

Software Testing Document
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“Apna Classroom”
Online Classroom

Group 2

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Of the requirements of
ITIT-3103 Software Engineering
[Final Document]

Github Repository Link:
<https://github.com/Ashes-Mondal/apna-classroom>

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1. Modules and Unit Tests

1.1. Modules (Backend)

1.1.1. Authentication

The Authentication module is used to authenticate the identity of a user accessing the system. It handles login, user registration, and any updates to the user's password. It is responsible for ensuring that the user is who they claim to be and is able to access the requested resources.

Table 1: Authentication Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is Password Valid	Short/Incorrect password	Throw Exception "Invalid Password"	Pass
2	Is Email Valid	Email with incorrect domain	Throw Exception "Invalid Email"	Pass
3	Is User Valid For Auth Details Update	Uuid of different user	Throw Exception "Forbidden"	Pass
4	Is User Successfully Disabled	Credentials of disabled user	Throw Exception "Forbidden"	Pass

1.1.2. File Upload Handler

This module is responsible for handling user-uploaded files. It must parse the files into a database-friendly format and store them to the database. There is a restriction on the file size and the handler can operate with multiple files at once. This module is used while uploading files in Assignments and Submissions.

Table 2: File Upload Handler Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is User Authorized	Invalid user credentials	Throw Exception "Forbidden"	Pass
2	Is File Too Large	Huge file	Throw Exception "File size too large"	Pass

1.1.3. Classroom Posts

The Classroom Posts module deals with the posts that can be made for any classroom. It handles all assignments and announcements, as well as any comments made on these posts. It interacts with the files module as well. This module must ensure that only a teacher can post an assignment. The module also enables getting the classroom feed, by merging the available assignments and announcements into a single list and ordering them chronologically.

Table 3: Classroom Post module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is User Authorized	Invalid user credentials	Throw Exception "Forbidden"	Pass
2	Is Valid Post Data	Invalid form data	Throw Exception "Invalid"	Pass

1.1.4. User Data

This module is simply used for retrieval of user data, and should be able to get information such as a user's name, email as well as enrolled classrooms. It should also prevent access to sensitive fields such as the user's password hash.

[P.T.O]

Table 4: User Data Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is User Authorized	Invalid user credentials	Throw Exception "Forbidden"	Pass

1.1.5. Classroom Data

The classroom data module is responsible for providing data about a given classroom. It is also involved in updation of data, including addition and removal of students, and for assistant faculty specific to that classroom.

Table 5: Classroom Data Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is User Authorized	Invalid user credentials	Throw Exception "Forbidden"	Pass
2	Is Valid Classroom Details	Invalid classroom data	Throw Exception "Invalid"	Pass
3	Is Valid Email for removal	Non-present email id	Throw Exception "Email doesn't exist"	Pass

1.1.6. Admin Portal

In this module we are handling the user-data provided to the admin. It is responsible for adding new users as well as updating/disabling users. User's data like Name, Email ID and Batch Code(For the student) can be changed.

[P.T.O]

Table 6: Admin Portal Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is User Authorized	Invalid user credentials	Throw Exception "Forbidden"	Pass
2	Is Valid Email for updating users	Invalid or non-present email id	Throw Exception "invalid"	Fail

1.1.7. Results

This module is used to generate and display results data to a student. This involves updating classroom cumulatives whenever a teacher grades a submission, as well as calculating final average and individual scores to display to a user.

Table 7: Results Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is User Authorized	Invalid user credentials	Throw Exception "Forbidden"	Pass
2	Does Update Results on submission grading	Valid submission grades	Class and Student averages are updated	Pass

1.1.8. User Submissions

The User Submissions module handles the assignment submissions for a student user. This also interacts with the files module as a student is able to attach files for their submission. The module also enables a teacher to assign marks to a submitted assignment, and must ensure that the score is in a valid range as defined by the assignment itself.

Table 8: User Submissions Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is User Authorized	Invalid user credentials	Throw Exception "Forbidden"	Pass
2	Are submission marks in range	Submission marks greater than max possible value	Throw Exception "Invalid"	Fail

1.2. Modules (Frontend)

1.2.1. Forms

This module handles user input on the frontend, including login page, creating classrooms, posts and also updating data throughout the application. This is a sensitive module and must try to prevent any erroneous or invalid data from being sent to the server. It is also responsible for ensuring the API calls are made correctly when a form is submitted.

Table 9: Forms Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is valid numeric input	Negatives, decimal values	Throw Exception "Invalid"	Pass
2	Is valid email input	Invalid email or domain	Throw Exception "Invalid"	Pass
3	Is not blank input	Null, or undefined input	Throw Exception "Empty Input"	Fail
4	Is valid batch code	Invalid batch code	Throw Exception "Invalid"	Fail

1.2.2. File Attachments

This module deals with displaying attached files as downloadable links. It must ensure that the file is a valid file, obtain the file's metadata and also generate a downloadable link for the user.

Table 10: File Attachments Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is valid download link	Any uploaded file	Starts download for correct file	Pass
2	Is valid file extension	Any uploaded file	Display correct file extension for file	Pass

1.2.3. Video Conference

The VC module is responsible for managing a video conference peer, and must ensure that the user can only access meetings that they are authorized to. It should also prevent users from spreading the meeting outside the institution.

Table 11: Video Conference Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is valid user	Invalid uuid for user	Redirect to home	Pass
2	Is disabled VC link sharing	Meeting link	Hidden share controls	Pass

1.2.4. CSV Parser

This is a utility module that is closely related to the admin module. This enables the addition of a large quantity of users to the database in a safe and efficient manner. It should therefore ensure that the file uploaded by the admin is valid, and then translate it into a format more accessible to the API. It should also validate that the user data inside the file is accurate to prevent any inconsistencies.

Table 12: CSV Parser Module Unit Tests

Sr. No.	Condition	Test Data	Expected Result	Success Status
1	Is valid csv format	Invalid csv headers or syntax	Throw Exception "Invalid CSV"	Pass
2	Is valid user details	Invalid user data	Throw Exception "Invalid User Data"	Pass

2. Testing Coverage

The project uses the **Agile Model** of software development, we have implemented and shipped multiple smaller scale modules frequently. The low size of each module implies that we are able to easily develop and verify test cases for our modules as and when they are created. Most boundary values are discussed during pair programming sessions and are immediately tested for when the code is implemented. This ensures a good testing coverage for the project.

This framework also enables us to frequently communicate with the client and ensure that the modules meet the acceptance criteria. The continuous deployment of modules enforces some amount of integration testing as well.

The frontend was also developed with the **Prototyping Model** and so majority of the UI bugs were removed in the initial stages of the project.

3. User Activities

3.1. GitHub Activities

3.1.1. Individual Commits (Total Commits: 82)

Ashes Mondal - **32 commits**

Aaryak Shah - **29 commits**

Subodh Rajpopat - **26 commits**

3.1.2. Individual Pull Requests (Total Pull Requests: 41)

Ashes Mondal - **17 Pull Requests**

Subodh Rajpopat - **13 Pull Requests**

Aaryak Shah - **12 Pull Requests**

3.2. Individual Contributions

3.2.1. Aaryak Shah

Main contributions in **Documentation, Database, Frontend, Testing**

Minor contributions in **Backend, UI**

3.2.2. Ashes Mondal

Main contributions in **Backend, Frontend, Database, Testing**

Minor contributions in **Documentation, UI**

3.2.3. Subodh Rajpopat

Main contributions in **UI, Frontend, Database, Testing**

Minor contributions in **Backend, Documentation**