

Test Case Specifications

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1.0 Introduction

1.1 Purpose

This test case specification supports the following objective:

- I. To detail the test cases derived from test coverage in Test Design Specification.

1.2 References

The following IEEE standards have been referenced in preparation of this document:

- *IEEE 829-2008 Standard for Software and System Test Documentation.*

The following documents provide the test basis for this test design:

- *System Design Document.*

2.0 Test Cases

2.1 Environment

Tests shall perform on actual devices following the specifications:

- Operating Systems: Windows, macOS, and Linux.
- Web Browser, Mobile App and Desktop App

Web Browser Testing Environment:

Operating System	Windows 10, macOS, Linux
Browsers	Chrome version Firefox version Microsoft Edge version
WebDriver Executables	chromedriver
Dependencies	Java Development Kit (JDK) 11
Automation Software	Selenium version 4.1.0

Desktop App Testing Environment:

Operating System	Windows 10, macOS, Linux
Emulator	VMware Fusion 12.2
Desktop App Version	Rajamark version 1.0
Testing Tool	Java Development Kit (JDK) 11

Mobile App Testing Environment:

Hardware Name	Android 11.0 (Emulator)
Operating System	Android 11.0 (Emulator)
Mobile App Version	Rajamark version 1.0
Testing Framework	

2.2 Test Cases

F001 - Register

Test Case ID			
Related Feature ID			
Objective	Register - user clicks the “Don’t have an account? Register here” button.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User clicks the “Don’t have an account? Register here” button.	The system should redirect the user to the Register page.		

Test Case ID			
Related Feature ID			
Objective	Register - user fills in all required information.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Username: admin1 Email Address: admin1@gmail.com Password: admin123!	The system should create a new record in the account database after validating the account and redirect the user to the Login page after displaying “REGISTRATION SUCCESS” message.		

Confirm Password: admin123!			
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Test Case ID			
Related Feature ID			
Objective	Register - user fills in all required information, passwords don't match.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Username: admin1 Email Address: admin1@gmail.com Password: admin123! Confirm Password: admin123	The system shall prompt an Error Message "Password does not match".		

Test Case ID			
Related Feature ID			
Objective	Register - user fills in all required information, username already exists.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Username: admin1 Email Address: admin1@gmail.com Password: admin123! Confirm Password: admin123!	The system shall prompt an Error Message "Username Has Existed. Please try again".		

Test Case ID			
Related Feature ID			
Objective	Register - user fills in all required information, email already exists.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Username: admin1 Email Address: admin1@gmail.com Password: admin123! Confirm Password: admin123!	The system shall prompt an Error Message "Email Has Existed. Please try again".		

Test Case ID			
Related Feature ID			
Objective	Register - user does not fill in all the required information.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Username: admin1 // null Email Address: admin1@gmail.com // null Password: admin123! // null Confirm Password: admin123! // null	The system shall prompt an Error Message “Please fill in all the required information”.		

F002 - Login

Test Case ID			
Related Feature ID			
Objective	Login - user fills in all required information.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Username: admin1 Password: admin123!	The system should change status to login after validating login and redirect the user to the Home page.		

Test Case ID			
Related Feature ID			
Objective	Login - user fills in all required information, but they don't match in the database.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Username: admin1 Password: admin123	The system shall prompt an Error Message "Username/Email is incorrect. Please try again".		

Test Case ID			
Related Feature ID			
Objective	Login - user does not fill in all the required information.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Username: admin1 // null Password: admin123! // null	The system shall prompt an Error Message "Please fill in all the required information".		

F003 - Logout

Test Case ID			
Related Feature ID			
Objective	Logout - verify successful logout when the user manually clicks the logout button		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User clicks on the logout button.	User is logged out of the system and redirected to the login page		

Test Case ID			
Related Feature ID			
Objective	Logout - ensure proper session termination after a period of inactivity in the website.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User session remains inactive for the configured timeout period.	User is automatically logged out of the system due to inactivity and redirected to the login page.		

Test Case ID			
Related Feature ID			
Objective	Logout - verify logout functionality while logged in multiple devices with the same credentials		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User logs out from one device while remaining logged in on another device	User is successfully logged out from that device and redirected to the login page while the other devices remain logged in.		

Test Case ID			
Related Feature ID			
Objective	Logout - verify behavior when attempting to access restricted pages after logout		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User tries to access a restricted page after logging out.	System redirects the user to the login page instead of allowing access to the restricted page..		

