Development of Human Resource Internal Application

For Rowy Hardware

TEST PLAN

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Table 1. Document Change Control

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Table 2. Document Sign Off

Name	Position	Signature	Date
Wan Huey Shin	Team Leader		17 Nov 2024
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Chapter 1: Introduction

1.1 Purpose of the Test Plan

The purpose of this test plan is to define the testing strategy, scope, resources, schedule, and criteria for the testing activities of the Employee Management System. This document aims to ensure that the system meets all specified functional and non-functional requirements, operates effectively, and is free from defects. It outlines the features to be tested, describes the testing methodologies to be employed, and facilitates communication among project stakeholders regarding the testing process.

1.2 Scope

The testing will encompass all functional and non-functional aspects of the Employee Management System. This includes user authentication (login and logout), personal information management, announcement system, leaderboard, reward system, KPI (Key Performance Indicator) tracking and management, leave application and approval process, staff management, department management, system routing, system logging, and authorization management.

Testing activities will cover various levels:

- **Unit Testing**: Verifying individual components for correct functionality.
- **Integration Testing**: Ensuring that combined components interact correctly.
- **System Testing**: Validating the complete and integrated software product.
- **Acceptance Testing**: Confirming the system meets business requirements and is ready for deployment.

Constraints and assumptions for the testing process include:

Testing will be conducted under the assumption that users have access to a stable internet connection. The system will be tested using standard web browsers compatible with the application. All necessary hardware and software resources are available and functioning properly. The testing environment will closely simulate real-world usage scenarios. Test data will adequately represent all possible user roles and scenarios. Users involved in testing will have appropriate permissions and roles within the system.

1.3 References

This test plan has been developed in accordance with the following documents and standards: the Project Plan, Software Requirements Specification (SRS), Software Design Document (SDD), Software Quality Assurance Plan (SQAP), and the IEEE 829 Standard for Software Test

Documentation. These documents provide detailed information on the project requirements, design, quality assurance procedures, and testing standards, serving as foundational references for the testing activities outlined in this plan.

1.4 Objectives

The objectives of the testing activities are multifaceted:

- **Verification of Requirements**: Ensure that the Employee Management System meets all specified functional and non-functional requirements as outlined in the SRS and other project documentation.
- **Defect Identification**: Identify and document any defects or issues within the system early in the development cycle to facilitate timely resolution.
- **Functionality Assurance**: Confirm that all features function as intended, providing the correct outputs for given inputs under various conditions.
- **Quality Validation**: Validate the system's usability, performance, reliability, and security to ensure it provides a satisfactory user experience and operates safely and efficiently.
- **Guideline Provision**: Provide clear guidelines for performing various types of tests required to maintain the system's quality and efficiency throughout its lifecycle.
- **Process Improvement**: Facilitate early detection and resolution of defects to improve the overall development process, reducing costs and time associated with fixing issues discovered later.

1.5 Resources Required

The successful execution of the testing plan requires a combination of personnel, hardware, software, and other resources.

Personnel:

- **Testing Team**: Comprising a Test Manager, Test Analysts, and Testers responsible for planning, designing, executing, and reporting on tests.
- **Development Team**: Including Developers and Technical Leads who will assist in fixing defects and providing technical insights.
- **Project Manager**: Overseeing the testing process, ensuring alignment with project timelines and objectives.
- **HR/Admin Representatives**: Participating in user acceptance testing and validating business rules and workflows.

Hardware:

- **Servers**: For hosting the application and setting up testing environments that mirror production.

- **Client Machines/Workstations**: Used by testers and developers to execute tests and perform development tasks.
- **Network Infrastructure**: Providing the necessary connectivity for multi-user testing and simulating real-world network conditions.

Software:

- **Employee Management System**: The application under test.
- **Testing Tools**: Test management software and automated testing frameworks (e.g., Selenium) for planning and executing tests efficiently.
- **Defect Tracking System**: Such as JIRA, for logging, tracking, and managing defects throughout the testing process.
- **Performance Monitoring Tools**: Like JMeter, for conducting load and stress testing to assess system performance under various conditions.
- **Web Browsers**: Latest versions of Chrome, Firefox, Edge, and Safari for compatibility testing.

Other Resources:

- **Test Data Sets**: Representing various user roles (e.g., HR, manager, employee) and scenarios to ensure comprehensive testing coverage.
- **Access to Documentation**: Including the SRS, SDD, user manuals, and other relevant materials to inform test case design and execution.
- **Backup and Recovery Procedures**: Ensuring that test environments and data can be restored in case of unexpected issues.

1.6 Environment Requirements

Testing will be conducted in an environment that closely replicates the production environment to ensure that test results are valid and applicable upon deployment.

