |
| 5. Select action: Activate user | Action: Activate | Suspended  account should be re-enabled | As expected | Pass |
| 6. Select action: Delete user | Action: Delete | Account should be permanently removed or archived (based on system rules) | As expected | Pass |
| 7. Attempt action on already deleted user | User previously deleted | System should show error or warning message | As expected | Pass |
| 8. Verify logs or audit trail |  | All actions should be logged with  timestamp and admin info | As expected | Pass |
| Post Condition:   * User account states are updated in the database * Suspended users cannot log in * Deleted users are permanently removed or marked inactive * Admin actions are logged for audit purposes | | | | |

* 1. The system shall enable administrators to monitor and verify job/internship postings for compliance with platform policies.

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| Project Name: Student Skill Bridge | Test Designed by: Md. Mahabub Al Hashan Sourov |
| Test Case ID: FR\_32  Test Priority (Low, Medium, High): High | Test Designed date:09-09-2025 |

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|  | | | Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Job/Internship Compliance Monitoring Test Title: Verify admin can monitor and verify job/internship posts | | | Test Execution date:09-09-2025 | | |
| Description: Ensure that administrators can view, verify, and take action on job/internship postings for policy compliance | | | | | |
| Precondition (If any):   * Admin must be logged in * Employers must have posted job/internship circulars | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as administrator | Username: admin Password: Admin@123 | Admin dashboard should be displayed | | As expected | Pass |
| 2. Navigate to “Job/Internship Posts” section |  | List of all employer- posted jobs/internships should be shown | | As expected | Pass |
| 3. Select a job post for review | Job ID: JOB654 | Job post details should be  displayed | | As expected | Pass |
| 4. Check for compliance flags (e.g. missing info, inappropriate content) | Description contains promotional links | System should highlight content that may violate policy | | As expected | Pass |
| 5. Approve compliant post | Status: Approve | Job is marked as active and visible to students | | As expected | Pass |
| 6. Reject or flag non- compliant post | Status: Rejected Reason: "Contains promotional  content" | Post should be hidden or marked as non- compliant | | As expected | Pass |
| 7. View audit logs of review actions |  | Action taken by admin should be recorded with timestamp | | As expected | Pass |
| Post Condition:   * Job posts are filtered and moderated for quality and policy compliance * Admin decisions are logged | | | | | |

* Students only see verified/compliant listings
  1. The system shall provide administrators with analytics and reports on system usage, user activity, and job application trends.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_33  Test Priority (Low, Medium, High): Medium | | | Test Designed date:09-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Admin Analytics & Reporting Test Title: Verify administrator access to system analytics and reports | | | Test Execution date:09-09-2025 | | |
| Description: Ensure administrators can access reports and dashboards showing usage metrics, user activity, and job application trends | | | | | |
| Precondition (If any):   * Administrator must be logged in * Platform must have user activity and job application data available | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as administrator | Username: admin  Password: Admin@123 | Admin dashboard  should be accessible | | As expected | Pass |
| 2. Navigate to  “Analytics” or “Reports” section |  | Analytics dashboard should load | | As expected | Pass |
| 3. Select “System Usage” report | Filter: Last 30 days | Report should show number of logins, registrations, and sessions | | As expected | Pass |
| 4. Select “User Activity” report | Filter: User type  = Student | Data on student logins, applications, and messages should be  displayed | | As expected | Pass |
| 5. Select “Job Application Trends”  report | Filter: Internships, Region = Dhaka | System should display number of applications over time, per job, and per location | | As expected | Pass |

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| 6. Export report as PDF or CSV | Format: CSV | File should be generated and downloaded | As expected | Pass |
| 7. View chart visualizations | Report: Application Trends | Interactive charts/graphs should be correctly displayed | As expected | Pass |
| Post Condition:   * Admin has access to accurate, real-time system metrics * Reports can be exported for record-keeping or presentation   + Visual insights support platform decision-making | | | | |

* 1. The system shall allow administrators to address user complaints or issues through a dedicated support interface.

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| Project Name: Student Skill Bridge | | | Test Designed by: Md. Mahabub Al Hashan Sourov | | |
| Test Case ID: FR\_34  Test Priority (Low, Medium, High): High | | | Test Designed date:09-09-2025 Test Executed by: Md. Mahabub Al Hashan Sourov | | |
| Module Name: Admin Support & Complaint Handling Test Title: Verify administrator can manage user complaints via support interface | | | Test Execution date:09-09- 2025 | | |
| Description: Ensure administrators can view, respond to, and resolve user-submitted complaints or issues via the platform's support system | | | | | |
| Precondition (If any):   * Admin is logged in * One or more complaints have been submitted by users (students or employers) | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Login as administrator | Username: admin Password:  Admin@123 | Admin dashboard should be displayed | | As expected | Pass |
| 2. Navigate to “Support” or “Complaints” section |  | List of submitted complaints/issues should be displayed | | As expected | Pass |
| 3. Click on a complaint to view details | Complaint ID: CMP102  User: Faysal Khan | Full complaint message and user contact info should be shown | | As expected | Pass |
| 4. Assign complaint to admin/staff | Assigned to: support\_agent01 | Complaint status  updated to “In | | As expected | Pass |

