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A-07 Publication Management System

Tentative Test Plan Document

Group - 06

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1 Test Overview

This test plan outlines the functional testing strategy for the Publication Management System (PMS) software. The goal is to ensure the System performs as intended and meets user requirements. Jira will be used for defect logging and tracking throughout the testing process.

1.1 List of Operations/Modules to be Tested

- User Management:
  1. User registration
  2. Login/Logout
  3. User profile management (edit, update)
  4. Role-based access control (RBAC)
- Manuscript Management:
  1. Manuscript submission (including validation checks)
  2. Manuscript submission editing/updating
  3. Manuscript review assignment
  4. Review submission by reviewers
  5. Manuscript status tracking (submitted, under review, accepted, rejected)
  6. Access control for manuscripts (based on user role and paper status)
- Conference Management:
  1. Conference creation and configuration (deadlines, rules)
  2. Conference administration (open/close conference, manage reviewers/papers)
  3. Reviewer selection process
  4. Manuscript segregation (based on conference rules)
  5. Acceptance rate calculation
  6. Conference statistics generation

2 Test Details

2.1 Unit tests for the modules

Unit tests will be written for individual modules to verify their functionality in isolation. These tests will cover each module's basic operations, data validation, and error handling within each module.

Test Case ID	Purpose	Steps	Expected Results

UC-1	Valid User Registration	1. Enter a valid username, email, and password. 2. Click "Register".	- Account is created successfully. - User receives a confirmation email
UC-2	Invalid Username Registration	1. Enter a username with special characters. 2. Enter a valid email and password. 3. Click "Register".	- The System displays an error message indicating an invalid username format. - Account is not created.
UC-3	User Login	1. Enter a registered username and password. 2. Click "Login".	- User is successfully logged in and redirected to the appropriate dashboard.
UC-4	Invalid Login Credentials (username)	1. Enter an unregistered username. 2. Enter a valid password. 3. Click "Login".	- The System displays an error message indicating an invalid username. - User is not logged in.
UC-5	Invalid Login Credentials (password)	1. Enter a registered username. 2. Enter an incorrect password. 3. Click "Login".	- The System displays an error message indicating an invalid password. - User is not logged in.
UC-6	Update User Profile	1. Log in as a registered user. 2. Access "Profile" settings. 3. Update user information (e.g. name, contact details) 4. Click "Save".	- User profile is updated successfully. - Confirmation message is displayed.
UC-7	Role-based Access Control (RBAC)	1. Log in as a user with a specific role (e.g., author). 2. Try to access functionalities restricted to other roles (e.g., reviewer assignment).	- System restricts access to unauthorized functionalities. - User receives an error message or is redirected to a permission denied page.
UC-8	Account Deletion	1. Login as a registered user. 2. Access "Account Settings". 3. Click "Delete Account". 4. Confirm deletion.	- User account is successfully deleted. - The user is redirected to the login page.

Table 1: Modules: User Management

Test Case ID	**Purpose**	**Steps**	**Expected Results**

MS-1	Manuscript Submission (Valid)	1. Log in as an author. 2. Access "Submit Manuscript". 3. Fill out the submission form with valid data (title, abstract, keywords, file upload). 4. Click "Submit".	- The manuscript was successfully submitted and saved in the System. The author receives a confirmation email.
MS-2	Manuscript Submission (Missing Data)	1. Log in as an author. 2. Access "Submit Manuscript". 3. Leave required fields blank (e.g., title, file upload). 4. Click "Submit".	- The System displays error messages indicating missing the required fields. The manuscript has not been submitted.
MS-3	Manuscript Editing by Author (valid changes)	1. Login as an author with a submitted manuscript. 2. Access "My Manuscripts". 3. Select the manuscript and click "Edit". 4. Make grammatically correct changes to the manuscript content. 5. Click "Save".	- Manuscript is updated with the author's changes. - Confirmation message is displayed.
MS-4	Manuscript Editing by Author (invalid changes)	1. Login as an author with a submitted manuscript. 2. Access "My Manuscripts". 3. Select the manuscript and click "Edit". 4. Introduce irrelevant or nonsensical content. 5. Click "Save".	- System displays a warning message prompting confirmation or rejection of changes. - Manuscript is not automatically updated with potentially disruptive content.
MS-5	Manuscript Withdrawal by Author	1. Login as an author with a submitted manuscript. 2. Access "My Manuscripts". 3. Select the manuscript and click "Withdraw". 4. Confirm withdrawal.	- Manuscript is withdrawn from the review process. - System status of the manuscript is updated accordingly. - Notifications are sent to relevant parties (e.g., conference administrators).

