**MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Report 5

**The Laboratory Tests   
Management System**

|  |  |
| --- | --- |
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| **Capstone Project Code** | eLTMS |

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# System Implementation & Test

## Details Description

### Overview

This section describes the approach and methodologies used by group to plan, organize and manage the testing of eLTMS system. It provides in detail all necessary information about the implementation and testing procedure of the system included test plans, test cases, test result, test environments, pass/fail criteria and risks estimations as well as a checklist to cover all possible cases.

### Test approach

* Goal: Test all features in the whole eLTMS system based on the core flow.
* Method: black-box testing
* Technique: check list

The testing for this project will consists of Integration System test level. Testing the program which was integrated and as a complete system to ensure that the software requirements have been met.

* Integration testing would be performed by all member of team and approved by team leader.

System testing is focused on assessing the system’s reliability. This process is concerned with finding errors that result from unanticipated interactions between components and component interface problems.

## 

## Database Relationship Diagram

### Physical diagram



Figure 1 – Physical Database Diagram

## System Testing Test Case

### User Web Application Test Case

#### <User> Register Account

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| RA01 | Register | 1. Enter “Nguyễn Hoàng Bách” into “Họ và tên” required field.  2. Choose “1/8/1995” into “Ngày sinh” required field.  3. Enter “0943689690” into “phone” required field.  4. Enter “1A Hoàng Diệu” into “Địa chỉ” required field.  5. Enter “123456” into “Mật khẩu” required field. | 1. System shows popup “Đăng kí thành công”. | Pass | 16/11/18 |

#### <User/Admin> Login

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| L01 | Test login | 1. Enter “0943689690” into “Số điện thoại” required field.  2. Enter “123456” into “Mật khẩu” required field.  3. Click on “Đăng nhập” button. | 1. System reloads page and, shows username “Hoàng Bách“ and “Đăng xuất” Button on top of the page. | Pass | 16/11/18 |
| L02 | Test login with a blank text box | 1. Input a blank in field “Số điện thoại”.  2. Click on “Đăng nhập” button. | 1. System shows error message “Vui lòng kiểm tra lại thông tin đăng nhập!”. | Pass | 16/11/18 |
| L03 | Test login with a blank text box | 1. Input a blank in field “Mật khẩu”.  2. Click on “Đăng nhập” button. | 1. System shows error message “Vui lòng nhập mật khẩu!”. | Pass | 16/11/18 |

#### <User> Book Appointment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| BA01 | Book appointment without login | 1. Choose “ Đặt lịch hẹn“ in menu bar. | 1. System navigate to create appointment page. | Pass | 16/11/18 |
| BA02 | Book appointment with validated input in step 1 | 1. Enter “Nguyễn Hoàng Bách” into “Họ và tên” required field.  2. Choose “1/8/1995” into “Ngày sinh” required field.  3. Enter “0943689690” into “phone” required field.  4. Enter “1A Hoàng Diệu” into “Địa chỉ” required field. | 1. Go to step 2 | Pass | 16/11/18 |
| BA03 | Book appointment with a blank text box in step 1 | 1. Input a blank in one of the field “Họ và tên”,”Ngày sinh”, “Số điện thoại”, “Địa chỉ”.  2. Click on “Bước 2” button. | 1. System shows error message “Vui lòng điền đầy đủ thông tin” | Pass | 16/11/18 |
| BA04 | Book appointment with validated input in step 2 | 1. Check labtest in checkbox area  2. Click on “Bước 3” button | 1. Go to step 3 | Pass | 16/11/18 |
| BA05 | Book appointment with a blank text box in step 2 | 1. Not check any labtest in checkbox area  2. Click on “Bước 3” button | 1. System shows error message “Vui lòng chọn loại xét nghiệm”. | Pass | 16/11/18 |
| BA06 | Book appointment with validated input in step 3 | 1. Select a date and time in the future  2. Click on “Đặt lịch” button. | 1. System shows popup “Đặt lịch thành công”. | Pass | 16/11/18 |
| BA07 | Book appointment with a wrong input in step 3 | 1. Select a date and time in the past  2. Click on “Đặt lịch” button. | 1. System shows error message “Vui lòng chọn lại ngày”. | Pass | 16/11/18 |

