
Test Document

for

Sahara

Version 1.0

Prepared by

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Course: CS253

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Date: 06/04/2025

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.0	Ravi and Friends	Revised the entire document for clarity, consistency, and structure. Improved language flow, corrected grammatical issues, and ensured alignment with the intended purpose and audience. All sections have been reviewed and updated where necessary.	06/04/2025

1 Introduction

Test Strategy:

Our team's testing strategy was manual testing. The testers have evaluated the app using various input combinations to ensure it responds correctly in all scenarios. Testing involved not only verifying the expected outputs on the frontend but also continuously monitoring the backend to confirm accurate database entries. This comprehensive approach ensured that all functional and non-functional requirements outlined in the SRS document were thoroughly validated.

Test Period of the App:

Testing was an essential part of the development process. During implementation, the app underwent tests for fundamental functions such as logins, submissions and discussions. However, the majority of testing took place after the app was fully implemented. Since the core functionality was already established and validated, any bugs encountered were easier to address, as they were limited to specific features of the app (certain functions within the source code). This streamlined the testing process, making it more efficient and less time-consuming.

Testers of the App:

The app's developers also served as testers. However, to maintain neutrality in the testing process, no developer was assigned to test the units or components they had worked on. This approach ensured an unbiased evaluation. A key advantage of having developers as testers was their in-depth knowledge of possible inputs, allowing for extensive testing to enhance the application's robustness. Multiple errors were identified and promptly corrected as they were discovered.

Coverage Criterion for Testing:

Functional requirements were the criterion used for testing.

Tools Used in Testing:

No tools were used for testing. The entire process was manual.

2 Unit Testing

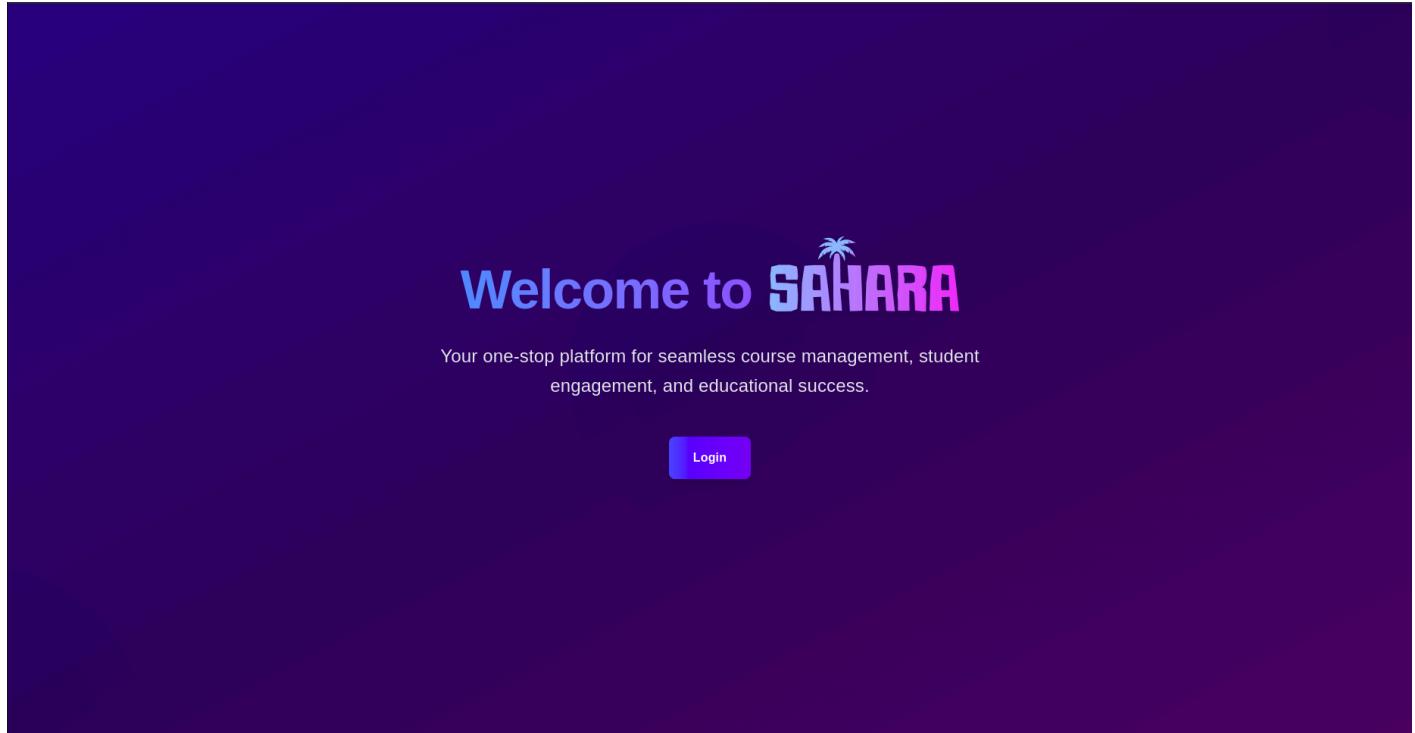
1. Landing Page

Unit Details: Landing Page

Test Owner: Spandan Pati and R Charan

Test Date: 28/03/25 - 04/04/25

Test Results: The landing page loads efficiently, prompting the user to log in to access the website.



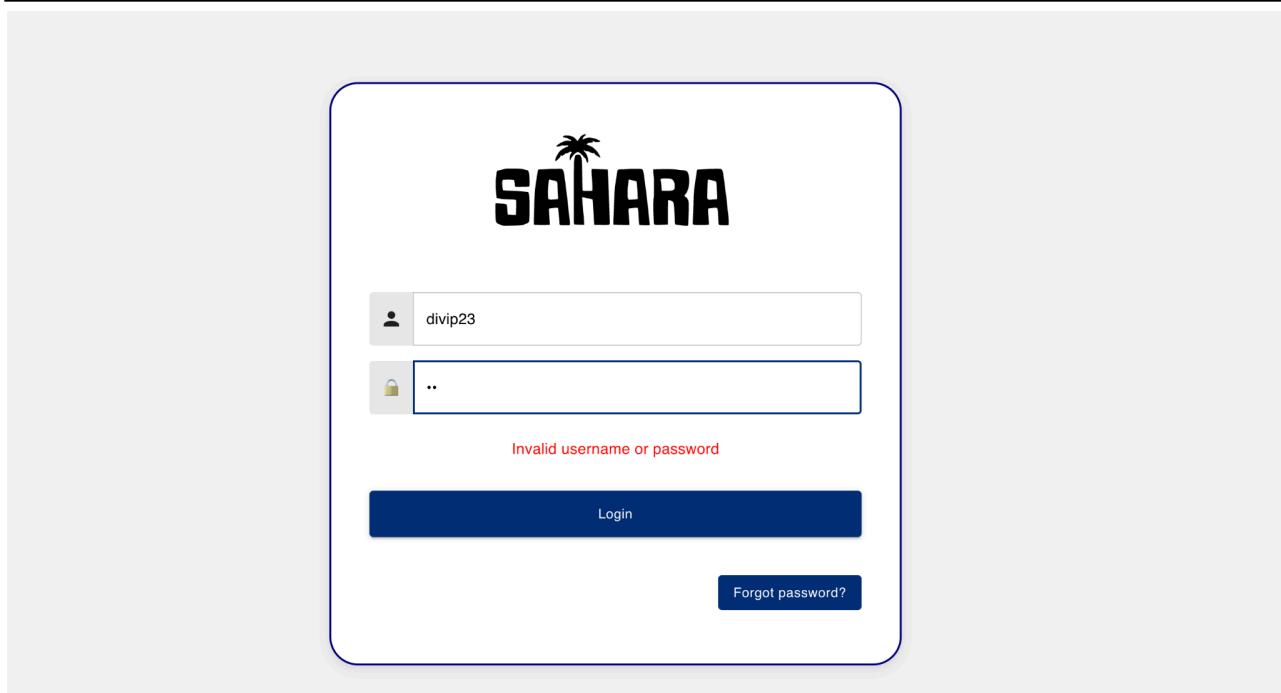
2. User Login Page

Unit Details: Login Page

Test Owner: Spandan Pati and R Charan

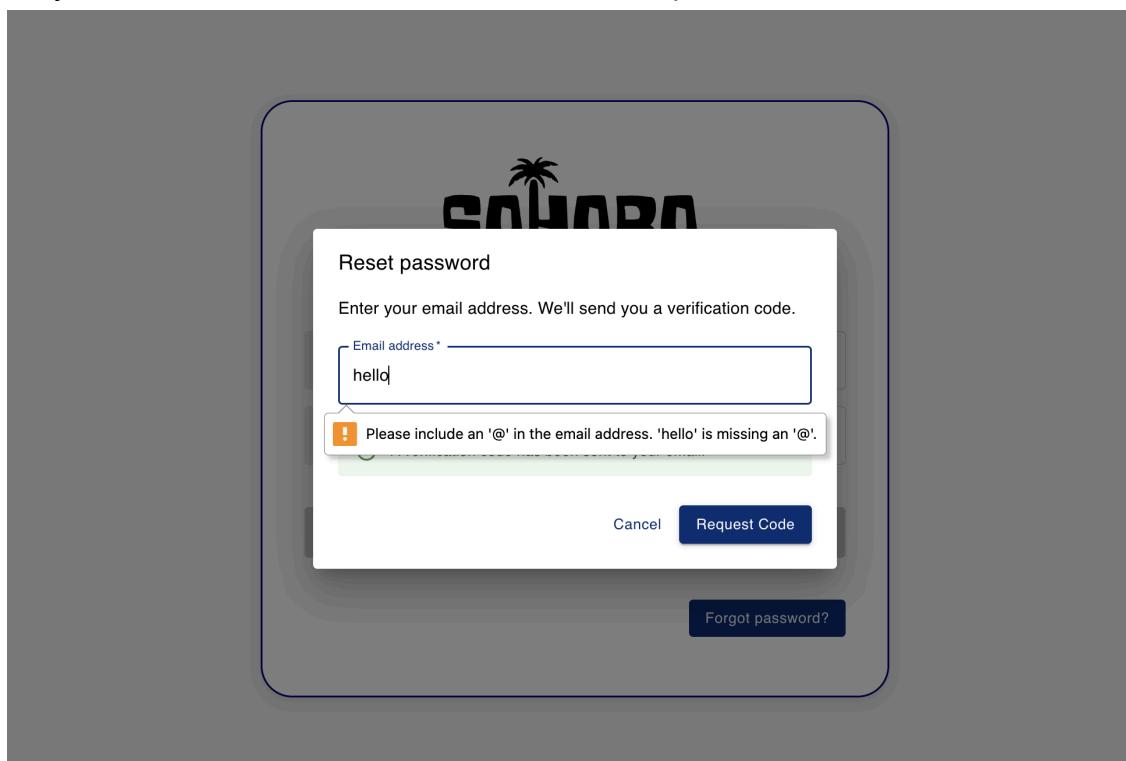
Test Date: 28/03/25 - 04/04/25

Test Results: The login procedure is efficient and requires the user ID and password to log in. The user is prompted if either the userID or password is incorrect.

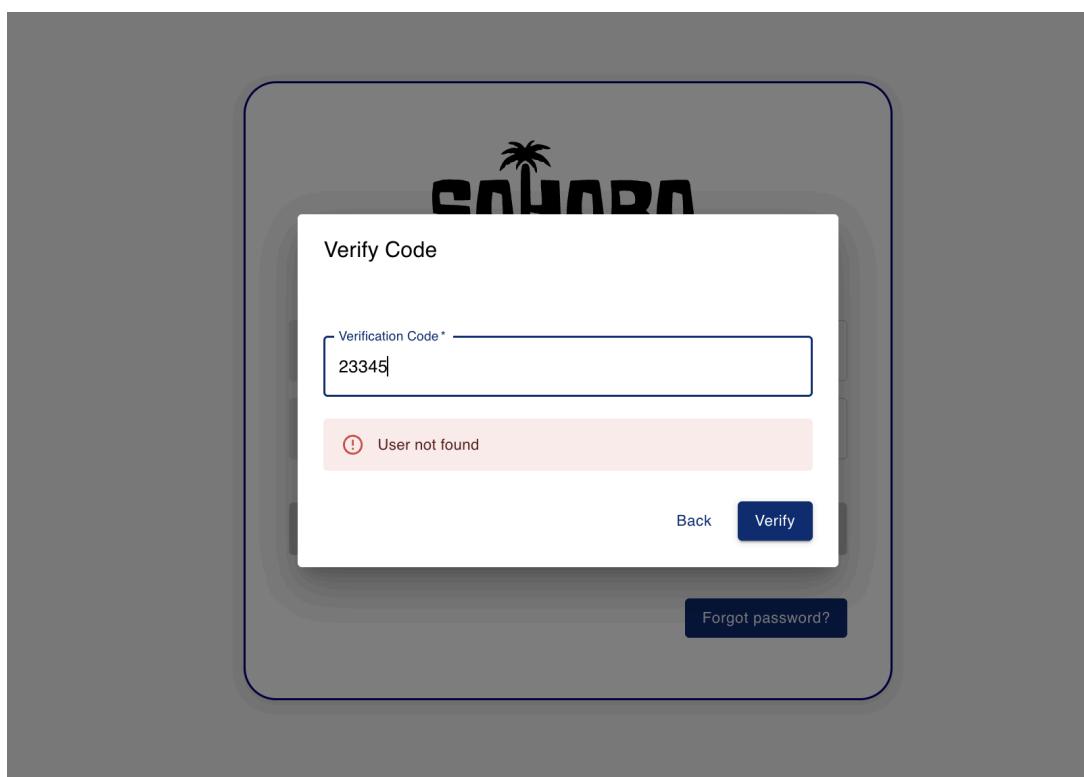
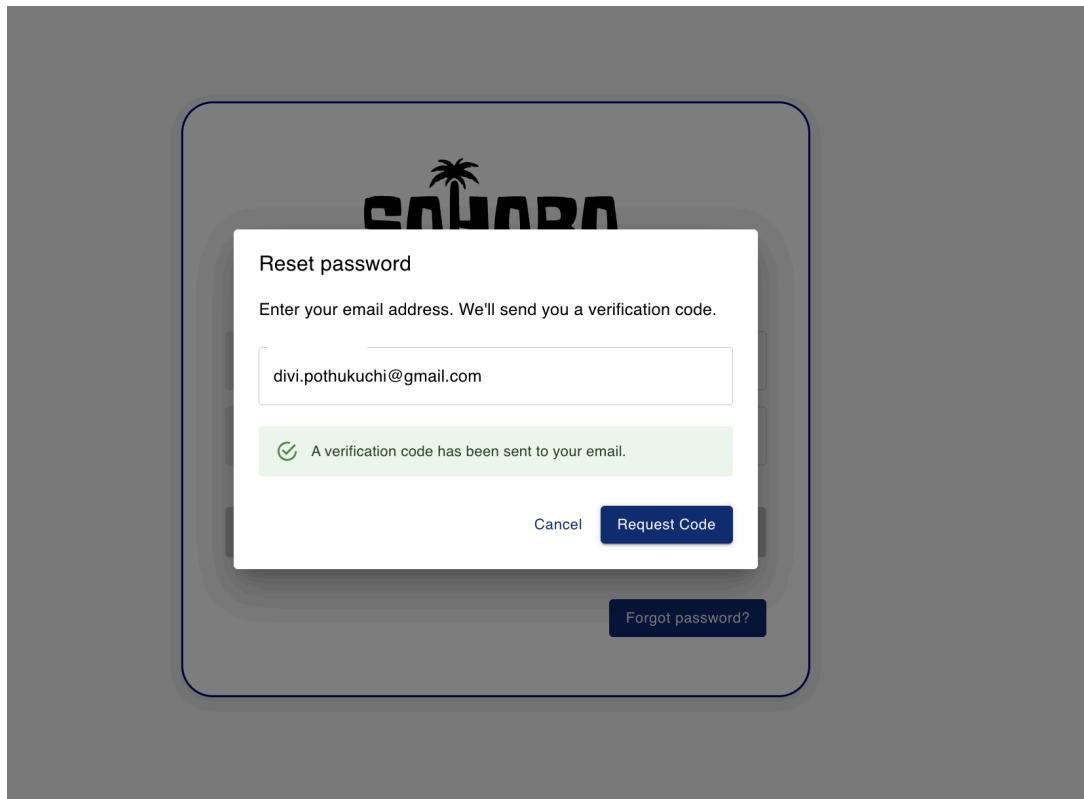


No signup page exists, since the professor has to add a CSV file containing the users. If the user forgets their password, a "**Forgot Password**" function sends an OTP to the user's IITK email ID.

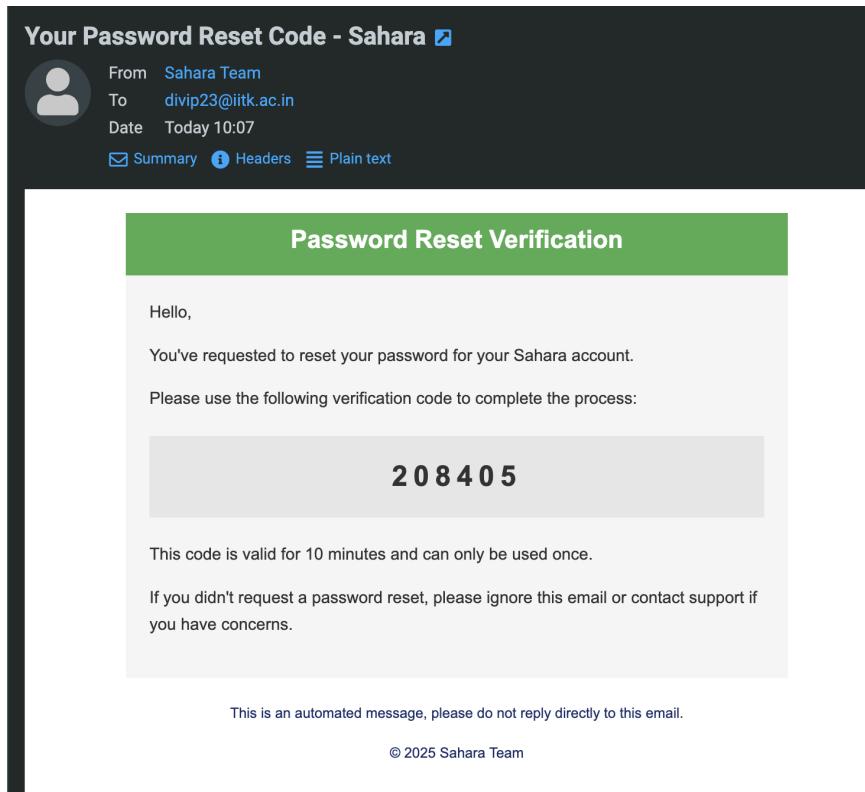
Only mail IDs in the valid email format are accepted.



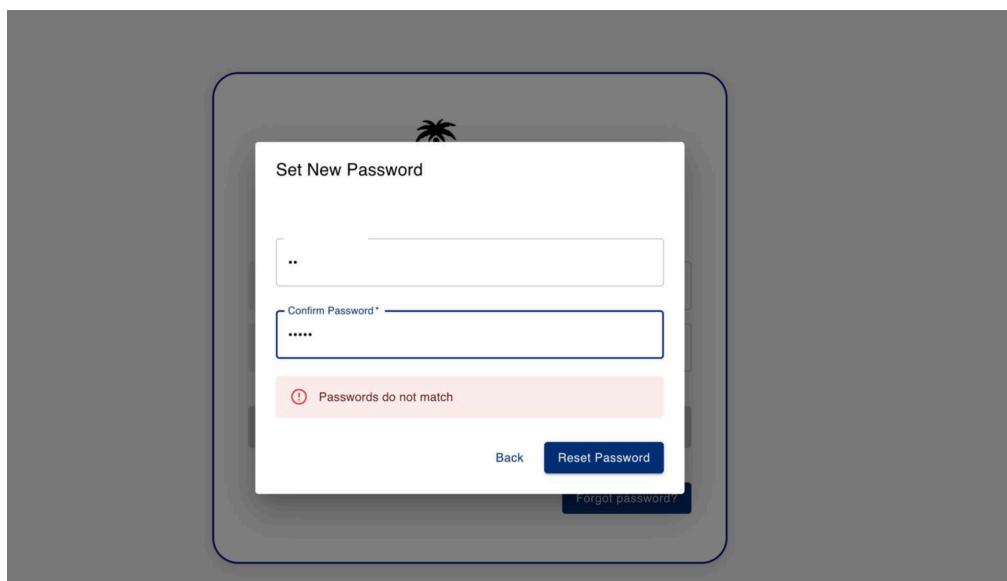
However, there is a bug when entering the email, as it doesn't raise an error for non-IITK email IDs or invalid email addresses while requesting a verification code. “**Invalid user**” error is only raised once a code is typed into the field.



The verification code sent is valid for 10 minutes. In case multiple verification codes are requested, only the latest one is valid.



While resetting the password, it notifies the user when the Confirm Password does not match the New Password.



Once the password is reset, only the reset password works and not the original password i.e. the new hashed password is updated in the database.

Original Password -

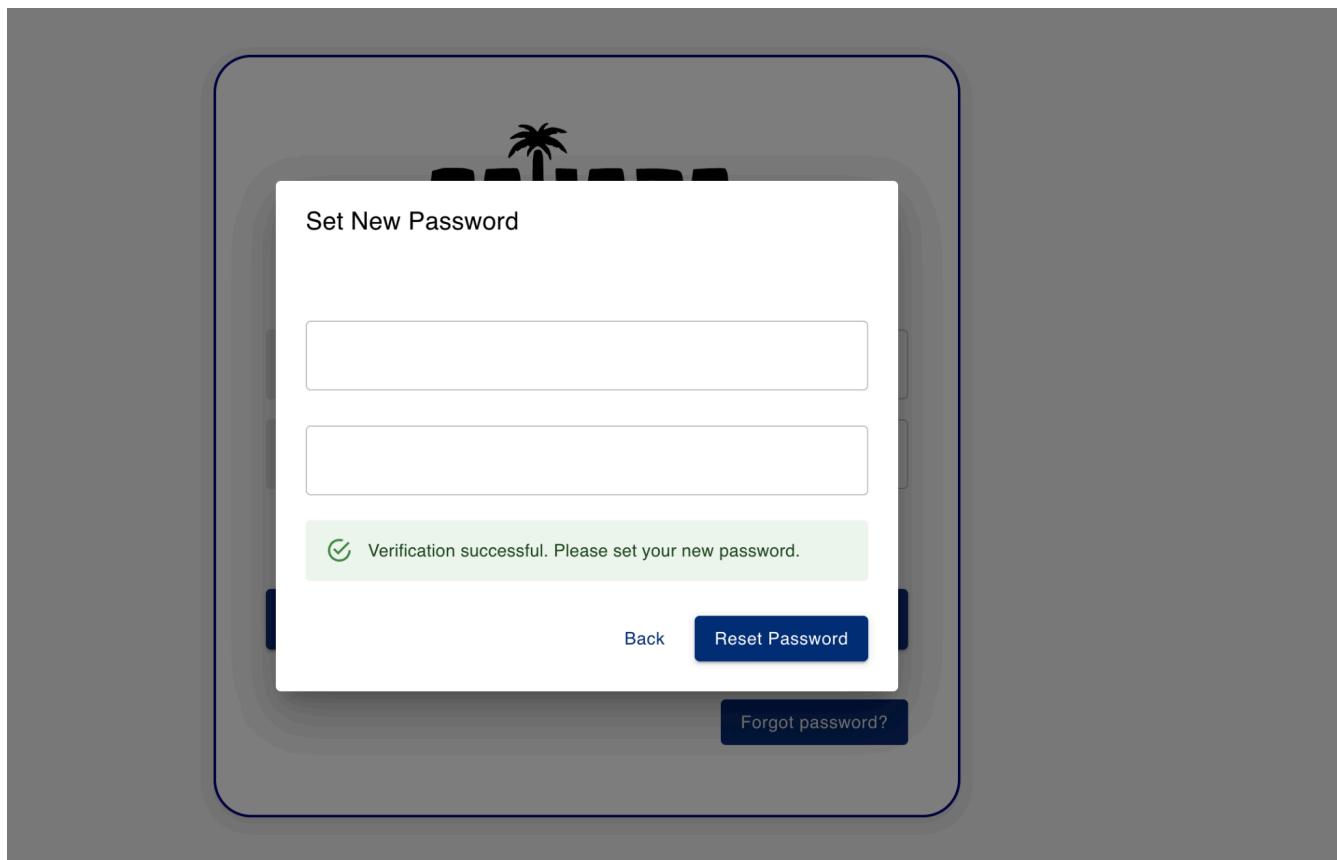
124	230378	DIVI POTHUKUCHI	divip23@iitk.ac.in	divip23	2	8	\$2b\$12\$3mkBUFWqluaC1dLbzE69Xubp5juOSMjQ6eGlyFCMgVbi8iWt...
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New Password -

124	230378	DIVI POTHUKUCHI	divip23@iitk.ac.in	divip23	2	8	\$2b\$12\$G1060Uf6VCEdgR.tuDRFA.zl79TD//N6R4ig1uXf86AHE6fpvsFnG
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The user can type a wrong password or a wrong verification code an unlimited number of times without any warnings. One possible feature that could be incorporated for security reasons could be to limit the number of wrong tries allowed for a user.

There also exist minor bugs in the UI relating to the font colour, resulting in ambiguity.



There also exists a bug wherein when a user tries to access any feature using the URL before logging in, the page is visible to them for a fraction of a second even before the user is authenticated, after which the user is redirected to the main login page. This should be fixed such that any page is not visible unless the user has been authenticated.

Although the User's token is only supposed to last for an hour and the User is supposed to be informed of the indirect session and should be redirected to the login page to login again, this does not happen.

The User is allowed to log in through another device while the current session is active. Once the User logs in, they are redirected to their dashboard, which displays different fields based on whether they are Professors, Students or TAs.

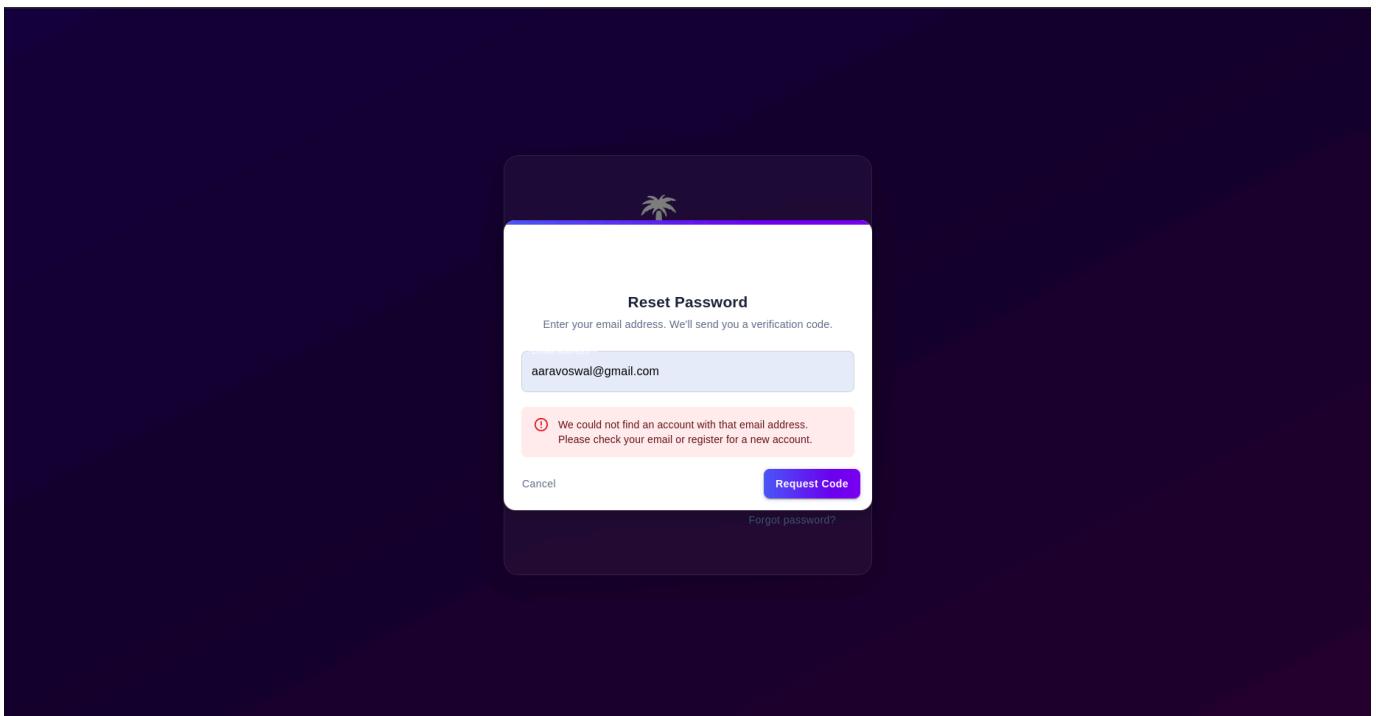
Structural Coverage: All possible cases relating to logging in, resetting passwords and authentication have been tested, and hence the coverage is 100%

Additional Comments: There exist the following bugs currently-

- verification code (which they wouldn't receive since it's an invalid email ID)
- Minor bugs in the UI.
- User token checking for access after a page is shown
- Possible feature- Limit the number of wrong tries for logging in/resetting password

The following bugs has been resolved:

- The User is now made aware of an invalid email ID during the Reset Password prompt itself.



- Minor UI bugs are mostly resolved.
- User token expires automatically, and they get logged out after 24 hours.

Professor's Side

1. Announcements- Bugs to be fixed, testing done

Unit Details: The Professor can create, view and delete Announcements. The created Announcements will then be visible to the TAs and the Students.

Test Owner: Pothuganti Nikhil and Divi Pothukuchi

Test Date: 28/03/25 - 04/04/25

Test Results: This is the initial view of the Announcements page from the Professor's side. It shows a list of all the old Announcements created, providing information about the date, time and author for each announcement.

There exists a bug in the date and time displayed on the screen. For reference, the Announcement titled "Quiz 8" was created on April 3rd, 10:56 AM, but it shows that it was created on April 1st, 11:48 PM.

The screenshot displays the SAHARA software interface. At the top, there is a navigation bar with a logo, a user icon labeled 'R', and a 'LOGOUT' button. On the left, a sidebar menu lists various features: Dashboard, Overview, Announcements (which is selected and highlighted in blue), Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area is titled 'Course Announcements' with a sub-instruction 'View and manage course announcements'. A large blue button on the right says '+ Create Announcement'. Below this, there is a list of four announcements, each with a delete icon (trash can) to its right. The announcements are: 'Mid Semester Examination' (Root Admin, March 28, 2025 at 07:44 PM), 'Quiz Grades Released' (Root Admin, March 28, 2025 at 07:44 PM), 'Library Management System' (Root Admin, March 28, 2025 at 07:39 PM), and 'Shell Scripting Announcement' (Root Admin, March 28, 2025 at 07:39 PM).

There exists an option for the Professor to delete any past announcement (even those not authored by them). A pop-up warning screen is displayed when a Professor tries to delete an announcement.

The screenshot shows the SAHARA LMS dashboard. On the left is a sidebar with links: Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. A red notification bubble at the bottom left says '1 Issue'. The main area is titled 'Course Announcements' and shows two announcements: 'Extension I' and 'Mid Semester'. A modal window titled 'Delete Announcement' is open over the 'Extension I' announcement, asking 'Are you sure you want to delete this announcement? This action cannot be undone.' with 'CANCEL' and 'DELETE' buttons. Below the modal, another announcement 'Quiz Grades Released' is visible.