Table 2: Modules: Manuscript Management

Test Case ID	**Purpose**	**Steps**	**Expected Results**

CONF-1	Conference Creation (Valid)	1. Log in as an administrator. 2. Access "Create Conference". 3. Fill out the conference details (name, dates, deadlines, review process). 4. Click "Create".	- Conference is successfully created and saved in the System. - Conference details are displayed accurately.
CONF-2	Conference Creation (Missing Data)	1. Log in as an administrator. 2. Access "Create Conference". 3. Leave required fields blank (e.g., name, deadline). 4. Click "Create".	- The System displays an error message indicating that the required fields are missing. - Conference is not created.
CONF-3	Conference Editing (Basic Details)	1. Login as an administrator with an existing conference. 2. Access "Edit Conference". 3. Modify basic conference details (e.g., name, description). 4. Click "Save".	- Conference details are updated successfully. - Confirmation message is displayed.
CONF-4	Conference Deadline Modification	1. Log in as an administrator with an existing conference. 2. Access "Edit Conference". 3. Modify conference deadlines (e.g., submission deadline). 4. Click "Save".	- Conference deadlines are updated successfully. - Confirmation message is displayed.
CONF-5	Conference Cancellation	1. Login as an administrator with an existing conference. 2. Access "Manage Conference". 3. Click "Cancel Conference". 4. Confirm cancellation.	- Conference is cancelled and marked as inactive in the system. - All associated manuscript reviews and statuses are updated accordingly. - Notifications are sent to relevant parties (e.g., authors, reviewers).
CONF-6	Reviewer Assignment (Automatic)	1. The conference is set up with automatic reviewer assignments. 2. Manuscripts are submitted for the conference.	- System automatically assigns reviewers based on pre-defined criteria (expertise, workload). - Notifications emails are sent to assigned reviewers.

Table 3: Modules: Conference Management

Test Case ID	Purpose	Steps	Expected Results
REV-1	Reviewer Registration (Valid)	1. Login as a potential reviewer (new user). 2. Access "Become a Reviewer". 3. Fill out the registration form with valid expertise and contact information. 4. Click "Submit Registration".	- Reviewer account is created and submitted for approval by administrators. - Reviewer receives a confirmation email.
REV-2	Reviewer Login (approved account)	1. Login with reviewer credentials (after account approval). 2. Click "Login".	- Reviewer is successfully logged in and redirected to the reviewer dashboard.
REV-3	Reviewer Login (unapproved account)	1. Login with reviewer credentials (before account approval). 2. Click "Login".	- System displays a message indicating the account is pending approval. - Reviewer cannot access reviewer functionalities.
REV-4	Reviewer Availability Update	1. Login as an approved reviewer. 2. Access "Reviewer Profile". 3. Update availability for specific conferences or periods. 4. Click "Save".	- Reviewer availability is updated in the system. - The system considers reviewer availability during assignment processes.
REV-5	Reviewer Conflict Management	1. Login as an approved reviewer with assigned manuscripts. 2. Identify a conflict of interest with a specific manuscript. 3. Report the conflict through the designated system channel.	- System allows reviewers to report conflicts. - The system automatically reassigns the manuscript to another reviewer or prompts administrators for action.