#### <Patient> View Booked Appointment/Result

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| VA01 | View booked appointment (after login) | 1. Choose “Tra cứu cuộc hẹn“ in menu bar. | 1. System navigate to view appointments page. | Pass | 16/11/18 |
| VA02 | View booked appointment without login | 1. Choose “Tra cứu cuộc hẹn“ in menu bar | 1. System naviagte to login page and shows “Vui lòng đăng nhập để xem thông tin chi tiết” | Pass | 16/11/18 |

### Mobile Application Test Case

#### <Guest> Login

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| RA\_1 | Test “Số điện thoại” guest input. | 1. User inputs a blank in field “Số điện thoại”.    2. User enters the “Số điện thoại” outside the allowed range from 10 to 12 number.    3. User enters “01692106611” into “Số điện thoại” required field. | 1. System shows error message “Vui lòng nhập đầy đủ thông tin!”.    2. System shows error message “Số điện thoại không hợp lệ!”.    3. System allows user to login. | Pass | 10/12/2018 |
| RA\_2 | Test “Nhập mật khẩu” guest input. | 1. User inputs a blank in field “Nhập mật khẩu”.  2. User enters "Nhập mật khẩu " more than 200 characters.  3. User enters “12345678” into “Nhập mật khẩu” required field. | 1. System shows error message “Vui lòng nhập đầy đủ thông tin!”.  2. System shows error message “Mật khẩu không hợp lệ!”.  3. System allows user to login. | Pass | 10/12/2018 |
| RA\_3 | Test “Đăng nhập” button | 1. User clicks “Đăng nhập” button. | 1. System show message if validation failed.  2. System navigate to mainpage if sucessfully. |  |  |

#### <Guest> Register Account

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| RA\_1 | Test “Họ và tên” guest input. | 1. User inputs a blank in required field “Họ và tên”. | 1. System shows error message “Vui lòng nhập đầy đủ thông tin”. | Pass | 10/12/2018 |
| RA\_2 | Test “Số điện thoại” guest input. | 1. User inputs a blank in field “Số điện thoại”.  2. User enters “Số điện thoại” already exists.  3. User enters the “Số điện thoại” outside the allowed range from 10 to 12 number.    4. User enters “01692106611” into “Số điện thoại” required field. | 1. System shows error message “Vui lòng nhập đầy đủ thông tin!”.  2. System shows error message “Số điện thoại đã được sử dụng!”.  3. System shows error message “Số điện thoại không hợp lệ!”.    4. System shows “Đăng ký thành công”. | Pass | 10/12/2018 |
| RA\_3 | Test “Email” guest input. | 1. User inputs a blank in field “Email”.  2. User inputs “Email” already exists.  3. User inputs “Email” wrong syntax.  4. User enters “[ducbm@gmail.com](mailto:ducbm@gmail.com)” into “Email” required field. | 1. System shows error message “Vui lòng nhập đầy đủ thông tin!”.  2. System shows error message “Email đã được sử dụng!”.  3. System shows error message “Email không hợp lệ!”.  4. System allows user to register. | Pass | 10/12/2018 |
| RA\_4 | Test “Nhập mật khẩu” guest input. | 1. User inputs a blank in field “Nhập mật khẩu”.  2. User enters "Nhập mật khẩu " more than 200 characters.  3. User enters “12345678” into “Nhập mật khẩu” required field. | 1. System shows error message “Vui lòng nhập đầy đủ thông tin!”.  2. System shows error message “Mật khẩu không hợp lệ!”.  3. System allows user to register. | Pass | 10/12/2018 |
| RA\_5 | Test “Chứng minh nhân dân” guest choose. | 1. User does not choose “Chứng minh nhân dân”.  2. User enters “251036695” to textbox “Chứng minh nhân dân”. | 1. System shows error message “Vui lòng nhập đầy đủ thông tin!”.  2. System allows user to register. | Pass | 10/12/2018 |

