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**GroupE1**

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**OrangHRM  
Master Test Plan**

**Version3.0**

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## Revision History

Date	Version	Description	Author
19/06/2021	1.0	Add target test items; outline of planned tests; iteration milestones	Nguyễn Thị Thùy Linh
21/06/2021	1.1	Add Entry and Exit Criteria, Environmental Needs, Responsibilities, Staffing, and Training Needs.	Nguyễn Lê Đức Hoàng
21/06/2021	1.2	Add Introduction and Testing workflow	Nguyễn Trung An
21/06/2021	1.3	Add Management process and procedures; risks, Dependencies, assumptions and constraints	Khru Vĩ Luân
21/06/2021	2.0	Review	Nguyễn Thị Thùy Linh
23/08	3.0	Add 5. Test Approach and change the number of members of team from 4 to 2	Nguyễn Thị Thùy Linh

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# Master Test Plan

## 1. Introduction

### 1.1 Purpose

The purpose of the Master Test Plan is to gather all of the information necessary to plan and control the test effort for a given iteration. It describes the approach to testing the software, and is the top-level plan generated and used by managers to direct the test effort.

This *Test Plan* for the OrangeHRM supports the following objectives:

- Identifies the items that should be targeted by the tests.
- Identifies the motivation for and ideas behind the test areas to be covered.
- Outlines the testing approach that will be used.
- Identifies the required resources and provides an estimate of the test efforts.
- Lists the deliverable elements of the test project.

### 1.2 Scope

All the features in some modules: Admin, Leave in OrangeHRM which satisfied the condition of the level of testing: System; and the type of testing: Functionality, Performance, GUI & Usability, Compatibility, Security.

### 1.3 Intended Audience

This Test Plan is written for the software testing course attendants including software testing group, the instructors and teacher assistants.

### 1.4 Document Terminology and Acronyms

HRM: Human Resource Management.  
PIM: Personal Information Module.  
ESS: Executive Support System.

### 1.5 References

User Manual for OrangeHRM & OrangeHRM Live of OrangeHRM Live Inc.

### 1.6 Document Structure

## 2. Evaluation Mission and Test Motivation

### 2.1 Background

Testing on Orange HRM software to find errors and record errors encountered in each respective module. With this document, it can help us track the progress of testing modules, execute tests to ensure that the program always executes well in all cases and easily monitor and detect problems when errors occur..

### 2.2 Evaluation Mission

- Find as many bugs as possible.
- Find important problems, assess perceived quality risks.
- Find as many bugs and record the errors and write in the report.

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### 2.3 Test Motivators

- This work finds many bugs that can help each member acquire the necessary skills in testing the quality of a software product.
- Help members evaluate the quality of software products is good or bad, thereby giving comments on errors of the product so that the software development team can correct and upgrade the software in a timely manner. better, resulting in a better user experience.

## 3. Target Test Items

The target item that has been identified as target for testing is OrangeHRM version 4.5. OrangeHRM. OrangeHRM is an Open Source Human Resource Management System that covers Personnel Information Management, Employee Self Service, Leave, Time & Attendance, Benefits, and Recruitment.

## 4. Outline of Planned Tests

### 4.1 Outline of Test Inclusions

This list below represents what modules will be tested in the OrangeHRM application.

Module Name	Applicable Roles	Description
Admin	Admin	This module allows Admin to fully control all settings that affect the action of your OrangeHRM implementation
Leave	ESS Admin	Employee: An employee can request for leave on the go, check available balances of your leave entitlements before applying for a leave. Supervisor: A supervisor can approve leave requests of their employees and assign leave on behalf of your employees when they cannot make it to the office. Admin: An Admin can configure all settings and manage the leave of all employees.

### 4.2 Outline of Other Candidates for Potential Inclusion

### 4.3 Outline of Test Exclusions

Because of the constraint of time and the number of members, there are some modules which will not be tested such as:

- Time
- Recruitment
- PIM
- Buzz

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- My Info
- Performance
- Directory
- Maintenance

Some types of testing will not be applied to test: Code coverage, API testing and Unit test.