Test Case ID			
Related Feature ID			
Objective	Logout - ensure session data is cleared upon logout.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User logs out of the system	All session-related data is cleared from the system.		

Test Case ID			
Related Feature ID			
Objective	Logout - ensure logout functionality is accessible and functional across different browsers and devices		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Users log out from the system using various browsers (e.g., Chrome, Firefox, Safari) and devices (e.g., desktop, mobile).	User is successfully logged out from that device and redirected to the login page		

F004 - Forgot Password

Test Case ID			
Related Feature ID			
Objective	Forgot Password - validate password reset request submission		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User submits a request to reset their password by providing their registered email address.	Confirmation message is displayed indicating that the password reset email has been sent to the user's email address.		
User submits a request to reset their password by providing their unregistered email address	System displays an error message indicating that the email address is not registered and prompts the user to provide a registered email address.		
User submits a password reset request with an invalid email address format.	System displays an error message indicating that the email address format is invalid and prompts the user to provide a valid email address.		

Test Case ID			
Related Feature ID			
Objective	Forgot Password - validate expiration of password reset link after a certain period.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User receives a password reset link via email and clicks on it after 2 minutes..	User is redirected to a page indicating that the password reset link has expired, prompting them to initiate a new password reset request.		

Test Case ID			
Related Feature ID			
Objective	Forgot Password - validate security measures against unauthorized password reset requests.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Multiple password reset requests are submitted for the same email address within a short period.	System detects and blocks subsequent password reset requests for a certain duration		

F005 - Manage Exam

Test Case ID			
Related Feature ID			
Objective	To verify that the system allows users to create a new exam record.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User clicks on the "Create" button.	The system redirects to a new page for entering exam details, including exam title, description, course code, session, and default grade set according to the predefined grading system.		

Test Case ID			
Related Feature ID			
Objective	To verify that the system allows users to edit existing exam records.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User selects an exam record and clicks on the "Edit" button.	The system allows the user to modify exam details, such as title, description, course code, session, and grade.		

Test Case ID			
Related Feature ID			
Objective	To verify that the system allows users to delete existing exam records.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User selects an exam record and clicks on the "Delete" button	The system prompts the user for confirmation to delete the exam record.		

F006 - View Exam

Test Case ID			
Related Feature ID			
Objective	To verify that the system displays available exam records on the Home page.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User logs in and navigates to the Home page.	The system lists all available exam records.		

Test Case ID			
Related Feature ID			
Objective	To verify that the system allows users to view details of a specific exam record.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User clicks on a particular exam record from the list.	The system redirects the user to the Exam Details page, displaying exam title, description, and a list of student details (if available).		

F007 - Upload Sample Answer

Test Case ID			
Related Feature ID			
Objective	Upload Sample Answer - User uploads sample answers for each question in text format. Verify that the user can upload sample answers for each question in text format.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User accesses the Exam Details Page. Sample Answer for each question in text format is uploaded.	System performs validation of text format and confirms upload status with "Upload Success!" success message.		

Test Case ID			
Related Feature ID			
Objective	Upload Sample Answer - User uploads sample answers for each question in an invalid format. Verify system displays error message when user uploads sample answer in an invalid format.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User accesses the Exam Details Page.	System performs validation of invalid format and updates upload status with		

Sample Answer for each question with invalid format is uploaded.	"Upload Fail, Invalid Format" error message.		
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Test Case ID			
Related Feature ID			
Objective	Upload Sample Answer - User uploads empty sample answers for each question. Verify system displays an error message when an empty sample answer is uploaded.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User accesses the Exam Details Page. Empty sample answer is uploaded.	System updates upload status and displays "Upload Fail, No Sample Answer Found!" error message.		

Test Case ID			
Related Feature ID			
Objective	Upload Sample Answer - Success message is displayed upon success in uploading a sample answer. Verify system displays success message upon success in uploading a sample answer.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency

User accesses the Exam Details Page. Sample Answer for each question in text format is uploaded.	System displays “Upload Success!” message confirming the upload of the sample answer.		
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Test Case ID			
Related Feature ID			
Objective	Upload Sample Answer - Error message is displayed upon failure in uploading a sample answer. Verify system displays error message upon failure in uploading a sample answer.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User accesses the Exam Details Page. Sample Answer for each question with invalid format is uploaded.	System displays “Upload Fail, Cause X” an error message with the cause of failure in uploading the sample answer.		