#### <Patient> Book Appointment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| BA\_1 | Test “Đặt lịch” screen. | 1. User “Đặt lịch” button on main screen.  2. User checks “Loại xét nghiệm” checkbox. | 1. System shows “Đặt lịch” screen and “Chọn loại xét nghiệm” section below the title.  2. Checkbox item is checked. | Pass | 10/12/2018 |
| BA\_2 | Test “bước 2” button. | 1. User clicks “Bước 2” button on “Chọn loại xét nghiệm” screen.  2. Users selects “Ngày”.  3. Users selects time slot. | 1. System navigates to “Chọn ngày” screen.  2. System shows datepicker dialog.  3. System shows dropdownlist of time slots. | Pass | 10/12/2018 |
| BA\_3 | Test “Bước 1” button. | 1. User clicks “Bước 1” button. | 1. System navigates to “Chọn loại xét nghiệm” screen. | Pass | 10/12/2018 |
| BA\_4 | Test “Chọn ngày” screen. | 1. User not select “Ngày”.  2. User does not select time slots. | 1. System shows error message “Vui lòng nhập đầy đủ thông tin!”.  2. System shows error message “Vui lòng nhập đầy đủ thông tin!”. | Pass | 10/12/2018 |

#### <Patient> View Appointment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| VA\_1 | Test “Danh sách cuộc hẹn” screen. | 1. User clicks “Danh sách cuộc hẹn” button on main screen. | 1. System navigates to “Danh sách cuộc hẹn” page.  1.1 System show loading dialog.  1.2 System display “Cuộc hẹn” list on the screen.  1.3 When the list is empty, system shows “Không có dữ liệu” message. | Pass | 10/12/2018 |
| VA\_2 | Test “Xóa” button. | 1. User clicks “Xóa” button on the appointment item. | 1. System call api to delete appointment and reloads page.  2. System displays “Có lỗi xảy ra” message when an error is occurred during deleting. | Pass | 10/12/2018 |
| VA\_3 | Test “Sửa” button. | 1. User clicks “Sửa” button on the appointment item. | 1. System navigates to edit appointment screen with the selected appointment. | Pass | 10/12/2018 |
| VA\_4 | Test “Xem chi tiết” button. | 1. User clicks “Xem chi tiết” button on the appointment item. | 1. System navigates to appointment detail page. | Pass | 10/12/2018 |
| VA\_5 | Test “Xem kết quả khám” button. | 1. User clicks “Xem kết quả khám” button on the appointment item. | 1. System navigates to “Kết quả khám” page. | Pass | 10/12/2018 |

#### <Patient> View Appointment Detail

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| VAD\_1 | Test “Xem chi tiết cuộc hẹn” screen. | 1. User clicks “Xem chi tiết cuộc hẹn” button on appointment item in the appointment history screen. | 1. System navigates to “Chi tiết cuộc hẹn” screen.  2. System display appointment detail on the screen. | Pass | 10/12/2018 |