## 5. Test Approach

### 5.1 Initial Test-Idea Catalogs and Other Reference Sources

### 5.2 Testing Techniques and Types

#### 5.2.1 Functional Testing

Technique Objective:	Exercise functionality of two modules: Admin and Leave, including navigation, data entry, processing, and retrieval to observe and log target behavior.
Technique:	Execute all features in the two modules by using domain testing, boundary testing and state transition testing to verify that: <ul style="list-style-type: none"> <li>· the expected results occur when valid data is used</li> <li>· the appropriate error or warning messages are displayed when invalid data is used</li> </ul>
Oracles:	Observation and some method to database play an important role to decide probable success or failure.
Required Tools:	The technique requires the following tools: <ul style="list-style-type: none"> <li>• Katalon studio to automation testing</li> </ul>
Success Criteria:	The change of database or other features will help to decide success or failure of a feature for example: using search feature to evaluate add feature.
Special Considerations:	The system can be failed by testing functionality so backup and recovery are vital.

#### 5.2.2 GUI & Usability

Technique Objective:	Exercise the following to observe and log standards conformance and target behavior: <ul style="list-style-type: none"> <li>• Navigation including window-to-window, field-to-field, and use of access methods (tab keys, mouse movements, accelerator keys).</li> <li>• Window objects and characteristics can be exercised—such as menus, size, position, state, and focus.</li> </ul>
Technique:	Create own checklist for OrangHRM then apply this checklist for all main

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	gui.
Oracles:	
Required Tools:	
Success Criteria:	Passing all requirements in checklist can consider as success
Special Considerations:	Not all properties for custom and third-party objects can be accessed.

### 5.2.3 Compatibility

Technique Objective:	Observe all main screens in Orangehrm in different OSs, different browsers
Technique:	<ul style="list-style-type: none"> <li>Take screenshot or video main screen of the application on different OS, different browsers</li> </ul>
Oracles:	
Required Tools:	<p>The technique requires the following tools:</p> <ul style="list-style-type: none"> <li>Lambdatest</li> </ul>
Success Criteria:	<p>GUI of main screen of Orangehrm is clear and full all elements</p> <p>Not have any element being error</p>
Special Considerations:	Tools free for Compatibility are limited about the time of using and the number of devices.

### 5.2.4 Performance Testing

Technique Objective:	<p>Exercise behaviors for designated functional transactions under the following conditions to observe and log target behavior and application performance data:</p> <ul style="list-style-type: none"> <li>normal anticipated workload</li> <li>anticipated worst-case workload</li> </ul>
Technique:	<ul style="list-style-type: none"> <li>Generate a large amount of data to use for performance</li> <li>Simulate many virtual users using the tested features together to determine the limit of the system.</li> <li>Scripts should be run on one machine and should be repeated with multiple clients (virtual or actual).</li> </ul>
Oracles:	To do performance testing need large data
Required Tools:	<p>The technique requires the following tools:</p> <ul style="list-style-type: none"> <li>JMeter</li> </ul>



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	<ul style="list-style-type: none"> <li>DTM to generate data</li> </ul>
Success Criteria:	Successful emulation of the workload without any failures due to test implementation problems.
Special Considerations:	<p>Comprehensive performance testing includes having a background workload on the server.</p> <p>The databases used for Performance Testing should be either actual size or scaled equally.</p>

### 5.2.5 Security Testing

Technique Objective:	<p>Exercise the target-of-test under the Sql injection conditions to observe and log target behavior</p> <ul style="list-style-type: none"> <li>Only those actors with access to the system and applications are permitted to access them.</li> </ul>
Technique:	Catch the request packet from the client and add some sql statements in the content.
Oracles:	
Required Tools:	<p>The technique requires the following tools</p> <ul style="list-style-type: none"> <li>Burp Suite</li> </ul>
Success Criteria:	Can not get data from database
Special Considerations:	The system can be failed by testing security so backup and recovery are vital

## 6. Entry and Exit Criteria

### 6.1 Test Plan

#### 6.1.1 Test Plan Entry Criteria

- Since the OrangeHRM application is already available, we can begin an execution test plan anytime.
- Component Testing has been completed.
- No change to test cases and test cases are up to date.
- Scenario based test cases have been reviewed by group members.

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### 6.1.2 Test Plan Exit Criteria

The exit criteria for this project:

- Execution of 100% test cases in test cases specification.
- All test cases executed must be documented and reviewed carefully.
- Formal approval will be granted by the Instructor/Teacher.

It specifies the criteria that denote a successful completion of a test phase. The exit criteria are the targeted results of the test and are necessary before proceeding to the next phase of development. Example: 95% of all critical test cases must pass.