The deletion gets reflected in the database as well

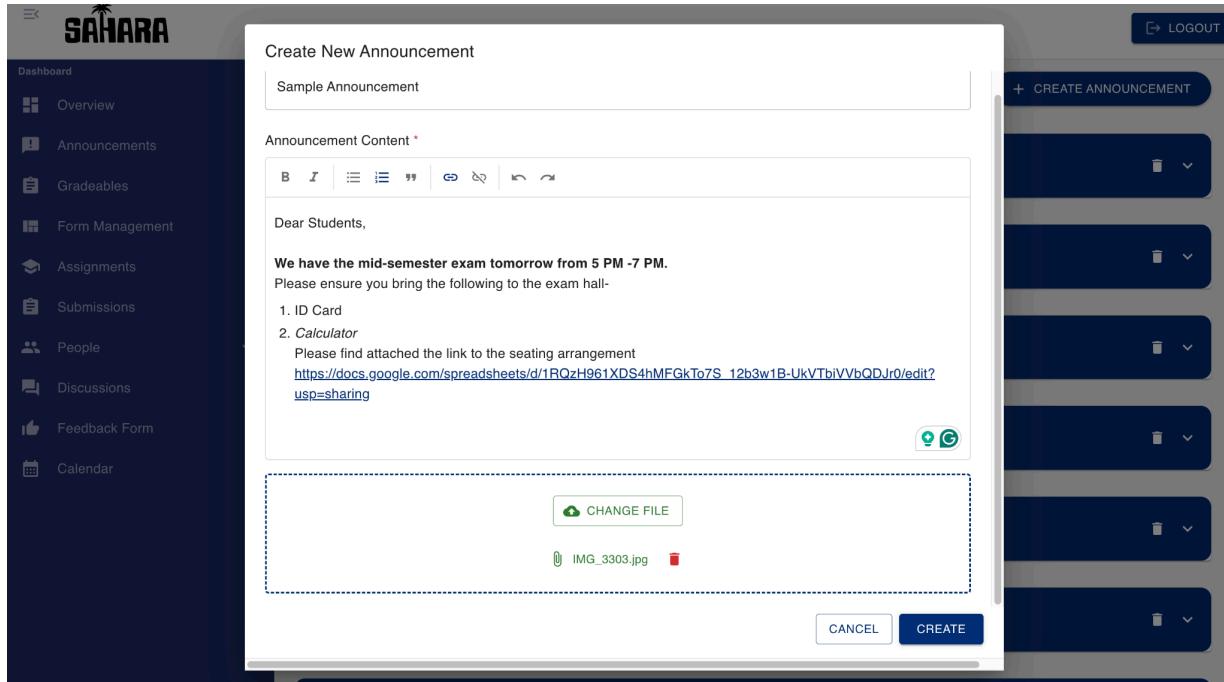
Before:

	id [PK] integer	creator_id integer	created_at character varying	title character varying	content character varying	url_name character varying
1	2	1	2025-03-28T14:09:04.559644+00:00	Welcome to CS253!	<p class="iptap-paragraph">Attached is the FCH for this course. Best of luck!</p>	fe9adc70-7ccb-489a-9a81-151551ea0dbb.docx
2	3	1	2025-03-28T14:14:06.541574+00:00	Mid Semester Examination	<p class="iptap-paragraph">Dear Students,</p><p class="iptap-paragraph">The mid-semester examination for the course CS253 will ...</p>	[null]
3	4	1	2025-03-28T13:57:31.644467+00:00	Shell Scripting Announcement	<p class="iptap-paragraph">Dear Students,</p><p class="iptap-paragraph">I have released the shell scripting assignment. It is a...</p>	d9175bd-5dd0-4c01-91fb-247be1251096.pdf
4	6	1	2025-03-28T14:14:06.541574+00:00	Quiz Grades Released	<p class="iptap-paragraph">Dear Students,</p><p class="iptap-paragraph">You can view your grades for all the quizzes at the following pdf:</p>	acd04a5b-82ba-492a-bbf5-9c0be217ecd.pdf
5	8	1	2025-03-28T14:09:04.559644+00:00	Library Management System	<p class="iptap-paragraph">Deadline is 31st March.</p><ol class="iptap-ordered-list"><p class="iptap-paragraph">To...</p>	4392cf02-0536-4ff2-8cb5-8c74199034ac.pdf
6	18	3	2025-04-01T18:18:03.899341+00:00	Quiz 8	<p class="iptap-paragraph">Quiz 8 is released. Please attempt before tomorrow evening</p><p class="iptap-paragraph"></p>	[null]
7	19	3	2025-04-01T18:18:03.899341+00:00	Quiz 9	<p class="iptap-paragraph"></p>	[null]
8	20	3	2025-04-01T18:18:03.899341+00:00	Sample Announcement	<p class="iptap-paragraph">Dear Students, We have the mid-semester exam tomorrow from 5 PM -7 PM. Please ensure y...</p>	3acad992-7ae1-4115-a1a0-8807d207bec3.jpg
9	21	3	2025-04-01T18:18:03.899341+00:00	Sample Announcement	<p class="iptap-paragraph">This is a sample announcement</p>	05472224-8199-4313-9db0-fe30dc5e821.jpg
10	22	3	2025-04-01T18:18:03.899341+00:00	Quiz 10	<p class="iptap-paragraph"></p>	[null]

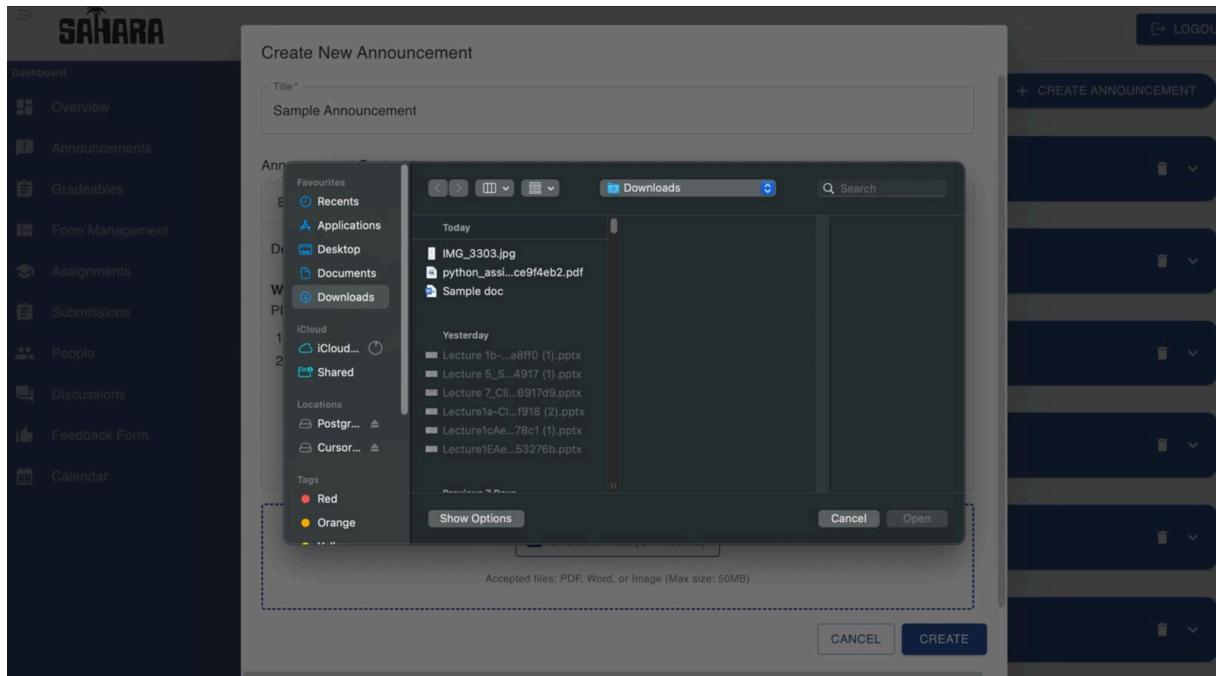
After:

	id [PK] integer	creator_id integer	created_at character varying	title character varying	content character varying	url_name character varying
1	3	1	2025-03-28T14:14:06.541574+00:00	Mid Semester Examination	<p class="iptap-paragraph">Dear Students,</p><p class="iptap-paragraph">The mid-semester examination for the course CS253 will ...</p>	[null]
2	4	1	2025-03-28T13:57:31.644467+00:00	Shell Scripting Announcement	<p class="iptap-paragraph">Dear Students,</p><p class="iptap-paragraph">I have released the shell scripting assignment. It is a...</p>	d9175bd-5dd0-4c01-91fb-247be1251096.pdf
3	6	1	2025-03-28T14:14:06.541574+00:00	Quiz Grades Released	<p class="iptap-paragraph">Dear Students,</p><p class="iptap-paragraph">You can view your grades for all the quizzes at the following pdf:</p>	acd04a5b-82ba-492a-bbf5-9c0be217ecd.pdf
4	8	1	2025-03-28T14:09:04.559644+00:00	Library Management System	<p class="iptap-paragraph">Deadline is 31st March.</p><ol class="iptap-ordered-list"><p class="iptap-paragraph">To...</p>	4392cf02-0536-4ff2-8cb5-8c74199034ac.pdf
5	18	3	2025-04-01T18:18:03.899341+00:00	Quiz 8	<p class="iptap-paragraph">Quiz 8 is released. Please attempt before tomorrow evening</p><p class="iptap-paragraph"></p>	[null]
6	19	3	2025-04-01T18:18:03.899341+00:00	Quiz 9	<p class="iptap-paragraph"></p>	[null]
7	20	3	2025-04-01T18:18:03.899341+00:00	Sample Announcement	<p class="iptap-paragraph">Dear Students, We have the mid-semester exam tomorrow from 5 PM -7 PM. Please ensure y...</p>	3acad992-7ae1-4115-a1a0-8807d207bec3.jpg
8	21	3	2025-04-01T18:18:03.899341+00:00	Sample Announcement	<p class="iptap-paragraph">This is a sample announcement</p>	05472224-8199-4313-9db0-fe30dc5e821.jpg
9	22	3	2025-04-01T18:18:03.899341+00:00	Quiz 10	<p class="iptap-paragraph"></p>	[null]

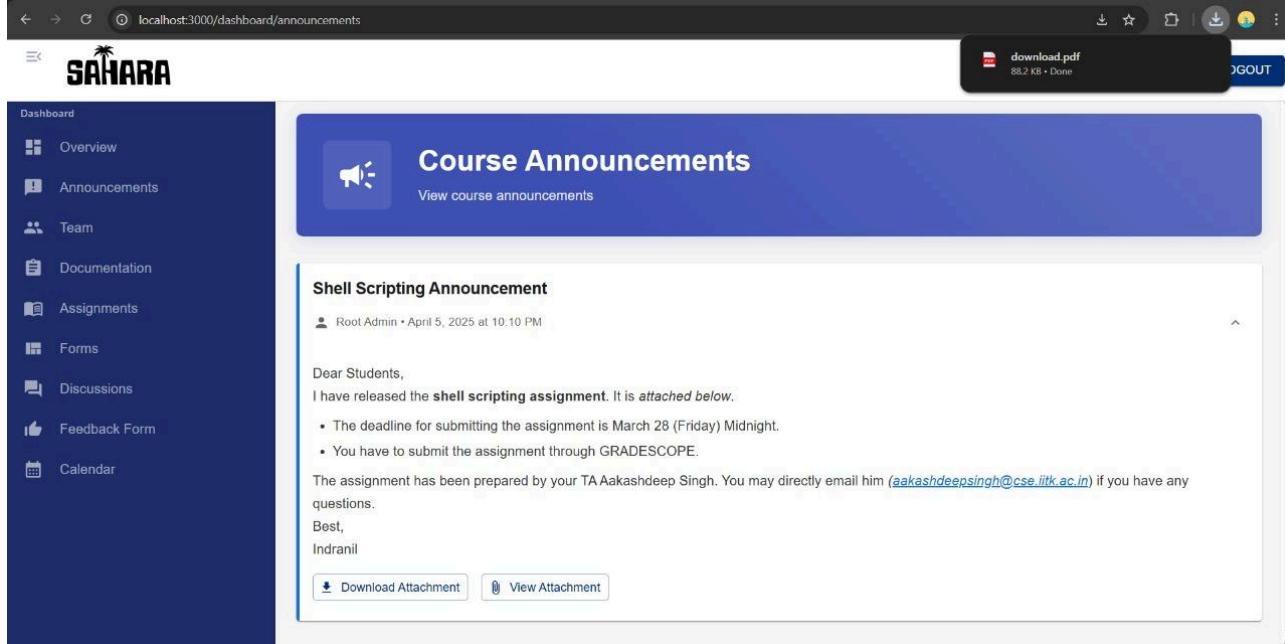
Sahara offers a sophisticated mechanism for creating Announcements, wherein the Professor can attach files (PDFs, images, Word documents of maximum size 50 MB) along with rich text, including **Bold**, *Italics*, Inserting Links, Bullet pointers, etc. The rich text features were tested and gave good results.



While the present features are impressive, there is no way for a Professor to attach more than one file to the announcement. The Professor should be allowed to attach multiple files or a zipped folder, in case multiple attachments are needed.



Users can view attachments of old Announcements by clicking on the “View Attachment” button. A new tab opens showing the attachment. Alternatively, Users can also download the attachments by clicking on the “Download Attachment” button, which downloads the attachment onto the User’s device.



The screenshot shows the SAHARA dashboard with a sidebar containing links like Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main content area displays a blue header "Course Announcements" with a megaphone icon. Below it is a "Shell Scripting Announcement" by Root Admin on April 5, 2025 at 10:10 PM. The announcement text includes a message to students about a shell scripting assignment, deadlines, and submission instructions. It ends with "Best, Indranil". At the bottom are "Download Attachment" and "View Attachment" buttons. A download progress bar for "download.pdf" (88.2 KB) is shown in the top right corner of the browser window.



The screenshot shows a browser window displaying the contents of the downloaded PDF file. The document is titled "CS253 Assignment 2 - Shell Scripting IIT Kanpur". It contains a "Problem Statement" section with instructions for writing a shell script named "larger.sh" that takes two files as input and performs specific operations. It also includes sample input data: "file1.txt: apple" and "file2.txt: apricot".

However, the name and the format of the attachment should be visible to the User while viewing the announcement itself so that the User knows what is attached without having to download or open it every time.

Structural Coverage: All possible cases relating to announcement creation, viewing and deletion have been checked, to a structural coverage of 100%.

Additional Comments: While the Announcements functionality is satisfactory to meet the needs of the Professor, the following bugs should be fixed to improve the status quo-

- The Date and Time of the Announcement that is displayed is incorrect (according to IST)
- The Professor cannot attach multiple files or a zipped folder to the announcement. Further, the accepted file formats are not enough and should be expanded to other general file formats like pptx etc.
- The name of the attachment should be visible with the announcement to make it easier for the User to know about its contents without having to download it.

The following bugs have been fixed:

- The Date and Time of the Announcement is working currently.

The screenshot shows the SAHARA software interface. At the top, there is a navigation bar with a logo, user information (R), and a 'LOGOUT' button. On the left, a sidebar menu lists various features: Dashboard, Overview, Announcements (selected), Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area is titled 'Course Announcements' with a subtitle 'View and manage course announcements'. It contains two announcement cards: 'Test Announcement' (by prof1 on April 5, 2025 at 10:45 PM) and 'Shell Scripting Announcement' (by Root Admin on April 5, 2025 at 10:10 PM). A 'Create Announcement' button is located in the top right corner of the main content area.

2. Assignments

Unit Details: Create, Edit, Delete, View and Grade Assignments

Test Owner: Ashik Stenny and Aarav Oswal

Test Date: 28/03/25 - 04/04/25

Test Results: Tests passed

This is the page that is displayed when we navigate to the Assignments section from the sidebar.

The screenshot shows the SAHARA software interface. On the left is a dark blue sidebar with white icons and text for various features: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments (which is selected and highlighted in blue), Submissions, People, Discussions, Feedback Form, and Calendar. The main area has a light blue header with the title "Assignments" and a sub-header "Create and manage course assignments". A "Create Assignment" button is in the top right. Below the header, there are two sections: "Ongoing/Upcoming Documents" and "Previous Documents", each containing a single assignment entry with details like name, opening date, due date, and description.

Sahara offers a very elegant framework for Assignment Creation. The Professor can create new Assignments by clicking on the “Create Assignment” button. The Professor provides the Name, Maximum Marks, Opening Date(Optional), Due Date, Description and can attach files of a wide variety of types.

While the Opening Date is optional to create an assignment, it is represented with a star that shows that it is required. This is a minor bug

The screenshot shows the "Create Assignment" form. At the top, there is a "Create Assignment" button and a sub-header "Create a new assignment for your students to complete". The form contains several input fields: "Name *" (with a placeholder "Assignment"), "Maximum Score *" (set to 100), "Description *", "Opens At *", and "Due Date *". There is also a "Reference File (Optional)" section with a "Upload Reference File" button. At the bottom of the form are "Cancel" and "Create Assignment" buttons.

An error is shown when we enter an Opening date that is after the Closing date.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. At the top right are user profile and logout icons. The main area is titled "Create Assignment" with the sub-instruction "Create a new assignment for your students to complete". The form fields are: Name * (new), Maximum Score * (100), Opens At * (Apr 10, 2025 12:00 AM), Due Date * (Apr 09, 2025 12:00 AM), Description * (new), and Reference File (Optional) with a "Upload Reference File" button. A red error message at the bottom left says "Opens at date must be before or equal to the due date". A blue "Create Assignment" button is at the bottom right.

The reference files can be of multiple types, including .pptx and zipped folders, which allows the Professor to attach multiple files, if required.

An error is shown when we attempt to enter a maximum score of 0.

This screenshot shows the same SAHARA interface and "Create Assignment" form as the previous one. The fields are identical: Name * (new), Maximum Score * (0), Opens At * (Apr 10, 2025 12:00 AM), Due Date * (Apr 11, 2025 12:00 AM), Description * (new), and Reference File (Optional) with a "Upload Reference File" button. A red error message at the bottom left says "Maximum score must be greater than zero". A blue "Cancel" button and a blue "Create Assignment" button are at the bottom.

An error is also shown if the due date is in the past.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with various navigation options: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area is titled "Create Assignment" with the sub-instruction "Create a new assignment for your students to complete". It contains fields for "Name" (with "NEW" entered), "Maximum Score" (set to 100), "Open At" (set to Apr 02, 2025 12:00 AM), "Due Date" (set to Apr 03, 2025 12:00 AM), "Description" (with "new" entered), and a "Reference File (Optional)" section with a "Upload Reference File" button. At the bottom left, there is a red error message box containing the text "Due date cannot be in the past". At the bottom right are "Cancel" and "Create Assignment" buttons.

Sahara allows the Professor to update details of past assignments

The screenshot shows the SAHARA software interface. The sidebar is identical to the previous screenshot. The main area is titled "Update Assignment" with the sub-instruction "Update the details of your assignment". It displays an existing assignment with the title "Bash Scripting Assignment". The "Deadline" field is set to "28-03-2025 18:30" and the "Opens At (Optional)" field is set to "14-03-2025 18:30". Below these fields is a "Description" field containing the text "please solve this on time". At the bottom right are "Cancel" and "Update Assignment" buttons.

However, the Professor cannot modify the file uploaded or the maximum marks and would be forced to delete and create a new assignment in case of any change in the reference file.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. At the top right are user profile icons and a 'LOGOUT' button. The main content area displays a past assignment titled 'Bash Scripting Assignment'. The assignment details include: 'Assignment Bash Scripting Assignment', 'Opens at: Mar 15, 2025, 00:00' and 'Due on: Mar 29, 2025, 00:00'. The 'Description' section says 'please solve this on time'. The 'System Instructions' section notes 'You are given an extra 10 minutes after due time to submit this assignment. However, please note that any submissions made after the due time are marked as late submissions.' The 'Results' section states 'Results will be available after Mar 29, 2025, 00:00'. A reference file 'shell_scripting_assignment_5d793725-ff31-47dc-8627-296b67d524c8.pdf' is listed. At the bottom are buttons for 'View All Submissions', 'Update Assignment', and 'Delete Assignment'.

The Professor can view past assignments and can download the reference file by clicking on the name of the file.

The Professor can also view all submissions for assignments, both ongoing and past ones.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. At the top right are user profile icons and a 'LOGOUT' button. The main content area displays a 'CHECK ONCE' dashboard. It shows three summary boxes: 'Total Submissions' (3), 'Graded Submissions' (2), and 'Average Score' (80.5). Below this is a table titled 'Submissions' listing student data:

Student Name	Email	Submitted on	Score	Action Buttons
HARSHPREET KAUR	harshpreet23@iitk.ac.in	4/5/2025, 6:17:02 PM	76/100	Download Grade
DIVI POTHUKUCHI	divip23@iitk.ac.in	4/5/2025, 3:48:33 PM	85/100	Download Grade
ASHIK STENNY	ashiks23@iitk.ac.in	4/6/2025, 9:05:52 PM	Not graded	Download Grade

The screenshot shows the SAHARA software interface. On the left is a dark blue sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area has a white background with a header 'CHECK ONCE'. It displays three summary boxes: 'Total Submissions' (3), 'Graded Submissions' (3), and 'Average Score' (87.0). Below this is a table titled 'Submissions' showing three entries:

Student Name	Submitted on	Score	Actions
HARSHPREET KAUR harshpreet23@iitk.ac.in	4/5/2025, 6:17:02 PM	76/100	Download Grade
DIVI POTHUKUCHI divip23@iitk.ac.in	4/5/2025, 3:48:33 PM	85/100	Download Grade
ASHIK STENNY ashiks23@iitk.ac.in	4/6/2025, 9:05:52 PM	100/100	Download Grade

A green success message at the bottom right says 'File downloaded successfully!'. In the top right corner, there is a file download notification for 'Rplot.pdf' (8.8 KB) and a 'LOGOUT' button.

The Professor can view the submissions of a particular Assignment and download the submissions. However, the userID or the name is not visible on the screen next to a particular submission. Further, there may be cases wherein the Professor would need to filter responses to find a particular student's submission. In the current system, it would be impossible for them to retrieve the submission of a particular student.

The professor can also grade the assignment based on the maximum marks mentioned. An error is raised if the Professor enters marks higher than the maximum marks mentioned.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area has a title "CHECK ONCE" at the top. It displays three cards: "Total Submissions 3", "Graded Submissions 2", and "Average Score 80.5". Below these cards is a table with student submissions. A modal dialog box titled "Grade Assignment" is open over the table, showing a dropdown menu for grading student "ASHIK STENNY" (ashiks23@iitk.ac.in) with a score of 100. The dialog includes "Cancel" and "Submit Grade" buttons. The table rows show student details: HARSHPREET KAUR (harshpreet23@iitk.ac.in), DIVI POTHUKUCHI (divip23@iitk.ac.in), and ASHIK STENNY (ashiks23@iitk.ac.in). Each row has "Download" and "Grade" buttons.

This screenshot is similar to the one above, showing the SAHARA software interface. The "Grade Assignment" dialog box is still open, but now it includes a warning message at the bottom: "Score cannot exceed maximum score of 100". The rest of the interface, including the sidebar, cards, and table, remains the same.

The Professor can also delete assignments- both ongoing ones and past ones- and a warning appears when they try to delete an assignment.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with various navigation options: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area is titled 'Assignments' and 'Create and manage course assignments'. It lists 'Ongoing/Upcoming Documents' with one entry: 'Assignment' (Title: 'CHECK ONCE', Description: 'CHECK ONCE', Opens at: 'Apr 11, 2025, 11:30 AM'). A modal window titled 'Delete Assignment' is centered over this list, containing the message 'Are you sure you want to delete this assignment? This action cannot be undone.' with 'Cancel' and 'Delete' buttons. Below the modal, there are sections for 'System Instructions' (warning about late submissions) and 'Results' (availability after Apr 11, 2025, 11:30 AM). At the bottom are buttons for 'View All Submissions', 'Update Assignment', and 'Delete Assignment'.

Structural Coverage: All possible cases relating to announcement creation, viewing and deletion and updation of Assignments have been checked, to a structural coverage of 100%.

Additional Comments: The following bugs can be fixed to make the existing functionality more efficient:

- Display the UserID of the student with the assignment submission and allow the Professor to find a submission by UserID
- Allow for modifying maximum marks and reference files while updating the Assignment

The screenshot shows the results for the 'CHECK ONCE' assignment. The top section displays summary statistics: 'Total Submissions' (2), 'Graded Submissions' (2), and 'Average Score' (80.5). Below this, a table titled 'Submissions' lists two entries:

Student Name	Submitted On	Score	Actions
DIVI POTHUKUCHI divip23@iitk.ac.in	05/04/2025, 15:48:33	85/100	Download Grade
HARSHPREET KAUR harshpreet23@iitk.ac.in	05/04/2025, 18:17:02	76/100	Download Grade

The UI for viewing the Assignment submissions has been changed to fix the first issue.

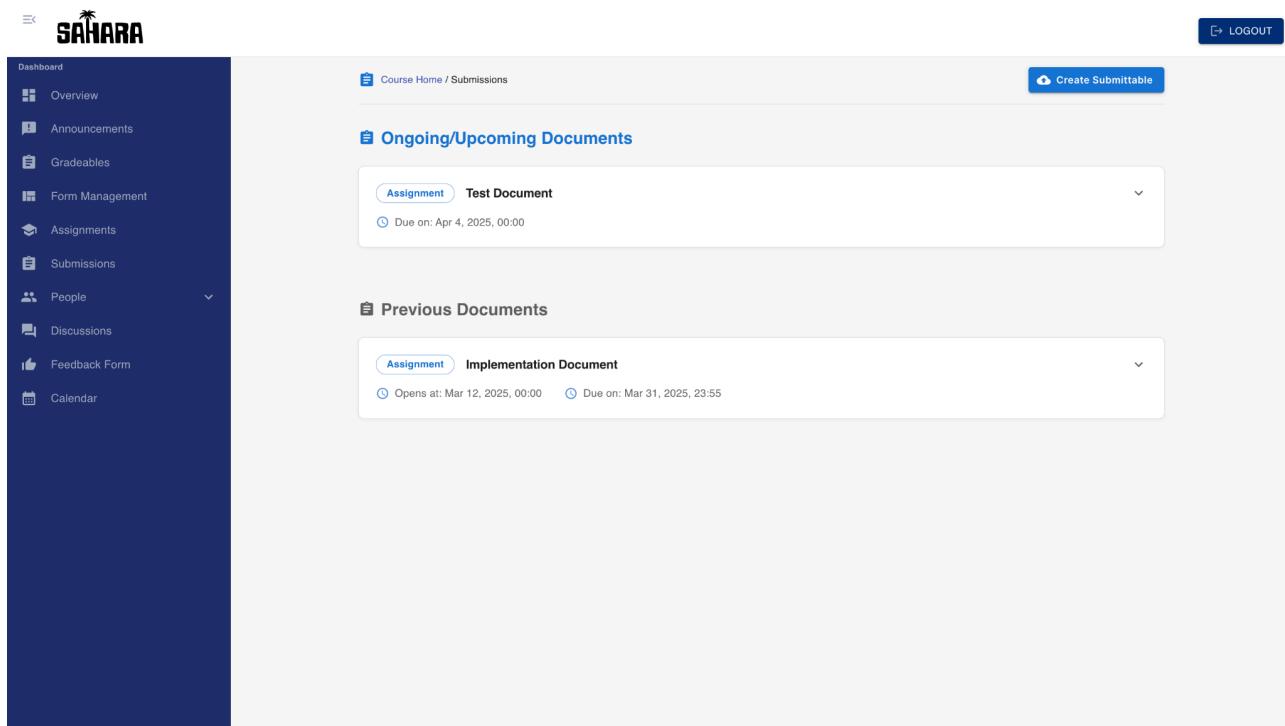
3. Submittables and Submissions- Testing done, bugs to be fixed

Unit Details: Create, Edit, Delete Submittables & View and Grade Submissions

Test Owner: Ashik Stenny and Aarav Oswal

Test Date: 28/03/25 - 04/04/25

Test Results: Tests passed



This is the page that appears upon clicking on the Submissions section in the sidebar.

Upon clicking on “Create Submittable”, the following screen appears. The Professor can create a submittable by giving the values of Name, Maximum Score, Due Date, Description and Reference File. The Reference File functionality offers great flexibility to the user in terms of the form at it accepts, such as pdf, doc as well as zipped folders.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. At the top right are user profile icons and a 'LOGOUT' button. The main area is titled 'Create Submittable' with the sub-instruction 'Create a new submittable for your students to complete'. It contains fields for 'Name' (with placeholder 'Implementation Document'), 'Maximum Score' (set to 100), 'Opens At' (set to 2025-03-11T18:30:00.000Z), 'Due Date' (set to 2025-03-31T18:25:00.000Z), 'Description' (with placeholder 'Students are required to submit a single PDF file containing the following components:'), and a 'Reference File (Optional)' upload field. Buttons for 'Cancel' and 'Create Submittable' are at the bottom.

The Submittable also gets updated in the database

The screenshot shows a database interface with a sidebar containing options like 'Columns', 'Constraints', 'Indexes', 'RLS Policies', 'Rules', and 'Triggers'. The main area is titled 'Data Output' and shows a table with the following schema and data:

	id [PK] integer	title character varying	opens_at character varying	deadline character varying	description character varying
1	1	Implementation Document	2025-03-11T18:30:00.000Z	2025-03-31T18:25:00.000Z	Students are required to submit a single PDF file containing the following components:
2	2	Test Document	[null]	2025-04-03T18:30:00.000Z	Dear Students,

Errors are displayed to the User when the Maximum Score is entered as 0, the Opens At Date is after the Due Date, or the Due Date is in the past.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with a navigation menu:

- Dashboard
- Overview
- Announcements
- Gradeables
- Form Management
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

At the top right are user profile and logout buttons.

The main area is titled "Create Submittable" with the sub-instruction "Create a new submittable for your students to complete". It contains the following fields:

- Name *: "new"
- Maximum Score *: "0" (with a note below: "Enter the maximum possible score for this submittable")
- Opens At *: "Apr 03, 2025 12:00 AM" (with a calendar icon)
- Due Date *: "Apr 05, 2025 12:00 AM" (with a calendar icon)
- Description *: "new"
- Reference File (Optional): A button labeled "Upload Reference File" with a cloud icon.

At the bottom are "Cancel" and "Create Submittable" buttons. A red error message "Maximum score must be greater than zero" is displayed at the bottom left.

This screenshot shows the same "Create Submittable" form after the user has corrected the maximum score. The sidebar and top navigation are identical to the first screenshot.

The "Maximum Score *" field now contains "125". The "Description *" field remains "new". The "Opens At *" and "Due Date *" fields are still set to "Apr 03, 2025 12:00 AM". The "Reference File (Optional)" section is unchanged.

The red error message "Maximum score must be greater than zero" is no longer present at the bottom left.

The screenshot shows the SAHARA application interface. On the left is a dark sidebar with navigation links: Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. A message at the bottom of the sidebar says "Due date cannot be in the past". The main area has a blue header "Create Submittable" with the sub-instruction "Create a new submittable for your students to complete". Below the header are input fields for Name (new), Maximum Score (125), Opens At (April 01, 2025 12:00 AM), Due Date (April 02, 2025 12:00 AM), and Description (new). There is also a "Reference File (Optional)" section with a "Upload Reference File" button. At the bottom are "Cancel" and "Create Submittable" buttons.

We can update the submittable by changing the values of the Name, Due Date, Description, etc.

The screenshot shows the SAHARA application interface. The sidebar and header are identical to the previous screenshot. The main area has a blue header "Update Submittable" with the sub-instruction "Update the details of your submittable". Below the header are input fields for Title (User Manual), Deadline (09-04-2025 20:30), Opens At (Optional) (03-04-2025 15:00), and Description (Dear Students, Please submit your user manual.). At the bottom are "Cancel" and "Update Submittable" buttons.

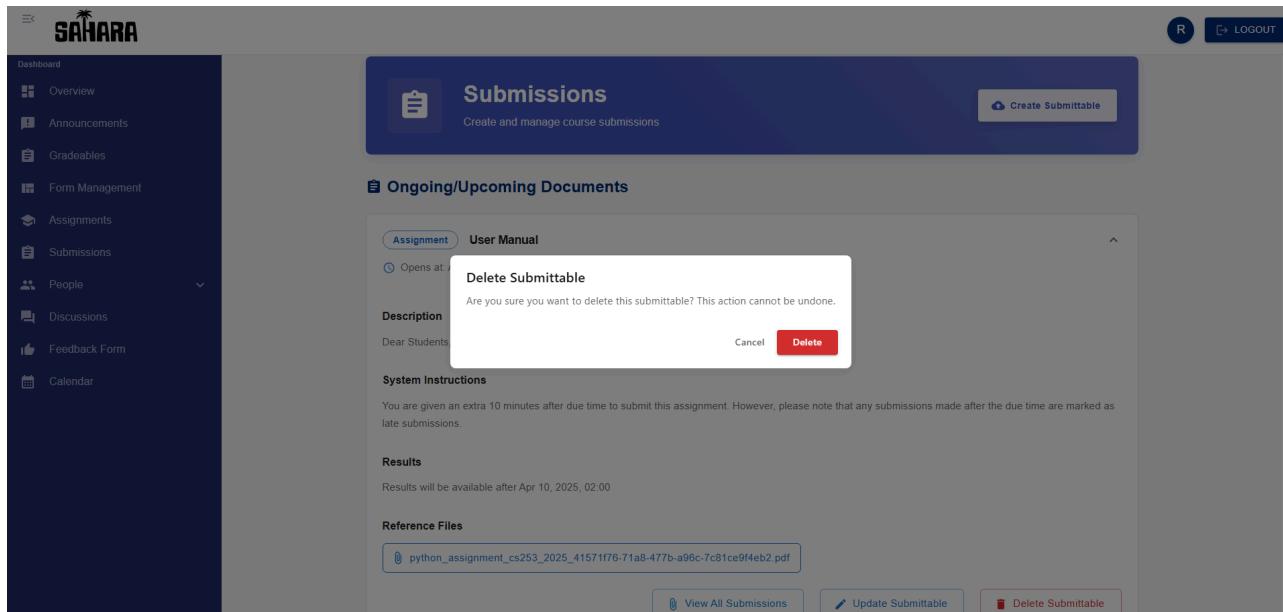
Updating the Submittable changes the information in the database.

The screenshot shows a database management interface with a sidebar containing "submittables" and icons for Columns, Constraints, Indexes, RLS Policies, Rules, and Triggers. The main area has tabs for Data Output, Messages, and Notifications. A table titled "submittables" is displayed with columns: id, title, opens_at, deadline, and description. The table contains three rows:

	id [PK] integer	title character varying	opens_at character varying	deadline character varying	description character varying
1	1	Implementation Document Updated	2025-03-11T18:30:00.000Z	2025-03-31T18:25:00.000Z	Students are required to submit a single PDF file containing the following compone
2	2	Test Document Updated	[null]	2025-04-03T18:30:00.000Z	Dear Students,
3	3	User Manual	2025-04-02T18:30:00.000Z	2025-04-03T18:30:00.000Z	Dear Students,

However, here again, we can't change the details regarding the reference files or the maximum marks while updating a submittable. The Professor would need to delete the submittable and create a new one in this case.

We can delete a submittable (past or ongoing) by clicking on the “Delete Submittable” button. A warning is displayed on the screen asking for confirmation before successfully deleting the submittable.



The database gets updated after the deletion

submittables		Data Output					Messages		Notifications					
ID	Type	id [PK] integer	title	character varying	opens_at	character varying	deadline	character varying	description	character varying	file_url	character varying		
1	Test Document Update	2	Test Document Update...	[null]	2025-04-03T18:30:00.000Z	2025-04-03T18:30:00.000Z	2025-04-03T18:30:00.000Z	Dear Students,	uploads/ref_7dbaa2ddc-7fba-48d7-a092-80e...	uploads/ref_7dbaa2ddc-7fba-48d7-a092-80e...				
2	User Manual	3	User Manual		2025-04-02T18:30:00.000Z	2025-04-03T18:30:00.000Z	2025-04-03T18:30:00.000Z	Dear Students,	uploads/ref_11fa87144-e7c-4775-93dd-59b...	uploads/ref_11fa87144-e7c-4775-93dd-59b...				

The Professor can also view all the Submissions for a Submittable. Along with the Submission, the Team ID and Submission Date can be viewed. The Professor can also download the submission and grade the submission.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area has a header "newwwww" with a "Back to List" button. It displays three summary boxes: "Total Submissions" (1), "Graded Submissions" (0), and "Average Score" (-). Below this is a "Submissions" section for "Team 8" with file "Rpilot01.pdf" submitted on "4/6/2021, 10:34:23 PM". The score is "Not graded" with "Download" and "Grade" buttons.

This screenshot is similar to the one above, but the "Grade" button is being interacted with, opening a modal dialog titled "Grade Assignment". The dialog shows the student information ("Student: Team 8 Rpilot01.pdf") and a dropdown menu for grading. The current grade value is "100". At the bottom of the dialog are "Cancel" and "Submit Grade" buttons.