#### <Patient> Edit Appointment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| EA\_1 | Test “Sửa lịch” screen. | 1. User clicks “Sửa lịch” button on appointment item in the appointment history screen.  2. User checks “Loại xét nghiệm” checkbox. | 1. System shows “Sửa lịch” screen and auto check the “Loại xét nghiệm” checkbox.  2. Checkbox item is checked. | Pass | 10/12/2018 |
| EA\_2 | Test “bước 2” button. | 1. User clicks “Bước 2” button on “Chọn loại xét nghiệm” screen.  2. Users selects “Ngày”.  3. Users selects time slot. | 1. System navigates to “Chọn ngày” screen.  2. System shows datepicker dialog.  3. System shows dropdownlist of time slots. | Pass | 10/12/2018 |
| EA\_3 | Test “Bước 1” button. | 1. User clicks “Bước 1” button. | 1. System navigates to “Chọn loại xét nghiệm” screen. | Pass | 10/12/2018 |
| EA\_4 | Test “Chọn ngày” screen. | 1. User not select “Ngày”.  2. User does not select time slots. | 1. System shows error message “Vui lòng nhập đầy đủ thông tin!”.  2. System shows error message “Vui lòng nhập đầy đủ thông tin!”. | Pass | 10/12/2018 |

#### <Patient> View Appointment Result

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| VAR\_1 | Test “Xem kết quả cuộc hẹn” screen. | 1. User clicks “Xem kết quả cuộc hẹn” button on appointment item in the appointment history screen. | 1. System navigates to “Kết quả cuộc hẹn” screen.  2. System display appointment result on the screen with:  - Name  - Birth year  - Gender  - Address  - Date register  - List result index. | Pass | 10/12/2018 |

### Admin Web Application Test Case

#### <Admin-Hospital Receptionist> Change status of appointment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| CS01 | Hospital Receptionist change status (after login) | 1. Click on checkbox at “Thanh toán” column | 1. System shows “Thực hiện thanh toán” popup to confirm. | Pass | 19/11/2018 |
| CS02 | Hospital Receptionist change status (after login) | 1. Click on “Có” button to perform action | 1. System shows notification with content “Đã thanh toán” and “Thay đổi trạng thái thành công” | Pass | 19/11/2018 |

Table 14 ­- Admin Web Application <Change status of appointment>

#### <Admin-Department Receptionist> Change status of appointment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| CS03 | Department Receptionist change status (after login) | 1. Click on checkbox at “Thanh toán” column | 1. System shows “Thực hiện thanh toán” popup to confirm. | Pass | 19/11/2018 |
| CS04 | Department Receptionist change status (after login) | 1. Click on “Có” button to perform action | 1. System shows notification with content “Đã thanh toán” and “Thay đổi trạng thái thành công” | Pass | 19/11/2018 |

Table 15 - Admin Web Application <Change status of appointment>

#### <Admin-Department Receptionist> Create a new appointment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| CA01 | Department Receptionist create a new appointment (after login) | 1. Click on “Thêm mới” button | 1. System shows popup with appointment’s information | Pass | 19/11/2018 |
| CA02 | Department Receptionist create appointment with validated input (after login) | 1. Enter “Nguyễn Hoàng Bách” into “Họ và tên” required field.  2. Choose “1/8/1995” into “Ngày sinh” required field.  3. Enter “0943689690” into “phone” required field.  4. Enter “1A Hoàng Diệu” into “Địa chỉ” required field.  5. Check labtest in checkbox area  6. Click on “Lưu” button | 1. System shows notification with content “Tạo mới cuộc hẹn thành công” | Pass | 19/11/2018 |
| CA03 | Department Receptionist create appointment with a blank text box (after login) | 1. Input a blank in one of the field “Họ và tên”,”Ngày sinh”, “Số điện thoại”, “Địa chỉ”.  2. Click on “Lưu” button  . | 1. System shows error message “Vui lòng điền đầy đủ thông tin” | Pass | 19/11/2018 |

Table 15 - Admin Web Application <Create a new appointment>

#### <Admin-Nurse> Change status of appointment after getting specimen

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| CS05 | Nurse changes status (after login) | 1. Click on checkbox at “Đã lấy mẫu” column | 1. System shows “Bạn có muốn thay đổi” popup to confirm | Pass | 19/11/2018 |
| CS06 | Nurse changes status (after login) | 1. Click on “Có” button to perform action | 1. System shows notification with content “Thay đổi trạng thái thành công” | Pass | 19/11/2018 |