F008 - Upload Student Data

Test Case ID			
Related Feature ID			
Objective	Upload Student Data - User uploads student data including student name and answer sheet in the correct data format. Verify user can upload student data that includes the student name and answer sheet in the correct data format.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User creates an exam record. User accesses the Exam Details Page. User uploads student data in the correct data format.	System performs validation of data format and updates upload status with "Upload Success!" success message.		

Test Case ID			
Related Feature ID			
Objective	Upload Student Data - User uploads student data including student name and answer sheet in an invalid data format. Verify system displays error message when user uploads student data that includes the student name and answer sheet in the invalid data format.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency

<p>User creates an exam record.</p> <p>User accesses the Exam Details Page.</p> <p>User uploads student data in an invalid data format.</p>	<p>System performs validation of data format and updates upload status with "Upload Fail, Invalid Format!" error message.</p>		
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Test Case ID			
Related Feature ID			
Objective	<p>Upload Student Data - User uploads empty entry of student data.</p> <p>Verify system displays error message when user uploads an empty entry of student data.</p>		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Inter-case Dependency
<p>User creates an exam record.</p> <p>User accesses the Exam Details Page.</p> <p>User uploads an empty entry of student data.</p>	<p>System updates upload status and displays "Upload Fail, No Student Data Found!" error message.</p>		

Test Case ID			
Related Feature ID			
Objective	<p>Upload Student Data - Success message is displayed upon success in uploading a student data.</p>		

	Verify system displays success message upon success in uploading a student data.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User uploads student data in the correct data format.	System displays "Upload Success!" message confirming the upload of the student data.		

Test Case ID			
Related Feature ID			
Objective	Upload Student Data - Error message is displayed upon failure in uploading a student data. Verify system displays error message upon failure in uploading a student data.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
User creates an exam record. User accesses the Exam Details Page. User uploads student data in an invalid data format.	System displays "Upload Fail, Cause X" an error message with the cause of failure in uploading the student data.		

F009 - View Student Score

Test Case ID			
Related Feature ID			
Objective	View Student Score - Check if the system displays the list of student scores correctly		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Navigate to the Exam Details page	The list of student scores is displayed without errors		

Test Case ID			
Related Feature ID			
Objective	View Student Score - Test if clicking the eye icon redirects to the Student Answer Page		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Click on the eye icon for a student in the Exam Details page	The system redirects to the Student Answer Page. The extracted answer is displayed in text format. The original image of the question paper is displayed.		

Test Case ID			
Related Feature ID			
Objective	View Student Score - Test if clicking the pencil icon prompts a pop-up with existing student data		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Click on the pencil icon for a student in the Exam Details page	A pop-up is displayed with the existing data of the student, including name, student ID, and uploaded answer sheet		

Test Case ID			
Related Feature ID			
Objective	View Student Score - Test if clicking the trash icon prompts a confirmation message and removes the student from the class lis		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Click on the trash icon for a student in the Exam Details page Click on the "Confirm" button in the confirmation message	A confirmation message is prompted. Upon clicking "Confirm", the student is removed from the class list.		

Test Case ID			
Related Feature ID			
Objective	View Student Score - Test if the system handles errors gracefully		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Perform actions such as clicking icons or navigating between pages with incorrect or invalid data	<p>The system displays appropriate error messages for invalid actions or data.</p> <p>The system handles errors gracefully without crashing.</p>		

F010 - Generate Student Report

Test Case ID			
Related Feature ID			
Objective	Generate Student Report - Test if clicking the "View Result" button redirects the user to the Results page		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Click on the "View Result" button at the exam record page	The system redirects to the Results page The details of the exam are displayed, including mean and median scores The individual score of each student is displayed.		

Test Case ID			
Related Feature ID			
Objective	Generate Student Report - Ensure that the system correctly calculates the mean and median scores		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Upload student answers for an exam with known scores	The mean score displayed on the Results page matches the		

	<p>calculated mean of the uploaded scores</p> <p>The median score displayed on the Results page matches the calculated median of the uploaded scores</p>		
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Test Case ID			
Related Feature ID			
Objective	Generate Student Report - Confirm that the system accurately displays the individual scores of each student		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Upload student answers for an exam	Each student's score is displayed correctly next to their respective names on the Results page		

Test Case ID			
Related Feature ID			
Objective	Generate Student Report - Test how the system handles cases where no scores have been uploaded for an exam		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency

Navigate to the Results page for an exam without any uploaded scores	The system displays a message indicating that no scores have been uploaded for the exam		
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Test Case ID			
Related Feature ID			
Objective	Generate Student Report - Test the system's response to unexpected or erroneous inputs		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Perform actions such as clicking buttons or entering data incorrectly	<p>The system displays appropriate error messages for invalid actions or data</p> <p>The system handles errors gracefully without crashing</p>		

F011 - Preprocess Image

Test Case ID			
Related Feature ID			
Objective	Upload Photo - Users choose "Take Photo" to upload an image.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Click the "Upload" button. Choose "Take Photo".	The system should activate the device camera for the user to take a photo.		

