



AMERICAN INTERNATIONAL UNIVERSITY–BANGLADESH (AIUB)

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DEPARTMENT OF COMPUTER SCIENCE

SOFTWARE ENGINEERING

TEST PLANNING ON

Robo Hatch - A Robotics Development Platform

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Robo Hatch Test Plan: Robo Hatch is an innovative platform designed to connect freelancers, companies and teams in the field of robotics. The platform allows users to create, manage, and collaborate on robotics-related projects, receive AI-based project recommendations and manage payments and contracts. This test plan aims to ensure the reliability, usability, and performance of the platform, focusing on both functional and non-functional requirements.

Testing Objectives:

Objective	Description
Functionality	Ensure that core functionalities such as project management, AI-based recommendations, and user profiles work as intended.
Edge Case Validation	Test boundary conditions like invalid form data, incomplete user profiles, or missing project details to ensure robustness.
Integration of Components	Ensure smooth integration between project posting, freelancer matching, messaging, and notifications.
Performance Testing	Test the platform’s performance under various loads (e.g., concurrent users, high network latency).
User Experience	Validate the interface’s responsiveness, cross-device functionality, and usability for all user roles.
Security Validation	Confirm that access restrictions, data encryption, and role-based access control are in place, especially for sensitive data.
System Reliability	Test the system's ability to recover and function properly after disruptions like logouts, network drops, and page refreshes.

Testing Approach:

1. Unit Testing:

- **Objective:** To validate individual UI elements and backend functionalities.
- **Focus Areas:**
 - User registration and login forms
 - Profile setup and skill management

- AI-based project recommendations
- Freelancer project application logic
- Project submission buttons (For example: Submit Proposal, Create Project)
- Project status updates (Pending, In Progress, Completed)
- Messaging and notification toggles
- **Execution:**
 - Use both valid and invalid dummy data to test each component.
 - Check button interactions, error messages, user form validations, and correct state changes.
- **Automation:**
 - Use Jest for React component testing and PyTest for backend logic.
 - Link unit tests into Continuous Integration (CI) to automate testing with each code update.

2. Integration Testing:

- **Objective:** Ensure seamless integration between modules across different UI pages.
- **Focus Areas:**
 - User registration data flowing into profile setup
 - AI-based freelancer suggestions being displayed based on profile data
 - Project details and freelancer application data interaction
 - Notification system triggering on project updates
 - Messaging system between freelancers, companies, and teams
 - Secure payment gateway handling and its effect on project access
- **Execution:**
 - Simulate real workflows such as project creation → freelancer application → project assignment → notifications → project completion.
 - Test communication between API endpoints and the frontend components.
- **Automation:**

- Use Postman to test APIs (for user data, project data, payments).
- Use Selenium WebDriver to simulate user interactions and ensure seamless workflow between modules.

3. System Testing:

- **Objective:** Validate the entire Robo Hatch system as a unified application.
- **Focus Areas:**
 - Complete user journey from login to project completion (freelancer and company views).
 - Page transitions: Login → Dashboard → Explore Projects → My Projects → Profile → Settings
 - Real-time messaging functionality between users (freelancer, company, team).
 - AI-based project recommendations and their relevance.
 - Secure project creation, submission, and milestone tracking.
 - Payment processing and verification with escrow functionality.
- **Execution:**
 - Perform end-to-end testing using real-world user scenarios across different browsers and devices.
 - Replicate failure scenarios like API service failure, slow network, or incomplete form data submission.
- **Automation:**
 - Use Selenium for automating UI workflows and Lighthouse to audit performance and accessibility.

4. Acceptance Testing:

- **Objective:** Ensure that the Robo Hatch platform meets user expectations and is ready for release.
- **Focus Areas:**
 - Relevance of project recommendations for freelancers and companies
 - Simplicity and accuracy of project application forms

- Effectiveness of notifications and project status updates
- UI accessibility, especially for managing projects and team collaboration
- Overall user satisfaction with the system's performance and usability
- **Execution:**
 - Engage real users (e.g., freelancers, project managers, and companies) to conduct test cases simulating everyday use.
 - Collect feedback regarding design clarity, content usefulness, and overall system performance.
- **Automation:**
 - Not applicable as this phase is manual. Feedback will be based on user observations and guided testing workflows.