Hardware Requirements:

- **Servers**: Configured similarly to production servers, capable of handling the application load during testing.
- **Client Machines**: Matching the configurations of end-user systems to accurately simulate user interactions.

Software Requirements:

- **Operating Systems**: Compatible with the Employee Management System and supporting all necessary applications and tools.
- **Database Systems**: Such as MySQL or SQL Server, mirroring the production database setup.

- **Web Servers**: Apache, Nginx, or equivalent servers that will host the application during testing.
- **Web Browsers**: Latest versions to test compatibility and functionality across different platforms.

Network Requirements:

- **Stable Internet Connection**: Essential for simulating real-world usage conditions and ensuring uninterrupted testing activities.
- **Network Simulation Tools**: To test the system under varying network conditions, including low bandwidth and high latency scenarios.

Data Requirements:

- **Test Databases**: Populated with sample data that covers all test scenarios, including edge cases and negative tests.
- **User Accounts**: Set up with various roles and permissions to test access controls and security measures.
- **Backup Procedures**: Established protocols to back up test data and restore environments as needed.

Security Measures:

- **Access Controls**: Implemented to secure test environments and prevent unauthorized access to sensitive data.
- **Compliance Adherence**: Ensuring that testing activities comply with data protection regulations and industry standards, particularly when handling personal and sensitive information.

2. Test Items

The product to be tested is the Employee Management System.

2.1 Features to be Tested

Log in

- All the users must be able to login to the system.

Log out

- All users must be able to logout of the system.

Personal Information

- The employee must be able to view their personal information.
- The employee must be able to edit their personal information.

Announcement

- The employee must be able to view announcement
- The system must be able to announce an employee's birthday.
- The admin must be able to post an announcement.
- The admin must be able to edit an announcement.
- The admin must be able to delete an announcement.

Leaderboard

- The employee must be able to view the leaderboard ranking.

Reward System

- The employee must be able to redeem the reward.
- The employee must be able to view the point details.
- The employee must be able to view redeemed reward history.
- The admin must be able to create a reward.
- The admin must be able to edit a reward;
- The admin must be able to delete a reward.
- The admin must be able to change reward status.
- The admin must be able to reset all points.

KPI Tracking

- The employee must be able to view their KPI dashboard (Department).
- The employee must be able to view their personal KPI dashboard.
- The employee must be able to track their KPI accurately.

Department KPI Management (manager & admin)

- The admin and manager must be able to create a new task.
- The admin and manager must be able to view an employee’s task details.
- The admin and manager must be able to delete a task for an employee.
- The admin and manager must be able to edit an employee’s task details.
- The admin must be able to search a selected department KPI.

Survey Management

- The admin is able to create the survey.
- The admin according to the time to publish the survey.
- The manager able to do the survey published by admin
- The admin is able to check the survey done by the manager according to time.

Leave Application

- The staff is able to apply a leave request
- The admin or hr are able to check the total leave form in the system , can according to time
- The staff is able to check the leave form that submitted by he-self
- The admin or hr able to approve or withdraw the leave form

Staff management

- The admin is able to view the staff information including name, email, etc.
- The admin is able to change the staff information including create , update and delete.
- The admin is able to reset the staff password.

Department management

- The admin is able to manage the department information including search department , add new department, delete an existing department, and update an existing department.

System router

- The admin is able to manage the system router including search router, update router, delete router and add router.

System log

- The admin is able to use system log to check sensitive actions such as login log and changing password history.

Authorization management

- The admin is able to manage roles including adding a new role, updating an existing role, delete a role , and searching for a role.
- The admin is able to authorize a role with specified permissions.
- Once the staff has the specified roles , the staff is able to access the functions.
- Once the staff has the roles, the staff is able to view the relatives system router.

