**Test Plan Document**

**Learning Management System for Pre-Onboarding Freshers**

**Group - 5**

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**1.INTRODUCTION**

**1.1. Purpose**

This test plan outlines the comprehensive testing strategy and framework governing the evaluation of the web application Learning Management System (LMS) specifically developed for the pre-onboarding phase of freshers. The document aims to provide insights into the following key aspects:

Test Strategy:

Defining the testing rules based on project parameters like start and end dates, project objectives and underlying assumptions like system availability, data integrity etc.

This strategy also gives description about the test setup process, including entry/exit criteria, test case creation methodology and which specific tasks to be performed including scheduling considerations.

Execution Strategy:

This gives an overview of the approach to executing tests, identifying and reporting the defects, and for fixing and implementing solutions.

Test Management:

This gives the process of managing the technical aspects of testing and events that can come up during execution process like communication strategies, risk identification and mitigation plans.

**1.2. Scope**

The scope of the test plan for the Learning Management System (LMS) for Pre-Onboarding freshers encompasses the comprehensive testing of essential functions, including user authentication and authorization, course operations, content accessibility, user profiles and communication tools. The test plan will differentiate the release type, whether it involves bug fixes, minor or major feature enhancements to tailor testing efforts accordingly.

The test plan will also outline specific testing goals and objectives, aligning them with the successful launch of the LMS for Pre-Onboarding freshers. Continuous improvement efforts will be integrated into the testing process. Lessons learned during testing will be captured, fostering a culture of feedback and refinement for future releases of the web application.

**1.3. Planning (Roadmap)**

The planning section of this test plan outlines the roadmap for executing testing activities throughout the development life cycle. It includes a strategic approach to ensure the successful validation of the Learning Management System.

The testing process will be divided into distinct phases, each playing a crucial role in maintaining the quality of the LMS release. In the initial stages, it will focus on requirements analysis and test planning, setup the test environment and designing the test cases based on the requirements of the web-application.

After the initial phases, the execution phase will commence to cover a range of testing types like Functional and Non-functional, Security, Usability and automated testing to ensure a comprehensive evaluation for efficiency and coverage.

The testing process will conclude with a thorough review of test results and the generation of comprehensive test reports by highlighting the overall quality and suitability of the LMS release.

**1.4. Testing Tools Used**

For the testing phase of the LMS release, Mockito and JUnit are powerful testing frameworks for Java, to enhance the efficiency of executing unit tests and ensuring the reliability of individual components. The Mockito will be employed to simulate dependencies and isolate components for effective unit testing. This approach allows for the creation of mock objects, facilitating the testing of specific functionalities in isolation. And JUnit will serve as the backbone for structuring and executing unit tests. Test cases will be organized to validate the behavior of individual units of code within the LMS. By this approach, efficiency will be enhanced by addressing repetitive testing scenarios at the unit level, contributing to the overall reliability of the LMS.

**1.5. Testing Environment**

The testing environment of the LMS release will be configured with the AWS Cloud deployment. It is designed to mimic the planned production setup by leveraging AWS cloud services. This includes the deployment of virtual servers, storage, and networking configurations in a cloud environment.

**2. Unit Testing Plan**

**2.1. Modules Identified for Testing:**

In the Unit Testing plan, specific modules have been identified for rigorous testing to ensure the integrity and functionality of individual components. The identified modules include:

**User Management: Authorization and Authentication:**

* Validate user registration process.
* Verify the login functionality for both users and administrators.
* Test password recovery process.
* Validate role-based access controls.

**Course Management:**

* Test the creation and uploading of training modules.
* Ensure proper storage and retrieval of course content.
* Validate multimedia and text modules functionality.

**Assessments and Quizzing:**

* Test the functionality to create assessments and quizzes.
* Verify the accuracy of quiz results and assessment evaluations.
* Ensure proper tracking of user performance.

**Progress Tracking:**

* Validate the tracking of user performance based on assessment and quiz results.
* Test the display of ongoing course materials.
* Ensure the interface for users to monitor their progress.

**Feedback:**

* Test the feature for users to provide feedback on course materials.
* Validate the communication channel between users and administrators.
* Verify administrators' ability to give feedback to candidates.

**SWOT Analysis:**

* Test the functionality for users to perform SWOT analysis.
* Validate the accuracy of results based on strengths, weaknesses, opportunities, and threats.