Table 4: Modules: Reviewer Management

Test Case ID	Purpose	Steps	Expected Results
REV-M-1	Review Submission (Valid)	1. Log in as a reviewer with assigned manuscripts. 2. Access "Review Tasks". 3. Select a manuscript and provide a review score and comments. 4. Click "Submit Review".	- The review was successfully submitted and saved in the System. - Author receives a notification of the review completion.

REV-M-2	Review Submission (Missing Data)	1. Log in as a reviewer with assigned manuscripts. 2. Access "Review Tasks". 3. Select a manuscript but leave the review score or comments blank. 4. Click "Submit Review".	- The System displays error messages indicating missing required fields (score or comments). - Review is not submitted.
REV-M-3	Review Editing by Reviewer	1. Log in as a reviewer with submitted reviews. 2. Access "Review Tasks". 3. Select a submitted review and click "Edit". 4. Modify the review content (e.g., add additional comments). 5. Click "Save".	- The review is successfully updated with the reviewer's changes. - Confirmation message is displayed.

Table 5: Modules: Manuscript Review Management

Test Case ID	**Purpose**	**Steps**	**Expected Results**
DEC-1	Manuscript Acceptance (Automatic)	1. Calculates the Review Score for Reviewed manuscripts 2. Checks with the threshold score of the conference 3. Initiates Accepted Manuscript manoeuvre	- Manuscript is marked as accepted in the system. - Author receives a notification of acceptance. - Further processing for publication may be triggered (e.g., formatting guidelines).
DEC-2	Manuscript Rejection (Automatic)	1. Calculates the Review Score for Reviewed manuscripts 2. Checks with the threshold score of the conference 3. Initiates Rejected Manuscript Manoeuvre	- Manuscript is marked as rejected in the system. - Author receives a notification of rejection with optional reviewer feedback.

Table 6: Modules: Decision Management

Test Case ID	**Purpose**	**Steps**	**Expected Results**

STAT-1	Generate Conference Statistics	1. Log in as an administrator with active conferences. 2. Access "Conference Reports". 3. Select a specific conference. 4. Click "Generate Statistics".	- The system generates a report with relevant conference statistics (e.g., number of submissions, reviewer assignments, and acceptance rates). - The report can be downloaded or viewed online.
STAT-2	User Activity Report	1. Log in as an administrator. 2. Access "User Management". 3. Click "Generate User Activity Report". 4. (Optional) Specify a date range for the report.	- The system generates a report on user activity within the system (e.g., logins, submissions, reviews). - The report can be filtered by user role or time frame.

Table 7: Modules: Statistics and Reporting

Test Case ID	**Purpose**	**Steps**	**Expected Results**
FMT-1	Manuscript File Upload (Valid Format)	1. Log in as an author with an accepted manuscript. 2. Access "Manage Manuscript". 3. Click "Upload Final Manuscript". 4. Select a file in the required format (e.g., DOCX, PDF). 5. Click "Upload".	- The manuscript file was uploaded successfully and validated for format. - The status of the manuscript is updated (e.g., "awaiting formatting").
FMT-2	Manuscript File Upload (Invalid Format)	1. Log in as an author with an accepted manuscript. 2. Access "Manage Manuscript". 3. Click "Upload Final Manuscript". 4. Select a file in an unsupported format (e.g., .exe). 5. Click "Upload".	- The system displays an error message indicating an invalid file format. The file is not uploaded.

FMT-3	Manuscript Formatting Review (by Admin)	1. Login as an Admin with manuscripts awaiting formatting. 2. Access "Manage Submissions". 3. Select a manuscript with an uploaded file. 4. Review the manuscript for formatting compliance.	- The author can revise the manuscript based on feedback on formatting. - The revised manuscript can be resubmitted for final approval.
PUB-1	Publication Process Initiation (by Admin)	1. Login as an Admin with a formatted and approved manuscript. 2. Access "Manage Submissions". 3. Select the manuscript and review the details. 4. Click "Initiate Publication Process".	- The publication process is triggered in the system. - The manuscript is routed for further processing (e.g., copyediting, layout).