The database gets updated after grading

A screenshot of a database management tool showing the "submittables" table. The table has columns: id, team_id, submitted_on, file_url, original_filename, submittable_id, and score. There are two rows of data:

	id [PK] integer	team_id integer	submitted_on character varying	file_url character varying	original_filename character varying	submittable_id integer	score integer
1	5	8	2025-04-03T13:12:40.523875+00:00	uploads/submission_b2f1ef0b-ee10-4d6f-9840-45b4afc7a1d4.pdf	CS220_FCH_5af9531f-159c-417a-83ca-4e8e4e30d9dc.pdf	3	[null]
2	6	8	2025-04-03T13:12:40.523875+00:00	uploads/submission_7b1d555e-a63d-4aa6-a22b-87c0738e923e.pdf	CS220_FCH_5af9531f-159c-417a-83ca-4e8e4e30d9dc.pdf	2	50

The screenshot shows the SAHARA software interface. On the left is a dark blue sidebar menu with the following items:

- Dashboard
- Overview
- Announcements
- Gradeables
- Form Management
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

The main content area has a header "User Manual". It displays three summary cards:

- Total Submissions: 1
- Graded Submissions: 1
- Average Score: 67.0

Below these cards is a table titled "Submissions" with one row:

Team 8	Submitted on 4/6/2025, 7:16:42 PM	Score 67/100	Download	Grade
--------	--------------------------------------	-----------------	----------	-------

Structural Coverage: All possible cases relating to submittable creation, editing and deletion and submission grading and viewing have been checked, to a structural coverage of 100%.

Additional Comments: The current system is already quite efficient but can be bettered if while editing a submittable, you are given the option to change Maximum Marks and Reference File as well.

3. Discussion Forums- Bugs to be fixed, testing done

Unit Details: The Professor is part of a global discussion forum with all the other Users

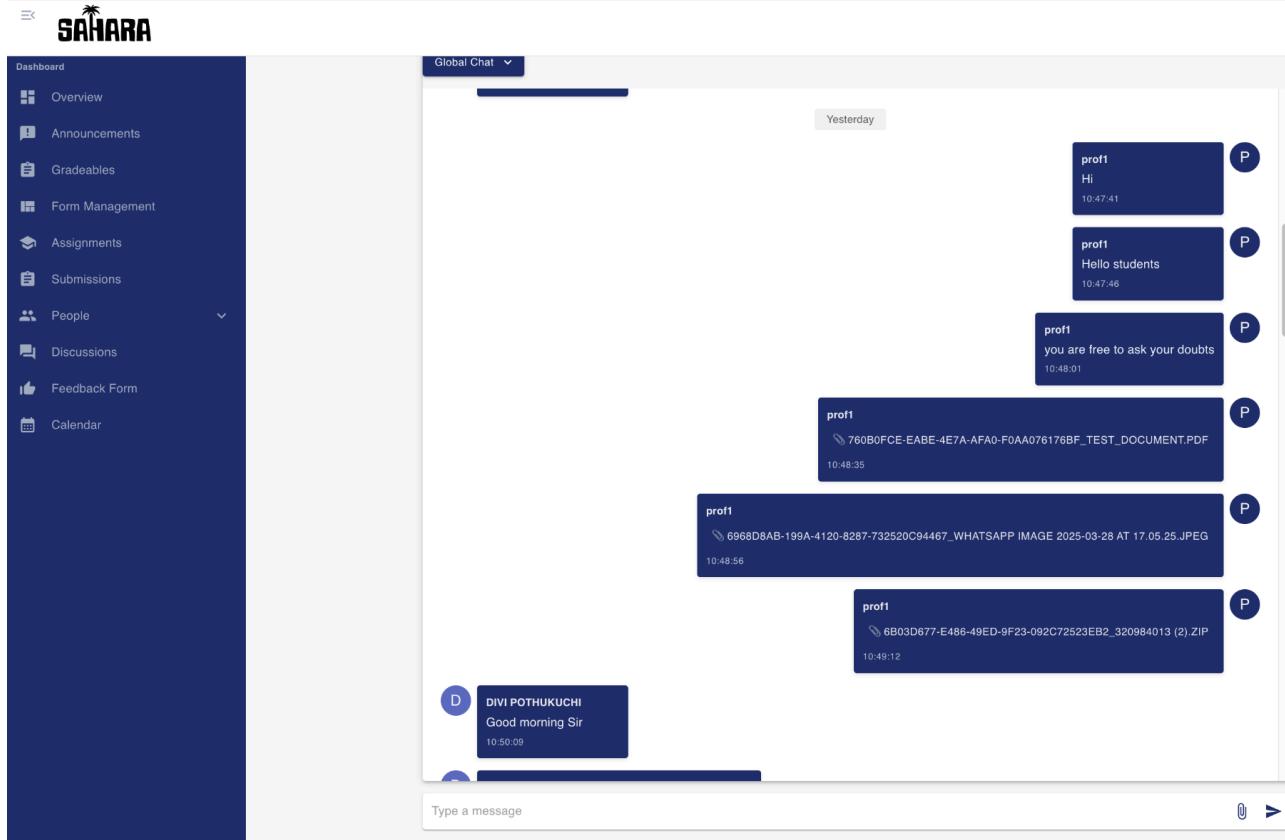
Test Owner: Vedhanth B and Ravi Arora

Test Date: 28/03/25 - 04/04/25

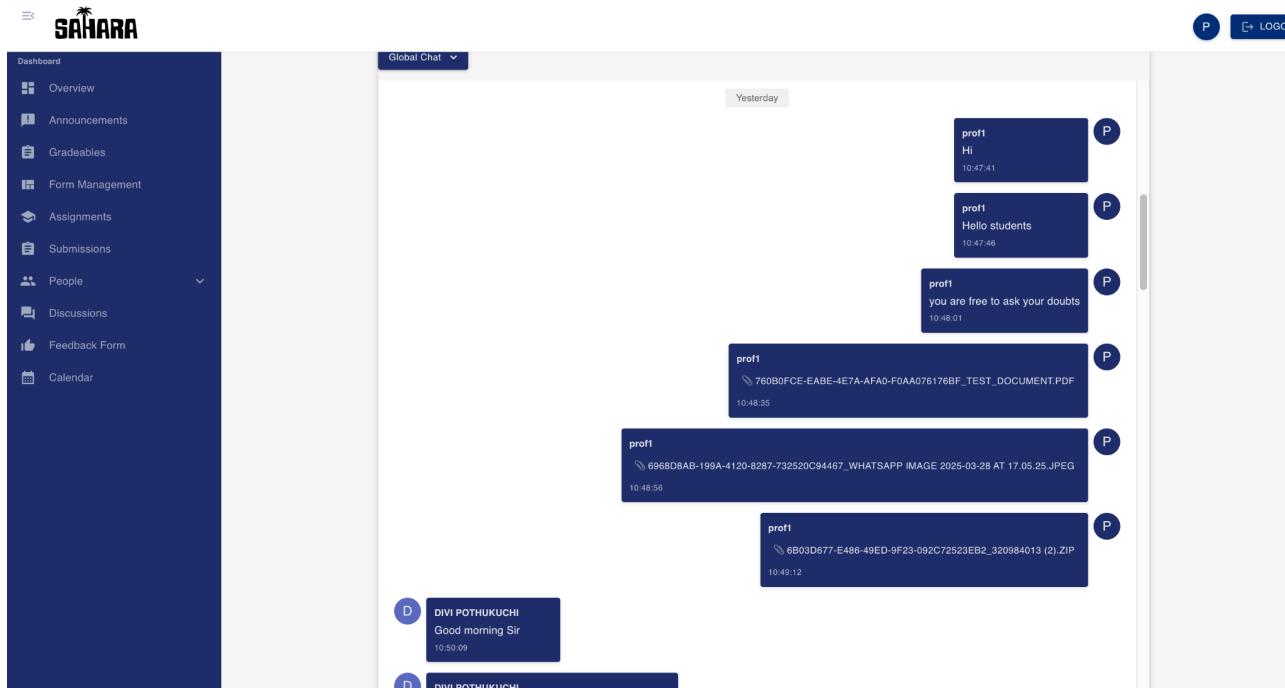
Test Results: Sahara offers highly efficient discussion forums for its Users. There are three types of discussion forums-

- Global Forum (consisting of the Professor, TAs and Students)
- TA + Team Forum (consisting of the TA(s) allotted to the team and all the team members. The Professor doesn't have access to this forum)
- Team Forum (consisting of only the team members. No one else has access to this forum)

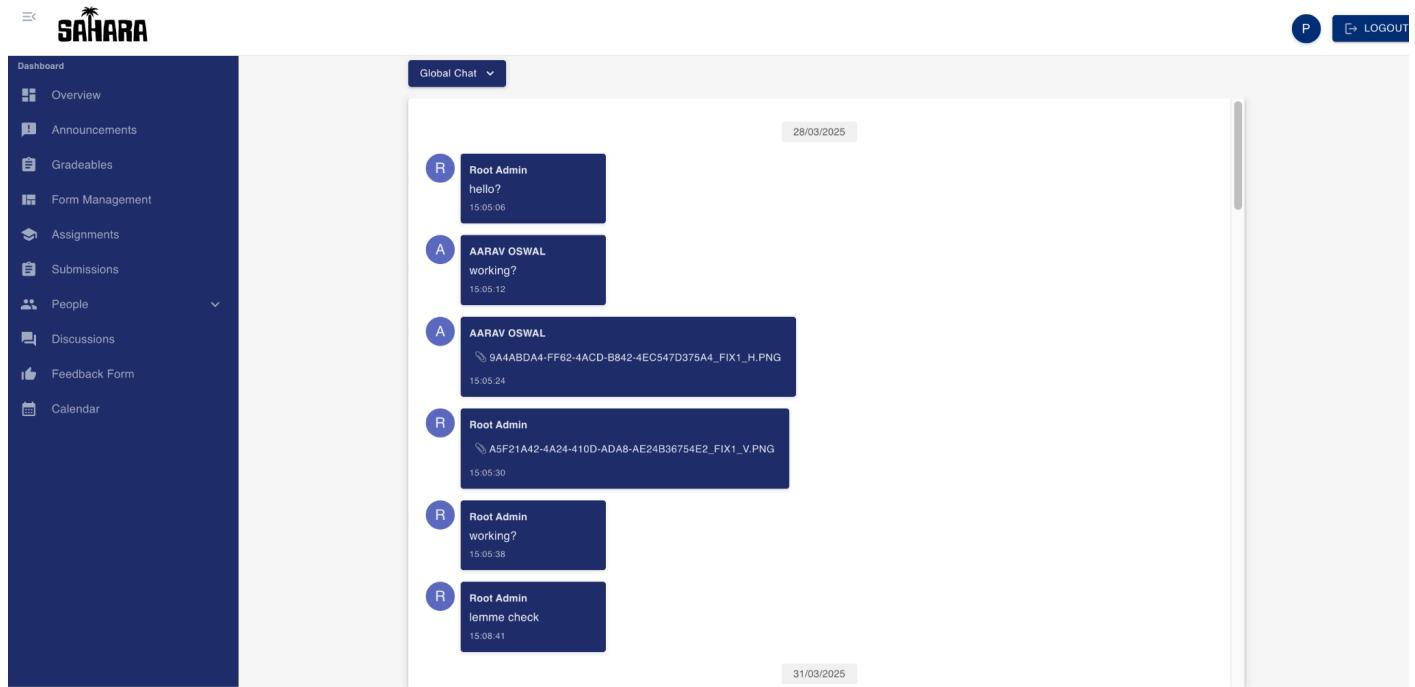
The following image shows the Global Discussion Forum.



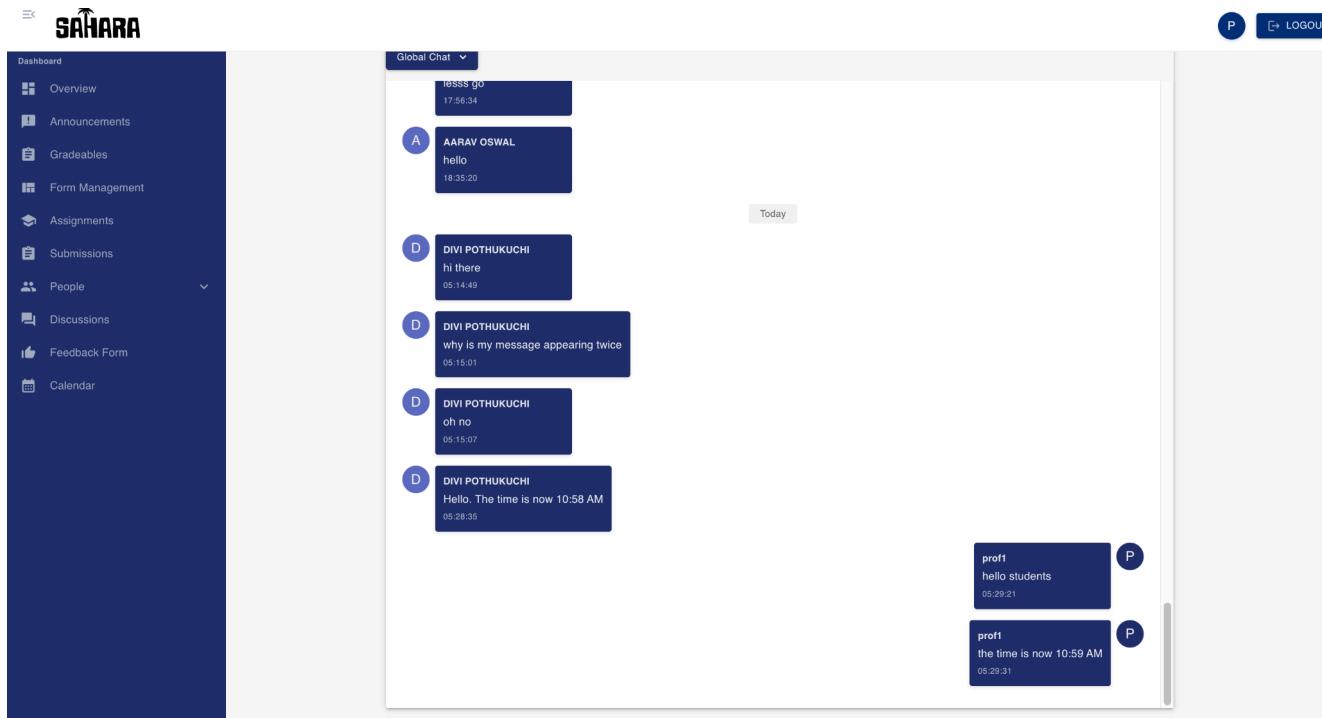
The Professor has access to a Global chat consisting of all Users. The design of the discussion forum is very user-friendly, allowing attachments of type pdf, zip folder, jpeg etc.



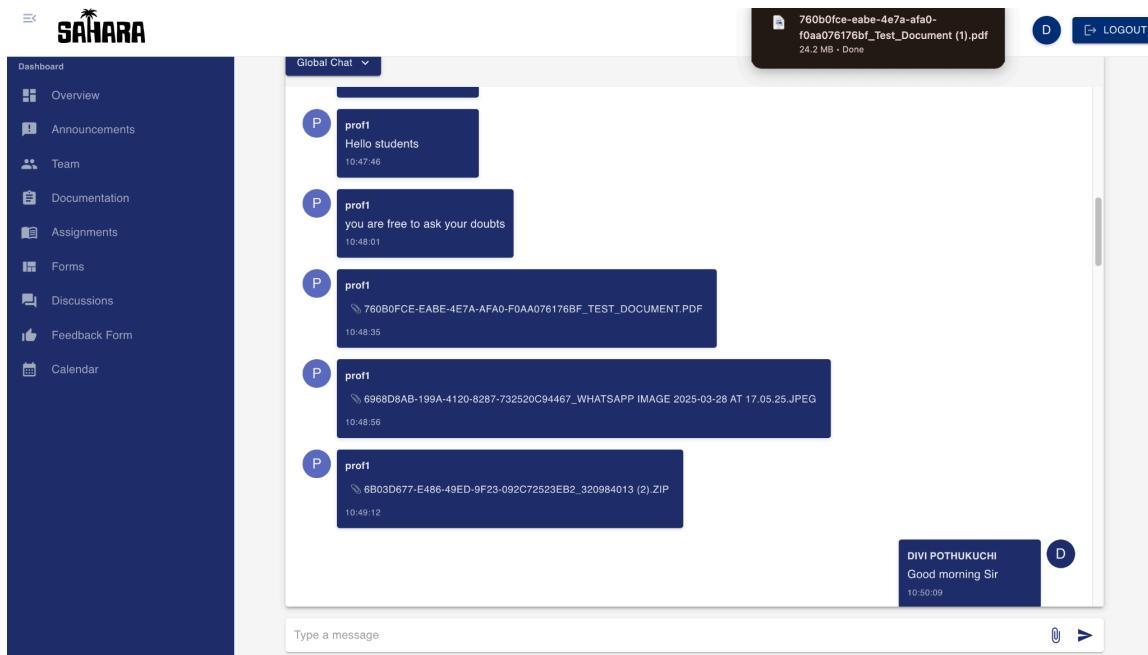
The time when the message was sent is shown, along with the name of the User who sent the message. The date is also displayed for earlier messages.



However, there is again a bug in the time displayed under the message (the correct time is sent in the message body for reference), which consequently can result in the wrong date being displayed.

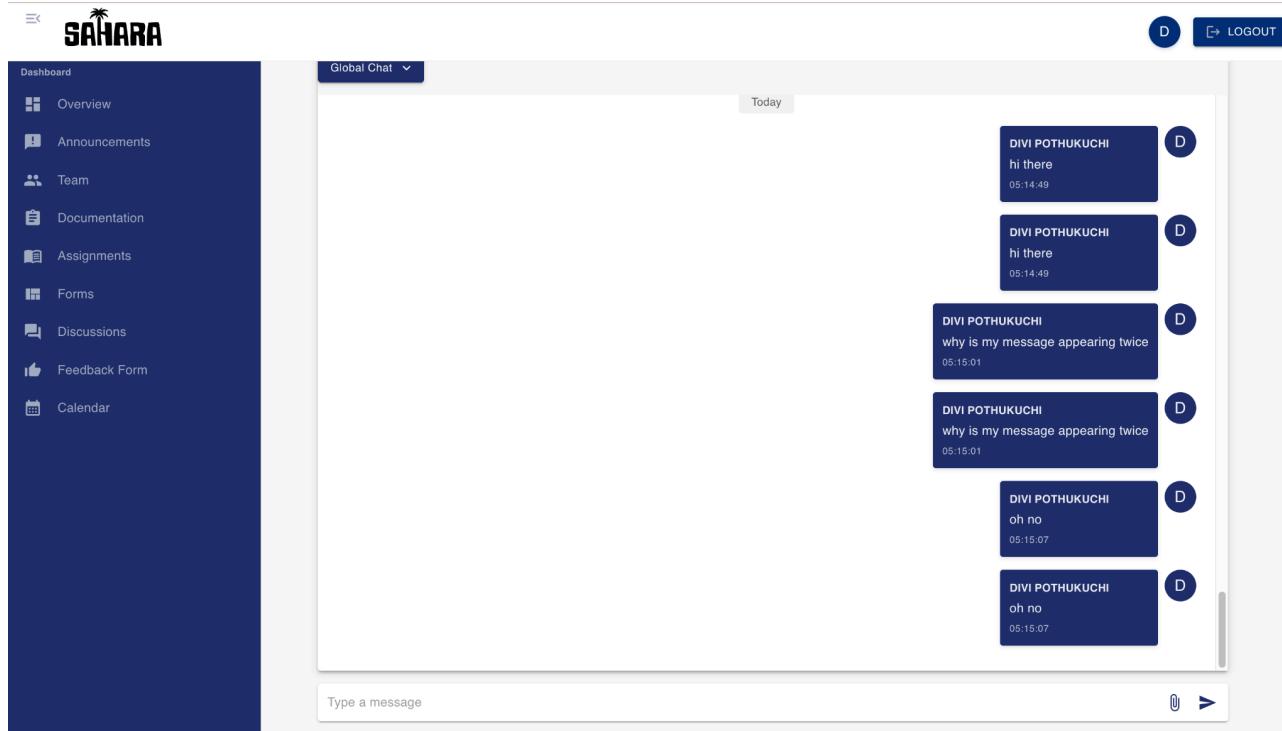


All the old files are retrieved easily and can be downloaded simply by clicking on the file link.



There exists another bug that has appeared occasionally throughout the testing period. Sometimes, the same message gets sent twice. This is usually only seen while sending a

message and not while receiving a message.



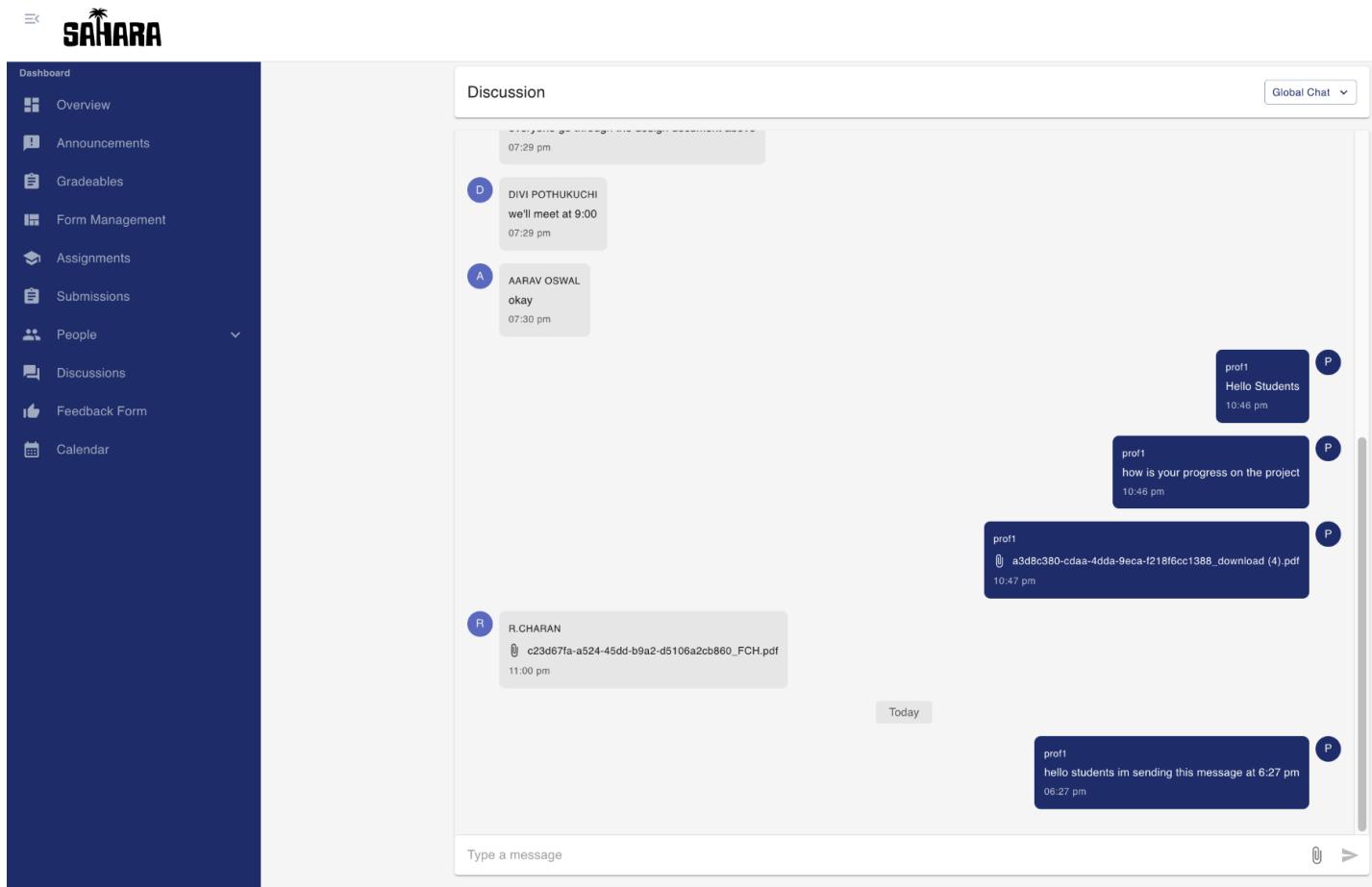
Structural Coverage: All possible cases relating to logging in, resetting passwords and authentication have been tested, and hence the coverage is 100%.

Additional Comments: The existing functionality of the discussion forums is already quite impressive.

The following bugs need to be fixed to improve the functionality-

- The date and time must match the IST and the date.
- Messages should not appear twice while being sent

Further, a feature to filter messages or search in chat can be implemented in the future.



The issue of the time in the Discussion forum has been fixed. We do not have enough information about why the messages appear twice occasionally and haven't been able to fix the bug.

4. Adding Students, TAs and Teams- To be checked completely

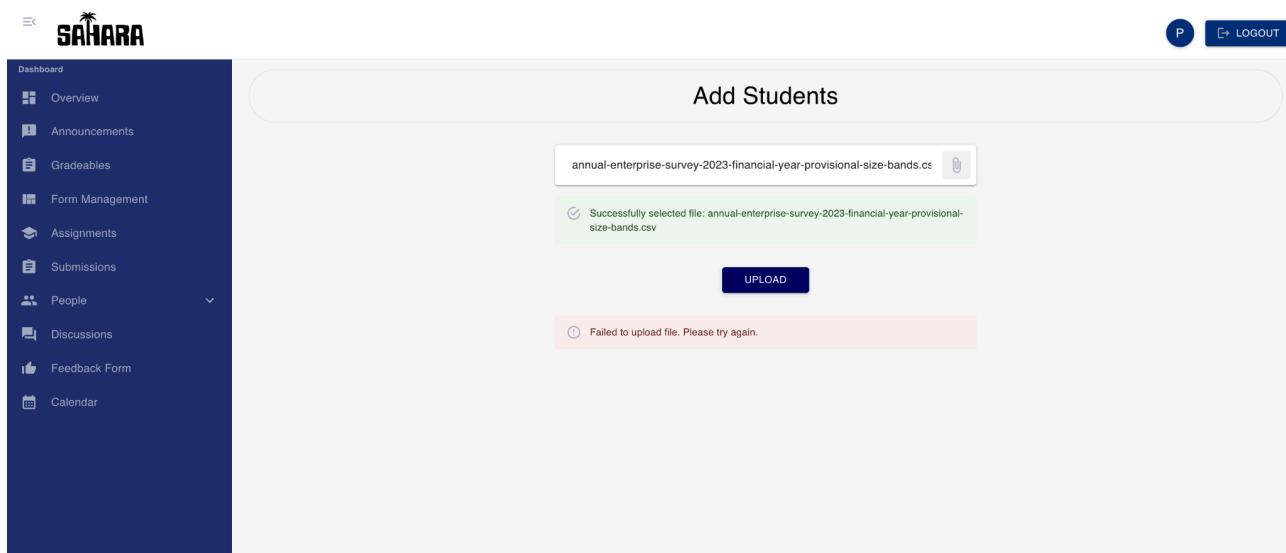
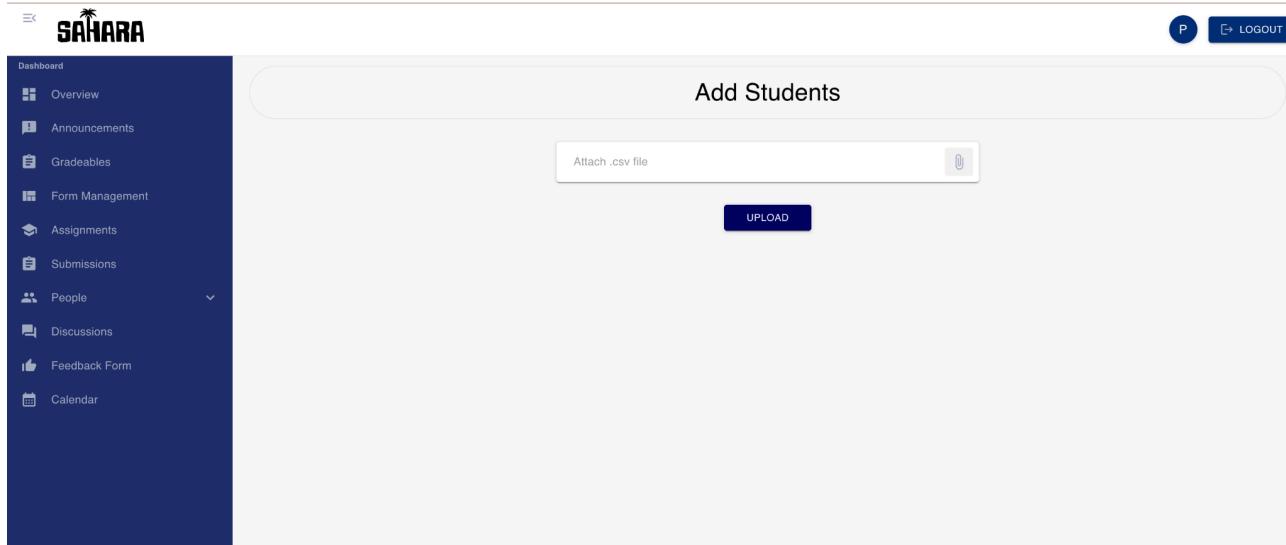
Unit Details: Upload a CSV file consisting of details of Students, TAs and Teachers to add them as Users to Sahara

Test Owner: Pothuganti Nikhil and Divi Pothukuchi

Test Date: 28/03/25 - 04/04/25

Test Results: Test passed

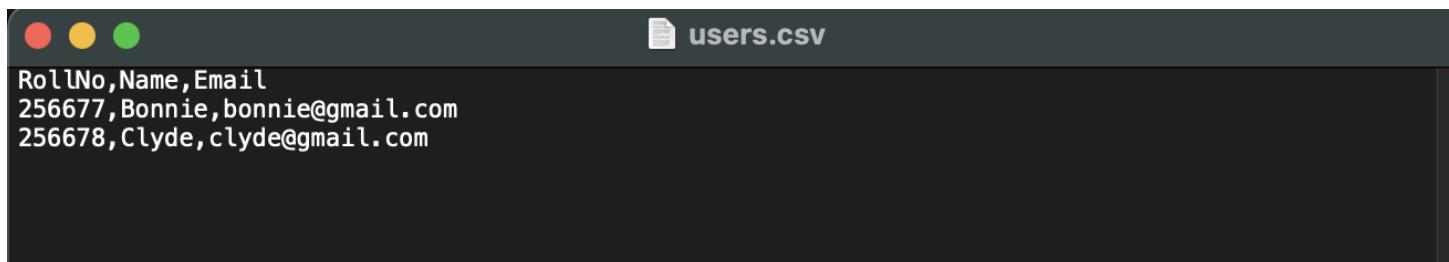
The only format of file that is accepted is a CSV file. It also expects the CSV file to be of a particular format in terms of the data stored in the columns. Providing a CSV file of any other format raises an error.



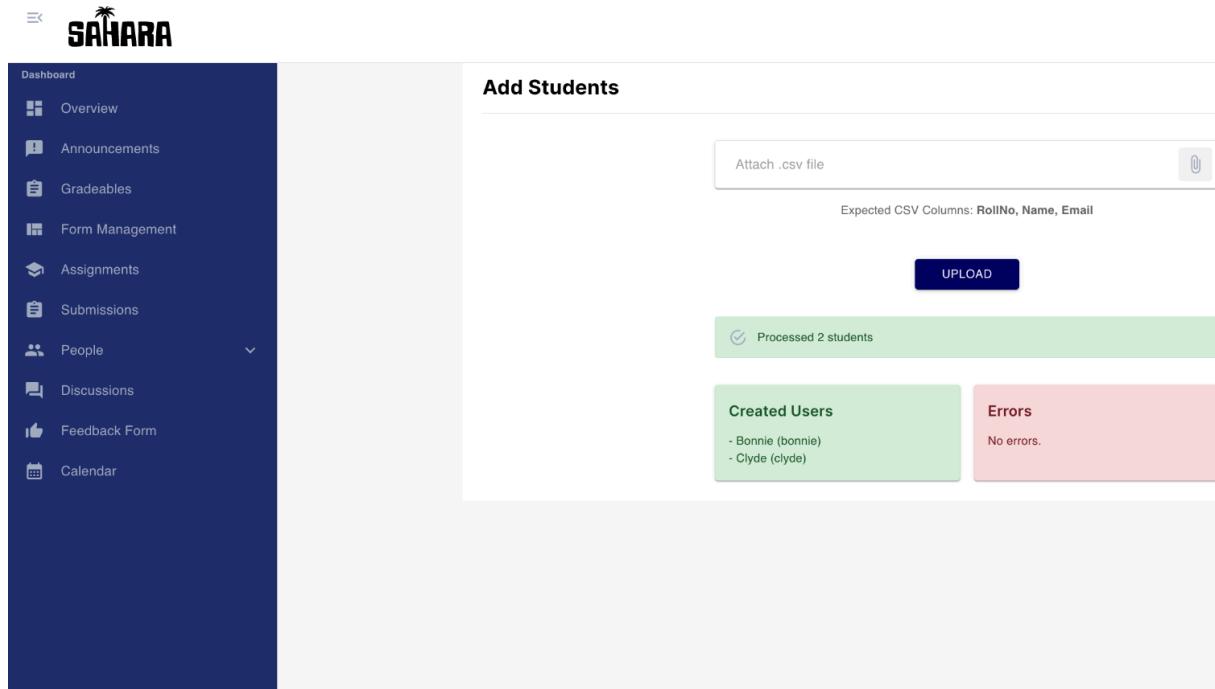
A critical bug has been found that the Upload CSV function doesn't seem to be working as intended. Further the CSV format it expects can be provided on the page to make the process more efficient.

This functionality was soon fixed after finding the bug to test the other units.

Now the format it expects is clearly written for better clarity.



Uploading this file gives the following result.



To add TAs, the Professor navigates to the Teaching Assistants tab, where they would have to click on the Add TAs button.

The screenshot shows the SAHARA software interface. On the left is a dark blue sidebar with various navigation options: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Users, Teaching Assistants, Teams, Discussions, Feedback Form, and Calendar. The main area is titled "Add Teaching Assistants". It features a file input field labeled "Attach .csv file" with a "UPLOAD" button below it. A note says "Expected CSV Columns: Name, Email". Below the input field are two boxes: "Created TAs" (green background) with the message "No TAs created yet." and "Errors" (pink background) with the message "No errors.". The top right corner has a profile icon and a "LOGOUT" button.

Adding a document of this format to add these users

The screenshot shows a CSV file named "users.csv" with the following content:

Name,Email
Connie,connie@gmail.com
Blyde,blyde@gmail.com

The screenshot shows the SAHARA software interface. On the left is a dark blue sidebar menu with various icons and labels: Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. At the top right are user icons for profile (P), notifications (C), and logout.