2.2 Test Cases

2.2.1 Functional Test Cases

Test Case(s)	**Steps**	**Expected Results**
Test Case for Login:	Login	

1) Check if the user can login to the system **Preconditions:** Admin has added the user into the database system.	1) Enter username and password, click "Log in".	User is logged in and redirected to the homepage.
Test Case for Logout:	Logout	
1) Check if the user can log out of the system **Preconditions:** The user has successfully logged in to the system.	1) Click on the profile located on the top left of the page. 2) Click “Logout”.	User is logged out and redirected to the login page.
Test Case for Personal Information	View Personal Information	
1) Check if the employee can view their personal information. **Preconditions:** The employee has successfully logged in to the system.	1) Click on the profile located on the top left of the page. 3) Click “Personal Information”.	All the employee information is displayed correctly.
	Edit Personal Information	
2) Check if the employee can edit their personal information. **Preconditions:** The employee has successfully logged in to the system.	1) Click the “Edit” button on the personal information page. 2) Update the information details as needed. 3) Click the “Save” button.	Updated information is saved, and the changes are reflected on the employee personal information page and admin staff management page.
Test Case for Announcement System:	Post Announcement (Admin)	
1) Check if the admin can post the announcement in the admin page. **Preconditions:** Admin has successfully logged in as an admin. The admin is navigated to the Announcement System page	1) Click the “Add” button to start creating a new announcement. 2) Enter all required fields. 3) Click “Post” button to submit	Newly posted announcement is recorded in the table displayed on the admin page. The announcement is saved and displayed to all the users in the employee announcement page.

by clicking on the "Announcement" option in the navigation bar.		All the users received email notification via their emails.
	Edit Announcement (Admin)	
1) Check if the admin can edit the existing announcement post. **Preconditions:** Admin has successfully logged in as an admin. The admin is navigated to the Announcement System page by clicking on the "Announcement" option in the navigation bar.	1) In the table, click on the “Edit” button in the row of the announcement you wish to edit. 2) Update the announcement details as needed. 3) Click on the “Save” button to save the changes.	Updated announcement is saved, and the changes are reflected on the employee announcement page.
	Delete Announcement (Admin)	
1) Check if the admin can edit the existing announcement post. **Preconditions:** Admin has successfully logged in as an admin. The admin is navigated to the Announcement System page by clicking on the "Announcement" option in the navigation bar.	1) In the table, click on the “Delete” button on the row of the announcement. 2) A confirmation prompt appears asking the admin to confirm the deletion of the selected announcement. 3) Click "Yes" to confirm and delete the announcement.	The announcement is removed from the table on the admin page. The announcement is also deleted from the employee announcement page.
	View Announcement (Employee)	
1) Check if the users can view the announcement post in the announcement page. **Preconditions:** The user has successfully logged in to the system and redirected to the homepage.	1) The users click on the “Announcement” option on the navigation bar to navigate to the announcement page. 2) A list of announcement posts is listed.	The announcement information is displayed correctly.

	3) Click on the certain announcement post that you want to view. 4) The details of the announcement are displayed.	
	Birthday Announcement	
1) Check if the system can announce an employee's birthday at 12 midnight.	1) At 12 midnight, the system announced an employee's birthday. 2) The employees click on the "Announcement" option on the navigation bar. 3) A list of announcement posts is listed. 4) Click on the birthday announcement.	
Test Case for Leaderboard	Leaderboard	
1) Check if the system can display the leaderboard ranking accurately. **Preconditions:** The user has successfully logged in to the system and redirected to the homepage.	1) The employee clicks on the "Leaderboard" option on the navigation bar to navigate to the leaderboard page.	Leaderboard shows the ranking based on the total points of the employees.
Test Cases for Reward System	Redeem Reward (Employee)	
1) Check if the employee can successfully redeem the reward **Preconditions:** The employee has successfully logged in to the system and redirected to the homepage. The employee is navigated to the Reward page by clicking on the "Reward" option in the navigation bar.	1) All the reward details are correctly displayed on the page 2) The employee clicks the "Claim" button on the specific reward.	The claimed reward is removed from the reward page. The redeemed reward is recorded in the View History page. The points are deducted according to the reward points.

	View Point Details (Employee)	
1) Check if the employee can view point details. **Preconditions:** The employee has successfully logged in to the system and redirected to the homepage. The employee is navigated to the Reward page by clicking on the "Reward" option in the navigation bar.	1) The employee clicks on the point icon located on the top left of the page.	All the point details, whether deducted or increased, are recorded accurately in the table.
	View Redeemed Reward History (Employee)	
1) Check if the employee can view the redeemed reward. **Preconditions:** The employee has successfully logged in to the system and redirected to the homepage. The employee is navigated to the Reward page by clicking on the "Reward" option in the navigation bar.	1) The employee clicks on the “View History” button located on the top right of the page.	All the redeemed reward history details are recorded in the table accurately.
	Create Reward (Admin)	
1) Check if the admin can successfully create a new reward. **Preconditions:** The admin has successfully logged in to the system. The admin is navigated to the Reward page by clicking on the "Reward Management" option in the navigation bar.	1) The admin clicks on the “Create New Reward” Button. 2) The admin fills in all the required informations on the page. 3) The admin clicks on the “Create” button to create the reward.	The newly created reward is recorded in the table on the Reward Management page. The newly created reward is saved and displayed to all the employees in the employee reward page.
	Edit Reward (Admin)	
1) Check if the admin can successfully edit a reward.	1) The admin clicks on the “Edit” button on the row of the reward.	Updated reward is saved, and the changes are reflected on the employee reward page.