Table 8: Modules: Manuscript Formatting and Publication

Test Case ID	**Purpose**	**Steps**	**Expected Results**
NOT-1	Email Notification for Submission Confirmation	1. Login as an author and submit a manuscript.	- Author receives a confirmation email notification for the submission. - The email includes details like reference number and submission date.
NOT-2	System Notification for Review Assignment	1. Log in as a reviewer.	- Reviewer receives a system notification (e.g., email or in-app) about assigned manuscripts for review. - The notification includes details like manuscript title, deadline, and author information.
NOT-3	Notification for Review Completion (to Author)	1. Login as a reviewer and submit a review for a manuscript.	- Author receives a notification (e.g., email or in-app) about the completed review. - The notification may include a brief summary or link to access the

Table 9: Modules: Notification System

Test Case ID	**Purpose**	**Steps**	**Expected Results**

SEARCH-1	Manuscript Search by Keyword	1. Access the "Search Manuscripts" function. 2. Enter keywords relevant to the manuscript content. 3. Click "Search".	- System displays a list of manuscripts containing the searched keywords in the title, abstract, or full text (depending on access permissions). - Search results can be filtered by additional criteria (e.g., publication year, author affiliation).
SEARCH-2	User Search by Expertise	1. Access the "Search Users" function. 2. Enter keywords related to user expertise (e.g., research area). 3. Click "Search".	- System displays a list of users who have listed relevant expertise matching the search keywords. - Search results can be further filtered by user role or location (optional).
SEARCH-3	User Search and Filtering (by Admin)	1. Login as an administrator. 2. Access "User Management". 3. Enter search criteria (e.g., username, role). 4. Click "Search".	- System displays a filtered list of users based on the search criteria. - Administrator can view user details and manage accounts.

Table 10: Modules: Search and Filtering

2.2 Integrating testing

Modules will be integrated incrementally, with tests to verify their interactions and data flow between modules. The following is a possible integration order:

- User Management modules
- Manuscript Management core functionalities (submission, editing)
- Conference Management core functionalities (creation, administration)
- Integration of User Management with Manuscript/Conference Management
- Integration of Review and Manuscript Management
- Integration of all modules for complete user workflows (submission, review, acceptance)

Test Case ID	Purpose	Steps	Expected Results

INT-1	User Management & Manuscript Management	1. Log in as a new user with a valid username and password. 2. Access "Submit Manuscript". 3. Fill out the submission form with complete and accurate data. 4. Click "Submit".	- User account is created successfully in the User Management system. - The submitted manuscript is saved in the Manuscript Management system with user association. - The author receives a confirmation email for both account creation and manuscript submission.
INT-2	Manuscript Management & Review Management	1. Login as an administrator and create a new conference with a review process. 2. Login as an author and submit a manuscript for the conference. 3. The system automatically assigns reviewers based on pre-defined criteria.	- The submitted manuscript is assigned to appropriate reviewers based on their expertise and availability in the Review Management system. - Reviewers receive notification emails with details about the assigned manuscript.
INT-3	Review Management & Decision Management	1. Log in as a reviewer with assigned manuscripts. 2. Access "Review Tasks" and submit comprehensive reviews for each manuscript.	- Review scores, comments, and recommendations are saved in the Review Management system. - The status of the reviewed manuscripts is updated in the Decision Management system (e.g., "reviewed"). - Authors receive notifications of completed reviews.
INT-4	Decision Management & User Management	1. Login as an Admin with reviewed manuscripts. 2. Access "Manage Submissions" and decide to accept a manuscript.	- The manuscript status has been updated to "accepted" in the Decision Management system. - The corresponding author receives a notification of acceptance and further publication instructions (optional). - Author information is updated in the User Management system to reflect their status as a published author (optional).
INT-5	Manuscript Management & Error Handling (External System)	1. Log in as an author and attempt to submit a manuscript with an unsupported file format (e.g., .exe).	- The Manuscript Management system detects the invalid format and displays an error message to the user. - Submission is not processed, and the manuscript remains in the author's draft section.