The main content area has a title "Add Teaching Assistants". It features a file input field labeled "Attach .csv file" with a "Browse" button. Below it is a note: "Expected CSV Columns: Name, Email". A large blue "UPLOAD" button is centered below the input field. A green progress bar at the bottom indicates "Processed 2 TAs". To the right of the progress bar, there are two sections: "Created TAs" (listing "Connie (connie)" and "Blyde (blyde)") and "Errors" (listing "No errors").

The screenshot shows the SAHARA software interface. The left sidebar is identical to the previous screenshot. The main content area displays a user profile for "Connie" (@connie). The profile card is blue and contains a user icon, the name "Connie", and the handle "@connie". Below the card, the "Profile Information" section shows the email "connie@gmail.com" and the role "ta". The "Account Details" section shows the User ID "4". Under the "Skills & Expertise" section, it says "No skills added yet. Click \"Manage Skills\" to add your expertise." A "MANAGE SKILLS" button is located at the bottom right of this section.

TAs can be added similarly, and the added TAs can be viewed as shown below

The screenshot shows the SAHARA application's interface. On the left is a dark sidebar with various navigation options: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People (selected), Discussions, Feedback Form, and Calendar. At the top right are user profile icons and a 'LOGOUT' button.

The main content area is titled 'Teaching Assistants'. It features a 'Filter by Skills:' section with buttons for Java, Node.js, and Spring Boot. A 'Filter Mode' dropdown is set to 'AND'. Below this is a table titled 'TA List' with columns for S. No., Name, Email, and Skills. The table contains 11 rows of data. To the right of the table are two buttons: 'ADD TAS' and 'ADD SKILLS'.

S. No.	Name	Email	Skills
1	Connie	connie@gmail.com	
2	Blyde	blyde@gmail.com	
3	ta1	ta1@iitk.ac.in	Java, Spring Boot
4	ta2	ta2@iitk.ac.in	
5	ta3	ta3@iitk.ac.in	Node.js
6	ta4	ta4@iitk.ac.in	
7	ta5	ta5@iitk.ac.in	
8	ta6	ta6@iitk.ac.in	
9	ta7	ta7@iitk.ac.in	
10	ta8	ta8@iitk.ac.in	
11	ta9	ta9@iitk.ac.in	

The Added Users can then be found in the Users tab

The screenshot shows the SAHARA application's interface. The sidebar and top navigation are identical to the previous screenshot. The main content area is titled 'Users' and displays a list of users. Each user entry includes a name, email, and a 'Student' status indicator. Two specific entries are highlighted with boxes: 'Bonnie' and 'Clyde'.

256677	Bonnie	bonnie@gmail.com	Student
230310	CEZAN VISPI DAMANIA	cezanvd23@iitk.ac.in	Student
230312	CH V SAI KOUSHIK	skoushik23@iitk.ac.in	Student
230316	CHAITANYA VISHNOI	chaitanyav23@iitk.ac.in	Student
230317	CHALLA KETHAN	kethanc23@iitk.ac.in	Student
230318	CHALLA UMESH VARUN	cumesh23@iitk.ac.in	Student
230324	CHAPATI VENKATA PRANAYA	chapative23@iitk.ac.in	Student
200293	CHATLA SOWMYA SRI	srisowmya20@iitk.ac.in	Student
230325	CHAUDHARI DIVYESHBHAI RASIKBHAI	divyesh23@iitk.ac.in	Student
230330	CHILAMAKURI KUNDAN SAI	ckundans23@iitk.ac.in	Student
256678	Clyde	clyde@gmail.com	Student
220321	DAKSH DUA	dakshdua22@iitk.ac.in	Student

SAHARA

Dashboard

- Overview
- Announcements
- Gradeables
- Form Management
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

People

Filter by Role

ID	Name	Email	Role
220004	AADI SINGH	aadis22@iitk.ac.in	Student
220010	AADYA DHIR	aadyad22@iitk.ac.in	Student
230011	AARADHYA ROHI	aaradhyaa23@iitk.ac.in	Student
230012	AARAV OSWAL	aaravoswal23@iitk.ac.in	Student
230015	AARSH JAIN	aarshjain23@iitk.ac.in	Student
230017	AARUSH NARENDRA GHATE	aarushng23@iitk.ac.in	Student
220020	AAYUSH GAUTAM	aayushg22@iitk.ac.in	Student
230027	AAYUSH KUMAR	aayushk23@iitk.ac.in	Student
220024	AAYUSH SINGH	aayushs22@iitk.ac.in	Student
210025	ABHIJEET AGARWAL	abhijeeta21@iitk.ac.in	Student

Anyone using this device can see downloaded files
People (1).xlsx 54.5 KB - Done

The details can also be exported to an Excel file that can be downloaded.

The Professor can additionally view all the added TAs and their skills and can filter based on skill to view particular TAs.

SAHARA

Dashboard

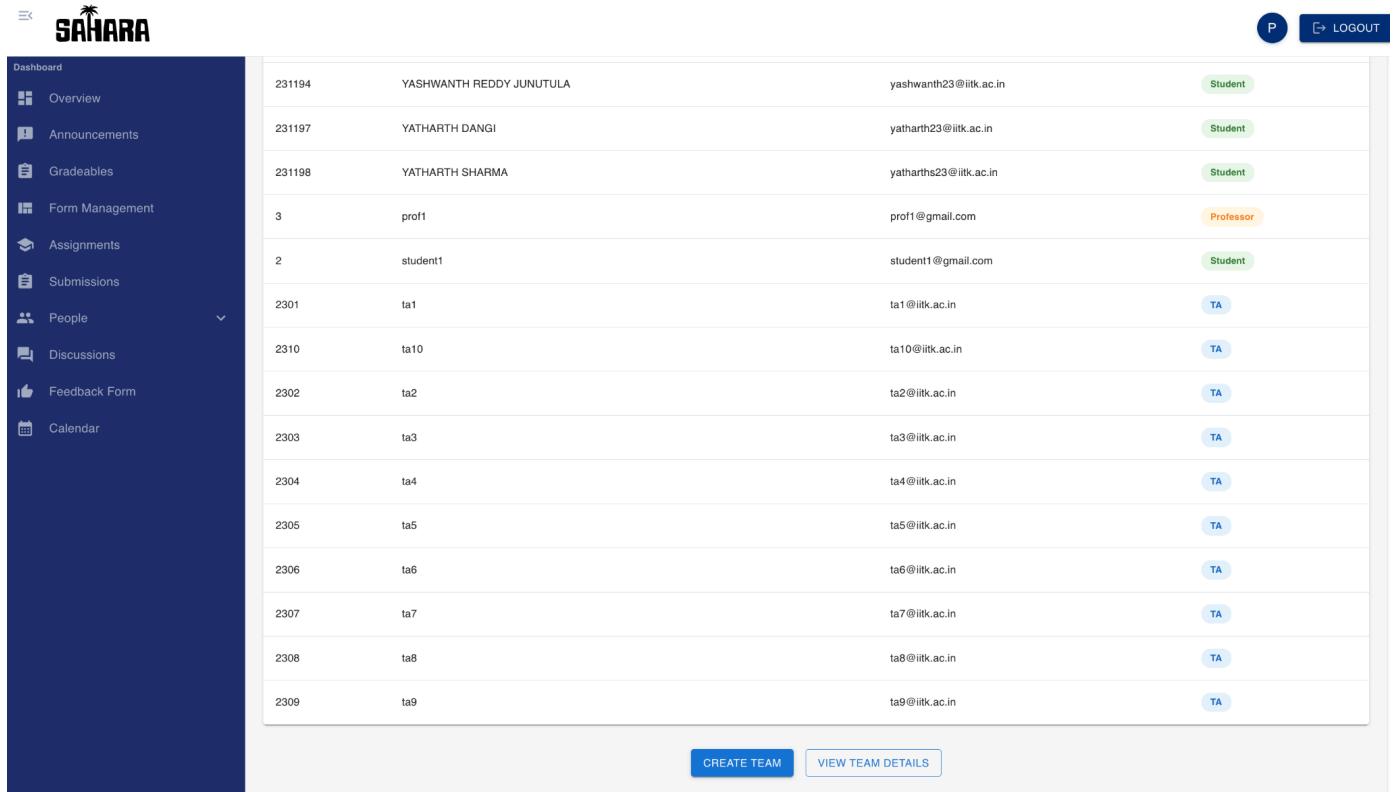
- Overview
- Announcements
- Gradeables
- Form Management
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

TA List

Filter by Skills: Filter Mode: OR AND

S. No.	Name	Email	Skills
1	Connie	connie@gmail.com	
2	Blyde	blyde@gmail.com	
3	ta1	ta1@iitk.ac.in	<input type="button" value="Java"/> <input type="button" value="Spring Boot"/>
4	ta2	ta2@iitk.ac.in	
5	ta3	ta3@iitk.ac.in	<input type="button" value="Node.js"/>
6	ta4	ta4@iitk.ac.in	
7	ta5	ta5@iitk.ac.in	
8	ta6	ta6@iitk.ac.in	
9	ta7	ta7@iitk.ac.in	
10	ta8	ta8@iitk.ac.in	
11	ta9	ta9@iitk.ac.in	
12	ta10	ta10@iitk.ac.in	

There is, however, no system in place to add another Professor to the course.



The screenshot shows a software interface titled "SAHARA". The left sidebar contains a navigation menu with the following items: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area displays a table of user data:

ID	Name	Email	Type
231194	YASHWANTH REDDY JUNUTULA	yashwanth23@iitk.ac.in	Student
231197	YATHARTH DANGI	yatharth23@iitk.ac.in	Student
231198	YATHARTH SHARMA	yatharths23@iitk.ac.in	Student
3	prof1	prof1@gmail.com	Professor
2	student1	student1@gmail.com	Student
2301	ta1	ta1@iitk.ac.in	TA
2310	ta10	ta10@iitk.ac.in	TA
2302	ta2	ta2@iitk.ac.in	TA
2303	ta3	ta3@iitk.ac.in	TA
2304	ta4	ta4@iitk.ac.in	TA
2305	ta5	ta5@iitk.ac.in	TA
2306	ta6	ta6@iitk.ac.in	TA
2307	ta7	ta7@iitk.ac.in	TA
2308	ta8	ta8@iitk.ac.in	TA
2309	ta9	ta9@iitk.ac.in	TA

At the bottom of the page, there are two buttons: "CREATE TEAM" and "VIEW TEAM DETAILS".

At the bottom of the page, there are options to “Create Team” and “View Team Details”. To Create Teams, you again need to add a CSV file consisting of the team details.

The page only accepts files of type CSV and shows the formatting of data it expects. It displays an error if it doesn't get the required columns.

The screenshot shows the 'Teams Creation' page of the Sahara software. On the left is a dark sidebar with various navigation options: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area is titled 'Teams Creation'. It shows a file input field containing 'annual-enterprise-survey-2023-financial-year-provisional-size-bands.csv'. Below it, a green success message says 'Successfully selected file: annual-enterprise-survey-2023-financial-year-provisional-size-bands.csv'. A note below states: 'The CSV file should be in the format: team name - member1 - member2 - ... - member10'. A blue 'SUBMIT' button is present. At the bottom, a red error message box contains the text '400: Invalid CSV format. Missing column: team_name'.

Another critical bug has been found that the teams creation expects the CSV file to have the columns as the names of the students. Sahara allows two users to have the same name, but they must have unique roll numbers. This issue therefore requires fixing.

The screenshot shows the 'Teams Creation' page of the Sahara software. The sidebar and overall layout are identical to the previous screenshot. The main area is titled 'Teams Creation' with a sub-section 'CSV File Upload'. It shows a file input field with 'teams.csv' selected, a 'BROWSE' button, and a note about the CSV format. A green success message says 'Successfully selected file: teams.csv'. A blue 'Upload and Create Teams' button is present. Below this is a section titled 'Upload Results' with an error message: '400: Invalid file: User 'pa1' is already assigned to a team.' To the right, there are two boxes: 'Created Teams' (green, empty) and 'Errors' (red, empty).

The screenshot shows the SAHARA software interface. The left sidebar contains a navigation menu with the following items: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area is titled "Teams Creation" and displays a sub-section titled "CSV File Upload". A file input field shows "teams.csv" selected, with a "BROWSE" button next to it. Below the input field is a note: "The CSV file should be in the format: team name - member1 - member2 - ... - member10". A green success message indicates "Successfully selected file: teams.csv". At the bottom is a blue "Upload and Create Teams" button.

This screenshot shows the same SAHARA interface after a CSV file has been uploaded. The "CSV File Upload" section now shows "CS253 2025 Projects - All (2).csv" selected. The "Upload and Create Teams" button is visible below. In the "Upload Results" section, there is a green message: "File uploaded successfully and data saved to the database!". Two boxes are present: "Created Teams" (green background) showing "2 teams created." and "Errors" (pink background) showing "No errors."

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area is titled "TEAMS' DETAILS" and contains a "Team Creation Status : Complete" message with a due date of 05-02-2025 and a note that 17 teams have been formed. It includes search bars for "Search Team" and "Search Name, Roll No". Below these are two tables: "Formed Teams" and "Beta-Test Pairs". The "Formed Teams" table lists 20 teams, each with a team number, name, and member names. The "Beta-Test Pairs" table lists pairs of team numbers and names. A "Download as Excel File" button is also present.

Team Number	Team Name	Members
19	Team 19	AYUSH GAUTAM, CHATLA SOWMYA SRI, SPARSH GUPTA, UJJWAL KUMAR, PRANSHU MANI TRIPATHI, ANANY DEY CHAUDHARY, SIDHARTH A S, LOKESH MEHRA, SIDHARTH PATHAK, ABHISHEK KUMAR, ANAND CHUTANI
18	Team 18	JARABALA GOVIND NAYAK, ANSH ADARSH, GONE NISHANTH, LAVISH KANWA, ARYAN KUMAR, LOKESH KUMAR, HARSH BHATI, SOMESHWAR SINGH, DURBASMRITI SAHA, NIDHI BAJPAI
5	Team 5	DHRUV VARSHNEY, Aryan Bansal, AYUSH SINGH, ADITYA GAUTAM, VED PRAKASH VISHWAKARMA, RAHUL AHIRWAR, ABHIJET AGARWAL, SHARIQUE AHMAD, MAYUR AGRAWAL, DHRUV RAI, AKASH VERMA
20	Team 20	JATOTH SHASHI VARDAN, SANGA BADRI, KARAN KUMAR, KANDULA AMAR NADHU, AYUSH YADAV, PAL AJAY RAMSAGAR, SUGALI YASHWANTH NAIK, RAJ, V HARI VANSH, ROHIT VINOD ATKURKAR, HARSHIT PATEL
15	Team 15	ARUZ AWASTHI, SAMEER YADAV, AADI SINGH, ANISH SAMU, SANGAM GUPTA, AADYA DHIR, ANIRUDH KUMAR MEENA, ANISHA SRIVASTAVA, DILBAR SINGH LAMBA, PRANSHU THIRANI
16	Team 16	MADHVI KHETAN, AYUSH KUMAR YADAV, KARTHIK S PILLAI, DVIJU OM OSHOIN, DEVANK SARAN PRAJAPATI, RAHUL MAHTAO, SUMIT KUMAR, Piyush Meena, Archit Atrey, Anket Kumar CHAUDHARY
17	Team 17	SURYANSH VERMA, SANJNA S. ALIASVIT DATTA, DHRITI BARNWAL, SOLANKI SHREY JIGNESHBHAI, MARISHA JITENDRA THORAT, ANJALI PATRA, DARSHAN DINESH SETHIA, BHAVNOOR SINGH, RUDRANSH VERMA
18	Team 18	DHRUV SINGHAL, DIVYAM AGARWAL, GAUTAM ARORA, SAKSHAM PARIHAR, DEHAM
19	Team 19	AYUSH GAUTAM, CHATLA SOWMYA SRI, SPARSH GUPTA, UJJWAL KUMAR, PRANSHU MANI TRIPATHI, ANANY DEY CHAUDHARY, SIDHARTH A S, LOKESH MEHRA, SIDHARTH PATHAK, ABHISHEK KUMAR, ANAND CHUTANI
20	Team 20	JATOTH SHASHI VARDAN, SANGA BADRI, KARAN KUMAR, KANDULA AMAR NADHU, AYUSH YADAV, PAL AJAY RAMSAGAR, SUGALI YASHWANTH NAIK, RAJ, V HARI VANSH, ROHIT VINOD ATKURKAR, HARSHIT PATEL
21	Team 21	ARUZ AWASTHI, SAMEER YADAV, AADI SINGH, ANISH SAMU, SANGAM GUPTA, AADYA DHIR, ANIRUDH KUMAR MEENA, ANISHA SRIVASTAVA, DILBAR SINGH LAMBA, PRANSHU THIRANI
22	Team 22	MADHVI KHETAN, AYUSH KUMAR YADAV, KARTHIK S PILLAI, DVIJU OM OSHOIN, DEVANK SARAN PRAJAPATI, RAHUL MAHTAO, SUMIT KUMAR, Piyush Meena, Archit Atrey, Anket Kumar CHAUDHARY
23	Team 23	SURYANSH VERMA, SANJNA S. ALIASVIT DATTA, DHRITI BARNWAL, SOLANKI SHREY JIGNESHBHAI, MARISHA JITENDRA THORAT, ANJALI PATRA, DARSHAN DINESH SETHIA, BHAVNOOR SINGH, RUDRANSH VERMA
24	Team 24	DHRUV SINGHAL, DIVYAM AGARWAL, GAUTAM ARORA, SAKSHAM PARIHAR, DEHAM

Structural Coverage: All possible cases relating to logging in, resetting passwords and authentication have been tested, and hence the coverage is 100%.

Additional Comments:

5. Team Feedback

Unit Details: The Professor can view the feedback submitted by each member of all the teams.

Test Owner: Spandan Pati and R Charan

Test Date: 28/03/25 - 04/04/25

Test Results: All the features work as expected. The Professor can view the details of each team individually by clicking on the “View Details” button. It also shows the Professor, when each member of the team had submitted the feedback form.


P [LOGOUT](#)

Team Feedback Overview

[EXPORT ALL MATRICES](#)

Team Name	Submissions	Last Submission	Actions
Ravi and Friends	3	31/03/2025	VIEW DETAILS
Team 2	1	02/04/2025	VIEW DETAILS

Team Feedback Details - Ravi and Friends

Feedback Matrix

[EXPORT MATRIX](#)

Submitter	AARAV OSWAL	ACHYUTH HARIKRISHNA WARRIER	ASHIK STENNY	DIVI POTHUKUCHI	HARSHPREET KAUR	POTHUGANTI NIKHIL	R.CHARAN	RAVI ARORA	SPANDAN PATI	VEDHANT BALASUBRAMANIAN
ASHIK STENNY 28/03/2025	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
ACHYUTH HARIKRISHNA WARRIER 28/03/2025	5%	5%	20%	10%	10%	10%	10%	10%	10%	10%
RAVI ARORA 31/03/2025	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Mean	8.3%	8.3%	13.3%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Variance	5.6%	5.6%	22.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Detailed Submissions

Submission by ASHIK STENNY

Submitted on: 28/03/2025, 14:24:37

Submission by ACHYUTH HARIKRISHNA WARRIER

Submitted on: 28/03/2025, 14:26:22

[CLOSE](#)

Hovering over a particular field will show the remarks provided by the submitter for the current member.

Team Feedback Details - Ravi and Friends

Feedback Matrix

EXPORT MATRIX

Submitter	AARAV OSWAL	ACHYUTH HARIKRISHNA WARRIER	ASHIK STENNY	DIVI POTHUKUCHI	HARSHPREET KAUR	POTHUGANTI NIKHIL	R.CHARAN	RAVI ARORA	SPANDAN PATI	VEDHANTH BALASUBRAMANIAN
ASHIK STENNY 3/28/2025	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
ACHYUTH HARIKRISHNA WARRIER 3/28/2025	5%	5%	20%	10%	10%	10%	10%	10%	10%	10%
RAVI ARORA 3/31/2025	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
AARAV OSWAL 4/3/2025	22.14%	5%	6.9%	10.05%	12.4%	7.9%	9.6%	4.9%	11.01%	10.1%
SPANDAN PATI 4/4/2025	0.69%	0.69%	6.9%	6.9%	6.9%	0.69%	6.9%	1.32%	0.01%	69%
DIVI POTHUKUCHI 4/5/2025	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
R.CHARAN 4/5/2025	10%	10%	10%	10%	8.5%	10%	10%	10%	9.5%	2%
Mean	8.7%	7.2%	10.5%	9.6%	9.7%	8.4%	9.5%	8.0%	8.6%	17.3%
Variance	36.9%	11.9%	16.7%	1.2%	2.4%	10.4%	1.1%	10.6%	12.6%	453.1%

CLOSE

The Export Matrix functionality allows the Professor to export the matrix displayed to Excel format.

Team Feedback Details - Ravi and Friends

Feedback Matrix

EXPORT MATRIX

Anyone using this device can see downloaded files

Ravi and Friends_feedback_matrix (2).xlsx
17.7 KB - Done

Submitter	AARAV OSWAL	ACHYUTH HARIKRISHNA WARRIER	ASHIK STENNY	DIVI POTHUKUCHI	HARSHPREET KAUR	POTHUGANTI NIKHIL	R.CHARAN	RAVI ARORA	SPANDAN PATI	VEDHANTH BALASUBRAMANIAN
ASHIK STENNY 28/03/2025	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
ACHYUTH HARIKRISHNA WARRIER 28/03/2025	5%	5%	20%	10%	10%	10%	10%	10%	10%	10%
RAVI ARORA 31/03/2025	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Mean	8.3%	8.3%	13.3%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Variance	5.6%	5.6%	22.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Detailed Submissions

Submission by ASHIK STENNY
Submitted on: 28/03/2025, 14:24:37

Submission by ACHYUTH HARIKRISHNA WARRIER
Submitted on: 28/03/2025, 14:26:22

Export Matrices of a particular team

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Submitter	Submission	AARAV OSW	ACHYUTH HA	ASHIK STEN	DIVI POTHUK	HARSHPREET	POTHUGANT	R.CHARAN	RAVI ARORA	SPANDAN PA	VEDHANTH	BALASUBRAMANIAN		
2	ASHIK STEN	28/03/2025	10	10	10	10	10	10	10	10	10	10	10	10	
3	ACHYUTH HA	28/03/2025	5	5	20	10	10	10	10	10	10	10	10	10	
4	RAVI ARORA	31/03/2025	10	10	10	10	10	10	10	10	10	10	10	10	
5	Mean		8.3	8.3	13.3	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
6	Variance		5.6	5.6	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7															
8															
9															

Export all matrices

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	Submitter	Submission	AARUSH NAIDHARAJIYA	Y NISCHAY AG	PRATUL KOC	ROHAN GAU	RUDRA SINH	SHRAVAN AI	SIDDARTH SUYASH	KAP VIHAAN SAPRA												
2	DHARAJIYA	Y	02/04/2025	-	14	10	10	10	10	10	1	5	10	30								
3	Mean		0.0	14.0	10.0	10.0	10.0	10.0	1.0	5.0	10.0	30.0										
4	Variance		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0										
5																						
6																						
7																						
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Structural Coverage: The testing process involved checking whether the Professor was able to view and export all feedback matrices properly and if the data given from the student's side was reflected correctly. All the possible cases have been checked and verified so the structural coverage is 100%

Additional Comments: No bugs found

6. Gradeables

Unit Details: The professor creates gradeables and uploads the marks for them as a CSV file. The Individual scores and statistics of the Gradeables can also be viewed.

Test Owner: Spandan Pati and R Charan

Test Date: 28/03/2025 - 04/04/25

Test Results: Bug - The graph display may become distorted if the total marks becomes large.

To create a gradeable, the Professor uploads a list of grades of students along with their usernames in this format.

RollNo	score
200198	0
200293	6
200408	0
210025	0
210040	6
210251	6
210404	6

The screenshot shows the SAHARA LMS interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables (which is selected and highlighted in blue), Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area has a header "Course Home / Gradeables". Below it is a blue call-to-action button "Create Gradeable and Upload Scores" with the sub-instruction "Create a new gradeable by providing a title, maximum points, and uploading a CSV file with student scores." A "Gradeable Information" form contains fields for "Test/Assignment Title*" (set to "Quiz 5") and "Maximum Points*" (set to "100"). An "Upload Scores" section includes a file input field with "scores.csv" selected and a "Browse" button. At the bottom is a "Create Gradeable" button. The top right corner shows user profile icons and a "LOGOUT" button.

Once they are successfully updated, the statistics of the gradeables can be viewed as shown.

The screenshot shows the SAHARA LMS interface for Quiz 2. The left sidebar contains navigation links for Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area displays the following information:

- Quiz 2**: 204 student submissions.
- Mean Score: 5.20**
- Student Results** table:

Student ID	Name	Score
220004	AADI SINGH	5
220010	AADYA DHIR	5
230011	AARADHYA ROHI	4
230012	AARAV OSWAL	6
230015	AARSH JAIN	6
230017	AARUSH NARENDRA GHATE	4
220020	AAVUSH GAUTAM	6
- Score Distribution** histogram showing the number of students versus score (0, 2, 3, 4, 5, 6).
- Score Statistics**:

Mean Score 5.20	Median Score 6.00	Mode Score 6.00	Variance 1.71
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7. TA- Team pairing

Unit Details: The TA chooses skills from a dropdown of skills available to them. Teams also choose a list of technologies with which they would work during the course of the project. Considering this information, using an algorithm we designed, we pair the TAs up with the teams to ensure better match of TA-Team skill requirement.

Test Owner: R Charan and Spandan Pati

Test Date: 28/03/25 - 04/04/25

Test Results: The Tests for TA adding skills and Teams adding skills have been done after this. We assume that both the TAs and the Teams can add their skills.

The Professor can pair Teams with the relevant TAs based on skills by navigating to the Teams tab and selecting TA Team pairing. The Professor can also select the number of TAs to be allotted to each team and click on Allocate TAs.

The Professor can also manually edit the TA assignment

Team ID	Team Name	Skills	Assigned TAs	Actions
1	Team 1		TA 5	Edit
2	Team 2		TA 6	Edit
3	Team 3		TA 10	Edit
4	Team 4	Node.js MongoDB React	TA 8	Edit
5	Team 5	Java MongoDB React	TA 9	Edit
6	Team 6	React Spring Boot Node.js	TA 7	Edit
7	Team 7	Java React Spring Boot	TA 3	Edit
8	Ravi and Friends	Node.js Java React	TA 6	Edit
9	Team 9	Node.js React Python	TA 2	Edit

The TA assigned during this process will then have a separate discussion forum with the team.

Team Team 1 TA Channel

- Global Chat
- Team Team 19 TA Channel
- Team Team 11 TA Channel
- Team Team_0f_5 TA Channel
- Team Not Ravi and Friends TA Channel
- Team Team 1 TA Channel

Structural Coverage: All the possible cases have been checked and verified so the structural coverage is 100%.

8. Adding Skills

Unit Details: The Professor can also add the appropriate skills that they consider would be used by the teams during the development of the project. The TAs can select from these skills

Test Owner: R Charan and Spandan Pati

Test Date: 28/03/25 - 04/04/25

Test Results:

The screenshot shows the SAHARA platform's interface. On the left is a dark blue sidebar with a navigation menu:

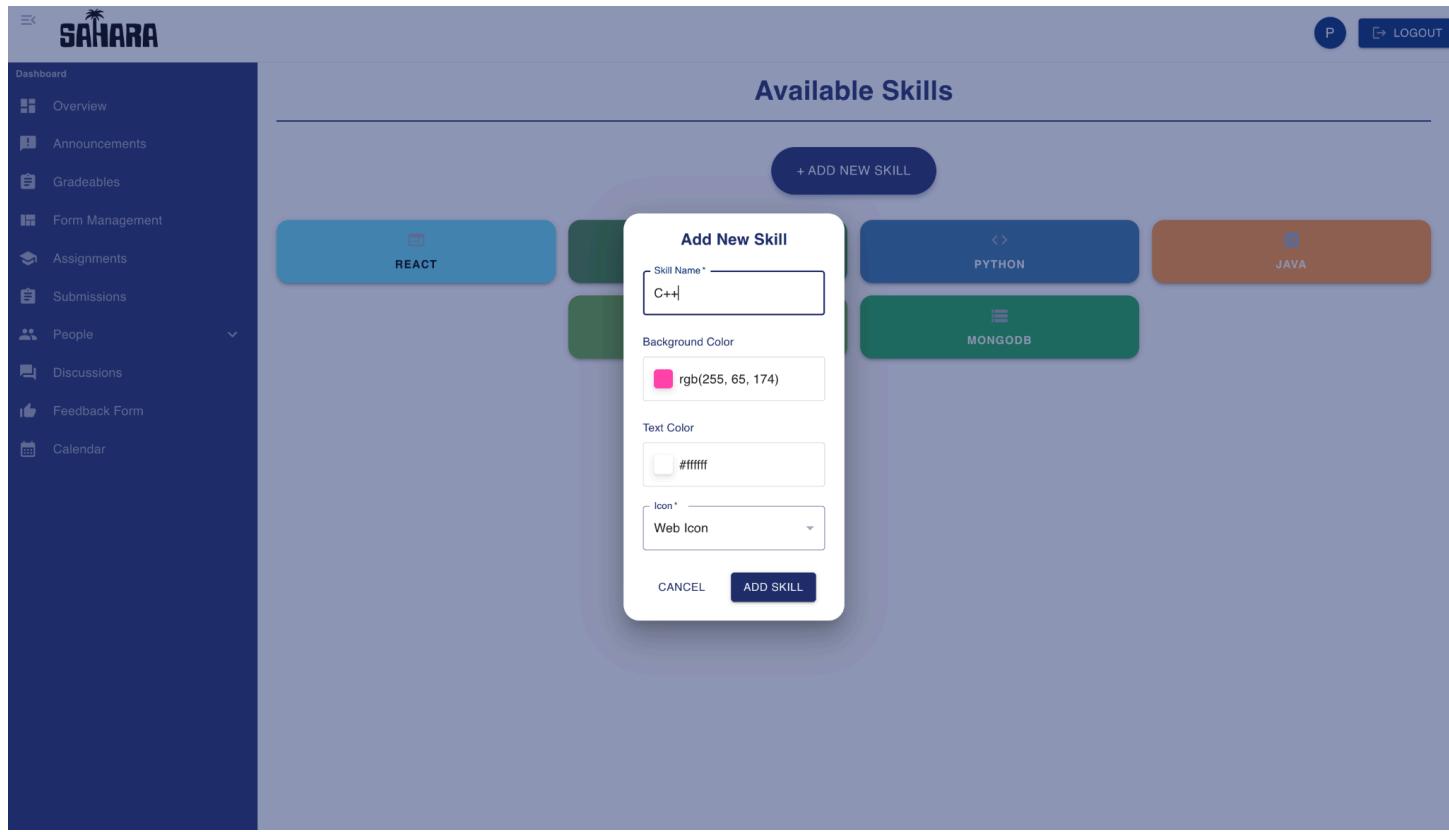
- Dashboard
- Overview
- Announcements
- Gradeables
- Form Management
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

The main content area is titled "Teaching Assistants". At the top, there is a "Filter by Skills:" section with several skill icons: Java, MongoDB, Node.js, Python, React, and Spring Boot. To the right of the filter is a "Filter Mode" dropdown set to "OR". Below the filter is a "TA List" table:

S. No.	Name	Email	Skills
1	Hemang Mohanlal Khatri	hemangmkhatri@cse.iitk.ac.in	React, Node.js, Python
2	Jeswaanth Gogula	jeswaanth@cse.iitk.ac.in	Java, Spring Boot, MongoDB

On the far right of the table are two blue buttons: "ADD TAS" and "ADD SKILLS".

The Professor navigates to the Add Skills tab in the Teaching Assistants page.



The skill gets added successfully.

TA's Side

The features implemented on the TA's side are mostly the same as the features on the Professor's side and use the same code. This is why only the features unique to the TA role have been tested separately.