Preconditions: The admin has successfully logged in to the system. The admin is navigated to the Reward page by clicking on the "Reward Management" option in the navigation bar.	2) Update the announcement details as needed. 3) Click on the “Save” button to save the changes.	
	Delete Reward (Admin)	
1) Check if the admin can successfully delete a reward. **Preconditions:** The admin has successfully logged in to the system. The admin is navigated to the Reward page by clicking on the "Reward Management" option in the navigation bar.	1) In the table, click on the “Delete” button on the row of the reward. 2) A confirmation prompt appears asking the admin to confirm the deletion of the selected reward. 3) Click "Yes" to confirm and delete the reward.	The reward is removed from the table on the admin page. The reward is also deleted from the reward page.
	View Reward (Admin)	
1) Check if the admin can successfully view a reward. **Preconditions:** The admin has successfully logged in to the system. The admin is navigated to the Reward page by clicking on the "Reward Management" option in the navigation bar.	1) In the table, click on the “View” button on the row of the reward.	The reward details are displayed on the view reward page successfully and accurately.
	Change Reward Status (Admin)	
1) Check if the admin can successfully change reward status. **Preconditions:** The admin has successfully logged in to the system. The admin is navigated to the Reward page by clicking on the "Redemption Overview" option in the navigation bar.	1) In the table, click on the “Change” button on the row of the employee redeemed reward. 2) The admin changed the status of the reward from “Not Received” to “Received” after the	The changed status is reflected in the table on the admin page. The changed status is reflected in the table on the employee view history page.

	employee received the reward in real life.	
	Reset All Points (Admin)	
1) Check if the admin can successfully reset all the employee points. **Preconditions:** The admin has successfully logged in to the system. The admin is navigated to the Reward page by clicking on the "Reward Management" option in the navigation bar.	1) The admin clicks on the “Reset All Points” button. 2) A confirmation prompt appears asking the admin to confirm the point reset. 3) Click "Yes" to confirm and reset the points.	All the points of the employee are reset to 0.
Test Cases for KPI Tracking	KPI dashboard (Department)	
1) Check if the employee can view their department dashboard **Preconditions:** The employee has successfully logged in to the system.	1) The employee is redirected to the KPI dashboard after logging in.	All details and the tracking number of tasks are displayed correctly.
	KPI dashboard (Personal)	
1) Check if the employee can view their department dashboard **Preconditions:** The employee has successfully logged in to the system	1) The employee views their personal KPI dashboard.	All KPI details and the tracking number of tasks are displayed correctly.
	Personal KPI Tracking	
1) Check if the employee can track their KPI accurately. **Preconditions:** The employee has successfully logged in to the system and redirected to the homepage.	1) The employee views their personal KPI tracking page. 2) The list of the employee’s KPI is displayed. 3) The employee clicks on a specific KPI.	KPI details and progress are displayed correctly.

Test Cases for KPI Department Management	Create New Task (Manager & Admin)	
1) Check if the admin and manager can create new tasks. **Preconditions:** The admin and manager have successfully logged in to their respective system. They are navigated to the page by clicking on the "KPI Department Management" option in the navigation bar.	1. The admin clicks on the “Create New Task” Button. 2. The admin fills in all the required information on the page. 3. The admin clicks on the “Create” button to create the task.	The newly created task is recorded in the table on the admin page. The newly created task is saved and displayed on the assigned employees page.
	Edit Task (Manager & Admin)	
1) Check if the admin and manager can edit a task for an employee. **Preconditions:** The admin and manager have successfully logged in to their respective system. They are navigated to the page by clicking on the "KPI Department Management" option in the navigation bar.	1) The admin clicks on the “Edit” button on the row of the employee task. 2) Update the task details as needed. 3) Click on the “Save” button to save the changes.	Updated task is saved, and the changes are reflected on the employee page.
	Delete Task (Manager & Admin)	
1) Check if the admin and manager can delete a task for an employee. **Preconditions:** The admin and manager have successfully logged in to their respective system. They are navigated to the page by clicking on the "KPI Department Management" option in the navigation bar.	1) In the table, click on the “Delete” button on the row of the employee task. 2) A confirmation prompt appears asking the admin to confirm the deletion of the selected task. 3) Click "Yes" to confirm and delete the reward.	The employee task is removed from the table on the admin page. The task is also deleted from the employee page.