### 6.1.3 Suspension and Resumption Criteria

#### 6.1.3.1 Suspension

There are some reasons which can lead to suspend the testing process:

- There are more than 50% of test cases failed, we must suspend testing until the development team fixes all the failed cases.
- Critical error(s) found affecting functionality of the whole system.
- An important change of test cases design.
- When a defect is found then cannot allow any further testing.
- A specific holiday shuts down both development and testing.

#### 6.1.3.2 Resumption

- When the development team fixes the system.
- When a holiday ends.

## 6.2 Test Cycles

### 6.2.1 Test Cycle Entry Criteria

The entrance criteria for each cycle of testing must be met before the next cycle can commence. Formal approval will be granted by the Test manager.

### 6.2.2 Test Cycle Exit Criteria

The cycle will be exited if it satisfies all the requirements:

- Must complete and document all test cases in the previous cycle.
- Formal approval will be granted by the Test manager.

### 6.2.3 Test Cycle Abnormal Termination

The criteria that will be used to determine whether testing should be prematurely suspended or ended for the current test cycle, or whether the intended build candidate to be tested must be altered:

- The Teachers/instructors suggest to terminate this cycle.
- The Tester team can not afford to execute these test cases planned in this cycle because not having enough knowledge, skills.
- The time is short, but features or techniques in this cycle are not important, so we prioritize testing key features.
- The software is not available for this cycle so we do another cycle first.

## 7. Deliverables

The following documents will be generated as a result of these testing activities:

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- Test cases design, specification which can be exported from Testlink
- Bug report exported from Mantis
- Test plan document
- Summary report: the final report which indicates the total number of test cases and bugs.

## 8. Testing Workflow

The workflow including 4 phases:

- Inception Phase: The initial phase of testing involves test planning and prototype testing, which helps the team to manage the process of testing and prepare steps for test execution.
- Elaboration Phase: The baseline of the test architecture is defined.
- Construction Phase: The construction phase of workflow testing includes thorough testing of each stage, which allows the team to find any discrepancies or defects in the system or its workflow that was left undetected by the team earlier.
- Transition Phase: The team performs regression testing, re-tests are conducted to ensure the accuracy of the workflow as well as to validate that no defects were left unattended or unresolved by the team.

## 9. Environmental Needs

### 9.1 Base System Hardware

The following table sets forth the system resources for the test effort presented in this *Test Plan*.

System Resources		
Resource	Quantity	Name and Type
2 High end laptops	1	HP Probook 440 G6 (Core i7, 8GB RAM, 256 GB SSD, Intel UHD Graphics )
	1	Dell Gaming G3 3579 (Core i7 8th gen, 16GB RAM, 256GB SSD, 1TB HDD, NVIDIA Geforce GTX 1050 Ti)
Network	2	Setup a LAN Gigabit and 1 internet line with the speed at least 5 Mb/s

### 9.2 Base Software Elements in the Test Environment

The following base software elements are required in the test environment for this *Test Plan*.

Software Element Name	Version	Type and Other Notes
OrangeHRM	4.5	Software
Windows		Operating System
Chrome, Microsoft Edge or Coccoc		Internet Browser
MS Outlook		eMail Client software

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### 9.3 Productivity and Support Tools

The following tools will be employed to support the test process for this *Test Plan*.

Tool Category or Type	Tool Brand Name	Vendor or In-house	Version
Defect Tracking	Mantis	In-house	2.2.1
Test Management	Testlink	In-house	1.9.16
Task Management	Trello	Vendor	
Document	Word	Vendor	

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### 9.4 Test Environment Configurations

The following Test Environment Configurations needs to be provided and supported for this project.

Configuration Name	Description	Implemented in Physical Configuration
Minimal configuration supported	Windows or MacOS	
Network installation (not client)	VNPT or Viettel	

## 10. Responsibilities, Staffing, and Training Needs

### 10.1 People and Roles

This table shows the staffing assumptions for the test effort.

Human Resources		
Role	Minimum Resources Recommended (number of full-time roles allocated)	Specific Responsibilities or Comments
Test Leader	Nguyễn Thị Thùy Linh	Provides management oversight. Responsibilities include: <ul style="list-style-type: none"> <li>Planning and assign and evaluate tasks to all members</li> <li>Test module Leave</li> <li>Apply types of testing: functional, security, compatibility, gui &amp; usability, performance</li> </ul>

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Test Analyst	Nguyễn Lê Đức Hoàng	<p>Identifies and defines the specific tests to be conducted.</p> <p>Responsibilities include:</p> <ul style="list-style-type: none"> <li>• Test Module Admin</li> <li>• Apply types of testing: functional, db generator, automation, gui &amp; usability</li> </ul>
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## 10.2 Staffing and Training Needs

This section outlines how to approach staffing and training the test roles for the project.