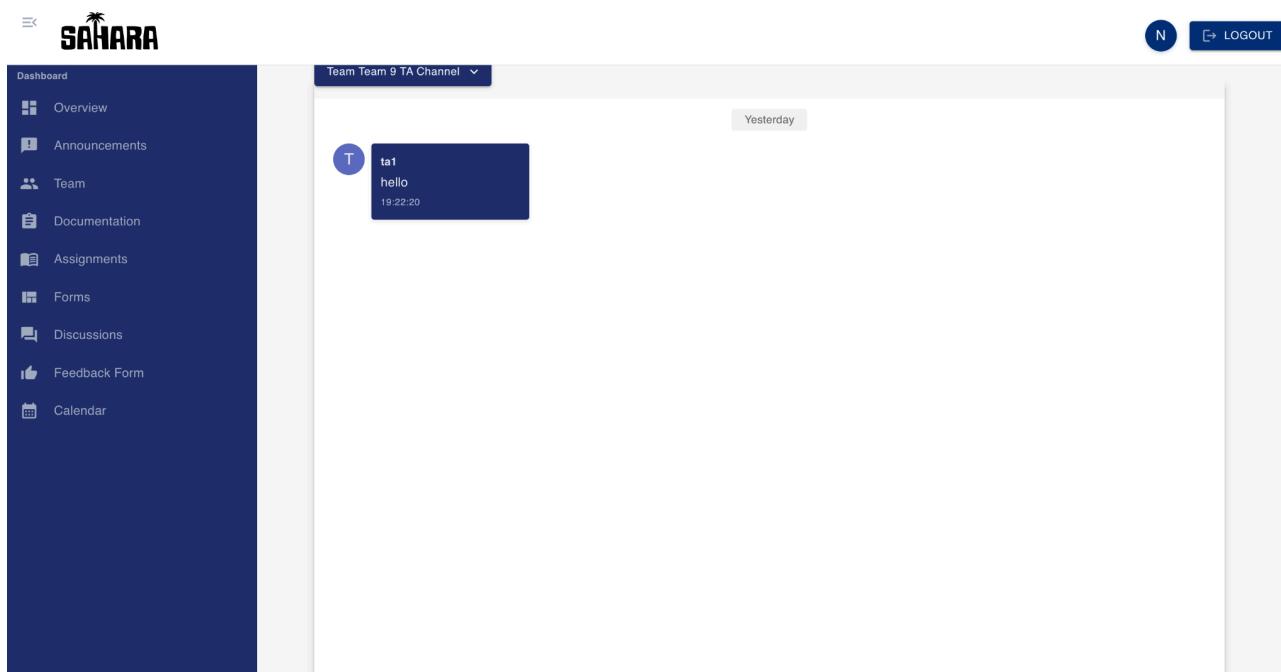
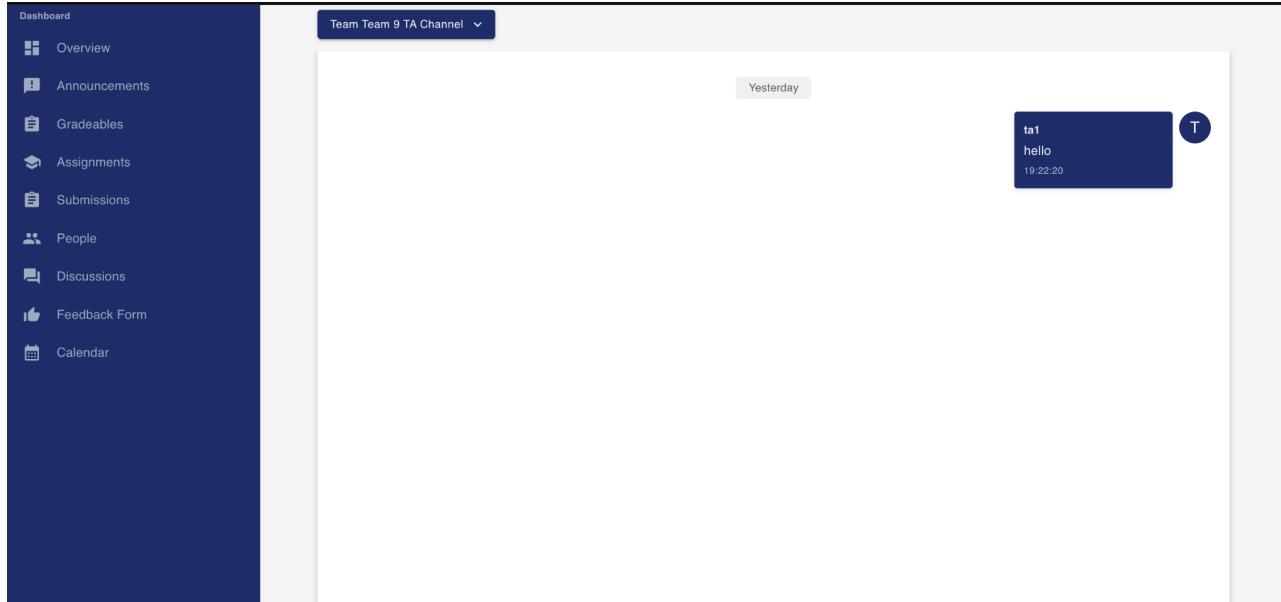
1. TA + Group forum

Unit Details: There exists a dedicated group forum for the TA and the mentee group

Test Owner: Vedhanth B and Ravi Arora

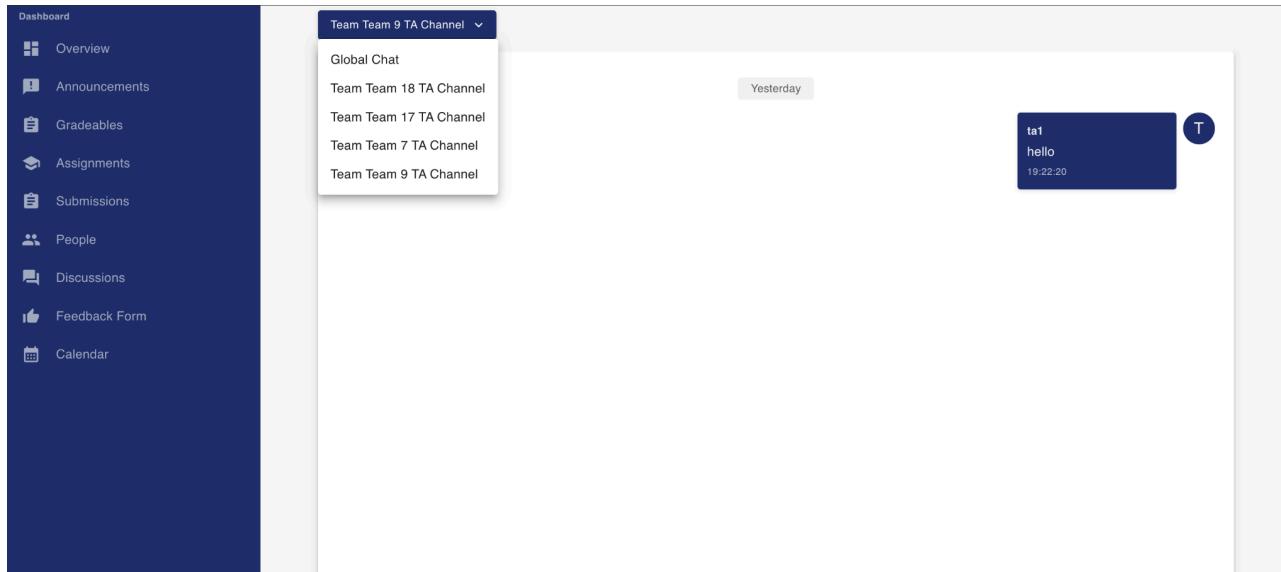
Test Date: 28/03/25 - 04/04/25

Test Results: Tests passed



Upon logging in as a student of Team 9 (to whom TA1 has been allotted), we see the message sent by TA1. Thus, we see that the TA pairing discussion forums are created correctly.

The TA is part of all of the group forums for which they are the mentors, along with the global forum.



The Discussion forums are created directly after the TA pairing. The Professor should get access to these forums to check on the activity in these forums. Also, there should be ways to create forums with specific TAs in special cases manually. In cases where the Professor of the course is itself the TA of a group, there is no way to make a dedicated forum with the Professor and the group.

Structural Coverage: All the possible cases have been checked and verified so the structural coverage is 100%.

Additional Comments: We have fixed the bug so that the Professor is part of all of the TA-Team forums so that the Professor can supervise these forums.

Now, even if the Professor is a “TA” to a group, they would have a channel to communicate

The screenshot shows the SAHARA software interface. On the left is a dark blue sidebar with various navigation options: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area is titled "Discussion" and shows a list of messages. A message from user D at 07:29 pm says: "DIVI POTHUKUCHI we'll meet at 9:00". A message from user A at 07:30 pm says: "AARAV OSWAL okay". Below these, a message from user R at 11:00 pm says: "R.CHARAN c23d67fa-a524-45dd-b9a2-d5106a2cb860_FCH.pdf". To the right of the discussion area is a sidebar titled "Global Chat" which lists several team channels: Team Ravi and Friends TA Channel, Team Team 2 TA Channel, Team Team 18 TA Channel, Team Team 17 TA Channel, Team Team 7 TA Channel, Team Team 9 TA Channel, Team Testing 2's Team TA Channel, Team Team 10 TA Channel, Team Team 15 TA Channel, Team Team 13 TA Channel, and Team Team 6 TA Channel. At the bottom right of the interface is a "Type a message" input field and a send button.

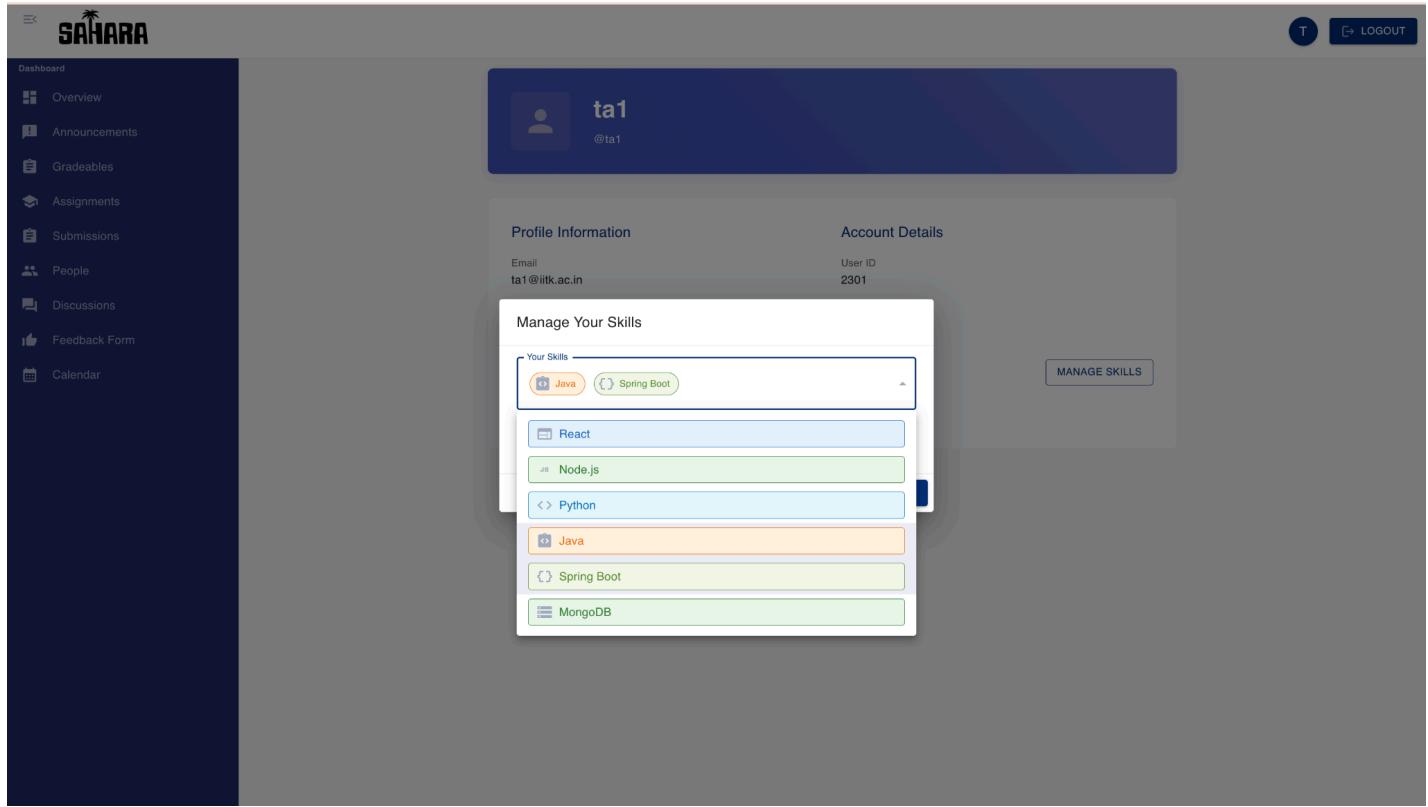
2. TAs selecting their skills for TA-Team pairing

Unit Details: TAs can select their skills from the available options in their profile.

Test Owner: Vedhanth B and Ravi Arora

Test Date: 28/03/25 - 04/04/25

Test Results: Tests passed



The TA has the same permissions as the Professor in case of Assignments and Submittables and can view and grade all the submissions.

They cannot add global events to the calendar (can only add team or personal events) or add global announcements.

They can view the Feedback form of all the groups (even of those groups that are not allotted to them)

Structural Coverage: All the possible cases have been checked and verified so the structural coverage is 100%.

Additional Comments: We have fixed the bug so that the Professor is part of all of the TA-Team forums so that the Professor can supervise these forums.

Student's Side

1. Discussion Forums

Unit Details: The Student is part of 3 discussion forums- one Intra-team forum, one with the TA and the Team, and one Global forum with the Professor.

Test Owner: R Charan and Spandan Pati

Test Date: 28/03/25-04/04/25

Test Results: Below are the result outcomes

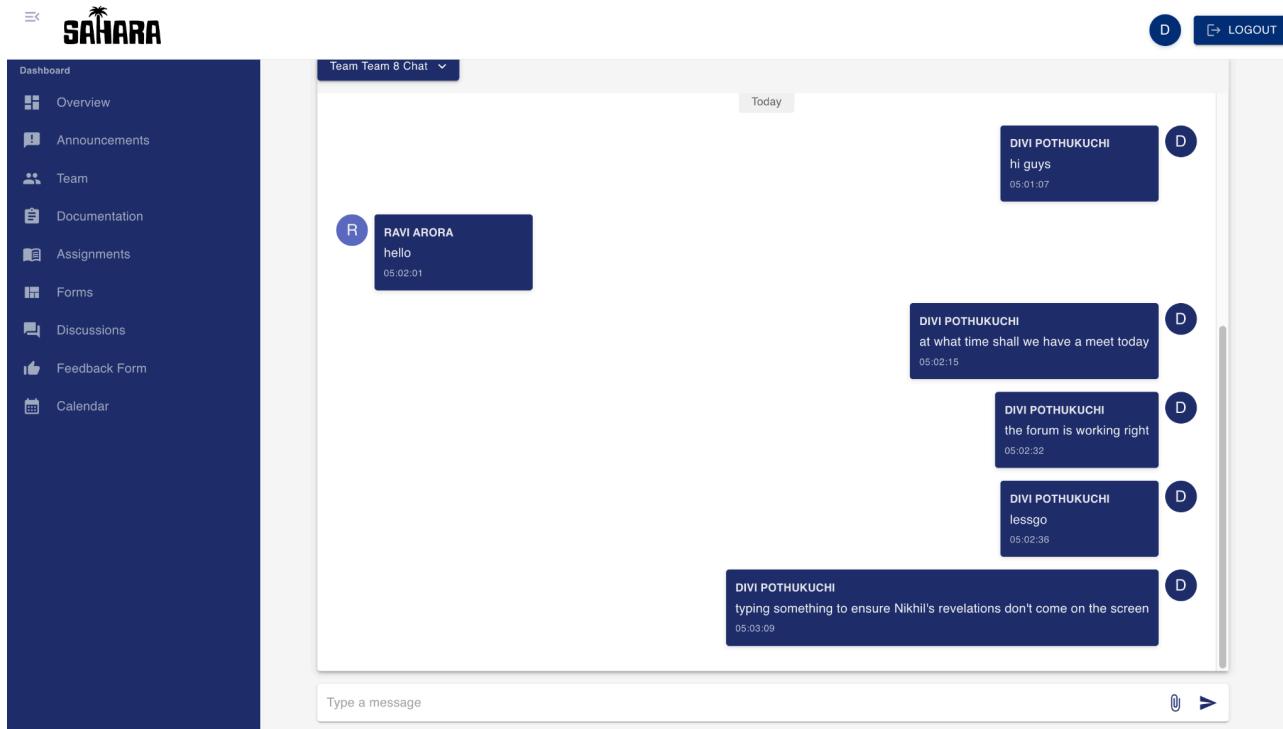
The screenshot shows a messaging application interface. On the left, there is a sidebar with the following menu items: Dashboard, Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. At the top right, there is a 'LOGOUT' button and a user icon. The main area is titled 'Global Chat' and shows a list of messages. One message is highlighted with a blue background. The messages are as follows:

- prof1: Hi (10:47:41)
- prof1: Hello students (10:47:46)
- prof1: you are free to ask your doubts (10:48:01)
- prof1: [760B0FCE-EABE-4E7A-AFA0-F0AA076176BF_TEST_DOCUMENT.PDF](#) (10:48:35)
- prof1: [6968D8AB-199A-4120-8287-732520C94467_WHATSAPP IMAGE 2025-03-28 AT 17.05.25.JPG](#) (10:48:35)

At the bottom, there is a text input field with placeholder 'Type a message' and a send button with a paperclip icon.

The testing messages of the Professor and the TAs sent on the global forum are visible even to the student. Apart from the global forum, the student is part of two other forums. The TA Channel consists of the group members along with the allotted TA.

This is the internal group chat. All the members of the group(based on the team CSV file uploaded) have access to the channel.



Structural Coverage: All the possible cases have been checked and verified so the structural coverage is 100%.

2. Team View and Adding skills

Unit Details: Students have the option to view the created team and adding skills they would need to use (data that will be used to pair with relevant TA)

Test Owner: R Charan and Spandan Pati

Test Date: 28/03/25-04/04/25

Test Results: The Team view seems to be working and is in accordance with the teams csv file we uploaded.

Ravi and Friends (10 team members)

Team Skills

- Node.js
- Java
- React

Name	Email
AARAV OSWAL	aaravoswal23@iitk.ac.in
ACHYUTH HARIKRISHNA WARRIER	achyuthw23@iitk.ac.in
ASHIK STENNY	ashiks23@iitk.ac.in
DIVI POTHKUCHI	divip23@iitk.ac.in
HARSHPREET KAUR	harshpreet23@iitk.ac.in
POTHUGANTI NIKHIL	nikhilp23@iitk.ac.in
R.CHARAN	rcharan23@iitk.ac.in
RAVI ARORA	raviarora23@iitk.ac.in
SPANDAN PATI	spandanp23@iitk.ac.in
VEDHANTH BALASUBRAMANIAN	vedhanthb23@iitk.ac.in

The teams can also add skills using this option

Ravi and Friends (10 team members)

Manage Team Skills

Team Skills

- Node.js
- Java
- React

- React
- Node.js
- Python
- Java
- Spring Boot
- MongoDB

Name	Email
AARAV OSWAL	aaravoswal23@iitk.ac.in
ACHYUTH HARIKRISHNA WARRIER	achyuthw23@iitk.ac.in
ASHIK STENNY	ashiks23@iitk.ac.in
DIVI POTHKUCHI	divip23@iitk.ac.in
HARSHPREET KAUR	harshpreet23@iitk.ac.in
POTHUGANTI NIKHIL	nikhilp23@iitk.ac.in
R.CHARAN	rcharan23@iitk.ac.in
RAVI ARORA	raviarora23@iitk.ac.in
SPANDAN PATI	spandanp23@iitk.ac.in
VEDHANTH BALASUBRAMANIAN	vedhanthb23@iitk.ac.in

3. Team Creation (Invite based system)

Unit Details: There is another invite-based way to team creation apart from the team creation using CSV file method.

Test Owner: Divi Pothukuchi

Test Date: 28/03/25-04/4/25

Test Results:

The screenshot shows the SAHARA platform's interface. On the left is a dark sidebar with various navigation options: Dashboard, Overview, Announcements, Team (which is selected), Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main area is titled 'Team Members' and shows a team named 'Ravi and Friends' with 10 members. Below this, there's a section for 'Team Skills' with three categories: Node.js, Java, and React. A modal window titled 'Invite User to Team' is open in the center, containing a text input field labeled 'User ID' with the value '256677'. At the bottom of the modal are two buttons: 'CANCEL' and 'INVITE USER'. In the background, a list of team members is visible, each with their name and email address. The names listed are AARAV OSWAL, ACHYUTH HARIKRISHNA WARRIER, ASHIK STENNY, DIVI POTHKUCHI, HARSHPREET KAUR, POTHUGANTI NIKHIL, R.CHARAN, RAVI ARORA, SPANDAN PATI, and VEDHANT BALASUBRAMANIAN. Their corresponding emails are aaravoswal23@iitk.ac.in, achyuthw23@iitk.ac.in, ashiks23@iitk.ac.in, divip23@iitk.ac.in, harshpreet23@iitk.ac.in, nikhip23@iitk.ac.in, rcharan23@iitk.ac.in, raviorora23@iitk.ac.in, spandanp23@iitk.ac.in, and vedhanthb23@iitk.ac.in.

The “Invite User to Team” button in the Teams tab allows the Student to enter the roll number of someone they’d like to invite to the team.

The screenshot shows the SAHARA software interface. On the left is a dark blue sidebar with a navigation menu:

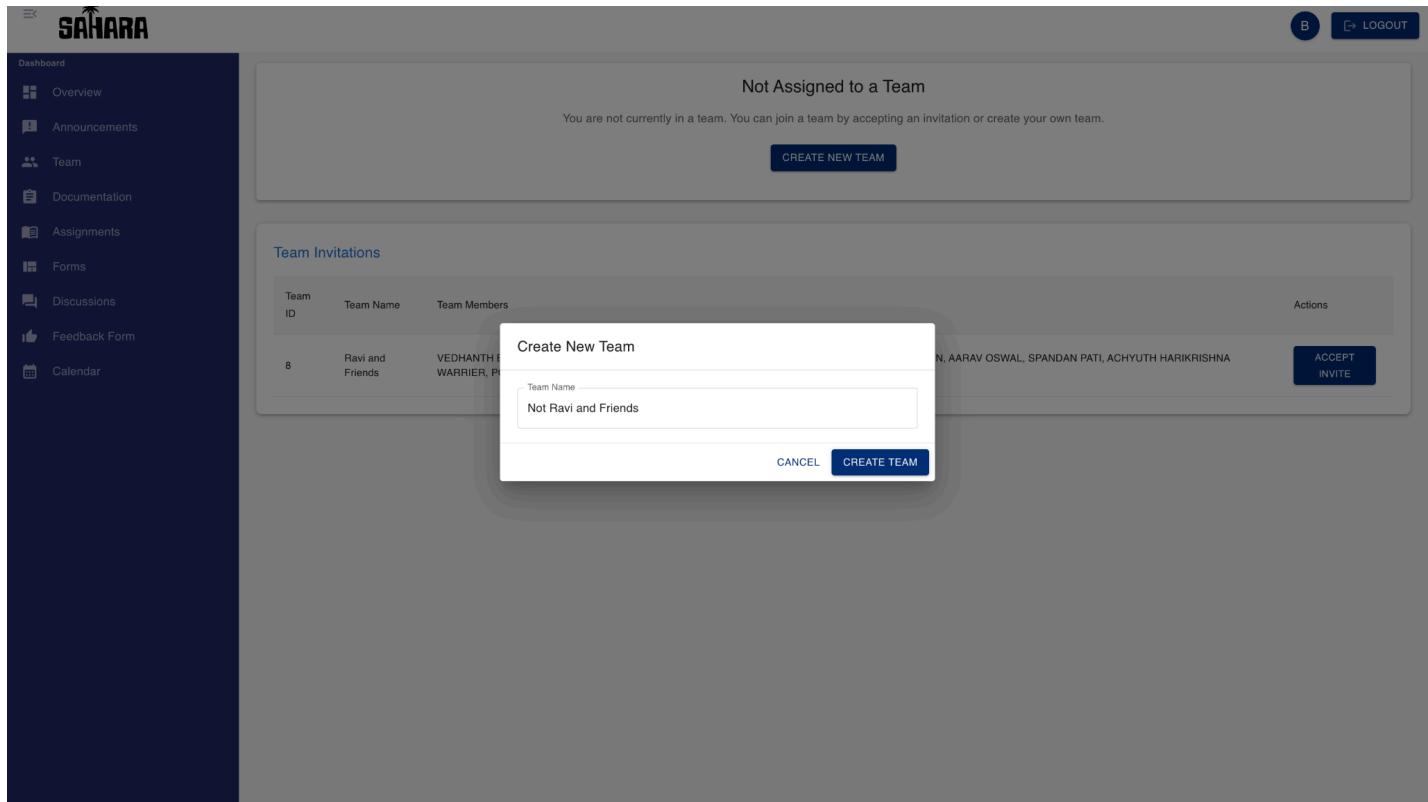
- Dashboard
- Overview
- Announcements
- Team
- Documentation
- Assignments
- Forms
- Discussions
- Feedback Form
- Calendar

The main content area has a header "Not Assigned to a Team" with a sub-header "You are not currently in a team. You can join a team by accepting an invitation or create your own team." A "CREATE NEW TEAM" button is present. Below this is a "Team Invitations" section with a table:

Team ID	Team Name	Team Members	Actions
8	Ravi and Friends	VEDHANTH BALASUBRAMANIAN, DIVI POTHUKUCHI, ASHIK STENNY, HARSHPREET KAUR, R.CHARAN, AARAV OSWAL, SPANDAN PATI, ACHYUTH HARIKRISHNA WARRIER, POTHUGANTI NIKHL, RAVI ARORA	<button>ACCEPT INVITE</button>

The sent invite reflects in the Team tab to the user. They can press Accept Invite and would be automatically added to the Team.

In case the User is not part of any Team, they can create a Team as shown below.



Structural Coverage: All the possible cases have been checked and verified so the structural coverage is 100%.

4. Feedback Submission

Unit Details: Students can submit a percentage contribution for each team member. The Feedback Matrix can be viewed by all the TAs and the Professor.

Test Owner: Harshpreet Kaur and Achyuth H Warrier

Test Date: 28/03/25 - 04/04/25

Test Results: Tests passed



SAHARA

Dashboard
Logout

- Overview
- Announcements
- Team
- Documentation
- Assignments
- Forms
- Discussions
- Feedback Form
- Calendar

Team Member	Contribution Percentage (%)	Remarks
VEDHANTH BALASUBRAMANIAN	10	Add remarks
DIVI POTHUKUCHI (You)	10	Add remarks
ASHIK STENNY	10	Add remarks
HARSHPREET KAUR	10	Add remarks
R.CHARAN	10	Add remarks
AARAV OSWAL	10	Add remarks
SPANDAN PATI	10	Add remarks
ACHYUTH HARIKRISHNA WARRIER	10	Add remarks
POTHUGANTI NIKHIL	10	Add remarks
RAVI ARORA	10	Add remarks
Total	100.00%	
SUBMIT FEEDBACK		



SAHARA

Dashboard
Logout

- Overview
- Announcements
- Team
- Documentation
- Assignments
- Forms
- Discussions
- Feedback Form
- Calendar

Team Member	Contribution Percentage (%)	Remarks
VEDHANTH BALASUBRAMANIAN	5	Add remarks
DIVI POTHUKUCHI (You)	5	Add remarks
ASHIK STENNY	5	Add remarks
HARSHPREET KAUR	5	Add remarks
R.CHARAN	5	Add remarks
AARAV OSWAL	5	Add remarks
SPANDAN PATI	5	Add remarks
ACHYUTH HARIKRISHNA WARRIER	5	Add remarks
POTHUGANTI NIKHIL	5	Add remarks
RAVI ARORA	5	Add remarks
Total	50.00%	Total must equal 100%
SUBMIT FEEDBACK		

The allowed values of percentage contribution were checked. Any value between and including 0 and 100 is allowed.

The user will not be allowed to fill out the form if the total percentage is less than 100% (exactly). However, a bug was found related to floating-point precision errors in the frontend representation.

Team Member	Contribution Percentage (%)	Remarks
VEDHANTH BALASUBRAMANIAN	10.1	Add remarks
DIVI POTHUKUCHI (You)	10.05	Add remarks
ASHIK STENNY	6.9	Add remarks
HARSHPREET KAUR	12.4	Add remarks
R.CHARAN	9.6	Add remarks
AARAV OSWAL	22.14	Add remarks
SPANDAN PATI	11.01	Add remarks
ACHYUTH HARIKRISHNA WARRIER	5.0	Add remarks
POTHUGANTI NIKHIL	7.9	Add remarks
RAVI ARORA	4.9	Add remarks
Total	100.00%	Total must equal 100%

When we enter values like the ones above containing decimal points, even if they add up to 100.0%, an error is reflected.

Team Member	Contribution Percentage (%)	Remarks
VEDHANTH BALASUBRAMANIAN	99.91	Add remarks
DIVI POTHUKUCHI (You)	0.01	Add remarks
ASHIK STENNY	0.01	Add remarks
HARSHPREET KAUR	0.01	Add remarks
R.CHARAN	0.01	Add remarks
AARAV OSWAL	0.01	Add remarks
SPANDAN PATI	0.01	Add remarks
ACHYUTH HARIKRISHNA WARRIER	0.01	Add remarks
POTHUGANTI NIKHIL	0.01	Add remarks
RAVI ARORA	0.01	Add remarks
Total	100.00%	Total must equal 100%

Structural Coverage: All the possible cases have been checked and verified so the structural coverage is 100%.

Additional Comments: This indicates one of the following two issues-

- Floating point precision issue with the frontend
- String to number conversion error

The backend should be fixed to use a tolerance threshold instead of exact equality to allow for decimal points in the contribution percentage.

The error has now been fixed to allow floating point percentage contributions efficiently.

Team Member	Contribution Percentage (%)	Remarks
AYUSH PATEL	99.91	Add remarks
KRISHNA KUMARYU	0.01	Add remarks
AMAN RAJ	0.01	Add remarks
AAYUSH KUMAR	0.01	Add remarks
SHAURYA JOHARI (You)	0.01	Add remarks
ANIRUDH CHERIYACHANASERI BIJAY	0.01	Add remarks
VINAY	0.01	Add remarks
SATWIK RAJ WADHWA	0.01	Add remarks
MARADA TEJA SATVIK	0.01	Add remarks
SOMAIYA NARAYAN ANRUDDH	0.01	Add remarks
Total	100.00%	

4. Assignment Submission

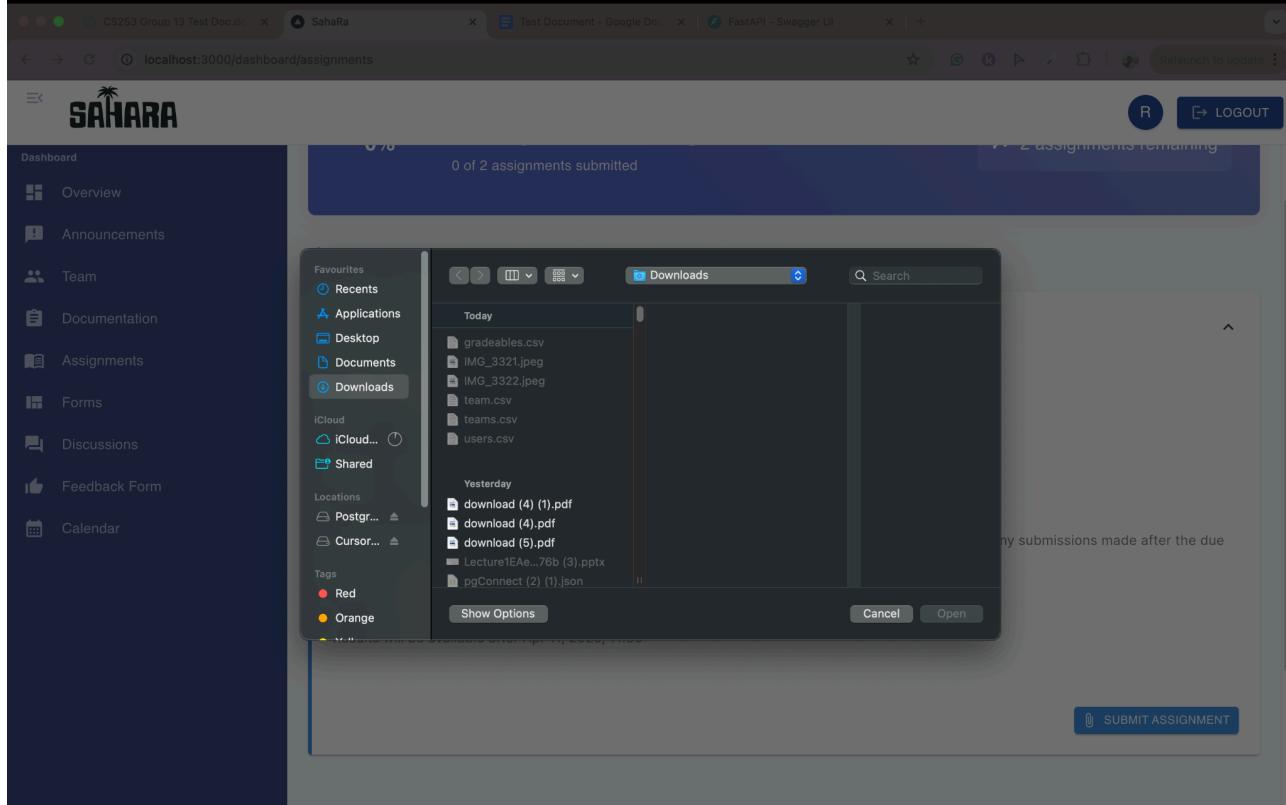
Unit Details: The students can submit ongoing Assignments, check the grades and comments for the graded assignment submissions,

Test Owner: Harshpreet Kaur and Achyuth H Warrier

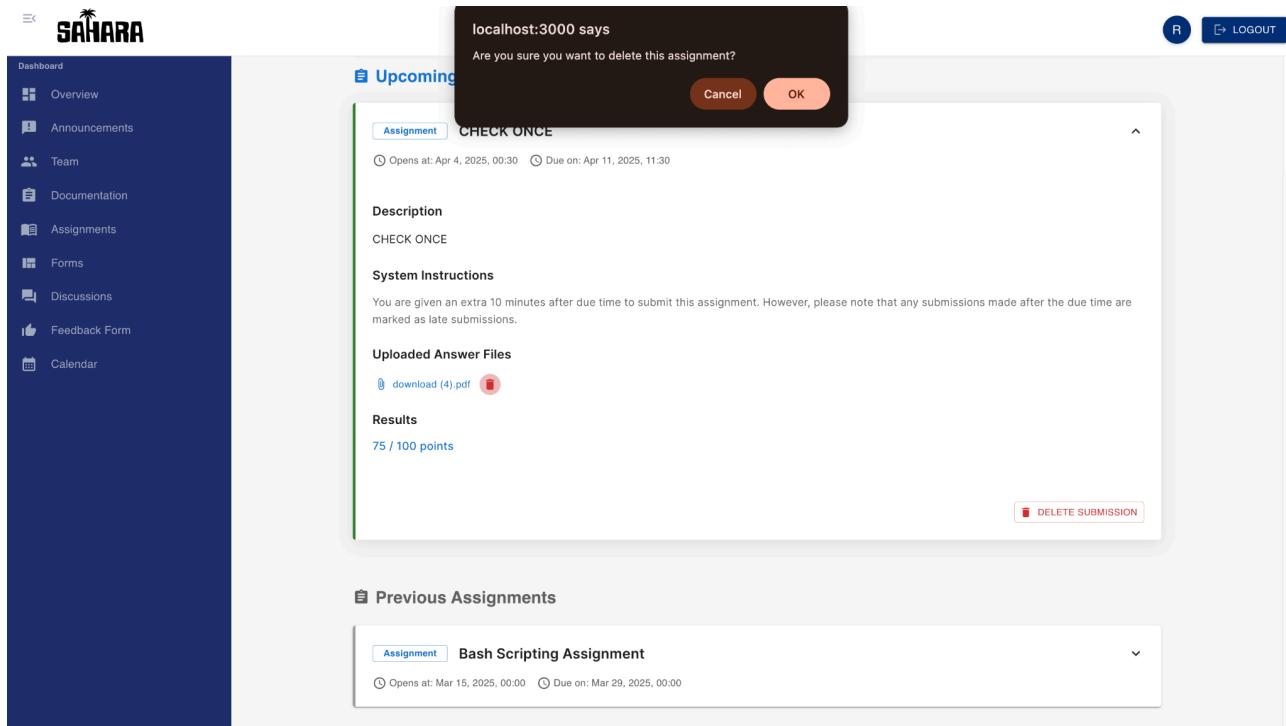
Test Date: 28/03/25 - 04/04/25

Test Results:

The Students can navigate to the Ongoing Assignments and select the “Submit Assignments” button. They then get prompted to upload a file from their file explorer (they can upload zipped folders as well)



The Assignments submitted can also be deleted if the Due date has not passed



The screenshot shows the SAHARA platform interface. At the top right, there are user icons for profile, notifications, and logout. The main header is "Assignment Progress" with a progress bar at 0%. Below it, a message says "2 assignments remaining". The main content area is titled "Upcoming/Ongoing Assignments". It lists an assignment named "CHECK ONCE" with the following details:

- Description:** CHECK ONCE
- System Instructions:** You are given an extra 10 minutes after due time to submit this assignment. However, please note that any submissions made after the due time are marked as late submissions.
- Results:** Results will be available after Apr 11, 2025, 11:30

At the bottom right of this card is a "SUBMIT ASSIGNMENT" button. Below this section is another titled "Previous Assignments" which lists a past assignment named "Bash Scripting Assignment". A success message "Assignment deleted successfully!" is visible next to this card.