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|  |  | Progress” and assigned user recorded |  |  |
| 5. Respond to complaint via messaging or notes | Message: “We are reviewing your issue.  You’ll get an update soon.” | Message is logged and visible to the user via their support inbox | As expected | Pass |
| 6. Change complaint status | Status: Resolved Close Date: 06/06/2025 | Complaint should be marked as resolved and moved to  history/archive | As expected | Pass |
| 7. View complaint resolution history |  | Admin should see timeline/log of all actions taken on the complaint | As expected | Pass |
| Post Condition:   * The selected complaint is marked as resolved and no longer appears in the active complaints list. * All actions taken by the administrator (viewing, assigning, responding, updating status) are logged in the system's complaint timeline. * The user who submitted the complaint receives a notification or update with the resolution status and admin response in their support inbox. | | | | |

# SOFTWARE PRODUCT METRICS

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| --- | --- | --- | --- | --- | --- |
| Information Domain Value **(FP unadjusted)** | Count | Simple | Average | Complex | Total |
| Number of external inputs (EIs) | 12 | 3 | 4 | 6 | 48 |
| Number of external outputs (EOs) | 10 | 4 | 5 | 7 | 50 |
| Number of external inquiries (EQs) | 8 | 3 | 4 | 6 | 32 |
| Number of internal logical files (ILFs) | 9 | 7 | 10 | 15 | 90 |
| Number of external interface files (EIFs) | 3 | 5 | 7 | 10 | 21 |
| Total Unadjusted Function Points (UFP) |  |  |  |  | 241 |

**Software Maturity Index (SMI) Calculation :**

**Possible values of MT (Total Modules)**

1. 1 FP = 1 Module → MT =241

2. 1 Module = 5 FP → MT =241/5=48.2 **≈** 48

3. 1 Module = 10 FP → MT = 241/10=24.1 **≈24**

4. 1 Module = 15 FP → MT = 241/15= **16.07**≈16

**Maintenance Changes Assumption**

Fa (Added modules) = 8

Fc (Changed modules) =10

Fd (Deleted modules) =2

**Formula**

SMI = (MT - (Fa + Fc + Fd)) / MT

**Calculations**

MT =48 , SMI = (48 - (8 + 10 + 2)) / 48= (48 - 20) / 48= 28 / 48**≈ 0.583**

MT = 24, SMI = (24 - (8 + 10 + 2)) / 24= (24 - 20) / 24= 4 / 24=**0.1666 ≈ 0.167**

MT = 16, SMI =  (16 - (8 + 10 + 2)) / 16=(16 - 20) / 16= -4 / 16**= -0.25**

MT = 8, SMI = (8 - (8 + 10 + 2)) / 8= (8 - 20) / 8 = -12 / 8**= -1.5**

**Description:**

**If SMI is near 1, system is stable. If much lower (<0.7) system is unstable.**

# CONCLUSION AND FUTURE WORK

**Conclusion:**

The "Student Skill Bridge" project was conceived to address a critical gap in the Bangladeshi market: the lack of a dedicated, student-centric platform for finding part-time jobs and internships. Existing solutions are often tailored for full-time professionals, leaving students to navigate an unorganized and inefficient process. This project successfully designed and developed a comprehensive web-based portal that bridges this gap by leveraging modern technologies like AI for personalized matching, video resumes for richer candidate presentation, and integrated tools for seamless communication and interview scheduling.

By adopting the Agile Scrum methodology, the development process was highly adaptive, allowing for incremental feature delivery and continuous integration of feedback from potential users (students and employers). This approach ensured that the final product aligns closely with user needs and market realities. The platform not only simplifies the job search and hiring process but also introduces innovative features that empower students to showcase their potential effectively and help employers discover talent efficiently. The "Student Skill Bridge" stands as a viable, sustainable solution that contributes to easing the transition from education to employment for the youth of Bangladesh.

**Future Work:**

While the current version of "Student Skill Bridge" fulfills its core objectives, there are several avenues for future enhancement and expansion to increase its impact and reach:

* **Advanced AI and Machine Learning:** The recommendation engine can be enhanced with more sophisticated ML models that consider a wider range of behavioral data, skill trends, and successful placement outcomes to provide even more accurate and personalized job matches.
* **Gamification and Skill Development:** Integrating micro-learning modules or coding challenges can help students upskill directly on the platform. A gamified system with badges and scores for completing profiles and skillsets could increase user engagement.
* **Mobile Application Development:** A dedicated native mobile app for iOS and Android would provide greater accessibility and convenience for students and employers on the go, featuring push notifications for new matches, messages, and interview reminders.
* **Integration with University Systems:** Partnering with universities to integrate academic data (with student consent) could automate profile creation and verify academic credentials, adding a layer of trust and convenience.
* **Expansion to a Broader Youth Market:** The platform could be expanded to include fresh graduates and entry-level job seekers, becoming a comprehensive career-launching platform for young talent across Bangladesh.
* **Advanced Analytics Dashboard for Employers:** Providing employers with detailed analytics on their posts, applicant demographics, and market trends would offer significant added value and help them make data-driven hiring decisions.
* **Blockchain for Credential Verification:** Exploring blockchain technology to create tamper-proof digital certificates for academic credentials and work experience could significantly enhance the platform's credibility and trustworthiness.