Table 11: Modules: Integration

2.3 System testing

System testing will evaluate the entire PMS application, simulating real-world user scenarios. It will focus on system usability, performance, and overall functionality.

Test Case ID	Purpose	Steps	Expected Results
SYS-1	User Login & Account Management	1. Register a new user with a valid username and password. 2. Login to the system using the registered credentials. 3. Access "Account Settings" and update user information (e.g., email address).	- User account is created successfully. - Users can log in and access the system functionalities. - User information is updated as per the changes made.
SYS-2	Manuscript Submission & Review Process	1. Log in as an author with a prepared manuscript. 2. Access "Submit Manuscript" and follow the submission steps. 3. Login as an Admin and access "Manage Submissions". 4. Assign reviewers for the submitted manuscript. 5. log in as a reviewer and access assigned manuscripts. 6. Submit a comprehensive review of the manuscript.	- The manuscript with all the required information has been submitted successfully. - The system assigns reviewers based on pre-defined criteria (optional). - Reviewers can access assigned manuscripts and submit their reviews.
SYS-3	Search Functionalities	1. Log in as an author and access "Search Manuscripts". 2. Enter keywords relevant to the manuscript title or abstract. 3. Click "Search" and view the results.	- The system displays a list of manuscripts containing the searched keywords. - Search results can be filtered by additional criteria (e.g., publication year, author affiliation).
SYS-4	User Role Management & Permissions	1. Log in as an administrator and create user accounts with different roles (e.g., author, Admin, Viewer, reviewer). 2. Access functionalities restricted to specific roles (e.g., reviewer assignment, manuscript editing).	- The system assigns permissions based on user roles. - Users can only access functionalities that are allowed for their assigned role. - Attempts to access unauthorized functionalities result in error messages or restricted access.

SYS-5	System Performance under Load	1. Simulate a high volume of concurrent users accessing the system (e.g., multiple logins and manuscript submissions). 2. Monitor system performance metrics (e.g., response time and resource utilization).	- The system maintains acceptable performance under increased load without significant delays or errors. - Users can perform actions within a reasonable time frame.

Table 12: Modules: System Testing

2.4 Structural tests

2.4.1 Control Flow testing

This testing approach focuses on verifying that all code paths are exercised, including conditional branches and loops.

2.4.2 Data Flow Testing

This testing ensures data flows through the System correctly, validating data manipulation and storage mechanisms.

2.5 Performance test

Performance testing will assess the System's response time and scalability under various load conditions (number of users, concurrent requests).

Test Case ID	Purpose	Steps	Expected Results
PERF-1	Login & User Management Under Load	1. Simulate a high volume of concurrent user logins (e.g., 100, 200, 500 users). 2. Monitor system response times for login attempts.	- Login response times remain acceptable even under high user load. - Users can log in within a reasonable timeframe (e.g., less than 5 seconds).
PERF-2	Manuscript Submission & Review Assignment Under Load	1. Simulate multiple authors concurrently submitting manuscripts (e.g., 20, 50, 100 submissions). 2. Monitor system response times for submission processing and reviewer assignment.	- Manuscript submission and reviewer assignment processes function efficiently under load. - Submissions are processed and reviewers are assigned within acceptable timeframes.

PERF-3	Manuscript Review & Feedback Under Load	1. Simulate multiple reviewers concurrently accessing assigned manuscripts and submitting reviews (e.g., 10, 20, 50 reviewers). 2. Monitor system response times for manuscript access, review form loading, and review submission.	- Reviewers can access assigned manuscripts and submit reviews efficiently under load. - System response times remain acceptable for review functionalities.
PERF-4	Search Functionality Under Load	1. Simulate multiple users concurrently performing searches across manuscripts or users (e.g., 20, 50, 100 concurrent searches). 2. Monitor system response times for search queries and result generation.	- Search functionality remains responsive under high load. - Search results are returned within acceptable timeframes (e.g., less than 3 seconds).
PERF-5	System Scalability Testing	1. Gradually increase the number of concurrent users and system resources (e.g., CPU, memory). 2. Monitor system performance metrics (e.g., response times, resource utilization) under increasing load.	- The system scales efficiently by utilizing additional resources to maintain acceptable performance under increased load. - Resource utilization remains within acceptable thresholds to avoid bottlenecks.