The submitted Assignment gets reflected in the Professor's (and TA's) Assignment tab.

The screenshot shows the SAHARA platform interface from the professor's perspective. At the top right, there are user icons for profile, notifications, and logout. The main header is "CHECK ONCE". The dashboard displays three key metrics in large boxes: "Total Submissions" (3), "Graded Submissions" (2), and "Average Score" (80.5). Below these metrics is a table titled "Submissions" showing three student entries:

Student Name	Submitted On	Score	Actions
HARSHPREET KAUR harshpreet23@iitk.ac.in	05/04/2025, 18:17:02	76/100	Download Grade
DIVI POTHUKUCHI divip23@iitk.ac.in	05/04/2025, 15:48:33	85/100	Download Grade
RAVI ARORA raviarora23@iitk.ac.in	06/04/2025, 19:16:42	Not graded	Download Grade

(this is the Professor's tab)

The Professor can now grade the Assignment

The screenshot shows the SAHARA teacher dashboard under the 'Check Once' section. On the left sidebar, there are various navigation options like Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area displays three summary boxes: 'Total Submissions' (3), 'Graded Submissions' (3), and 'Average Score' (78.7). Below these are detailed submission records for three students:

Student	Submitted On	Score	Actions
HARSHPREET KAUR harshpreet23@iitk.ac.in	05/04/2025, 18:17:02	76/100	Download Grade
DIVI POTHUKUCHI divip23@iitk.ac.in	05/04/2025, 15:48:33	85/100	Download Grade
RAVI ARORA raviarora23@iitk.ac.in	06/04/2025, 19:16:42	75/100	Download Grade

A green success message at the bottom right says 'Assignment graded successfully!' with a close button.

And the grade can be viewed on the Student's side

The screenshot shows the SAHARA student assignment progress view. The left sidebar includes links for Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main area features a progress bar showing '50%' completion with the message '1 of 2 assignments submitted' and '1 assignments remaining'. Below this, it lists 'Upcoming/Ongoing Assignments' for 'CHECK ONCE':

- Assignment:** CHECK ONCE
Opens at: Apr 4, 2025, 00:30 Due on: Apr 11, 2025, 11:30
- Description:** CHECK ONCE
- System Instructions:** You are given an extra 10 minutes after due time to submit this assignment. However, please note that any submissions made after the due time are marked as late submissions.
- Uploaded Answer Files:** [download \(4\).pdf](#)
- Results:** 75 / 100 points

A red 'DELETE SUBMISSION' button is located at the bottom right of the assignment card. At the very bottom, there is a link for 'Previous Assignments'.

Structural Coverage: All the possible cases have been checked and verified, so the structural coverage is 100%.

Additional Comments: A possible bug would be add the Student should not be able to delete their assignment submission after it has been graded. However, we have assumed that the grading will be done after the due date and in the rare case of it being done before, the student should be allowed to change the submission

5. Submittable Submission

Unit Details: The students can submit ongoing Submittables, check the grades and comments for the graded submissions,

Test Owner: Harshpreet Kaur and Achyuth H Warrier

Test Date: 28/03/25 - 04/04/25

Test Results:

The Students can submit ongoing Submittables by navigating to the Documentation tab

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Team, Documentation (selected), Assignments, Forms, Discussions, Feedback Form, and Calendar. The main area has a blue header bar with 'Project Progress' and '100% 1 of 1 documents submitted'. Below this is a button 'All documents submitted!'. The main content area is titled 'Ongoing/Upcoming Documents' and shows a single assignment named 'User Manual'. It details the assignment's opening and due dates, its description (asking students to submit a user manual), system instructions (noting late submissions), question files (a PDF), uploaded answer files (a PDF), and results (available after April 10, 2025, at 02:00). At the bottom right, there is a green checkmark icon with 'File submitted' and a red trash bin icon with 'DELETE SUBMISSION'.

The interface and code for the submittables tab is similar to the Assignments tab. Here also students are allowed to delete their submission.

A screenshot of the SAHARA student interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Team, Documentation, Assignments (selected), Forms, Discussions, Feedback Form, and Calendar. The main content area shows a progress bar at 100% completion. A central modal window titled "localhost:3000 says" asks "Are you sure you want to delete this submission?" with "Cancel" and "OK" buttons. To the right of the modal is a message "All documents submitted!". Below the modal is a section titled "Ongoing/Upcoming Documents" for an assignment titled "User Manual". The assignment details include: "Opens at: Apr 3, 2025, 20:30" and "Due on: Apr 10, 2025, 02:00". The "Description" section says "Dear Students, Please submit your user manual." The "System Instructions" section notes: "You are given an extra 10 minutes after due time to submit this assignment. However, please note that any submissions made after the due time are marked as late submissions." The "Question Files" section lists a file: "python_assignment_cs253_2025_41571f76-71a8-477b-a96c-7c81ce9f4eb2.pdf". The "Uploaded Answer Files" section shows a download link: "download (4) (1).pdf". The "Results" section states: "Results will be available after Apr 10, 2025, 02:00". At the bottom right of this section is a red "DELETE SUBMISSION" button.

The submission is reflected on the Professor's (and TA's) side under the Submissions tab.

A screenshot of the SAHARA professor interface. The sidebar includes: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions (selected), People, Discussions, Feedback Form, and Calendar. The main content area shows a card for an assignment titled "User Manual". The card displays three metrics: "Total Submissions" (1), "Graded Submissions" (0), and "Average Score" (-). Below this is a table titled "Submissions" with one row: "Team 8" submitted on "06/04/2025, 19:16:42" with a score of "Not graded". It includes "Download" and "Grade" buttons.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area is titled "User Manual". It displays three summary boxes: "Total Submissions" (1), "Graded Submissions" (1), and "Average Score" (67.0). Below these is a "Submissions" table with one row. The table columns are "Team 8", "Submitted on 06/04/2025, 19:16:42", and "Score 67/100". To the right of the table are "Download" and "Grade" buttons. A success message at the bottom right says "Submission graded successfully!".

The Professor can also download the Submission

This screenshot is similar to the previous one but includes a download confirmation message at the top right. The message says "download (4) (1).pdf 251 KB - Done". The rest of the interface is identical to the first screenshot, showing the "User Manual" assignment details and a single submission entry.

The grade that the Professor gives for the Documentation Submission is visible for all the Team members

The screenshot shows the Sahara software interface. On the left is a dark blue sidebar with a navigation menu:

- Dashboard
- Overview
- Announcements
- Team
- Documentation
- Assignments
- Forms
- Discussions
- Feedback Form
- Calendar

The main area is titled "Project Progress" with a "100%" completion circle and "1 of 1 documents submitted". A button "All documents submitted!" is visible. Below this, under "Ongoing/Upcoming Documents", there is a card for an assignment titled "User Manual". The card includes:

- Description:** Dear Students, Please submit your user manual.
- System Instructions:** You are given an extra 10 minutes after due time to submit this assignment. However, please note that any submissions made after the due time are marked as late submissions.
- Question Files:** python_assignment_cs253_2025_41571f76-71a8-477b-a96c-7c81ce9f4eb2.pdf
- Uploaded Answer Files:** download (4) (1).pdf
- Results:** 67 / 100 points

A red "DELETE SUBMISSION" button is at the bottom right of the card.

(picture taken from the account of a user in the same team as the previous user)

Structural Coverage: All the possible cases have been checked and verified, so the structural coverage is 100%.

Features common to all

1. Calendar

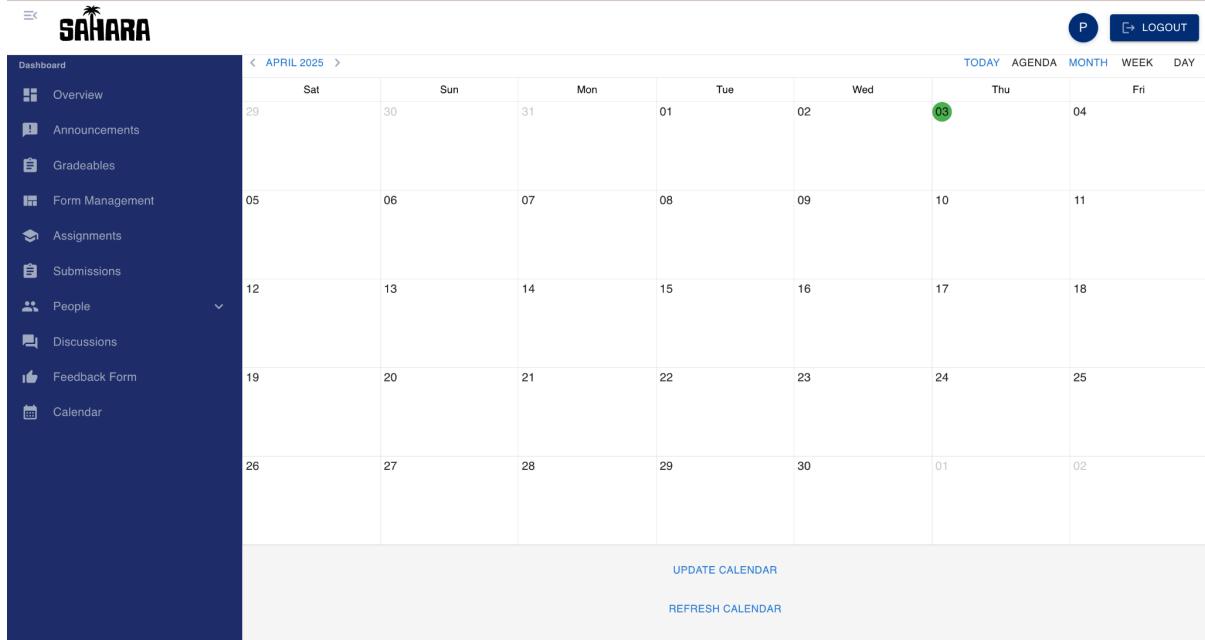
Unit Details: The calendar functionality is for users to add events in the calendar for their personal deadlines, events in their team calendar for the team deadlines and events to the global calendar for global deadlines (only profs)

Test Owner: Divi Pothukuchi and Pothuganti Nikhil

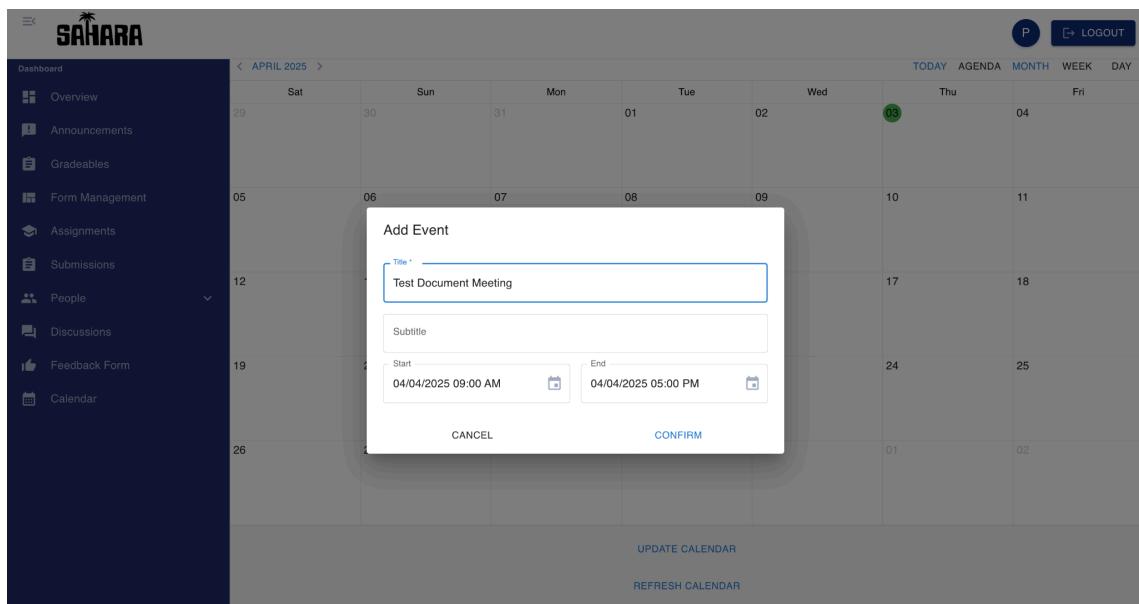
Test Date: 28/03/25-04/4/25

Test Results: Sahara provides features to add events to the Calendar of three types-

Personal(blue), **Global**(red) and **Team**(green). Global events can only be added by the Professor. Personal events can be added individually by Users and only reflect in the Personal calendar.

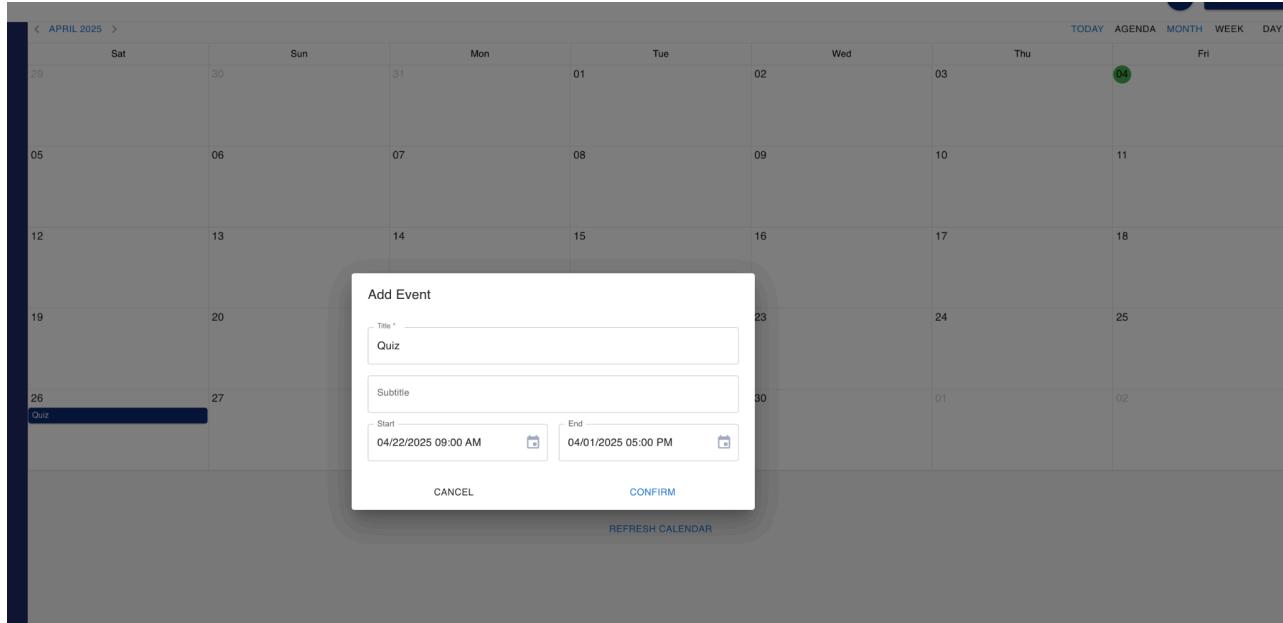


On clicking on any date from the calendar, the User gets an option to create an event. Once we confirm the details, the event is visible on the calendar.



The Add event functionality seems to have multiple bugs. The User can enter a start date that is after the end date, and the event gets created successfully. The event is always created on the start date, regardless of the end date that is mentioned.

Multi-day events cannot be created, so instead of taking the start date and end date, the start time and end time should be taken from the User. Further, it should be ensured that the end time is after the start time.



The screenshot shows the SAHARA application dashboard. The left sidebar includes links for Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main area displays the April 2025 calendar. An event titled "Quiz" is listed for April 21, 2025, from 09:00 AM to 05:00 PM. Navigation buttons for TODAY, AGENDA, MONTH, WEEK, and DAY are located at the top right, along with a LOGOUT button. A "REFRESH CALENDAR" button is also present below the calendar grid.

The screenshot shows the SAHARA software interface. At the top right, there are navigation links: TODAY, AGENDA, MONTH (which is selected), WEEK, and DAY. Below the navigation is a calendar for April 2025. An event titled "Test Document Meeting" is listed for Thursday, April 3, 2025, and is highlighted with a green circle. The sidebar on the left contains links for Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar.

There are some bugs with the way the events are stored in the database as well. Once we press on Update Calendar or Refresh Calendar, the event that was just created disappears.

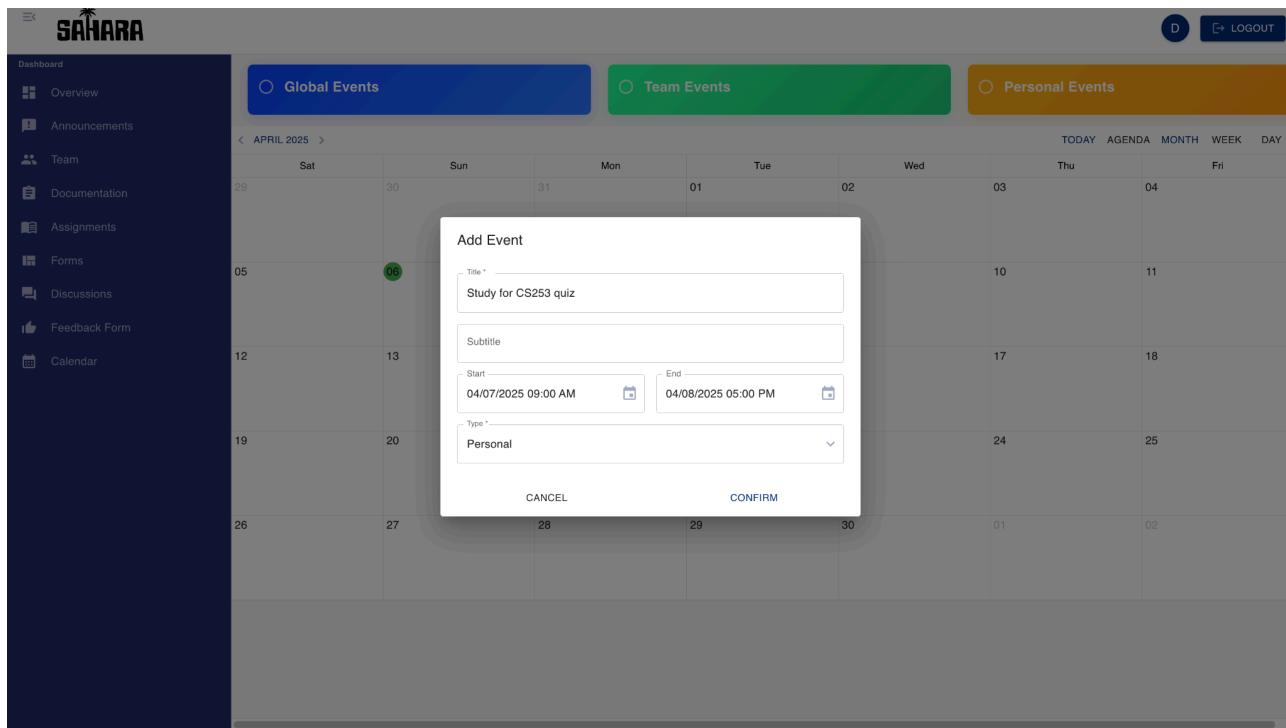
This screenshot shows the same SAHARA software interface as the previous one, but the event "Test Document Meeting" from April 3, 2025, has disappeared from the calendar grid. The rest of the interface, including the sidebar and navigation links, remains the same.

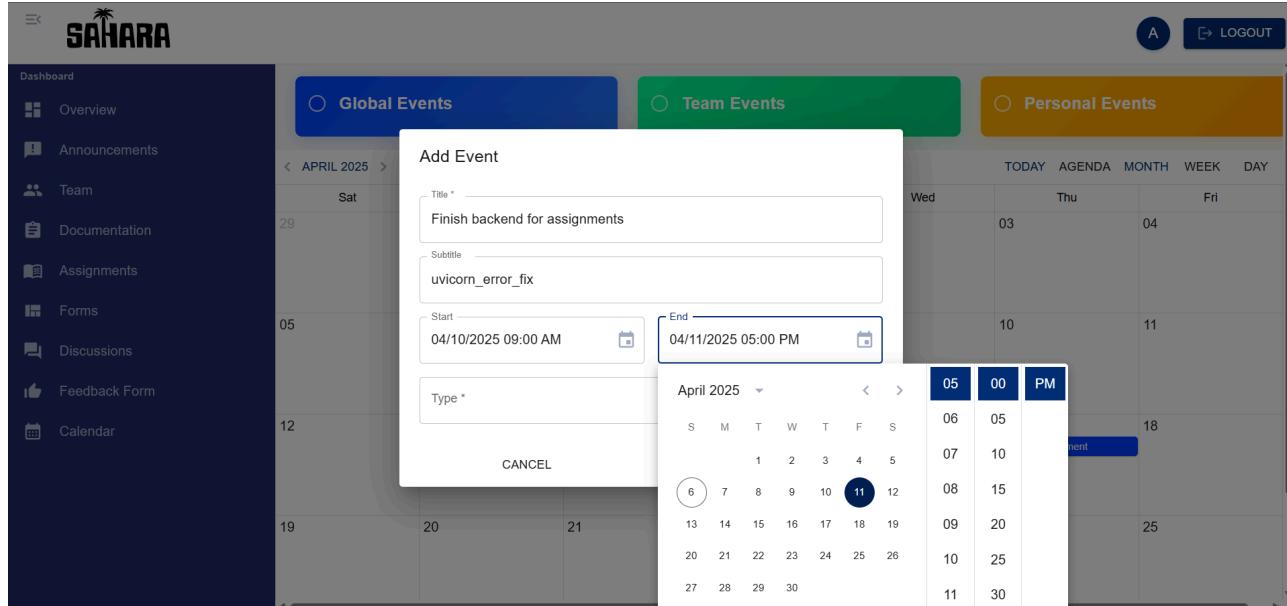
	<code>id</code> [PK] integer	<code>events</code> jsonb	<code>description</code> character varying	<code>start_time</code> character varying	<code>end_time</code> character varying	<code>created_at</code> character varying
--	---------------------------------	------------------------------	---	--	--	--

The table in the database representing calendar events is also empty. This reveals a major bug in how new events that are created are stored in the Calendar database.

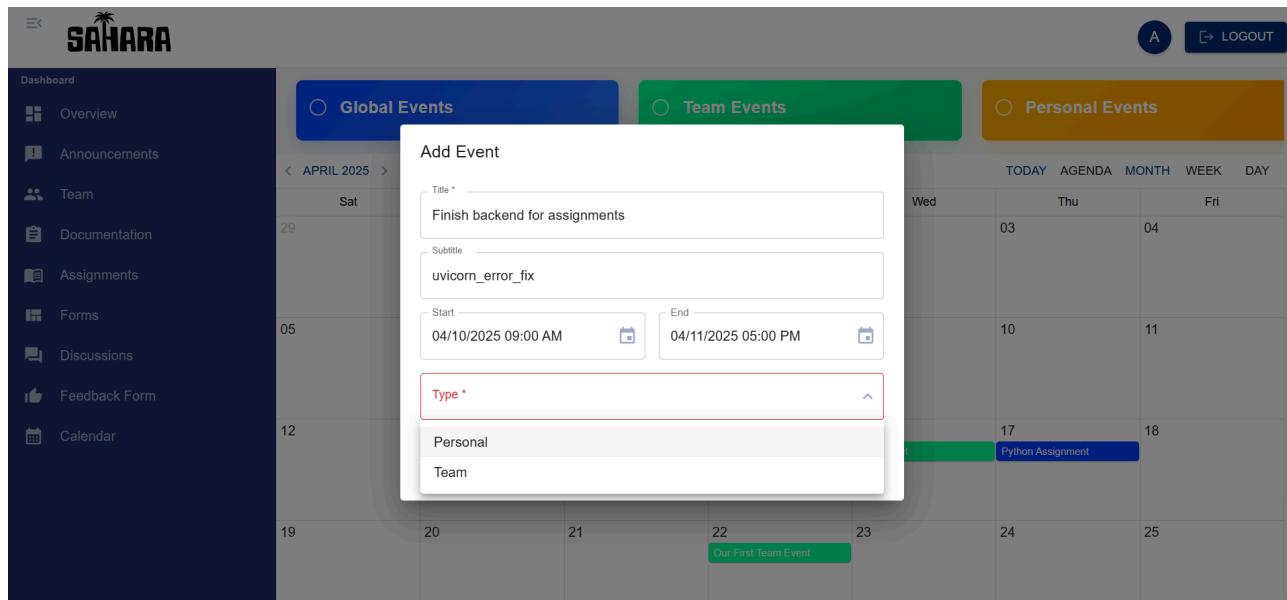
The bugs have now been fixed and the Calendar appears like this

The Student and TA can add Personal events and Team events





The date and time can be chosen from the calendar in the drop-down as indicated.



The type of the event can also be set as personal or team, which will reflect as clicked. The team event will reflect for all the students within the team and the TA assigned, while personal events only reflect for that particular user.

The screenshot shows a software interface for 'SAHARA'. At the top right are user icons labeled 'A' and 'LOGOUT'. The main area features a sidebar with various menu items like Dashboard, Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main content area displays a monthly calendar for April 2025. The calendar has three tabs at the top: 'Global Events' (blue), 'Team Events' (green), and 'Personal Events' (orange). Below the tabs are buttons for 'TODAY', 'AGENDA', 'MONTH', 'WEEK', and 'DAY'. The calendar grid shows dates from 29 to 25. Specific events are highlighted with colored boxes: 'Testing Meet' (green) on April 13, 'Last day to Make Teams' (blue) on April 8, 'Team Meet' (green) and 'Python Assignment' (blue) on April 16 and 17 respectively, and 'Our First Team Event' (green) on April 22.

2. Profile

Unit Details: The Profile icon displayed on the top of the screen opens up to this page.

The feature exists in all three logins.

Test Owner: R Charan and Spandan Pati

Test Date: 28/03/25-04/04/25

Test Results: Below are the result outcomes

The screenshot shows a user profile page for 'DHRITI BARNWAL'. The top bar has user icons labeled 'D' and 'LOGOUT'. The sidebar on the left lists the same menu items as the previous screenshot. The main content area shows a profile card for 'DHRITI BARNWAL' with the handle '@dhrilib23'. Below the card are two columns: 'Profile Information' and 'Account Details'. Under 'Profile Information', there is a placeholder photo, the name 'DHRITI BARNWAL', the handle '@dhrilib23', and fields for Email ('dhrilib23@iitk.ac.in'), Role ('student'), and Team ('Team 17'). Under 'Account Details', there is a field for User ID ('230364').

The Team number shown is according to the Teams data that the Professor uploads.

This is the TA profile page. TAs can add their skills here.

The screenshot shows the SAHARA application interface. On the left is a dark blue sidebar menu with the following items:

- Dashboard
- Overview
- Announcements
- Gradeables
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

The main content area displays a user profile for "ta1". At the top is a blue header bar with the user icon and the text "ta1" and "@ta1". Below this is a white card with two sections: "Profile Information" and "Account Details".

Profile Information:

- Email: ta1@iitk.ac.in
- Role: ta

Account Details:

- User ID: 2301

Below these sections is a "Skills & Expertise" section with two items: "Java" and "Spring Boot". A "MANAGE SKILLS" button is located at the bottom right of this section.

This is the Professor's profile page

The screenshot shows the SAHARA application interface. The sidebar menu is identical to the previous one. The main content area displays a user profile for "prof1". The blue header bar at the top shows the user icon and the text "prof1" and "@prof1". Below this is a white card with "Profile Information" and "Account Details" sections.

Profile Information:

- Email: prof1@gmail.com
- Role: prof

Account Details:

- User ID: 3

(The email ID is a sample email ID we had taken for testing. It will be replaced by the Professor's IITK email id)

Structural Coverage: All the possible cases have been checked and verified, so the structural coverage is 100%.

3. Dashboard

Unit Details: The Dashboard page is displayed immediately after the User logs in or by selecting the Overview tab.

Test Owner: Ashik Stenny and Aarav Oswal

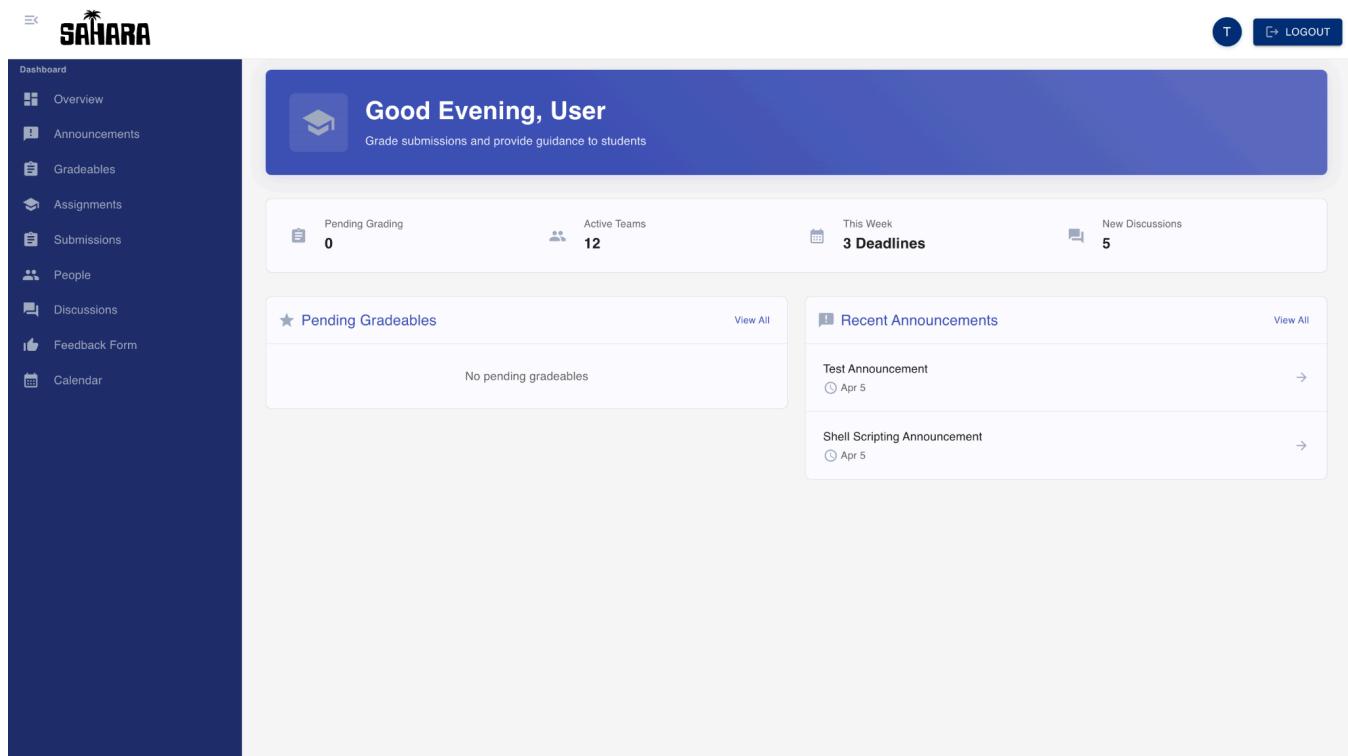
Test Date: 28/03/25 - 04/04/25

Test Results:

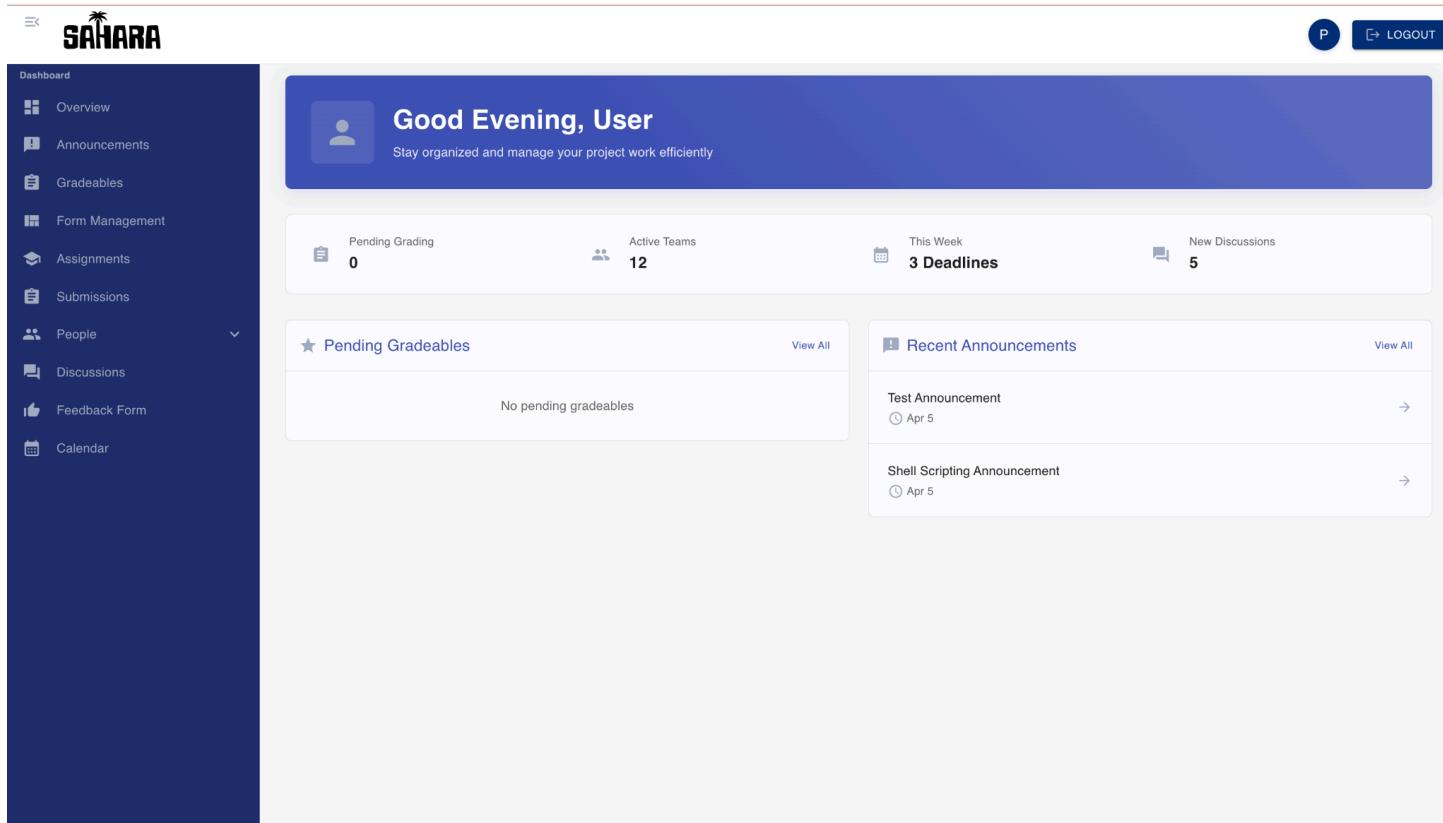
The screenshot shows the SAHARA student dashboard. On the left is a sidebar with a dark blue background containing a logo of a desert landscape with a sun and a mountain, followed by the word "SAHARA". Below the logo is a vertical list of navigation items: Dashboard, Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main content area has a light blue header with the text "Good Evening, User" and the subtext "Stay organized and manage your project work efficiently". Below the header are four cards: 1) "Documents Completed" (1/1), "Completion 100%", "Upcoming Deadlines 1", and "Avg. Score N/A". 2) "Upcoming Documents" card showing "User Manual" (Submitted, Due: Apr 10, Completed). 3) "Recent Announcements" card showing "Test Announcement" (Due: Apr 5) and "Shell Scripting Announcement" (Due: Apr 5). 4) "Ongoing Assignments" card showing "CHECK ONCE" (Due: Apr 11, 4d 14h remaining).