Each module will undergo comprehensive testing with a focus on unit-level functionality, data flow, and interaction with other modules. This targeted approach aims to identify and address any issues at the individual component level, ensuring the overall reliability and performance of the learning management system

**2.2. Unit Test Plan:**

**Module Name: User Authentication and Authorization**

User Management for Admin

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| **Sl. No** | **Test ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Test Result (Pass/Fail)** |
| 1 | UM01 | Admin can create users profile roles | Valid details like name,email | User is successfully added | User is successfully created | Pass |
| 2 | UM02 | Verify the admin can edit the details of the users | The new details | User edited successfully | User edited successfully | Pass |
| 3 | UM03 | Verify the admin can delete the newly created user | User ID | The user is successfully deleted | The user is successfully deleted | Pass |
| 4 | UM04 | Validate the edit of Invalid User Id | Invalid User ID | User ID not found | User ID not found | Pass |
| 5 | UM05 | Validate the deletion of Invalid User Id | Invalid User ID | User ID not found | User ID not found | Pass |
| 6 | UM06 | Duplicate creation of the users | Duplicate User details | User already exists | User already exists | Pass |
| 7 | UM07 | Search functionality | Valid User details | User details displayed | User details displayed | Pass |

User Management

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| **Sl. No** | **Test ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Test Result (Pass/Fail)** |
| 1 | UA01 | User enters valid username and password | Valid username, Valid Password | User is successfully authenticated | Successful login | Pass |
| 2 | UA02 | Verify User Login | Valid credentials | Successful login and access | Successful login and access | Pass |
| 3 | UA03 | User resets password successfully | Password reset request | Password is updated, user can login with new password | Password reset confirmation | Pass |
| 4 | UA04 | Validate Role-Based Access Control | User roles | Access permission | Permission is granted | Pass |
| 5 | UA05 | Reset Password OTP Verification | Valid OTP | Successful Password reset | New password will be generated | Pass |
| 6 | UA06 | User enters Invalid OTP | Invalid OTP | Invalid OTP | Invalid OTP | Pass |
| 7 | UA07 | Invalid Role Based Access Control | Invalid User roles | Access Denied | Invalid credentials | Pass |
| 8 | UA08 | Verify Sign-Up process for Admin | Valid detailed credentials | Successful sign-up process | Registration is successful | Pass |

**Module Name: Course Management**

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| **Sl. No** | **Test ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Test Result (Pass/Fail)** |
| 1 | CM01 | Creation of training modules | Course module details | Course is successfully created | Course is successfully created | Pass |
| 2 | CM02 | Validate the addition of multimedia content of course | Course content details | Course content is added. | Course content is added. | Pass |
| 3 | CM03 | Verify the multimedia content functionality | Video and Document type | The multimedia content is successfully displayed | The multimedia content is successfully displayed | Pass |
| 4 | CM04 | Validate the deletion of course which are not mapped with any assessments | Delete course | Course is deleted | Course is deleted | Pass |
| 5 | CM05 | Verify the admin can view the details of the course contents | Course details retrieval request | Course details | Course details | Pass |
| 6 | CM06 | Ensure Proper Storage and Retrieval of Content for Candidate | Course content retrieval request | Successful retrieval of the content | Successful retrieval of the content | Pass |

**Module Name: Assessments and Analysis**

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| **Sl. No** | **Test ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Test Result (Pass/Fail)** |
| 1 | AQ01 | Test Creation of Assessments | Assessment details, questions, options | Successfully created Assessment details, questions, options | Successfully created Assessment details, questions, options | Pass |
| 2 | AQ02 | Verify Accuracy of Results | User completes a assessments | Accurate grading and display of results | Accurate grading and display of results | Pass |
| 3 | AQ03 | Ensure Proper Evaluation of Assessment Performance | User completes an assessment | Accurate evaluation and feedback | Accurate evaluation and feedback | Pass |
| 4 | AQ04 | Verify Handling of Time-Constrained Assessment | User completes an assessment within a set time limit | System accurately handles time constraints | System accurately handles time constraints | Pass |

**Module Name: Feedback Management**

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| **Sl. No** | **Test ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Test Result (Pass/Fail)** |
| 1 | FM01 | User ID and Course ID provided, form submitted | Valid User ID and Course ID | Feedback Sent Successfully! | Feedback Sent Successfully! | Pass |
| 2 | FM02 | User ID and Course ID provided, but date missing, form submitted | Valid User ID , Course ID and Missing the date | Error Submitting Form | Error Submitting Form | Pass |
| 3 | FM03 | User ID and Course ID missing, form submitted | Invalid User ID and Course ID | Error Submitting Form | Error Submitting Form | Pass |
| 4 | FM04 | User ID missing, but Course ID provided, form submitted | Invalid User ID and Valid Course ID | Error Submitting Form | Error Submitting Form | Pass |
| 5 | FM05 | Course ID missing(leave empty for General Feedback), but User ID provided, form submitted | Missing Course ID and Valid User ID | Feedback Sent Successfully! | Feedback Sent Successfully! | Pass |