	View Task (Manager & Admin)	
1) Check if the admin and manager can view an employee task. **Preconditions:** The admin and manager have successfully logged in to their respective system. They are navigated to the page by clicking on the "KPI Department Management" option in the navigation bar.	1) In the table, click on the "View" button on the row of the employee task.	The task details are displayed on the view task page successfully and accurately.
	View Specific Department KPI (Admin)	
1) Check if the admin can view specific department KPI. **Preconditions:** The admin has successfully logged in to the system. The admin is navigated to the page by clicking on the "KPI Department Management" option in the navigation bar.	1) The admin selects a specific department on the dropdown selection. 2) Click on the "Search" button.	The selected department KPI details are displayed correctly.
Test case for Survey management	Survey creation	
1) Check if the survey can be create by admin **Preconditions:** Current user should be admin	1) Click the create button 2) Fill in the form 3) Click the confirm button	The survey form can be found in the survey list
	Survey publish	
1）check if the survey can be publish to a specified month and a specified department	1）click the publish button 2）select month 3）select the target department	The survey will be publish to the target department according to month

Preconditions: At least one survey form should in the system	4）click publish button	
	Fill in the survey form(manager)	
1) Check if there is existing a published survey and if the survey can be finished **Preconditions**: At least one survey form published to the department	1) Check the system list and find the specified survey and month 2) To finish the survey for a specified staff	The survey form existing in the department survey list and the manager able to do the survey for a specified staff in his department
	Check the survey form(Admin)	
1) Check if admin is able to check the survey done by department manager **Preconditions**: Department manager is done at least one the survey	1) Click the check survey button 2) Find the specified department and select the month 3) Click check button to check the survey form for a specified user	Admin is able to check the survey done by department manager
Test case for leave application	Staff apply for a leave(staff)	
1) Check if staff is able to apply a leave form **Preconditions**: User login as staff	1) Staff click the create button to create a new leave form 2) Click confirm button	Staff is able to apply a leave form
	Check the leave form (admin)	
1）Check if admin is able to find the leave form created by staff **Preconditions**: At least oneleave form create by staff	1) Click the list form list, to find the specified leave form 2) Compare the leave form information with user inputted	admin is able to find the leave form with detailed information
	Leave history (staff)	

1) Check if staff can check the leave form created by he-self **Preconditions** : At least one leave form create by current staff	1) Click the leave form history function 2) Find the specified leave form created by he-self 3) Compare the leave form information with the original one	Staff able to check the leave history and the detailed information matched with the raw one
	Leave form approve	
1) Check if admin is able to approve the leave form , and if the number of holiday will changed after approve or reject **Preconditions** : At least one leave form created by staff	1) Check the leave form list and find the specified leave from 2) Approve or reject the leave form	If admin apply the leave form the total number of holidays will be reduced according to the leave day staff applied admin the leave form status will be changed to applied. If admin reject the leave form , the total number of holiday will not be changed and the status of this form will become rejected
Test cases for staff management	View staff list (admin)	
1) Check if admin is able to view staff information **Preconditions** : At least one staff in the system	1) Click the staff list 2) Find a specified staff and click the detailed information button	Admin is able to check the detailed staff information
	Create a new staff	
1) Check if admin is able to create a new staff **Preconditions** : None	1) Click the new button 2) Fill in the form 3) Click the confirm button	Admin is able to create a new staff and the detailed information is matched with raw data
	Delete a staff	
1) Check if admin is able to delete an existing staff **Preconditions** : At least one staff in the system	1) Click the delete button 2) Double confirm the operation	The staff information should be removed
	Update a staff	

1) Check if admin is able to update the staff information **Preconditions** : At least one staff in the system	1) Find the specified staff 2) Click update button 3) Change staff information then click confirm button	admin is able to update the staff information
	Reset password for staff	
1) Check if admin is able to reset a specified staff's password **Preconditions** : At least one staff in the system	1) Find a specified staff in staff list 2) Click the reset button	admin is able to reset a specified staff's password
Test cases for department management	Search department	
1) Check if admin is able to search and check department **Preconditions** : At least one department in the system	1) Click department list 2) Fill the search condition then click search	Admin able to search the department according to the search condition
	Add a new department	
1) Check if admin is able to add one more department **Preconditions** : None	1) Click add button 2) Fill in the form 3) Click the confirm button	Admin is able to add a new department , and the new department data should match with the raw data
	Delete a department	
1) Check if admin is able to delete a specified department **Preconditions** : At least one department in the system	1) Find the specified department 2) Click the delete button and double confirm it	Admin is able to delete the specified department . Note : Admin should not able to delete the department that has child departments
	Update a department	
1) Check if admin is able to update a department	1) Find the specified department 2) Change the department	Admin is able to update the department information.