Above is the Student's dashboard

It shows the Upcoming Submissions, Ongoing Assignments and Recent Documents. Pressing on the arrow button or on view all redirects to the pages successfully.



This is the TA's dashboard. The dashboard shows the Pending Gradeables and the Recent Announcements. Clicking on View All for both redirects to the respective pages.



The screenshot shows the SAHARA software interface for a professor. At the top, there is a navigation bar with a logo, a search bar containing 'SAHARA', and user profile icons for 'P' and 'LOGOUT'. On the left, a dark sidebar lists various dashboard items: Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area has a blue header with the message 'Good Evening, User' and a sub-instruction 'Stay organized and manage your project work efficiently'. Below the header are four summary cards: 'Pending Grading' (0), 'Active Teams' (12), 'This Week' (3 Deadlines), and 'New Discussions' (5). The 'Pending Gradeables' section shows 'No pending gradeables'. The 'Recent Announcements' section lists two entries: 'Test Announcement' (Apr 5) and 'Shell Scripting Announcement' (Apr 5).

This is the Professor's dashboard that is the same as the TA's dashboard.

Structural Coverage: All the possible cases have been checked and verified, so the structural coverage is 100%.

3 Integration Testing

1. Announcements

Module Details: Combined testing of various units, including Creation of announcements by the Professor, viewing the Announcements by the TA and the Student, and Display of recent Announcements on the Dashboard

Test Owner: Ashik Stenny and Aarav Oswal

Test Date: 28/03/25-04/4/25

Test Results: Below are the test results

1. Creation of Announcement

The Professor can create an announcement by entering the text and attaching any documents.

	id [PK] integer	creator_id integer	created_at character varying	title character varying	content character varying
1	32	3	2025-04-05T10:18:33.960763+00:00	Extension in deadline for the submission of Testing Document	<p class="tiptap-paragraph">Dear Students, The deadline for the submission of the testing docu
2	3	1	2025-03-28T14:14:06.541574+00:00	Mid Semester Examination	<p class="tiptap-paragraph">Dear Students,</p><p class="tiptap-paragraph">The mid-semester
3	6	1	2025-03-28T14:14:06.541574+00:00	Quiz Grades Released	<p class="tiptap-paragraph">Dear Students,</p><p class="tiptap-paragraph">You can view your grades fc

The Announcement has been created successfully and added to the backend.

2. Viewing the Announcement from the Announcements tab

We now view the announcements tab from the Student Profile

The screenshot shows the SAHARA application interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main content area has a blue header bar with a megaphone icon and the text "Course Announcements". Below it, a message reads: "Extension in deadline for the submission of Testing Document" by "profl" on April 5, 2025 at 03:48 PM. The message states: "The deadline for the submission of the testing document has been extended from 4th April to 5th April, 11:59 PM. Please submit on time!". At the bottom of the message are two buttons: "Download Attachment" and "View Attachment". In the top right corner of the main window, there is a download notification for "download (5).pdf" (251 KB) and a "LOGOUT" button.

We can also successfully view and download the attachment. This has been tested from all three kinds of profiles.

3. Viewing from the 'Recent Announcements' section in the Dashboard

The screenshot shows the SAHARA application dashboard. The left sidebar is identical to the previous screenshot. The main area features a blue header bar with a user profile icon and the text "Good Afternoon, DIVI". Below it, a message says "Stay organized and manage your project work efficiently". To the right, a button says "Team: Ravi and Friends". The dashboard displays several metrics: "Documents Completed 1/1", "Completion 100%", "Upcoming Deadlines 1", and "Avg. Score N/A". Below these are sections for "Upcoming Documents" and "Recent Announcements". The "Upcoming Documents" section shows a single item: "User Manual [Submitted] Due: Apr 8 Completed". The "Recent Announcements" section lists five items from newest to oldest: "Extension in deadline for the submission of Testing Document" (Today, 03:48 PM), "Mid Semester Examination" (Mar 28), "Quiz Grades Released" (Mar 28), "Library Management System" (Mar 28), and "Shell Scripting Announcement" (Mar 28). Each announcement has a "View All" link to its full details.

We see a list of the top 5 recent announcements arranged in the order of date created, from newest to oldest. Again, this feature has been tested in all three profiles.

Structural Coverage: 100%

Additional Comments: All features work as expected. Consistency was seen between different units.

2. Assignments

Module Details: Combined testing of various units, including Creating, Editing and Deleting Assignments by the Professor, Submitting Assignments by the Students, Viewing and Grading Assignments by the TAs and the Professors

Test Owner: R Charan and Spandan Pati

Test Date: 28/03/25-04/4/25

Test Results: Below are the result outcomes

1. Creating, Editing and Deleting Assignments by the Professor

The new assignment is reflected in the database

	id [PK] integer	title character varying	opens_at character varying	deadline character varying	description character varying	file_url character varying
1	13	CHECK ONCE	2025-04-04T18:30:00.000Z	2025-04-07T18:30:00.000Z	CHECK ONCE	
2	14	Python Assignment	2025-04-04T18:30:00.000Z	2025-04-11T18:30:00.000Z	Dear Students,	uploads/036c81ed-fabd-41ba
3	4	Bash Scripting Assignment	2025-03-14T18:30:00.000Z	2025-03-28T18:30:00.000Z	please solve this on time	uploads/ba099d74-918e-4f71

The Professor can also update the Assignment details as shown below

The assignment details also get updated in the database.

Data Output							Messages	Notifications					
							Showing rows: 1 to 3						
	id	[PK]	integer	title	character varying	opens_at	character varying	deadline	character varying	description	character varying	file_url	character varying
1		4		Bash Scripting Assignment		2025-03-14T18:30:00.000Z		2025-03-28T18:30:00.000Z		please solve this on time			uploads/ba099d74-918e-4f71-b60d-4227811a13ca.pdf
2		13		CHECK ONCE		2025-04-04T18:30:00.000Z		2025-04-07T18:30:00.000Z		CHECK ONCE			
3		14		PYTHON ASSIGNMENT !!!!!!		2025-04-04T18:30:00.000Z		2025-04-11T18:30:00.000Z		Dear Students,			uploads/036c81ed-fabd-4

The Professor can also delete an assignment, in which case it gets removed from the database.

Data Output							Messages	Notifications					
							Showing rows: 1 to 2						
	id	[PK]	integer	title	character varying	opens_at	character varying	deadline	character varying	description	character varying	file_url	character varying
1		4		Bash Scripting Assignment		2025-03-14T18:30:00.000Z		2025-03-28T18:30:00.000Z		please solve this on time			uploads/ba099d74-918e-4f71-b60d-4227811a13ca.pdf
2		13		CHECK ONCE		2025-04-04T18:30:00.000Z		2025-04-07T18:30:00.000Z		CHECK ONCE			

2. Submitting Assignments by the Students

Students get an option to submit assignments whose due date has not passed yet as shown below.

The screenshot shows the SAHARA Learning Management System (LMS) interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Team, Documentation, Assignments (selected), Forms, Discussions, Feedback Form, and Calendar. The main content area has a blue header bar with 'Assignment Progress' and '0%'. Below it, a message says '1 of 2 assignments submitted' and '2 assignments remaining'. A section titled 'Upcoming/Ongoing Assignments' displays an assignment named 'CHECK ONCE' with the following details:

- Description:** CHECK ONCE
- System Instructions:** You are given an extra 10 minutes after due time to submit this assignment. However, please note that any submissions made after the due time are marked as late submissions.
- Results:** Results will be available after Apr 10, 2025, 00:00

A blue 'SUBMIT ASSIGNMENT' button is at the bottom right.

The student can delete their Assignment submission and reupload until the due date.

This screenshot shows the same LMS interface after a submission has been deleted. The assignment progress bar now shows '50%' and '1 of 2 assignments submitted'. The 'Upcoming/Ongoing Assignments' section for 'CHECK ONCE' includes a new 'Uploaded Answer Files' section with a link to download (4).pdf and a trash icon. A red 'DELETE SUBMISSION' button is visible at the bottom right of the assignment card.

Their assignment submission gets updated in the database

Data Output							Messages	Notifications	
							Showing rows: 1 to 1		
							Page No: 1		
1	13	230378	2025-04-05T10:18:33.946103+00:00	uploads/assignment_34783503-23aa-447f-b5e0-6d992ad8bf83.pdf	download (4).pdf	13	[null]		

They can also download their submissions, both ongoing and past assignments.

The screenshot shows the SAHARA platform interface. At the top, there's a navigation bar with the SAHARA logo, user profile icon, and 'LOGOUT' button. Below the navigation is a sidebar with links: Dashboard, Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main content area has a blue header bar with 'Assignment Progress' and a 50% completion circle. It displays '1 of 2 assignments submitted' and '1 assignments remaining'. Below this is a section titled 'Upcoming/Ongoing Assignments' for an assignment named 'CHECK ONCE'. It shows the assignment opens at April 4, 2025, 00:30 and is due on April 11, 2025, 11:30. The 'Description' is 'CHECK ONCE' and 'System Instructions' mention an extra 10 minutes after due time for submission. Under 'Uploaded Answer Files', there's a link to download a PDF file. The 'Results' section notes results will be available after April 11, 2025, 11:30. A red 'DELETE SUBMISSION' button is at the bottom right.

3. Viewing and Grading Assignments by the Professor and the TAs

The Professor and TAs can view and grade the assignments

The screenshot shows the SAHARA platform interface for grading assignments. The left sidebar includes 'Dashboard', 'Overview', 'Announcements', 'Gradeables', 'Form Management', 'Assignments', 'Submissions', 'People', 'Discussions', 'Feedback Form', and 'Calendar'. The main area has a title 'CHECK ONCE'. It displays 'Total Submissions' (2), 'Graded Submissions' (2), and 'Average Score' (80.0). A modal dialog box is open for 'Grade Assignment' for student HARSHPREET KAUR (email: harshpreet23@iitk.ac.in). The dialog shows a score input field with '76' and buttons for 'Cancel' and 'Submit Grade'. Below the dialog, it says '4/5/2025, 3:48:33 PM'. To the right, there are two entries: one for HARSHPREET KAUR with a score of 76/100 and another for DIVI POTHUKUCHI with a score of 84/100. Each entry has 'Download' and 'Grade' buttons.

The marks are then reflected on the User's assignments tab

The screenshot shows the SAHARA software interface. On the left is a dark blue sidebar with navigation links: Dashboard, Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main area has a light gray background. At the top center, there is a blue header bar with the title "Assignment Progress" and a progress indicator showing "50% 1 of 2 assignments submitted". To the right of the header, a button says "1 assignments remaining". Below the header, a section titled "Upcoming/Ongoing Assignments" displays a single assignment entry. The entry includes fields for "Assignment" (labeled "CHECK ONCE"), "Description" (labeled "CHECK ONCE"), "System Instructions" (a note about late submissions), "Uploaded Answer Files" (a PDF file named "08_04_03042025.pdf"), and "Results" (a score of "76 / 100 points"). A red "DELETE SUBMISSION" button is located at the bottom right of the assignment card.

Structural Coverage: 100%

Additional Comments: All features work as expected. Consistency was seen between different units.

3. Submissions

Module Details: Combined testing of various units, including Creating, Editing and Deleting Submissions by the Professor, Submissions by the Students, Viewing and Grading Submissions by the TAs and the Professors

Test Owner: Divi Pothukuchi and Pothuganti Nikhil

Test Date: 28/03/25-04/4/25

Test Results: Below are the test results

1. Creating, Editing and Deleting Submittables by the Professor

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with various navigation options: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area has a blue header bar with the title "Create Submittable" and a subtitle "Create a new submittable for your students to complete". Below the header is a form with the following fields:

- Name *: Test Document
- Maximum Score *: 100
- Opens At *: Apr 01, 2025 12:00 AM
- Due Date *: Apr 05, 2025 12:00 AM
- Description *: Dear Students,
Please submit the test document!
- Reference File (Optional): A button labeled "Upload Reference File" with a file icon.

At the bottom of the form are two buttons: "Cancel" and "Create Submittable".

The new submittable is reflected in the database

	<code>id [PK] integer</code>	<code>title character varying</code>	<code>opens_at character varying</code>	<code>deadline character varying</code>	<code>description character varying</code>	<code>file_url character varying</code>	<code>original_filename character varying</code>
1	3	User Manual	2025-04-03T15:00:00.000Z	2025-04-09T20:30:00.000Z	Dear Students,	uploads/ref_1f8a7144-5e7c-4775-93dd-59bca323816f.p...	python_assignment_cs253.pdf
2	5	Test Document	2025-03-31T18:30:00.000Z	2025-04-05T18:30:00.000Z	Dear Students,	uploads/ref_5f20fe06-1510-4dc4-ac7d-9322ee2fb8ab.pdf	download (5).pdf

The Professor can also update the Submittable details as shown below

The screenshot shows the SAHARA software interface. The left sidebar is identical to the previous one. The main area has a blue header bar with the title "Update Submittable" and a subtitle "Update the details of your submittable". Below the header is a form with the following fields:

- Title *: TEST DOCUMENT 1!!1!
- Deadline *: 05/04/2025, 06:30 PM
- Opens At (Optional): 31/03/2025, 06:30 PM
- Description *: Dear Students,
Please submit the test document!

At the bottom of the form are two buttons: "Cancel" and "Update Submittable".

The submittable details also get updated in the database.

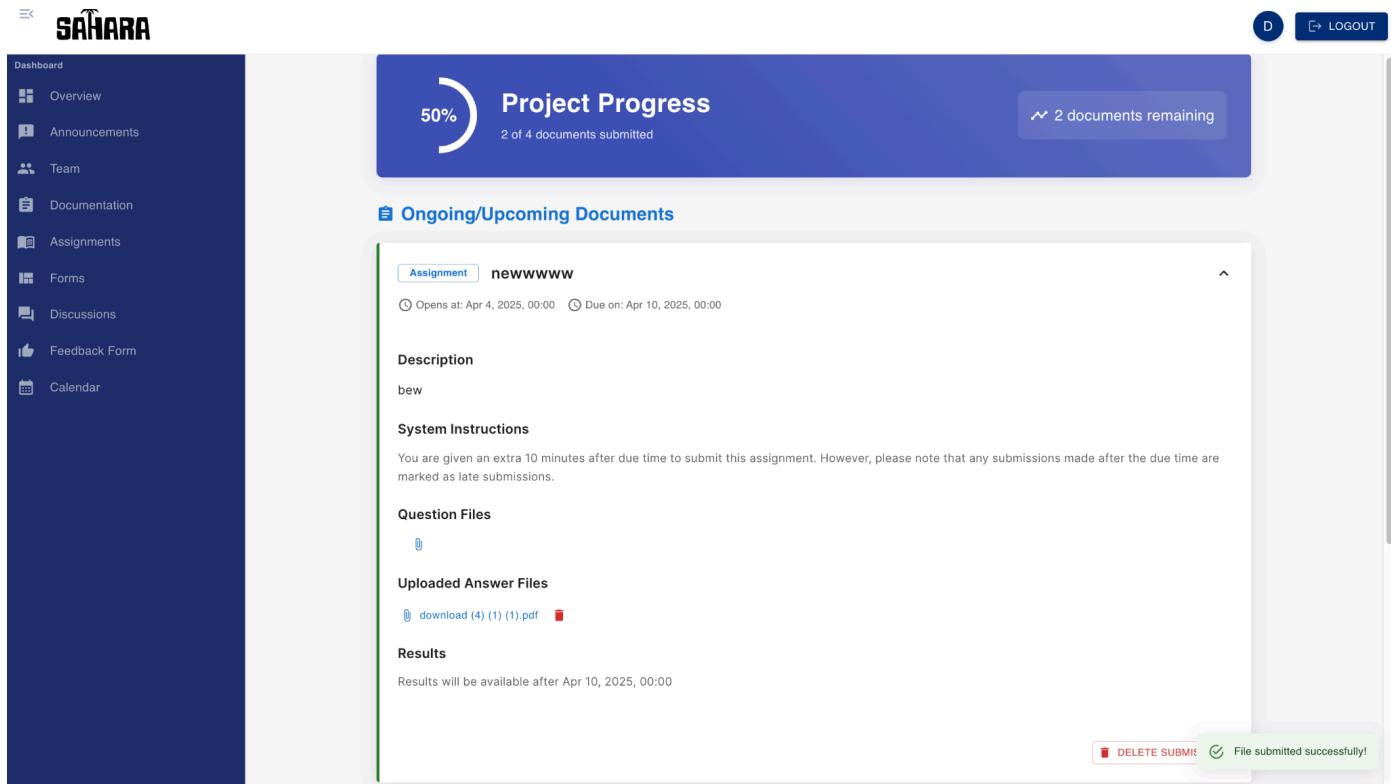
							Showing rows: 1 to 2	Page No:	1	of 1	<	<<	>>	>	
	id	[PK]	integer	title	character varying	opens_at	character varying	deadline	character varying	description	character varying	file_url	character varying	original_filename	character varying
1		3	User Manual		2025-04-03T15:00:00.000Z		2025-04-09T20:30:00.000Z			Dear Students,		uploads/ref_1f8a7144-5e7c-4775-93dd-59bca323816f.p...	python_assignment_cs253_2c5.pdf		
2		5	TEST DOCUMENT 1!!!		2025-03-31T18:30:00.000Z		2025-04-05T18:30:00.000Z			Dear Students,		uploads/ref_5f20fe06-1510-4dc4-ac7d-9322ee2fb8ab.pdf	download (5).pdf		

The Professor can also delete a submittable, in which case it gets removed from the database.

							Showing rows: 1 to 1	Page No:	1	of 1	<	<<	>>	>	
	id	[PK]	integer	title	character varying	opens_at	character varying	deadline	character varying	description	character varying	file_url	character varying	original_filename	character varying
1		3	User Manual		2025-04-03T15:00:00.000Z		2025-04-09T20:30:00.000Z			Dear Students,		uploads/ref_1f8a7144-5e7c-4775-93dd-59bca323816f.pdf	python_assignment_cs253_2c5.pdf		

2. Submissions by the Students

Students get an option to upload a submission whose due date has not passed yet, as shown below.



The screenshot shows the SAHARA dashboard interface. On the left, there's a sidebar with navigation links: Dashboard, Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main area is titled "Project Progress" and shows a progress bar at 50% completion with the message "2 of 4 documents submitted". Below this, there's a section titled "Ongoing/Upcoming Documents" which lists an assignment named "newwwww". The assignment details include: "Assignment: newwwww", "Opens at: Apr 4, 2025, 00:00", "Due on: Apr 10, 2025, 00:00", "Description: bew", "System Instructions: You are given an extra 10 minutes after due time to submit this assignment. However, please note that any submissions made after the due time are marked as late submissions.", "Question Files: (empty)", "Uploaded Answer Files: download (4) (1) (1).pdf", and "Results: Results will be available after Apr 10, 2025, 00:00". At the bottom right of this section, there are two buttons: "DELETE SUBMIT" (red) and "File submitted successfully!" (green).

The student can delete their submission and reupload until the due date.

Their submission gets updated in the database

	Id [PK] integer	team_id integer	submitted_on character varying	file_url character varying	original_filename character varying	submittable_id integer	score integer
1	26	8	2025-04-06T13:46:42.719232+00:00	uploads/submission_004ded6c-e87e-40c1-aebb-2d584d1d76fe....	download (4) (1).pdf	3	67
2	28	8	2025-04-06T16:16:20.108091+00:00	uploads/submission_b26598f3-a4a3-43f3-93fc-8b7ac4f7d454.pdf	download (4) (1).pdf	10	[null]

(For reference the second row refers to the submission)

They can also download their submissions, both ongoing and past assignments.

The screenshot shows the SAHARA application interface. On the left is a dark sidebar with navigation links: Dashboard, Overview, Announcements, Team, Documentation, Assignments, Forms, Discussions, Feedback Form, and Calendar. The main area has a blue header bar with the title "Project Progress" and a progress circle at 50%. Below it, a card displays "2 of 4 documents submitted" and "2 documents remaining". The main content area shows an "Ongoing/Upcoming Documents" section for an assignment titled "newwwww". It includes fields for "Assignment", "Description" (with the value "bew"), "System Instructions" (warning about late submissions), "Question Files" (empty), "Uploaded Answer Files" (a file named "download (4) (1).pdf" is listed), and "Results" (available after April 10, 2025, 00:00). A success message "File downloaded successfully!" is visible at the bottom right.

3. Viewing and Grading Submissions by the Professor and the TAs

Both the Professors and the TAs can view and grade the submissions. The grades given are then reflected to the User.

The screenshot shows the SAHARA software interface. On the left is a dark sidebar with various navigation options: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area has a title "final testing submittable". It displays "Total Submissions: 1" and "Graded Submissions: 1". A large green box on the right shows an "Average Score: 100.0". In the center, there's a modal dialog titled "Grade Assignment" for a submission from "Student: Team 8" with file "Test_Document.pdf". The score input field is set to "100". Buttons at the bottom of the dialog are "Cancel" and "Submit Grade".

The screenshot shows the SAHARA software interface. The left sidebar is identical to the previous screenshot. The main area shows an assignment titled "final testing submittable" with a status bar indicating "1 of 3 documents submitted". Below the title, it says "Ongoing/Upcoming Documents". The assignment details include: "Assignment: final testing submittable", "Opens at: Apr 3, 2025, 00:00", "Due on: Apr 17, 2025, 00:00", "Description: eabvhjdjs", "System Instructions: You are given an extra 10 minutes after due time to submit this assignment. However, please note that any submissions made after the due time are marked as late submissions.", "Question Files: Test_Document.pdf", "Uploaded Answer Files: Test_Document.pdf", and "Results: 100 / 100 points". A red "DELETE SUBMISSION" button is located at the bottom right.

Structural Coverage: 100%

Additional Comments: All features work as expected. Consistency was seen between different units.

4. Add Users

Module Details: Combined testing of various units, including Adding Users, logging in as the new User

Test Owner: Divi Pothukuchi and Pothuganti Nikhil

Test Date: 28/03/25-04/4/25

Test Results: Below are the test results

The Professor can add Users using a CSV file of the format provided.

The screenshot shows the SAHARA platform's 'Add Students' interface. On the left, there is a sidebar with various navigation options: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area is titled 'Add Students' and contains a form to 'Attach .csv file'. Below the form, it says 'Expected CSV Columns: RollNo, Name, Email'. There is a blue 'UPLOAD' button. A green progress bar at the bottom indicates 'Processed 1 students'. To the right, there are two boxes: 'Created Users' (listing 'Penguin (penguin)') and 'Errors' (listing '- Username deevee already exists').

The screenshot shows a CSV file titled 'Untitled.csv' with the following content:

RollNo	Name	Email
250075	Divi	deevee@gmail.com
255555	Penguin	penguin@gmail.com

The added Students can be viewed on this page

ID	Name	Email	Role
220004	AADI SINGH	aadis22@iitk.ac.in	Student
220010	AADYA DHIR	aadyad22@iitk.ac.in	Student
230011	AARADHYA ROHI	aaradhyra23@iitk.ac.in	Student
230012	AARAV OSWAL	aaravoswal23@iitk.ac.in	Student
230015	AARSH JAIN	aarshjain23@iitk.ac.in	Student
230017	AARUSH NARENDRA GHATE	aarushng23@iitk.ac.in	Student
220020	AAYUSH GAUTAM	aayushg22@iitk.ac.in	Student
230027	AAYUSH KUMAR	aayushk23@iitk.ac.in	Student
220024	AAYUSH SINGH	aayushs22@iitk.ac.in	Student

255555	Penguin	penguin@gmail.com	Student
250075	Divi	deevee@gmail.com	Student

The Students can then log in and are eligible to form teams

Dashboard
Logout

Penguin

@penguin

Profile Information

Email
penguin@gmail.com

Role
student

Account Details

User ID
255555

Skills & Expertise

No skills added yet. Click "Manage Skills" to add your expertise.

[MANAGE SKILLS](#)

Structural Coverage: 100%

Additional Comments: All features work as expected. Consistency was seen between different units.

5. Teams

Module Details: Combined testing of various units, including creating teams using CSV files, creating teams using invites, adding team skills,

Test Owner: Ravi Arora and Vedhanth B

Test Date: 28/03/25-04/4/25

Test Results: Below are the test results

The screenshot shows the SAHARA application interface. On the left is a dark sidebar menu with the following items: Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People (selected), Discussions, Feedback Form, and Calendar. The main area has a blue header bar with the text "Teams Creation" and a sub-instruction "Upload a CSV file to create multiple teams at once". Below this is a "CSV File Upload" section containing a file input field with the path "CS253 2025 Projects - All (2).csv" and a "BROWSE" button. A note below the input says "The CSV file should be in the format: RollNo, TeamID". A green success message indicates "Successfully selected file: CS253 2025 Projects - All (2).csv". At the bottom of this section is a blue "Upload and Create Teams" button. Below this is an "Upload Results" section with a green message "File uploaded successfully and data saved to the database!". To the right are two boxes: "Created Teams" (green background) showing "2 teams created." and "Errors" (pink background) showing "No errors.".

Structural Coverage: 100%

Additional Comments: All features work as expected. Consistency was seen between different units.

6. TA-Team pairing

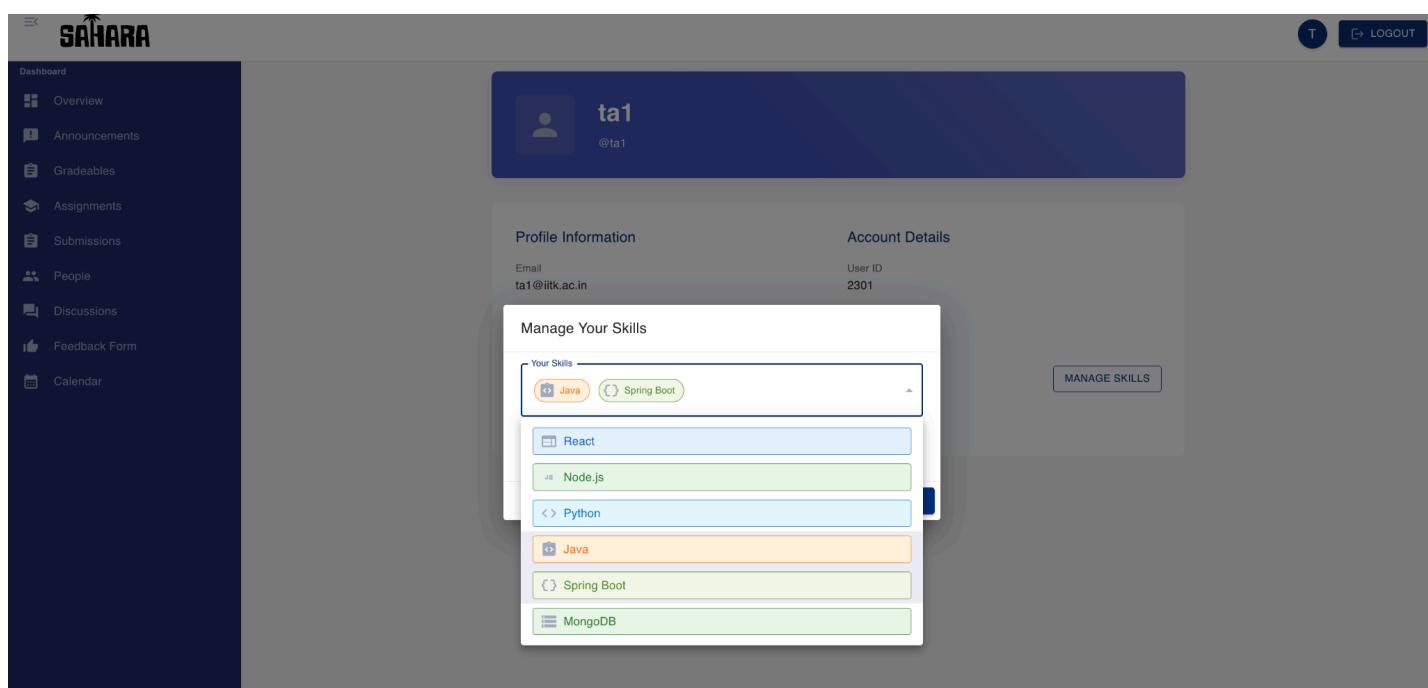
Module Details: Combined testing of various units, including the TAs adding their skills in their profile, and matching TAs to teams based on skill

Test Owner: Achyuth H Warrier and Harshpreet Kaur

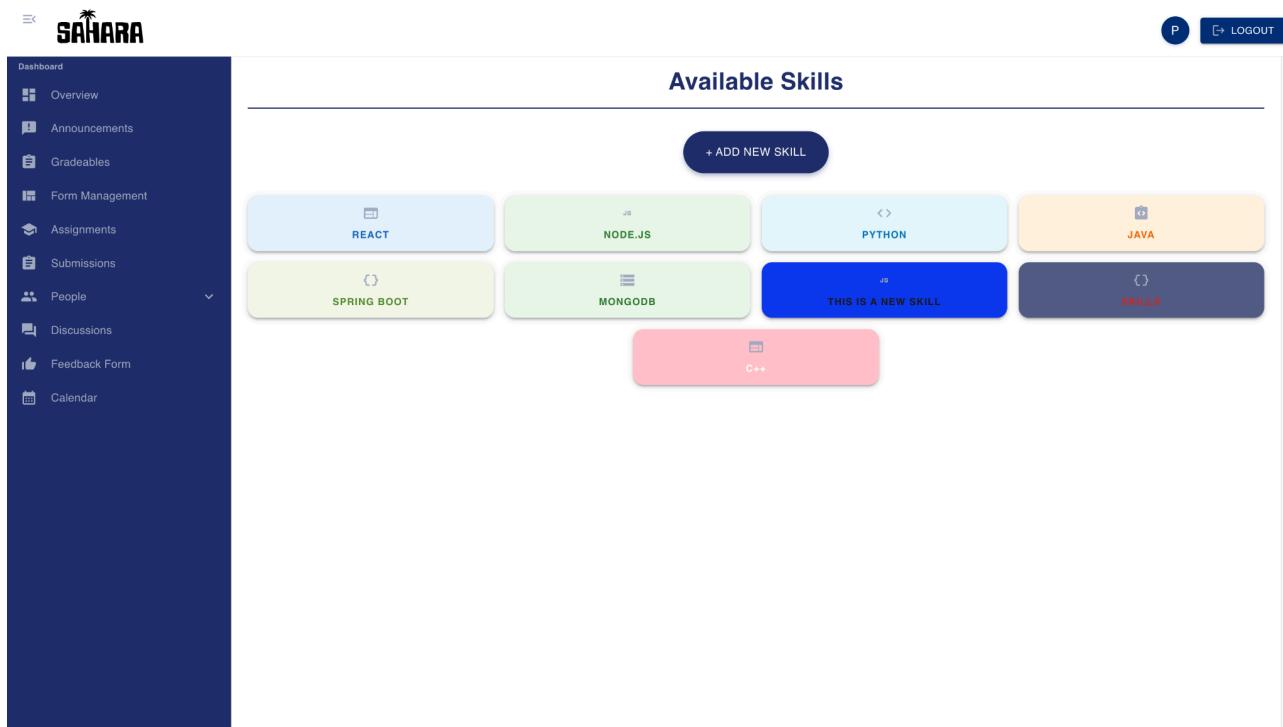
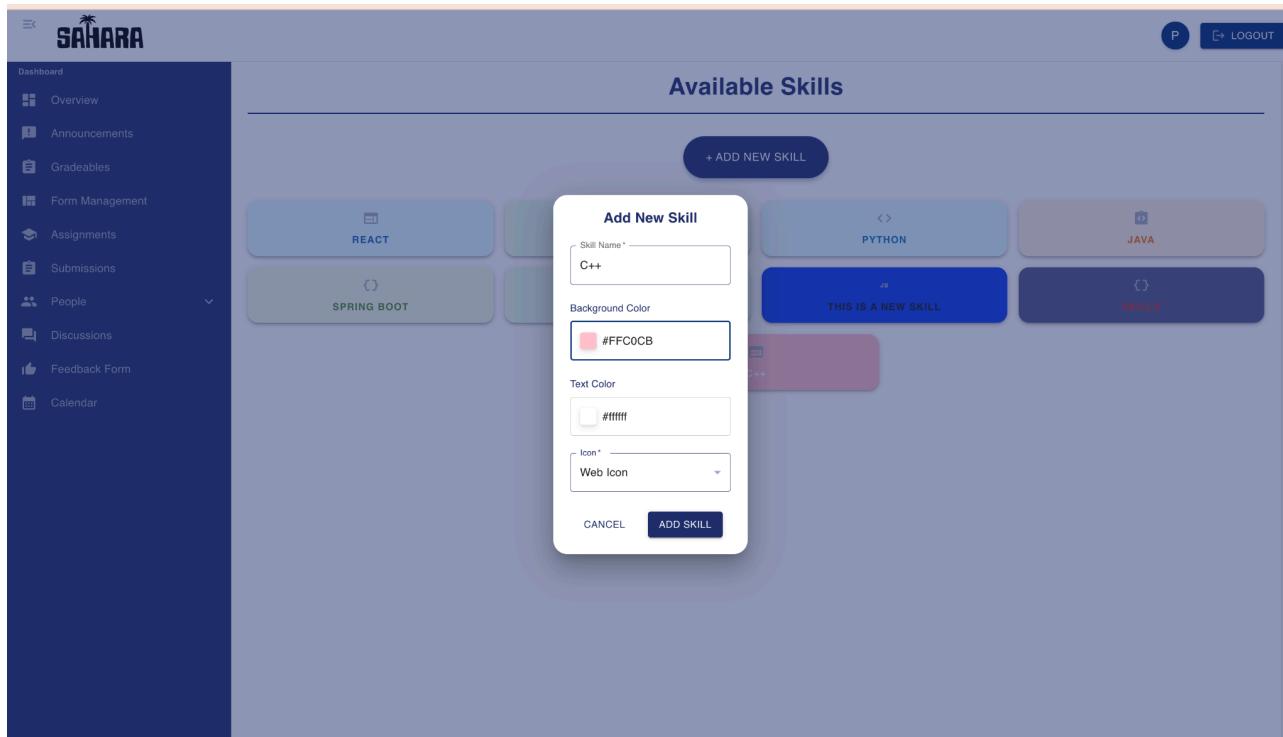
Test Date: 28/03/25-04/4/25