**Module Name: Assessment Report**

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| **Sl. No** | **Test ID** | **Test Description** | **Input** | **Expected Output** | **Actual Output** | **Test Result (Pass/Fail)** |
| 1 | AR01 | Data Is Retrieving | User Results data | Assessment Report Generated Successfully | Assessment Report Generated Successfully | Pass |
| 2 | AR02 | Downloading CSV File Report | Clicking On Download Button | Download Sucessfully | Download Sucessfully | Pass |
| 3 | AR03 | No Reports But Downloading CSV File | Clicking On Download Button | No Reports Available to Download. | No Reports Available to Download. | Pass |
| 4 | AR04 | Searching a Candidate Deatils | Valid Details | Displaying The Assessment Report  of The Candidate | Displaying The Assessment Report  of The Candidate | Pass |
| 5 | AR05 | Searching  For a Candidate Deatils | Invalid  Details | Results Not Found | Results Not Found | Pass |
| 6 | AR06 | Downloading Individual Candidate CSV File | Valid Details | Download Sucessfully | Download Sucessfully | Pass |

**3. Integration Test Plan**

**3.1 Methodology Used**

The Integration Test Plan adopts the Top-down Integration methodology for comprehensive validation of the Learning Management System (LMS). This approach initiates testing from higher-level modules and progressively integrates lower-level modules, ensuring a systematic examination of the system's functionality.

**3.2 Approach**

Top-down Integration Approach:

* **Start with Higher-Level Modules:** Initiate testing with modules representing user-facing functionalities, such as User Authentication and Authorization, Course Management, and Assessments and Quizzing.
* **Progressive Integration:** Validate interactions and data flow between higher-level modules, ensuring seamless collaboration. Integrate progressively with lower-level modules, addressing dependencies as testing proceeds.
* **Early Detection of System-level Issues:** Identify and address system-level integration issues early in the testing process, minimizing the risk of critical issues emerging later.
* **User Experience Validation:** Prioritize the validation of functionalities that directly impact the user experience, aligning testing with user expectations.

**Benefits:**

* **Systematic Validation:** The top-down approach provides a systematic way to validate the collaboration and data flow between modules.
* **Early Issue Identification:** Early detection of system-level issues enhances the efficiency of issue resolution and reduces the likelihood of critical problems surfacing late in the testing process.

**4. System Testing/ User Acceptance Test/ Beta Testing**

**4.1 Testing Methodology**

**4.1.1. System Testing:**

During the System Testing phase, a Black Box Testing approach is utilized to thoroughly validate the Learning Management System (LMS). This method involves assessing the complete range of system functionalities without access to internal code details. The testing scenarios cover functional, performance, and security aspects to guarantee the LMS complies with specified requirements.

**4.1.2. User Acceptance Test (UAT):**

User Acceptance Testing in the Learning Management System (LMS) adopts a White Box Testing methodology, engaging end-users actively in the testing process. This phase ensures that the LMS fulfills business needs, maintains user-friendliness, and aligns with organizational objectives. Test scenarios encompass business process validation, usability testing, and verification of acceptance criteria defined collaboratively with stakeholders.

**4.1.3. Beta Testing:**

Beta Testing for the Learning Management System (LMS) embraces a Field-Testing strategy by introducing a pre-release version to a specific group of external users. This phase collects real-world feedback, identifying potential issues before the official release. Beta Testing scenarios encompass validation through real-world usage, feedback collection, and compatibility testing across diverse devices and environments.

**4.2 Description**

**4.2.1 System Testing:**

The goal of System Testing is to affirm the overall functionality, performance, and security of the Learning Management System (LMS) prior to deployment. The execution entails thorough functional testing, performance evaluation through load testing, and security testing to identify and address potential vulnerabilities. Deliverables encompass detailed test reports showcasing results from functional, performance, and security testing, in addition to bug reports and their respective resolutions.

**4.2.2. User Acceptance Test (UAT):**

User Acceptance Testing (UAT) for the Learning Management System (LMS) strives to confirm alignment with user expectations, business processes, and usability standards. The execution incorporates user-driven testing scenarios, usability assessments, and verification of acceptance criteria established collaboratively with stakeholders. Deliverables encompass UAT test results displaying user satisfaction, system alignment, and documentation of identified issues and their resolutions.

**4.2.3. Beta Testing:**

Beta Testing for the Learning Management System (LMS) gathers real-world feedback from external users to enhance system robustness. Beta versions are released to a limited user group for diverse testing scenarios, and user feedback is collected through surveys and forums. Beta testing reports include feedback, identified issues, suggested enhancements, and recommendations for system improvements. This ensures a thorough evaluation of the LMS, aligning it with user expectations and industry standards before official release.