Test Case ID			
Related Feature ID			
Objective	Choose from Gallery - Users can choose "Choose from Gallery" to upload an image.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Click the "Upload" button. Choose "Choose from Gallery".	The system should prompt the user to select an image from the device gallery.		

Test Case ID	
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Related Feature ID			
Objective	Adjust resolution and format - System preprocesses uploaded images successfully.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Uploaded image with correct image format.	The system should adjust resolution and format to optimize for text extraction.		

Test Case ID			
Related Feature ID			
Objective	Display error message - System displays an error message if image preprocessing fails.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Uploaded image with incorrect format.	The system should display an error message: "Image Preprocessing failed. Please try again".		

F012 - Extract Answer

Test Case ID			
Related Feature ID			
Objective	Extract text - System performs OCR to extract answers from uploaded images.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Uploaded image with correct image format with answers.	The system should extract text representing answers from the image.		

Test Case ID			
Related Feature ID			
Objective	Display error message - System displays an error message if no answers are detected.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Uploaded image with correct image format without answers.	The system should display an error message: "Extracting failed".		

Test Case ID			
Related Feature ID			

Objective	Display extracted answer - System displays extracted answers for user confirmation or editing.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Uploaded image with correct image format with answers.	The system should display extracted answers for confirmation or editing.		

Test Case ID			
Related Feature ID			
Objective	Store answers - System stores answers and the image of the question paper into the student record.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Confirmed answers, Student ID. Click the “Confirm” button.	The system should store the confirmed answers and the image of the question paper into the student record associated with the provided Student ID.		

F013 - Compare Answer to Question

Test Case ID			
Related Feature ID			
Objective	Verify that the system correctly identifies a correct student answer when compared to the sample answer.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Sample answer: ["1. A", "2. B"] Student answer: ["1. A", "2. B"]	The system should indicate that the student's answer is correct.		

Test Case ID			
Related Feature ID			
Objective	Verify that the system correctly identifies an incorrect student answer when compared to the sample answer.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Sample answer: ["1. A", "2. B"] Student answer: ["1. A", "2. A"]	The system should indicate that the student's answer is incorrect.		

Test Case ID			
Related Feature ID			
Objective	Verify that the system correctly identifies the sequence of students answer with sample answers		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
<p>Sample answer: ["1. A", "2. B"]</p> <p>Student answer: [2. B", "1. A"]</p>	The system should indicate that the student's answer is correct even when the sequential is not correct as long as the numbering of students' answers is the same as the sample answer.		

F014 - Calculate Exam Score

Test Case ID			
Related Feature ID			
Objective	Verify that the system correctly calculates the score when all answers match perfectly.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Sample answers: ["1. A", "2. B", "3. C", "4. D"] Student answers: ["1. A", "2. B", "3. C", "4. D"]	The system should calculate the score as 100%.		

Test Case ID			
Related Feature ID			
Objective	Verify that the system correctly calculates the score when some answers match partially.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
Sample answers: ["1. A", "2. B", "3. C", "4. D"] Student answers: ["1. A", "2. B", "3. X", "4. D"]	The system should calculate the score based on the percentage of correct answers. For example, if 3 out of 4 answers are correct, the score should be 75%.		

Test Case ID			
Related Feature ID			
Objective	Verify that the system correctly handles cases where there are missing answers from the student.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
<p>Sample answers: ["1. A", "2. B", "3. C", "4. D"]</p> <p>Student answers: ["1. A", "2. B"]</p>	The system should calculate the score based on the provided answers. For example, if 2 out of 4 answers are correct, the score should be 50%.		

Test Case ID			
Related Feature ID			
Objective	Verify that the system updates the student's score record correctly and displays the updated score on the Exam Details page.		
Covered Test Coverage Items			
Input	Expected Result	Special Procedural Requirements	Intercase Dependency
<p>Sample answers: ["1. A", "2. B", "3. C", "4. D"]</p> <p>Student answers: ["1. A", "2. B", "3. C", "4. D"]</p>	After calculation, the system should update the student's score record with the calculated score and display it on the Exam Details page.		

Approvals

Approved Date	Approved Version	Approver Role	Approver