Test Results: Below are the test results

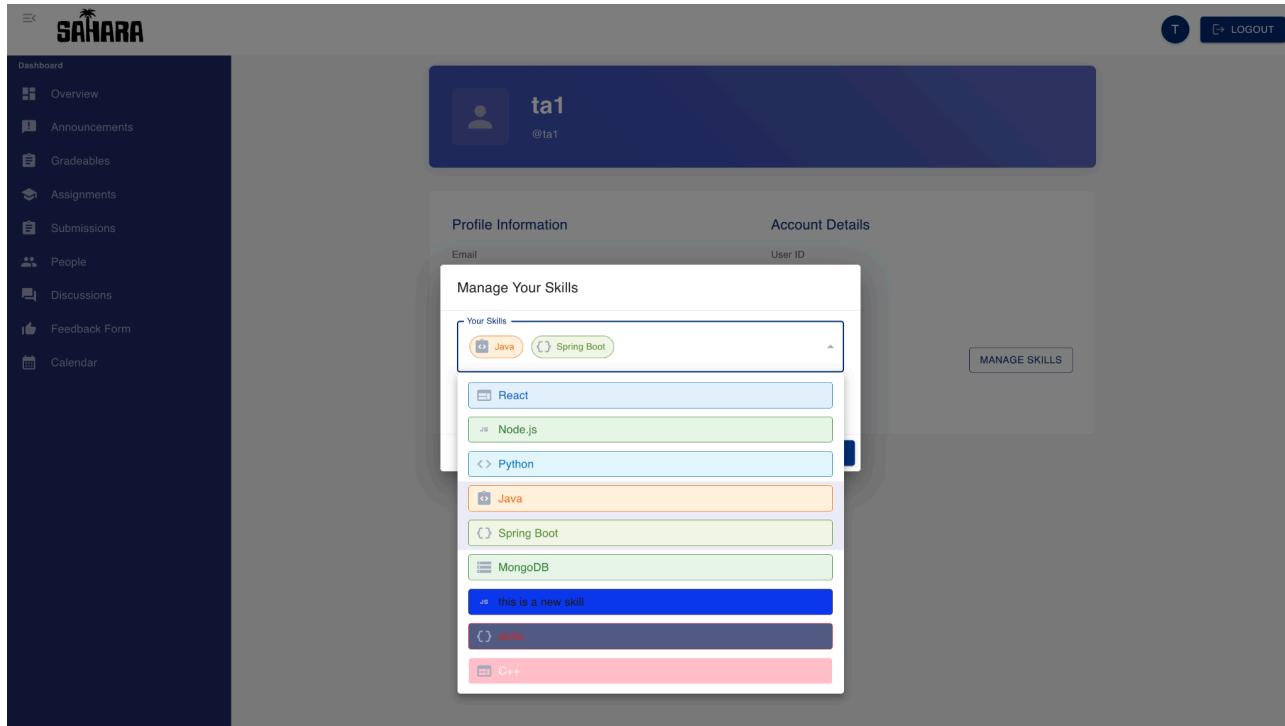
The TAs can go to their profiles and choose their skills



The skills that show up are added by the Professor. The Professor can add new skills using the functionality below



TAs can now find these skills while adding their skills in their profile



The following page helps filter among the TAs for specific skills

The screenshot shows a list of 'Teaching Assistants' (TAs). The left sidebar contains navigation links for Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main area displays a title 'Teaching Assistants' and a 'Filter by Skills:' section with buttons for Java, MongoDB, Node.js, Python, React, and Spring Boot. The 'Filter Mode:' dropdown is set to 'AND'. Below this is a 'TA List' table with columns: S. No., Name, Email, and Skills. Two entries are shown:

S. No.	Name	Email	Skills
1	Hemang Mohanlal Khatri	hemangmkhatri@cse.iitk.ac.in	React, Node.js, Python
2	Jeswaanth Gogula	jeswaanth@cse.iitk.ac.in	Java, Spring Boot, MongoDB

On the right side, there are three buttons: 'ADD TAS', 'TA SKILLS FORM', and 'TA-TEAM PAIRING'.

There are two modes - **AND** and **OR**. This can be used to filter the ta's by specific skills or by a group of skills.

The Professor can select the Allocate TAs pairing option to pair the Teams with the TAs

Team ID	Team Name	Skills	Assigned TAs	Actions
1	Team 1	Python, Spring Boot, React	(ta2, ta3)	
2	Team 2	Python, Java, MongoDB	(ta2, ta10)	
3	Team 3	Python, Spring Boot, MongoDB	(ta6, ta7)	
4	Team 4	Node.js, MongoDB, React	(ta9, ta10)	

They can select the edit option to change the TAs allotted to Teams manually.

7. Calendar

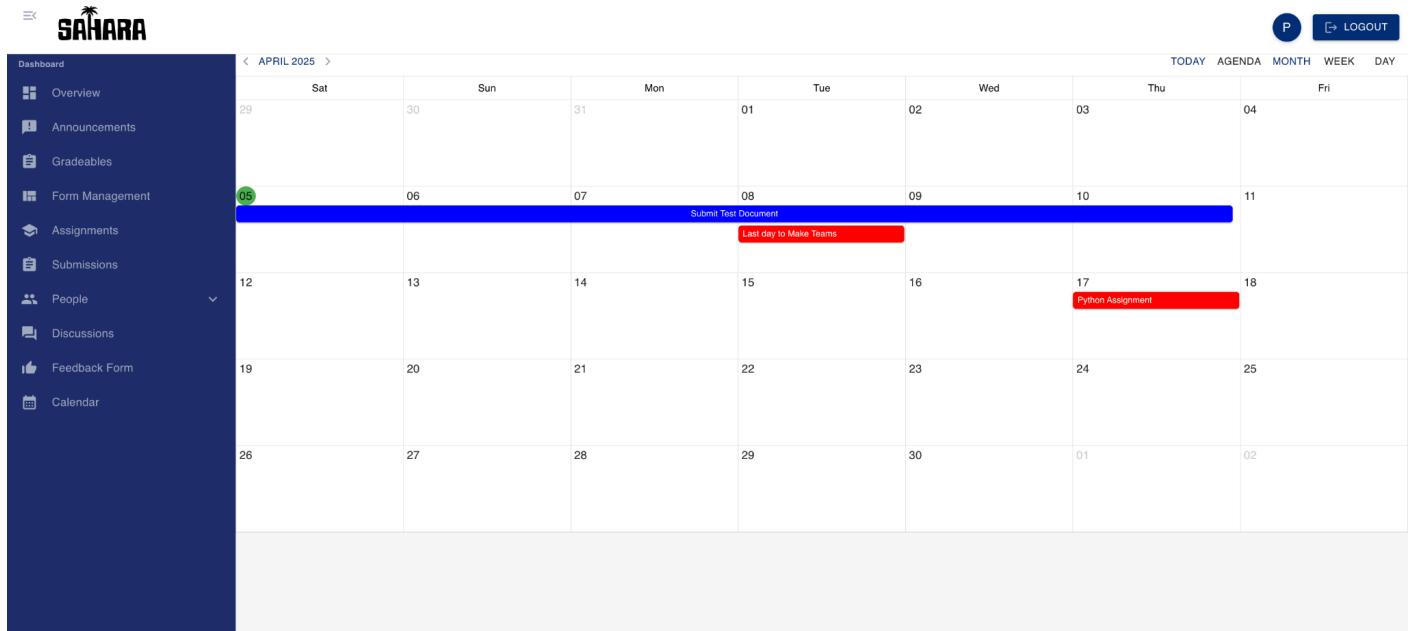
Module Details: Combined testing of various units, including the Users adding events to their personal calendar and team calendars, Professor adding events to the Global calendar

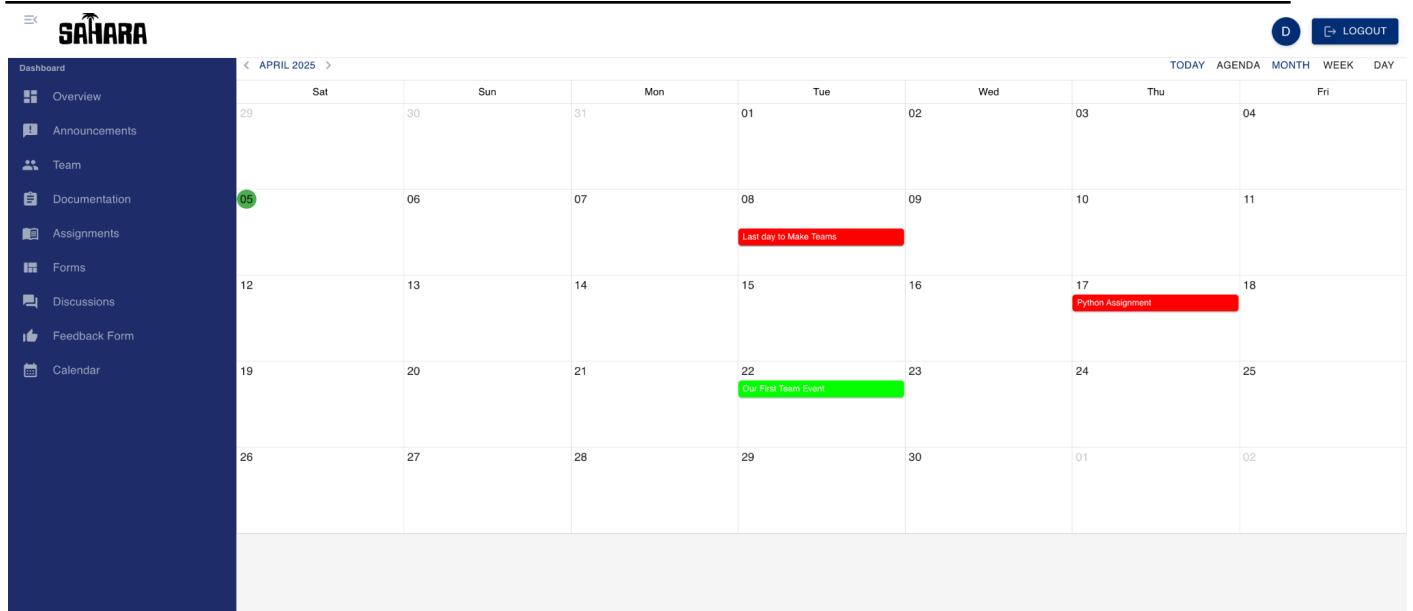
Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25-04/4/25

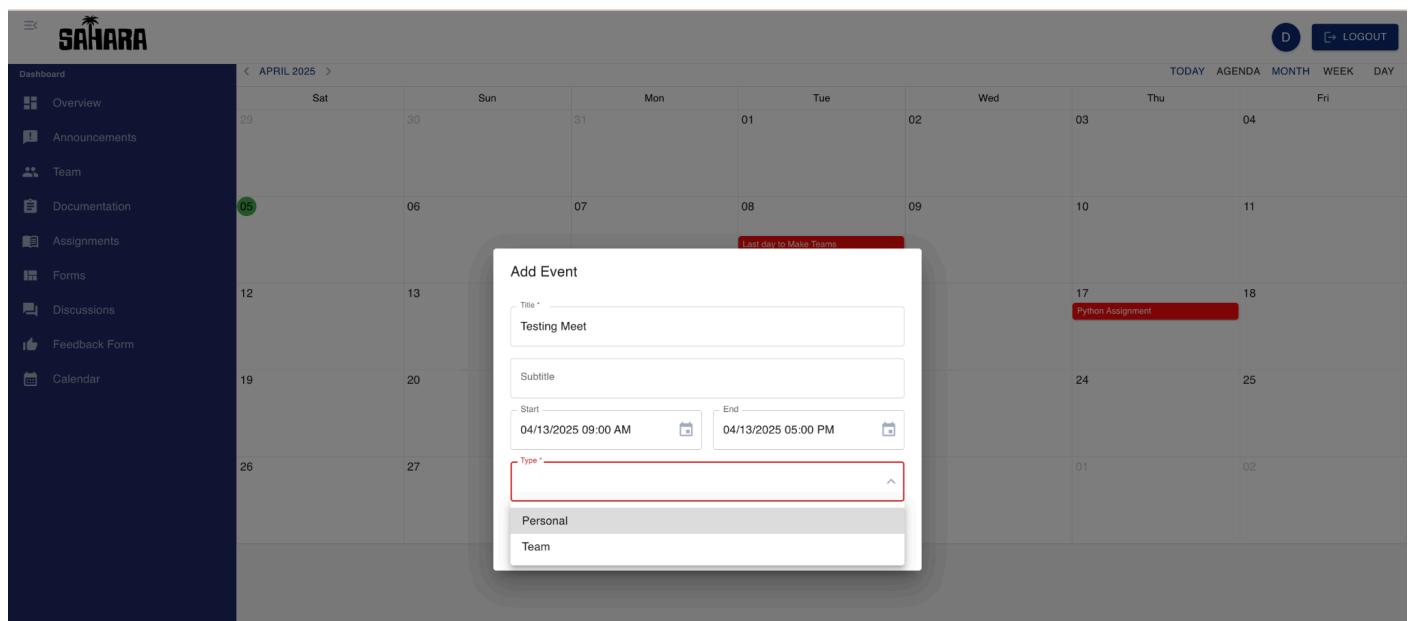
Test Results: Sahara provides features to add events to the Calendar of three types-

Personal(blue), **Global**(red) and **Team**(green). Global events can only be added by the Professor. Personal events can be added individually by Users and only reflect in the Personal calendar.





Users can create Team events that are visible for the entire Team.



Structural Coverage: 100%

Additional Comments: All features work as expected. Consistency was seen between different units.

8. Feedback Form

Module Details: Combined testing of various units, including teams adding percentage contributions to each of the other team members, Professor viewing individual team feedback matrices and exporting them.

Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25-04/4/25

Test Results:

Each student has a contribution feedback form like the one shown below, consisting of all the Team members' names. Each student can allot a percentage contribution to each of their teammates from 0 to 100.

Team Member	Contribution Percentage (%)	Remarks
student1	0	Add remarks
AARAV OSWAL	10	Add remarks
ACHYUTH HARIKRISHNA WARRIER	10	Add remarks
ASHIK STENNY	10	Add remarks
DIVI POTHUKUCHI (You)	10	Add remarks
HARSHPREET KAUR	10	Add remarks
POTHUGANTI NIKHIL	10	Add remarks
R CHARAN	10	Add remarks
RAVI ARORA	10	Add remarks
SPANDAN PATI	10	Add remarks
VEDHANTH BALASUBRAMANIAN	10	Add remarks
Total	100.00%	

SUBMIT FEEDBACK

Once the User has submitted the feedback form, they will no longer be able to access it. The Professor and all the TAs can see the **feedback matrices** of individual teams as shown below and can export it.

Team Feedback Details - Ravi and Friends

Feedback Matrix

Submitter	student1	AARAV OSWAL	ACHYUTH HARIKRISHNA WARRIER	ASHIK STENNY	DIVI POTHUKUCHI	HARSHPREET KAUR	POTHUGANTI NIKHL	R.CHARAN	RAVI ARORA	SPANDAN PATI	VEDHANT BALASUBRAM
ASHIK STENNY 28/03/2025	-	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
ACHYUTH HARIKRISHNA WARRIER 28/03/2025	-	5%	5%	20%	10%	10%	10%	10%	10%	10%	10%
RAVI ARORA 31/03/2025	-	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
AARAV OSWAL 03/04/2025	-	22.14%	5%	6.9%	10.05%	12.4%	7.9%	9.6%	4.9%	11.01%	10.1%
SPANDAN PATI 04/04/2025	-	0.69%	0.69%	6.9%	6.9%	6.9%	0.69%	6.9%	1.32%	0.01%	69%
DIVI POTHUKUCHI 05/04/2025	0%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Mean	0.0%	9.6%	6.8%	10.6%	9.5%	9.9%	8.1%	9.4%	7.7%	8.5%	19.8%
Variance	0.0%	43.0%	12.4%	19.5%	1.3%	2.5%	11.6%	1.3%	11.6%	14.6%	483.1%

Detailed Submissions

Submission by ASHIK STENNY
Submitted on: 28/03/2025, 14:24:37

Submission by ACHYUTH HARIKRISHNA WARRIER
Submitted on: 28/03/2025, 14:26:22

Submission by RAVI ARORA
Submitted on: 31/03/2025, 17:31:27

CLOSE

Structural Coverage: 100%

Additional Comments: All features work as expected. Consistency was seen between different units.

9. Discussions

Module Details: Combined testing of various units, including Global, Team+TA and an intra-team discussion forum

Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25-04/4/25

Test Results:

- 1) **Global Discussion Forum** - constituents: Professors, TAs and Users

The screenshot shows the SAHARA platform interface. On the left is a dark blue sidebar with a navigation menu:

- Dashboard
- Overview
- Announcements
- Gradeables
- Form Management
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

The main area is titled "Discussion". It shows a conversation between three users:

- DIVI POTHUKUCHI (D) at 07:28 pm: everyone go through the design document above
07:29 pm
- DIVI POTHUKUCHI (D) at 07:29 pm: we'll meet at 9:00
07:29 pm
- AARAV OSWAL (A) at 07:30 pm: okay
07:30 pm

On the right side of the discussion area, there are two messages from "prof1":

- prof1 at 10:46 pm: Hello Students
10:46 pm
- prof1 at 10:46 pm: how is your progress on the project
10:46 pm

At the bottom of the discussion area, there is a text input field labeled "Type a message" and a small icon.

- 2) **TA + Team Discussion Forum** - constituents: TA and Team (The Professor is also a constituent to supervise the forum)

Dashboard

- Overview
- Announcements
- Gradeables
- Form Management
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

Discussion

07:29 pm

D DIVI POTHUKUCHI
we'll meet at 9:00
07:29 pm

A AARAV OSWAL
okay
07:30 pm

Global Chat

- Team Ravi and Friends TA Channel
- Team Team 2 TA Channel
- Team Team 18 TA Channel
- Team Team 17 TA Channel
- Team Team 7 TA Channel
- Team Team 9 TA Channel
- Team Testing 2's Team TA Channel

prof1 Hello Students
10:46 pm

prof1 how is your progress on the project
10:46 pm

prof1 a3d8c380-cdaa-4dda-9eca-f218f6cc1388_download (4).pdf
10:47 pm

Type a message

The Professor is part of all of the TA+Team forums.

A TA is part of separate forums for each of their assigned teams.

SAHARA

Dashboard

- Overview
- Announcements
- Gradeables
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

Discussion

07:29 pm

D DIVI POTHUKUCHI
we'll meet at 9:00
07:29 pm

A AARAV OSWAL
okay
07:30 pm

P prof1
Hello Students
10:46 pm

P prof1
how is your progress on the project
10:46 pm

P prof1
a3d8c380-cdaa-4dda-9eca-f218f6cc1388_download (4).pdf
10:47 pm

Global Chat

- Team Team 10 TA Channel
- Team Team 15 TA Channel
- Team Team 7 TA Channel
- Team Team 13 TA Channel

Type a message

3) Intra-Team Discussion Forum

The screenshot shows the SAHARA software interface. The left sidebar is dark blue with white icons and text. The main area is titled "Discussion". It shows a conversation between two users: R.CHARAN and DIVI POTHUKUCHI. R.CHARAN sent a message at 10:58 pm on 05-04-2025. DIVI POTHUKUCHI responded with "okay" at 11:00 pm. A third message from DIVI POTHUKUCHI at 11:00 pm on 5-4-25 is also shown. A message input field at the bottom says "Type a message".

The Intra Team discussion forum only contains members of the team. The Professor is not a part of this forum. Intra-team forums get created as soon as a team is created. TA + Team forums get created as soon as a TA is allotted to a Team. The user gets added to the global forum as soon as the User is created.

Structural Coverage: 100%

Additional Comments: All features work as expected. Consistency was seen between different units.

10. Gradeables

Module Details: Combined testing of various units, including creating Gradeables and viewing the statistics for the Gradeables

Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25-04/4/25

Test Results:

The Professor can create **Gradeables** by uploading a **CSV** of the scores.

The screenshot shows the SAHARA software interface. On the left is a dark blue sidebar with a navigation menu:

- Dashboard
- Overview
- Announcements
- Gradeables
- Form Management
- Assignments
- Submissions
- People
- Discussions
- Feedback Form
- Calendar

The main content area has a blue header bar with the title "Create Gradeable and Upload Scores". Below it, a sub-instruction reads: "Create a new gradeable by providing a title, maximum points, and uploading a CSV file with student scores." The form contains two sections: "Gradeable Information" and "Upload Scores".

Gradeable Information

- Test/Assignment Title*: Quiz test
- Maximum Points*: 100

Upload Scores

Attach scores CSV file

Upload a CSV file containing student scores. Maximum file size: 10MB.

The screenshot shows the SAHARA software interface. The sidebar and header are identical to the previous screenshot.

The main content area shows the same "Create Gradeable and Upload Scores" page. The "Gradeable Information" section now contains:

- Test/Assignment Title*: Quiz test
- Maximum Points*: 100

The "Upload Scores" section shows a file named "scores.csv" selected for upload, with a "Browse" button available for changing the file.

Upload a CSV file containing student scores. Maximum file size: 10MB.

The screenshot displays the SAHARA software interface for a group project. The left sidebar contains a navigation menu with items like Dashboard, Overview, Announcements, Gradeables, Form Management, Assignments, Submissions, People, Discussions, Feedback Form, and Calendar. The main content area is titled "Quiz 2" and shows "204 student submissions". A blue header bar indicates a "Mean Score: 5.66". Below this, the "Student Results" section lists student IDs, names, and scores. The "Score Distribution" section features a bar chart showing the number of students per score range (0, 2, 3, 4, 5, 6). At the bottom, "Score Statistics" are provided for Mean Score (5.66), Median Score (6.00), Mode Score (6.00), and Variance (45.55).

Student ID	Name ↑	Score
220004	AADI SINGH	5
220010	AADYA DHIR	5
230011	AARADHYA ROHI	4
230012	AARAV OSWAL	6
230015	AARSH JAIN	6
230017	AARUSH NARENDRA GHATE	4
220020	AAYUSH GAUTAM	6

Score Distribution

The bar chart illustrates the frequency of student scores across different ranges. The x-axis represents the score ranges (0, 2, 3, 4, 5, 6) and the y-axis represents the number of students (0 to 120). The distribution is skewed right, with the highest frequency occurring at score 6.

Score Range	Number of Students
0	~10
2	~5
3	~10
4	~20
5	~65
6	~110

Score Statistics

Statistic	Value
Mean Score	5.66
Median Score	6.00
Mode Score	6.00
Variance	45.55

4 System Testing

1. Requirement: Login

Test Owner: Vedhanth B and Ravi Arora

Test Date: 28/03/25-04/4/25

Test Results: Test Passed

Additional Comments: Any user can login using their unique username and password.

An error message was shown when an invalid username was entered or when the password was wrong.

2. Requirement: Forgot Password

Test Owner: Vedhanth B and Ravi Arora

Test Date: 28/03/25-04/4/25

Test Results: Test Passed

Additional Comments: In cases where a user forgot their password or wished to change it, they could click on the “Forgot Password” button on the login page. An OTP was then sent to their registered contact information, allowing them to securely reset their password and regain access to their account.

3. Requirement: Logout

Test Owner: Vedhanth B and Ravi Arora

Test Date: 28/03/25-04/4/25

Test Results: Test Passed

Additional Comments: Clicking the “LOGOUT” icon at the top right corner of the screen logged the user out and redirected to the login page.

4. Requirement: Add Students and TAs by Professor

Test Owner: Ashik Stenny and Aarav Oswal

Test Date: 28/03/25-04/4/25

Test Results: Test Passed

Additional Comments: The professor was able to successfully add students and TAs by uploading a CSV file with the required details. The system correctly validated the data, added the users to the platform, and displayed appropriate error messages for any invalid or duplicate entries.

7. Requirement: Announcement Creation by Professor

Test Owner: Ashik Stenny and Aarav Oswal

Test Date: 28/03/25-04/4/25

Test Results: Test Passed

Additional Comments: The professor was able to create announcements using the "Create Announcement" button located at the top right of the Announcements page. The form included fields for Title and Description (both mandatory), along with an optional file attachment. Upon submission, the announcement was successfully displayed to all users. The feature functioned as expected, with validations in place for required fields and proper rendering of attached files.

5. Requirement: Team Registration

Test Owner: R Charan and Spandan Pati

Test Date: 28/03/25-04/4/25

Test Results: Test Passed

Additional Comments: There were two ways to register teams on the platform. Professors could register entire teams at once by uploading a **CSV** file containing the team details. Alternatively, individual students had the option to form teams by inviting other registered students from the same course to join them. I tested both functionalities on the application—team registration via CSV upload worked smoothly for professors, and the student invitation system successfully allowed team formation through in-app requests.

6. Requirement: Team TA assignment

Test Owner: R Charan and Spandan Pati

Test Date: 28/03/25-04/4/25

Test Results: Test Passed

Additional Comments: Each Teaching Assistant (TA) can list their technical skills on their profile. Every project team defines a tech stack specific to their project. The TA-team pairing algorithm then matches TAs to teams based on how well the TA's skill set aligns with the team's tech stack.

7. Requirement: Project Timeline Management

Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25-04/4/25

Test Results: Test Passed

Additional Comments: Professor can set deadlines for various project deliverables, such as presentations and final reports. These deadlines appear on a centralized platform calendar accessible to all users. Users have the option to personalize their calendars by adding individual deadlines or events, allowing them to effectively manage their course responsibilities and personal schedules.

8. Requirement: Gradeables Creation and Viewing

Test Owner: Divi Pothukuchi and Pothuganti Nikhil

Test Date: 28/03/25-04/4/25

Test Results: Test Passed

Additional Comments: The user was able to create new gradeables by clicking on the “Create New Gradeable” button located at the top right of the Gradeables page. The form required input of the test title and maximum points, along with uploading a CSV file containing student scores. Upon submission with correctly formatted data, the gradeable was successfully created and added to the list.

Clicking on any test from the Gradeables list redirected the user to a detailed statistics page. This page displayed a histogram showing the number of students versus marks, with exact counts revealed on hover. A sortable list of student marks was shown, with options to sort by Roll Number, Name, or Score. At the bottom of the page, key statistical metrics—mean, mode, median, and variance—were accurately calculated and displayed. All features functioned as expected during testing.

9. Requirement: Assignment Creation and Management by Professor

Test Owner: Divi Pothukuchi and Pothuganti Nikhil

Test Date: 28/03/25-04/04/25

Test Results: Test Passed

Additional Comments: The Assignments page successfully displayed a list of all assignments created, with each entry showing the Assignment Title, Issued Date, and Due Date. Each assignment included a collapsible toggle that revealed the detailed description and action controls. The Edit button opened a pre-filled form, allowing the professor to update assignment details, while the Delete button removed the assignment permanently after confirmation.

The “New Assignment” button at the top-right navigated the user to a creation form, which allowed entry of the assignment title, detailed description, and due date.

Professors were also able to attach an optional reference file. Upon clicking the “Create Assignment” button, the new assignment was successfully saved and immediately appeared in the main assignments list. All functionalities were tested and performed as expected.

10. Requirement: Submissions Management and Submittable Creation by Professor

Test Owner: Divi Pothukuchi and Pothuganti Nikhil

Test Date: 28/04/25 - 04/04/25

Test Results: Test Passed

Additional Comments: The Submissions Management Interface displayed a clear, organized list of all required submissions, categorized by team or individual students. Each submission entry showed key metadata including the title, opening date/time, and due date/time. The expandable panel for each entry revealed further assignment

details such as submission description, a list of submitted files (if any), and associated metadata like the submitter's identity and timestamp.

Clicking on “**View All Submissions**” successfully navigated to a detailed view where professors could access and manage all entries. The interface provided functional administrative controls—Update Submission allowed modifications to submission properties, and Delete Submission effectively removed the assignment and all related student submissions after confirmation.

The “**Create New Submittable**” button at the top-right launched a dedicated creation interface. Professors were able to input the assignment title, maximum score, opening and due date/time, and a description. An optional reference file could also be uploaded to provide additional context or a submission template. Upon clicking the “Create Submittable” button, the new assignment was created successfully and became visible to students based on the defined schedule. All tested features functioned as expected and data was accurately reflected throughout the platform.

11. Requirement: Feedback Form

Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25 - 04/04/25

Test Results: Test Passed

Additional Comments: The feedback form allowed students to evaluate themselves and their team members by distributing exactly 100% across all members. The form enforced this constraint strictly and became read-only after submission. On revisiting the page, the submitted scores and timestamp were correctly displayed.

On the professor's side, the Team Feedback page displayed submission status per team, the latest submission timestamp, and a completion summary. The “**View Details**” button opened a feedback matrix showing peer evaluations along with statistical metrics like mean and variance per student. The Export to XLSX feature worked as expected, generating a comprehensive file containing feedback percentages, submission times, and contributor data for all teams.

12. Requirement: Discussion forums

Test Owner: R Charan and Spandan Pati

Test Date: 28/03/25 - 04/04/25

Test Results: Test Passed

Additional Comments: The Discussions page was successfully tested for all three forum types. Students were able to access:

- Global Forum, open to all course participants
- Team-Specific Forum, limited to members of their own team
- Team + TA Forum, accessible only to the team and their assigned TA

Access restrictions were correctly enforced, and messages posted in each forum were visible only to the intended audience. All functionalities worked as expected.

13. Requirement: Dashboard View

Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25 - 04/04/25

Test Results: Test Passed

Additional Comments: Upon successful login, users were redirected to their respective dashboards based on their roles.

For **students**, the dashboard displayed recent announcements, active assignments, and active submittables. Announcements were clickable, and selecting one redirected the user to the Announcements page with the specific item expanded. The dashboard also showed pending gradeables alongside announcements. Students could click “View All” to navigate to the full list of gradeables or announcements. Additionally, active team details, number of upcoming deadlines, and new discussion alerts were visible, offering a complete academic overview.

For **professors and TAs**, the dashboard similarly showed recent announcements with clickable access. In addition, professors were able to view summary cards showing the number of active teams, upcoming deadlines, and newly initiated discussions. Pending gradeables appeared alongside announcements, and the “View All” button allowed navigation to their detailed respective modules.

14. Requirement: Team Page – Student Interaction

Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25 - 04/04/25

Test Results: Test Passed

Additional Comments: The Team page successfully displayed the student’s current team details, including the list of members and the associated tech stack. Students were able to edit the tech stack and the changes were reflected immediately. The invite feature functioned correctly, allowing students to send invitations to other registered course members. Invitations were received and accepted without errors during testing.

15. Requirement: Documentation Page – Student Submission Management

Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25 - 04/04/25

Test Results: Test Passed

Additional Comments: The Documentation page listed all the required document submissions for the course. Students could upload documents with valid file formats. Before the deadline, students were able to delete their existing submissions and upload new ones. The system correctly enforced submission deadlines and blocked re-uploads after the due date. All tested actions worked smoothly and reflected changes accurately.

16. Requirement: Assignments Page – Student Submission Flow

Test Owner: Achyuth H Warrier and Harshpreet Kaur

Test Date: 28/03/25 - 04/04/25

Test Results: Test Passed

Additional Comments: The Assignments page displayed all active and past assignments clearly. For active assignments, students could upload, delete, and re-upload their submissions before the deadline. The system provided appropriate validation for deadlines and file types. For past assignments, students were able to view their previous submissions, but editing options were disabled as expected. All functionalities operated correctly during testing.

5 Conclusion

From what we can tell, our testing was thorough enough that we don't expect many errors if the system goes live. We found and fixed a large number of bugs, as illustrated in the document, which shows our testing worked well.

We could have made testing better by having more students on the team and splitting them into smaller groups. This would have cut down on how much the developers and testers needed to talk to each other about each feature.

Having testers check code they didn't write themselves is important. We made sure developers never tested features they built. Keeping these roles separate helps testers think like real users instead of being protective of the software. This is how things are done when testing safety-critical software - outside checkers certify that systems are safe.

Giving more time to testing would have helped too. But since we were on a tight schedule, we focused on building the system while doing the most complete testing we could.

Appendix A - Group Log

Sno.	Date	Agenda	Duration
1	29/03/2025	Submission of Implementation Document, Testing done at a primitive level	5 hours
2	30/03/2025	Code base restructuring, improving code	4 hours
3	31/03/2025	Started Unit Testing, Discussed division of parts for Testing	3 hours
4	1/04/2025	Unit Testing continued	3 hours
5	2/04/2025	Finished Unit Testing, started work on the User Manual and Testing Document initiated	2.5 hours
6	3/04/2025	Integration Testing, User Manual finalised	2.5 hours
7	4/05/2025	Integration Testing done, Structural Testing initiated	2.5 hours
8	5/05/2025	Structural Testing done, finalised the Testing Document, Fixed bugs found during testing	4 hours