Preconditions : At least one department in the system	information then click confirm button	
Test cases for system route	Check system router	
1) Check if admin is able to check the system router **Preconditions** : None	1) Click the system router list 2) Click the detailed information button	Admin is able to check the router information such as router name , router path and etc
	Add a system router	
1) Check if admin is able to add one more system route **Preconditions** : None	1) Click the new button 2) Input the detailed information 3) Click the confirm button	Admin is able to create a new route . Once the admin created the route , the sidebar should show the route path.
	Update a system route	
1) Check if admin is able to change the existing router **Preconditions:** at least one route should in the system	1) Find a specified route 2) Click the update button 3) Change the router information	Admin is able to change the router information . Once the admin changed the router , the router in the sidebar should also be changed.
	Delete a system route	
1) Check if admin is able to delete a system route **Preconditions:** at least one route should in the system	1) Find a specified route 2) Click the delete button 3) Double confirm the operation	Admin is able to delete the system router. Once the admin removes the router , the router in the sidebar should also disappear.
Test cases for System log	Check system logs	
1) Check if admin is able to check system logs **Preconditions:** None	1) Click the system log list 2) Find a specified system log and click the details button	Admin is able to check the system log information such as the login time and sensitive actions.
Test cases for Authorization management	Check roles	

Table 3. Functional Test Cases

2.2.1. Non-functional Testing

Testing Goal: The goal of the non-functional testing is to ensure that the application is not only functional but also user-friendly, with a small learning curve. The design should allow the average user to quickly adapt to the user interface, ensuring efficiency and satisfaction.

Testing Procedure: The testing will be conducted with a set of participants who will perform basic tasks using the application. After completing each task, participants will provide feedback on the difficulty of the task and suggestions for improving the user interface.

Pass/Fail Criteria: Each task has a constant pass criteria:

- Tasks must be completed within 30 seconds to be considered successful.
- Participants' feedback should indicate a difficulty rating of less than 5 on a scale of 1 to 10 (1 = very easy, 10 = very hard).

Table 4. Non-functional test cases

Test Case(s)	Steps	Expected Results
Ensure smooth user login experience.	Employee enters login credentials and clicks "Log in".	Login completes, and homepage loads within 3 seconds.
Verify logout speed.	Employee clicks the "Logout" button in the profile menu.	Logout completes, and login page loads within 2 seconds.
Check if employee can edit personal information.	Employee clicks the “Edit” button in the personal information page.	Edit operations complete within 1 minute, and updates are reflected in the employee page.
Check if employee can view announcements easily	Employee navigates to the announcement page.	Announcement page loads within 2 seconds, and announcements are clear and readable.
Validate announcement management speed	Admin creates, edits, and deletes announcements.	Each operation completes within 30 seconds, with the updates reflected immediately on both employee and admin page.
Check if the system can send announcement emails efficiently	HR posts an announcement.	Email notifications are sent to all employees within 1 minute.

Check if employee can view rewards easily.	Employee navigates to the reward page.	Reward page loads within 5 seconds, and rewards are clear and readable.
Check if employee can redeem reward efficiently	Employee redeems a reward.	Redemption process completes within 5 seconds, and points are updated instantly.
Validate reward management speed	Admin creates, edits, and deletes reward.	Each operation completes within 30 seconds, with the updates reflected immediately on both employee and admin page.
Verify leaderboard updates in real-time	Employee completes a task and earns points.	Leaderboard reflects new points and updated rankings immediately.
Check real-time KPI tracking	Task progress is updated on KPI tracking page.	KPI progress is reflected immediately on both the employee and admin page.
Validate KPI department task management speed	Admin and manager create, edit, and delete tasks.	Each operation completes within 30 seconds, with the updates reflected immediately on both employee and admin page.
Survey Creation Performance	1) Admin clicks the "Create Survey" button. 2) Admin fills out the survey form and clicks "Submit". 3) Measure the time it takes for the survey to be created and updated in the system.	The survey is created and appears in the survey list within 5 seconds.
Survey Publication Performance	1) Admin publishes the survey to a specific department. 2) Measure the time it takes for the survey to be published and visible to the target department.	The survey is published, and the department can view it within 10 seconds.