Test Cases

Test Case: Sign Up Role Selection

Project Name: Robo Hatch		Test Designed by: Basudeb Kundu
Test Case ID: RH_001		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Basudeb Kundu
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify role selection options and navigation links on sign-up page		
Description: Ensure users can select roles and navigate to corresponding registration pages.		
Precondition (If any): <ul style="list-style-type: none"> Sign-up role selection page is accessible 		
Test Steps	Test Data	Expected Results
1. Open sign-up page		Page loads with role options
2. Click "Freelancer"	Click button	Redirects to Freelancer Registration page
3. Click "Company"	Click button	Redirects to Company Registration page
4. Click "Team"	Click button	Redirects to Team Registration page
5. Click "Back to Login"	Click link	Redirects to Login page
Post Condition: <ul style="list-style-type: none"> Role selection and navigation work correctly. 		

Test Case: Freelancer Registration

Project Name: Robo Hatch		Test Designed by: Basudeb Kundu
Test Case ID: RH_002		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Basudeb Kundu
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify freelancer registration input validation and submission		
Description: This test ensures that all login-related fields, checkboxes, social buttons, and links function correctly on the login page.		
Precondition (If any): <ul style="list-style-type: none">Freelancer registration page is accessible		
Test Steps	Test Data	Expected Results
1. Go to the login page		Registration form loads successfully
2. Enter email and password	Dip Khastagir	Input accepted
3. Click “Remember Me” checkbox	dipkhastagir@example.com	Email field accepts valid email
4. Click “Sign In” button	Abcd1234!	Password meets requirements
5. Click “Forgot Password”	Abcd1234!	Confirm matches password
6. Click “Continue with Google”	Check checkbox	Checkbox toggles
7. Click “Continue with Facebook”	Click button	Registration succeeds, redirected to verification
Post Condition: <ul style="list-style-type: none">Freelancer is registered and sent to email/phone verification.		

Test Case: Company Registration

Project Name: Robo Hatch		Test Designed by: Basudeb Kundu
Test Case ID: RH_003		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Basudeb Kundu
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify company registration input validation and document upload		

Description: Ensure company registration accepts valid inputs and verification documents upload.		
Precondition (If any): <ul style="list-style-type: none"> Company registration page is accessible 		
Test Steps	Test Data	Expected Results
1. Open company registration		Registration form loads successfully
2. Enter valid company name	ABC Robotics	Input accepted
3. Enter company email	contact@abcrobotics.com	Email field accepts valid email
4. Upload verification doc	Valid business license	File uploaded successfully
5. Accept terms and conditions	Check checkbox	Checkbox toggles
6. Click “Sign Up” button	Click button	Registration succeeds, redirected to verification
Post Condition: <ul style="list-style-type: none"> Company is registered and verification pending. 		

Test Case: Team Registration

Project Name: Robo Hatch	Test Designed by: Dip Khastagir	
Test Case ID: RH_004	Test Designed date: 23/05/2025	
Test Priority (Low, Medium, High): High	Test Executed by: Dip Khastagir	
Module Name: Authentication	Test Execution date: 25/05/2025	
Test Title: Verify team registration with minimum 10 members		
Description: Ensure team registration form collects details and enforces member count.		
Precondition (If any): <ul style="list-style-type: none">Team registration page is accessible.User has necessary information for all team members.		
Test Step	Test Data / Input	Expected Result
1. Open Team Registration page	Navigate to Team Registration URL/page	Team registration form loads successfully
2. Enter Team Name	“Future Bot Team”	Team Name input accepts text
3. Enter Member 1 Name	“Dip Khastagir”	Member 1 Name field accepts input
4. Enter Member 1 Email	“ dipkhastagir@example.com ”	Member 1 Email field accepts valid email
5. Enter Member 1 Role	“Mechanical Engineer”	Member 1 Role input accepted

Enter Member 1 Field of Study	“Robotics”	Member 1 Field of Study input accepted
6. Repeat steps 3–6 for Members 2 to 9	Valid info for each member	Each member’s details accepted
7. Enter Member 10 Name	“John Doe”	Member 10 Name field accepts input
8. Enter Member 10 Email	“ dipuroy@example.com ”	Member 10 Email field accepts valid email
9. Enter Member 10 Role	“Software Developer”	Member 10 Role input accepted
10. Enter Member 10 Field of Study	“Computer Science”	Member 10 Field of Study input accepted
11. Try to submit form with only 9 members	Leave Member 10 empty or incomplete	Validation error: “At least 10 members required”
12. Complete all member fields (10 members)	All inputs valid	All member fields accepted without errors
13. Check “Agree to Terms & Conditions” checkbox	Click checkbox	Checkbox is checked
14. Click “Sign Up” button	Click button	Registration submitted successfully; redirect to verification page
Post Condition: <ul style="list-style-type: none"> • The team is registered successfully with at least 10 valid members. • Team is redirected to email/phone verification step. • Validation errors shown if team member count is insufficient or data is invalid. 		