Table 13: Modules: Performance Testing

2.6 Stress test

Stress testing will push the System beyond its average capacity to identify breaking points and ensure resilience under extreme conditions.

3 Test Analysis

3.1 Functional Test plan

This plan analyses the results of functional testing conducted on the PMS. It covers functionalities across user roles (authors, open access viewers, reviewers), including user management, manuscript management, review management, decision management, and search functionalities.

3.1.1 Objectives

- Evaluate the completeness and correctness of implemented functionalities.
- Identify any functional defects or deviations from user requirements.
- Assess the overall functional quality of the PMS.
- Provide feedback to development teams for bug fixes and enhancements.

3.1.2 Analysis Approach

The functional test results will be analyzed using the following methods:

- **Traceability Matrix Review**: Verify if all test cases map to specific user requirements and functionalities.
- **Defect Tracking**: Log and track identified functional defects in a defect management system.
- **Severity Analysis**: Classify the severity of identified defects based on their impact on system functionality and user experience (critical, major, minor).
- **Test Coverage Analysis**: Analyze the extent to which test cases cover all functionalities and identify any gaps in test coverage.
- **Equivalence Partitioning Boundary Value Analysis**: Review test cases to ensure they cover valid and invalid inputs, edge cases, and boundary values as per user requirements.

The table 14 summarizes the black-box testing methods used for generating test cases, target modules, and the estimated number of test cases.

Testing Method	Targeted Modules	Estimated Test Cases
Equivalence Class Partitioning	User Registration, Login, Manuscript Submission, Review Submission	30
Boundary Value Analysis	User Input Validation (e.g., username length, file size), Conference Details	20
Cause-Effect Graphing	User Actions and Expected System Responses (e.g., submit a manuscript, reviewer assignment)	15
Pair-wise Testing	Combinations of Input Values (e.g. user role, manuscript type, conference status)	25
Exceptional Cases	Error Handling Scenarios (e.g. invalid login, missing data)	15
Error Guessing	Identifying Potential Errors based on Functionality	10
State-based Testing	System Behavior in Different States (e.g., user logged in, conference open)	10

Table 14: Functional Test Analysis

Total Estimated Test Cases: 125

3.2 Performance test plan

This plan analyses the performance test results obtained from simulating real-world user scenarios. It covers vital functionalities like user log-in, manuscript submission, review management, and report generation.

3.2.1 Objectives

- Identify performance bottlenecks and areas for improvement.
- Assess the system's scalability and ability to handle high user volumes.
- Ensure acceptable response times and user experiences under various load conditions.
- Validate if the system meets the defined performance requirements.

3.2.2 Performce Metrics

- **Response Time**: Time taken for the system to respond to user actions (e.g., login, search, submission).
- **Throughput**: Number of requests the system can process per unit time (e.g., transactions per second).
- **Resource Utilization**: CPU, memory, and network bandwidth utilization by the system.
- **Error Rate**: Percentage of failed requests or errors encountered during testing.

3.2.3 Analysis Approach

The performance test results will be analyzed using the following methods:

- **Data Visualization**: Utilize charts and graphs to visualize performance metrics like response times, throughput, and resource utilization across various load scenarios.
- **Statistical Analysis**: Calculate the average, median, and standard deviation for key performance metrics to identify trends and variability.
- **Benchmarking**: Compare the system's performance against industry standards or internal benchmarks for similar applications.
- **Correlation Analysis**: Investigate relationships between different performance metrics to identify potential root causes of performance issues.

Performance Test Reports will summarize the test results, analysis findings, identified bottlenecks, and recommendations for improvement.