Phase	Skill	Member
Test Planning	<ul style="list-style-type: none"> <li>- Preparation of test plan/strategy document for various types of testing</li> <li>- Test tool selection</li> <li>- Test effort estimation</li> <li>- Resource planning and determining roles and responsibilities.</li> <li>- Training requirement</li> </ul>	2
Test case development	<ul style="list-style-type: none"> <li>- Create test cases, automation scripts (if applicable)</li> <li>- Review and baseline test cases and scripts</li> <li>- Create test data (If Test Environment is available)</li> </ul>	2
Test environment setup	<ul style="list-style-type: none"> <li>- Understand the required architecture, environment set-up and prepare hardware and software requirement list for the Test Environment.</li> <li>- Setup test Environment and test data</li> <li>- Perform smoke test on the build</li> </ul>	2

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Test execution	<ul style="list-style-type: none"> <li>- Execute tests as per plan</li> <li>- Document test results, and log defects for failed cases</li> <li>- Map defects to test cases in RTM</li> <li>- Retest the Defect fixes</li> <li>- Track the defects to closure</li> </ul>	2
Test cycle closure	<ul style="list-style-type: none"> <li>- Evaluate cycle completion criteria based on Time, Test coverage, Cost, Software, Critical Business Objectives, Quality</li> <li>- Prepare test metrics based on the above parameters.</li> <li>- Document the learning out of the project</li> <li>- Prepare Test closure report</li> <li>- Qualitative and quantitative reporting of quality of the work product to the customer.</li> <li>- Test result analysis to find out the defect distribution by type and severity.</li> </ul>	2

## 11. Iteration Milestones

Milestone	Planned Start Date	Actual Start Date	Planned End Date	Actual End Date	Nguyễn Thị Thùy Linh	Nguyễn Lê Đức Hoàng
Test Planning	15/6		21/6		<ul style="list-style-type: none"> <li>- write Test plan</li> <li>- review Test plan</li> <li>- install OrangeHRM</li> </ul>	<ul style="list-style-type: none"> <li>- write Test plan</li> <li>- install OrangeHRM</li> </ul>
Prepare Test cases/Test data, Training process	22/6		5/7		<ul style="list-style-type: none"> <li>-Training</li> <li>- assign features to test for all members and review tasks</li> </ul>	-Training
Functional Testing 1(Manual)	6/7		12/7		-review tasks	- design functional test cases for features assigned

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					- design functional test cases for features assigned	
Functional Testing 2(Manual)	13/7		19/7		-review tasks - execute functional test cases that written in last week	- execute functional test cases that written in last week
User Interface Testing & Compatibility Testing	20/7		26/7		-review tasks -GUI testing for features assigned( design and execution )	-GUI testing for features assigned ( design and execution )
Functional Testing 3(Automation)	27/7		2/8		-review tasks -automation for some test cases	-automation for some test cases
Performance Testing & Data generator	3/8		9/8		-review tasks -performance testing for features assigned(design and execution)	-performance testing for features assigned(design and execution)
Security	10/8		16/8		-review tasks -security testing for features assigned( execution and document)	-database testing for features assigned( execution and document)
Review	16/8		23/8		-review test cases -write summary report	-review test cases -write summary report