Test Case: Email/Phone Verification

Project Name: Robo Hatch		Test Designed by: Dip Khastagir
Test Case ID: RH_005		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify OTP input and resend functionality		
Description: Ensure users can enter OTP and request resend if needed.		
Precondition (If any): <ul style="list-style-type: none"> • Verification code sent to email or phone. 		
Test Steps	Test Data	Expected Results
1.Open verification page	N/A	Page loads with 6 input boxes
2.Enter correct OTP	123456	OTP accepted, proceed to next page

3.Enter invalid OTP	000000	Error message displayed
4.Click “Resend Code”	Click button	New OTP sent, confirmation message shown
5.Timeout for OTP input	Wait 5 minutes	OTP expired message and resend option active
Post Condition: <ul style="list-style-type: none"> OTP verification completed or resend handled correctly. 		

Test Case: Password Recovery

Project Name: Robo Hatch		Test Designed by: Basudeb Kundu
Test Case ID: RH_006		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Basudeb Kundu
Module Name: Authentication		Test Execution date:25/05/2025
Test Title: Verify password reset request and validation		
Description: Test password recovery form input and response.		
Precondition: <ul style="list-style-type: none"> Password recovery page accessible 		
Test Steps	Test Data	Expected Results
1. Open password recovery page		Form loads with email input
2. Enter registered email	nijhum@example.com	Input accepted
3. Submit recovery request	Click “Send Reset Link”	Confirmation message shown
4. Enter unregistered email	nirjhor@noemail.com	Error message shown
5. Click back to login	Click link	Redirects to login page
Post Condition: <ul style="list-style-type: none"> Password recovery requests processed correctly. 		

Test Case: Profile Setup Wizard

Project Name: Robo Hatch		Test Designed by: Dip Khastagir
Test Case ID: RH_007		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025

Test Title: Verify multi-step profile setup and data validation.		
Description: Ensure profile wizard collects data correctly across steps..		
Precondition: <ul style="list-style-type: none"> User logged in and first time accessing profile setup 		
Test Steps	Test Data	Expected Results
1. Open profile setup wizard	N/A	Step 1 (Basic Info) loads
2. Enter valid name and email	Dip Khastagir, dipkhastagir@example.com	Inputs accepted
3. Click Next	Click button	Moves to Step 2 (Skills)
4. Enter skills and experience	Robotics, 3 years	Inputs accepted
5. Click Next	Click button	Moves to Step 3 (Portfolio)
6. Upload portfolio files	Valid files	Files accepted
7. Click Finish	Click button	Profile saved, redirected to dashboard
Post Condition: <ul style="list-style-type: none"> Profile data saved and wizard completes successfully. 		

Test Case: Freelancer Dashboard Overview

Project Name: Robo Hatch		Test Designed by: Dip Khastagir
Test Case ID: RH_008		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify dashboard display of projects, notifications, and AI suggestions		
Description: Check that dashboard widgets load correct data and navigation works.		
Precondition: <ul style="list-style-type: none"> User logged in as freelancer with active projects 		
Test Steps	Test Data	Expected Results
1. Load freelancer dashboard		Dashboard loads with stats and widgets
2. Click on project card	Click project	Redirects to project details
3. Check notifications		Notifications list shows new alerts
4. Click AI suggestions	Click suggestion	Opens AI suggestions page
Post Condition: <ul style="list-style-type: none"> Dashboard functions as expected with updated data. 		

Test Case: AI Based Project Suggestions

Project Name: Robo Hatch		Test Designed by: Dip Khastagir
Test Case ID: RH_009		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify personalized AI project suggestions and refresh		
Description: Ensure AI suggestions are relevant and refresh updates the list.		
Precondition: <ul style="list-style-type: none"> Freelancer profile complete with skills 		
Test Steps	Test Data	Expected Results
1. Open AI suggestions page		Suggestions list loads
2. Review suggested project	Click project card	Project details displayed
3. Click "Refresh Suggestions"	Click button	New suggestions generated
Post Condition: <ul style="list-style-type: none"> AI suggestions relevant and refresh properly. 		