Leave Request Submission	1) The employee submits a leave request form. 2) Measure the time it takes for the system to confirm the request.	The leave request is submitted and the confirmation page loads within 3 seconds.
Leave Form Approval Performance	1) Admin/HR clicks the "Approve" button for a pending leave request. 2) Measure the time it takes for the system to process the approval.	The leave request is approved and the status is updated within 5 seconds.
Staff Information View (Admin Side)	1) Admin accesses the "Staff List". 2) Admin selects a staff member to view detailed information. 3) Measure the time it takes for the detailed information to load.	Staff details load within 3 seconds.
Staff Information Edit (Admin Side)	1) Admin selects a staff member and clicks "Edit". 2) Admin updates the staff information and clicks "Save". 3) Measure the time it takes for the system to save the updated information.	Staff information is updated within 10 seconds, and changes are reflected immediately.
Department Search Performance	1) Admin enters a search term for a department. 2) Measure the time it takes for the department search results to be displayed.	Department search completes within 3 seconds.
Department Update Performance	1) Admin selects a department and clicks "Edit".	Department information is updated within 10 seconds.

	2) Admin updates the department information and clicks "Save". 3) Measure the time it takes for the department information to be saved and updated in the system.	
Router Search Performance	1) Admin enters a search term for the system router. 2) Measure the time it takes for the router list to be filtered.	Router search completes within 3 seconds.
Log Retrieval Performance	1) Admin accesses the "System Logs" page. 2) Admin selects a log to view. 3) Measure the time it takes for the log details to load.	Log details load within 3 seconds.
Role Management Performance	1) Admin adds a new role, updates an existing role, or deletes a role. 2) Measure the time it takes for the role operation to be completed.	Role creation, update, or deletion completes within 15 seconds.
Role Permission Authorization Performance	1) Admin assigns permissions to a role. 2) Measure the time it takes for the permissions to be applied and reflected in the system.	Permissions are updated and applied within 5 seconds

2.3. Features not to be Tested

There are currently no features that will not be tested as all the implemented features are all testable.

3.Strategy

The Employee Management System will undergo a systematic testing approach to ensure all components work efficiently both individually and collectively. The testing strategy encompasses unit, integration, system, and acceptance testing phases to identify issues early, verify module interactions, and confirm the system meets all specified requirements.

3.1. Roles and Responsibilities

Development Team

- Responsible for unit testing of individual components
- Creates automated test scripts for core functionalities
- Performs initial integration testing of related modules
- Documents any technical issues or limitations discovered

Testing Team

- Executes all test cases documented in section 2.2
- Validates both functional and non-functional requirements
- Maintains test logs and defect tracking
- Performs user acceptance testing coordination

Project Manager

- Oversees the overall testing process
- Approves test plans and results
- Coordinates between development and testing teams
- Makes decisions about test suspension and resumption

Admin/HR Team

- Validates business rules and workflows

- Tests administrative functions including:
    - User management
    - Announcement system
    - Reward system
    - KPI management
    - Points management

3.2. Test Deliverables

The following documents and materials will be produced during the testing process:

Planning Phase

- Detailed test plans for each module
- Test case specifications
- Testing environment requirements
- Risk assessment documentation

Execution Phase

- Test scripts and automated test cases
- Test data sets for different scenarios
- Defect logs and tracking reports
- Test execution logs

Closure Phase

- Test summary reports
- Performance testing results
- User acceptance testing sign-off
- System documentation updates

3.3. Testing Schedule

Features to test	Estimated Testing
Phase 1: Core Functionality ● User authentication system ● Personal information management ● Basic navigation and UI testing	Semester 2

Phase 2: Business Features (Weeks 4-6) ● Announcement system ● Reward system ● KPI tracking ● Leaderboard functionality	Semester 2
Phase 3: Integration Testing (Weeks 7-8) ● End-to-end workflow testing ● Cross-module integration ● Performance testing ● Security testing	Semester 2
Phase 4: User Acceptance (Weeks 9-10) ● User acceptance testing ● Bug fixes and refinements ● Final system validation	Semester 2

3.4. Risk and Contingency

Several risks associated with the testing process have been identified. The contingency plan will address these risks to minimize impact on the timeline and quality of testing.

High-Priority Risks

1. **Data Integration Issues**
    - Risk: Inconsistent data flow between modules
    - Contingency: Implement robust error handling and data validation
    - Mitigation: Regular integration testing cycles
2. **Performance Bottlenecks**
    - Risk: System slowdown with multiple concurrent users
    - Contingency: Load balancing and optimization
    - Mitigation: Regular performance testing
3. **Security Vulnerabilities**
    - Risk: Unauthorized access to sensitive data
    - Contingency: Regular security audits
    - Mitigation: Implement security best practices

Medium-Priority Risks

1. **Browser Compatibility**
   - Risk: Inconsistent behavior across browsers
   - Contingency: Cross-browser testing strategy
   - Mitigation: Standard compliance in development
2. **User Adoption**
   - Risk: Resistance to new system features
   - Contingency: User training programs
   - Mitigation: Intuitive UI design and documentation