## 12. Risks, Dependencies, Assumptions, and Constraints

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Risk	Mitigation Strategy	Contingency (Risk is realized)
A member(s) drop this project	The Team leader always keeps contact with all members in teams. If a member does not interact in the group or does not do this work assigned, the team leader will remind it and report for the teacher to handle.	<ul style="list-style-type: none"> <li>Report for the teacher to handle</li> </ul>
Because of Covid19, all members do not have a chance to face-to-face conversation	use zoom/facebook to communicate between all members in the group	<ul style="list-style-type: none"> <li>use zoom/facebook to communicate between all members in the group</li> </ul>
A/some member (s) does not complete the tasks assigned on deadline	Before the deadline 1-2 days, the team leader reminds all member about this deadline Have penalty for member does not meet deadline	<ul style="list-style-type: none"> <li>If this action repeats many times, the team leader will report for the teacher to handle.</li> <li>Note in the final report</li> </ul>
Members in the group do not have enough knowledge about automation tools	Training by read more book/tutorial, watch video, take part in all lessons in the class	<ul style="list-style-type: none"> <li>Replace Manual testing with Automation Testing</li> </ul>
A laptop of a member in the group is broken and do not work	All documents and code/script will be upload in Internet	<ul style="list-style-type: none"> <li>Using another laptop to use and then immediately repair.</li> </ul>
Prerequisite entry criteria is not met.	Tester will define the prerequisites that must be met before Load Testing can start.	<ul style="list-style-type: none"> <li>Meet outstanding prerequisites</li> <li>Consider Load Test Failure</li> </ul>
Test data proves to be inadequate.	Tester will indicate what is required and will verify the suitability of test data.	<ul style="list-style-type: none"> <li>Redefine test data</li> <li>Review Test Plan and modify components (that is, scripts)</li> <li>Consider Load Test Failure</li> </ul>
Database requires refresh.	System Admin will endeavor to ensure the Database is regularly refreshed as required by Tester.	<ul style="list-style-type: none"> <li>Restore data and restart</li> <li>Clear Database</li> </ul>
Inaccurate time estimates.	Tester will schedule time for each cycle and determine the deadline to fit the estimated time.	<ul style="list-style-type: none"> <li>Report back to leader or manager</li> <li>Speed up the process if possible</li> <li>Negotiate with customer</li> </ul>
Improper communication between team members.	Members will schedule for meeting at least once a week to discuss problems they came across.	<ul style="list-style-type: none"> <li>Report back to leader for permission to host a meeting</li> </ul>

Dependency between	Potential Impact of Dependency	Owners
Performance Profiling	Program may have critical issues to execute before this test so Function Testing, Data & Database Integrity Testing and User Interface Testing must be done first	
OrangeHRM	OrangeHRM Inc supports the software called OrangeHRM to test. OrangeHRM is open source, if there are any changes, it will lead to	OrangeHRM Inc.



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	the fact that this project will not be complete.	
Mantis Bug Tracker	Mantis is a free open source, web-based bug tracking system that is commonly used for tracking software defects. If there are any major updates or change, it may lead to increasing time to resolve the issue or failing the project	Victor Bactor
TestLink	TestLink is a web-based test management system that is commonly being used by SQA (software quality assurance) testers. This system is provided by Teamtest. If there are any major updates or change, it may lead to increasing time to resolve the issue or failing the project	Teamtest

Assumption to be proven	Impact of Assumption being incorrect	Owners
The testing applications, systems, automation tools and environments are stable and working	Critical, this will affect the whole testing process	
All members will not drop this project	Critical, if there is a member or more who quits the project. It will be a burden for the other members	
All laptop will work in the testing process	Critical, it will decrease the productivity of testing process	
All applications are available for free	Average, it will increase the cost but will not completely stop the project	
Any issue come across are predicted	Minor, it will slightly increase the time to resolve	

Constraint on	Impact Constraint has on test effort	Owners
Time	Less time, less features will be tested	
Resource: laptop, people	Less people, the workload for each member will increase	
Cost	Less cost, less tools will be used for automation testing	
Scope	Not too high or too low so it cover all general and critical issues	
Quality	Aim for the best quality tests and identify all issues	

### 13. Management Process and Procedures

#### 13.1 Measuring and Assessing the Extent of Testing

#### 13.2 Assessing the Deliverables of this Test Plan

- Exported charts, test cases Testlink
- Bug report from Mantis
- Test plan document
- Summary report

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### 13.3 Problem Reporting, Escalation, and Issue Resolution

When something (issues, problems, conflicts, etc) happened that need to be escalated:

1. Take note of the problem's information
2. Report or escalate to team leader or higher authorities such as Teachers/instructor

### 13.4 Managing Test Cycles

Expected to have at least 3 cycles, based on 2 weeks/cycle. After each cycle, the team leader will review and consider the next cycle and then we will have a meeting with Teacher to discuss what we did .

Three cycles:

- Cycle 1: using Data and Database Integrity Testing and Function Testing for testing the functionality of the product.
- Cycle 2: using User Interface Testing for testing the UI of the product.
- Cycle 3: using Performance Profiling to find any performance issue.

### 13.5 Traceability Strategies

Testlink and Bug Mantis are linked, therefore it is easy to trace between test cases and bugs.

### 13.6 Approval and Signoff

Ho Tuan Thanh - Teacher Assistant  
Lam Quang Vu - Lecturer