Table 15 - Admin Web Application <Change status of appointment>

#### <Admin-Lab Technician> Add new labtest

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| AL01 | Lab Technician add a new labtest (after login) | 1. Click on “Thêm mới dịch vụ xét nghiệm” button | 1. System shows popup with labtest’s information form | Pass | 19/11/2018 |
| AL02 | Lab Technician add a new labtest with validated input (after login) | 1. Enter “CTM” into “Mã xét nghiệm” required field.  2. Enter “CT Máu” into “Tên xét nghiệm” required field.  3. Select “Máu” in “Loại” dropdown list required field.  3. Enter “45000” into “Giá” required field.  4. Enter something into “Mô tả” required field.  5. Click on “Lưu” button | 1. System shows notification with content “Thêm mới dịch vụ thành công” | Pass | 19/11/2018 |
| AL03 | Lab Technician add a new labtest with a blank text box (after login) | 1. Input a blank in one of the field “Mã xét nghiệm”, “Tên xét nghiệm”, “Giá” and not select “Loại”  2. Click on “Lưu” button  . | 1. System shows error message “Vui lòng điền đầy đủ thông tin” | Pass | 19/11/2018 |

Table 15 - Admin Web Application <Add new labtest>

#### <Admin-Lab Technician> Add new sample group

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| ASG01 | Lab Technician add a new sample group (after login) | 1. Click on “Nhóm xét nghiệm” button | 1. System shows popup with list of sample group | Pass | 19/11/2018 |
| ASG02 | Lab Technician add a new sample group (after login) | 1. Click on “Thêm mới nhóm xét nghiệm” button | 1. System shows popup with sample group’s information form |  |  |
| ASG03 | Lab Technician add a new sample group with validated input (after login) | 1. Enter “Tế bào” into “Tên nhóm xét nghiệm” required field  2. Enter “1200” into “Thời gian tiến hành” required field  3. Enter “25200” into “Bắt đầu” required field  4. Enter “63000” into “Kết thúc” required field  5. Click on “Lưu” button | 1. System shows notification with content “Thêm nhóm xét nghiệm thành công” | Pass | 19/11/2018 |
| ASG04 | Lab Technician add a new sample group with a blank text box (after login) | 1. Input a blank in one of the field “Tên nhóm xét nghiệm”, “Thời gian tiến hành”, “Bắt đầu”, “Kết thúc”  2. Click on “Lưu” button  . | 1. System shows error message “Vui lòng điền đầy đủ thông tin” | Pass | 19/11/2018 |

Table 15 - Admin Web Application <Add new sample group>

#### <Admin-Lab Technician> Add new sample

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Test Case Description | Test case procedure | Expected output | Result | Test Date |
| AG01 | Lab Technician add a new sample (after login) | 1. Click on “Loại xét nghiệm” button | 1. System shows popup with list of sample | Pass | 19/11/2018 |
| AG02 | Lab Technician add a new sample (after login) | 1. Click on “Thêm mới loại xét nghiệm” button | 1. System shows popup with sample group’s information form |  |  |
| AG03 | Lab Technician add a new sample with validated input (after login) | 1. Enter “Tế bào” into “Tên loại xét nghiệm” required field  2. Select “Tế Bào” in “Nhóm xét nghiệm” dropdown list required field.  3. Enter something into “Mô tả” required field.  4. Click on “Lưu” button | 1. System shows notification with content “Thêm loại xét nghiệm thành công” | Pass | 19/11/2018 |
| AG04 | Lab Technician add a new sample with a blank text box (after login) | 1. Input a blank in one of the field “Tên loại xét nghiệm” and not select “Nhóm xét nghiệm”  2. User clicks on “Lưu” button | 1. System shows error message “Vui lòng điền đầy đủ thông tin” | Pass | 19/11/2018 |

Table 15 - Admin Web Application <Add new sample>