3.5. Testing Tasks

The following tasks will guide the testing team through the testing process:

Preparation Tasks

1. Test environment setup
2. Test data preparation
3. Test tool configuration
4. Test script development

Execution Tasks

1. Functional testing of all modules
2. Integration testing between components
3. Performance testing under load
4. Security testing and validation
5. User acceptance testing coordination

Monitoring Tasks

1. Defect tracking and management
2. Test progress reporting
3. Quality metrics monitoring
4. Test coverage analysis

Documentation Tasks

1. Test results documentation
2. Defect documentation
3. Test summary reporting

4. User guide updates

3.6 Environment Requirements

Hardware Requirements

- Server infrastructure for application hosting
- Development and testing workstations
- Network infrastructure for multi-user testing

Software Requirements

- Testing tools and frameworks
- Defect tracking system
- Test management software
- Performance monitoring tools

Data Requirements

- Test data sets for various scenarios
- Sample user profiles
- Historical data for reporting tests
- Backup and recovery procedures

4. Pass/Fail Criteria

4.1) Product Level

The system should meet specific functionality standards that ensure seamless user interactions and efficient management processes. Below are the criteria to determine successful testing outcomes.

Table 8. Test Case Pass/Fail Criteria

Testing Criteria	Pass Criteria	Fail Criteria
User Login	Users can log in with role-based access, and permissions function correctly per user role (HR, manager, employee).	Users cannot log in, or role-based access control is malfunctioning.
KPI Tracking and Leaderboard	KPIs can be assigned annually and tracked monthly, and leaderboard displays are updated every week without lag.	KPIs are not trackable, or leaderboard updates are delayed or inaccurate.
KPI Tracking and Leaderboard	KPIs can be assigned, tracked monthly, and leaderboard displays are updated in real-time without lag.	Video sent, has loss of frames.
Leave Application Process	Employees can apply for leave, HR and manager can approve/disapprove requests with accurate leave balance updates.	Leave requests are not processed, approvals are missed, or leave balances do not update correctly.
Points management by HR	HR can refresh employee points, and updates are reflected accurately in employee accounts and redemption options.	Points refreshment is unsuccessful or inaccurately displayed in the employee account.
Points Redemption	Employees can redeem points in the rewards catalog, and transactions are recorded accurately..	Redemption is unsuccessful, or points balance does not reflect changes accurately.
Reward System Management by HR	HR can create, update, and remove rewards in the catalog, and changes reflect accurately for employees.	Reward creation or updates do not reflect in the catalog, or errors occur during reward management.
Announcement System	HR can post announcements , which display correctly and employees can view it	Announcements do not display.
Role Authorization by HR	HR can authorize and manage roles with correct access permissions for different users (e.g., HR, manager, employee).	Role authorization fails, resulting in incorrect access levels for users.

System Security Compliance	Sensitive data is protected and adheres to the necessary security protocols (e.g., hashed passwords).	Data security protocols fail, exposing sensitive information to unauthorized access.

4.2. Testing Stages

During each development stage test will be conducted and judged according to the following criteria

Table 9. Testing level pass/fail criteria

Testing Level	Pass criteria	Fail criteria
Unit Testing	● All unit tests have been passed successfully ● At least 70% of all code written has been covered during testing. ● All bugs and errors found have been logged and been accounted for.	● Not all unit tests have been passed ● Not enough code written has been included in testing.
Integration Testing	● 90% of all modules developed have been tested. ● Modules perform their assigned function successfully when tested together. ● All issues have been logged and corrected	● Modules fail to carry out their function when put together. ● Too many critical issues found.
System Testing	● Entire System has been tested. ● 100% of all specified requirements have been successfully achieved. ● Minor Issues found have been logged and fixed. ● 100% of all system features are functioning appropriately.	● Not all specified requirements have been achieved. ● Critical issues and defects found during the test. ● System features are not functioning accurately.
Acceptance Testing	● When the client is satisfied with the product.	● Does not achieve the requirements specified. ● Critical issues found by client. ● Does not satisfy the client.

4.3. Suspension criteria and resumption requirements

4.3.1. Suspension Criteria

- Major system design flaws are discovered that compromise functionality.
- Significant requirement changes from the client necessitate re-evaluation.
- Critical issues prevent further testing until resolved.

4.3.2. Resumption Requirements

- All critical issues found have been fixed.
- Modified or fixed modules have passed testing successfully.
- The new changes have gained the approval of the testing manager as well as the Team Leader.

4.4. Approvals

- Both the Team leader and the Testing manager must agree to the completion of a testing level before moving on to the next level.
- Any changes or addition to the system features would have to be approved by the client.