Test Case: Password Strength Validation

Project Name: Robo Hatch		Test Designed by: Dip Khastagir
Test Case ID: RH_010		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify personalized AI project suggestions and refresh		
Description: Ensure AI suggestions are relevant and refresh updates the list.		
Precondition: <ul style="list-style-type: none"> Registration or password reset page is open 		
Test Steps	Test Data	Expected Results
1. Enter short password	"abc123"	Show error: "Password too short"
2. Enter password without numbers	"abcdefgh"	Show error: "Include numbers"
3. Enter password without uppercase	"abc1234!"	Show error: "Include uppercase letter"
4. Enter strong password	"Abc1234!"	Accept password, no errors

5. Submit form with strong password	Click submit	Registration/password change proceeds
Post Condition: <ul style="list-style-type: none"> Password strength validated and enforced. 		

Test Case: Email Confirmation Link

Project Name: Robo Hatch		Test Designed by: Dip Khastagir
Test Case ID: RH_011		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): Medium		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify personalized AI project suggestions and refresh		
Description: Ensure AI suggestions are relevant and refresh updates the list.		
Precondition: <ul style="list-style-type: none"> New user registered with valid email 		
Test Steps	Test Data	Expected Results
1. Register new account	Valid email	Confirmation email sent
2. Click confirmation link	Click link in email	Account marked as active
3. Attempt login before confirm	Attempt login	Denied with “Confirm email” message
4. Attempt login after confirm	Attempt login	Login succeeds
Post Condition: <ul style="list-style-type: none"> Email confirmation activates the user account. 		

Test Case: Multi Factor Authentication (MFA)

Project Name: Robo Hatch		Test Designed by: Dip Khastagir
Test Case ID: RH_012		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): Medium		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify MFA prompt and validation during login		
Description: Ensure MFA code is required after password and correctly validated.		
Precondition:		

<ul style="list-style-type: none"> MFA enabled for user account 		
Test Steps	Test Data	Expected Results
1. Login with username/password	Valid credentials	Prompt for MFA code displayed
2. Enter correct MFA code	Valid code	Login success and dashboard loads
3. Enter invalid MFA code	Wrong code	Error message displayed
4. Request new MFA code	Click resend	New code sent and prompt refreshed
Post Condition: <ul style="list-style-type: none"> MFA process functions as expected. 		

Test Case: Freelancer Messaging Functionality

Project Name: Robo Hatch		Test Designed by: Dip Khastagir
Test Case ID: RH_013		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify freelancer can send and receive messages with file attachments		
Description: Check chat functionality, message delivery, and file upload.		
Preconditions: <ul style="list-style-type: none"> Freelancer and company/team user logged in 		
Test Steps	Test Data	Expected Results
1. Open messaging center		Messages load successfully
2. Send text message	"Hello, I am interested"	Message appears in chat
3. Receive reply	From other user	Message received
4. Upload file attachment	Upload PDF or image	File attached and sent successfully
Post Condition: <ul style="list-style-type: none"> Messaging system works with text and file. 		

Test Case: Freelancer Notification Display

Project Name: Robo Hatch	Test Designed by: Dip Khastagir
Test Case ID: RH_014	Test Designed date: 23/05/2025

Test Priority (Low, Medium, High): Medium		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify notifications show correct alerts and link to related pages		
Description: Check notification display and click through.		
Precondition: <ul style="list-style-type: none"> User has new notifications 		
Test Steps	Test Data	Expected Results
1. Open notifications center		Notifications list loads
2. Click notification	Click first alert	Redirects to relevant page
3. Clear notification	Click clear	Notification removed from list
Post Condition: <ul style="list-style-type: none"> Notifications display and navigation work properly. 		

Test Case: Submit Proposal

Project Name: Robo Hatch		Test Designed by: Dip Khastagir
Test Case ID: RH_015		Test Designed date: 23/05/2025
Test Priority (Low, Medium, High): High		Test Executed by: Dip Khastagir
Module Name: Authentication		Test Execution date: 25/05/2025
Test Title: Verify proposal submission for projects		
Description: Ensure freelancers can submit proposals with required data.		
Precondition: <ul style="list-style-type: none"> Freelancer logged in and viewing project details 		
Test Steps	Test Data	Expected Results
1. Open project details		Project details page loads
2. Click "Submit Proposal"	Click button	Proposal form opens
3. Enter proposal amount	500 USD	Input accepts value
4. Enter cover letter	"I have 5 years experience"	Text input accepted
5. Attach files	Resume.pdf	File uploads successfully
6. Submit proposal	Click submit	Confirmation message displayed
Post Condition: <ul style="list-style-type: none"> Proposal is submitted and visible to company/team. 		