The Team

Test Cases and Requirements

Test Coverage Report

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1. Introduction

The purpose of this report is to document the outcome of the tests done on the E-tendance System by the Quality Assurance Team.

Software testing is an essential activity in the software development and maintenance life cycles. It is a practice often used to decide and improve software quality. Development is more systematic nowadays and organizations seek measures of testing completeness and effectiveness to show test completion criteria. Of them all, coverage is considered especially valuable. Test coverage helps monitor the quality of testing and assists testers to create tests that cover areas that are missing or not validated.

Test Coverage aims to measure the effectiveness of testing in a qualitative manner. It determines whether the test cases are covering entire functional requirements. It is a kind of black box testing, where test cases are not written based on code but based on user requirements or expected functionality.

2. Testing Methodology

The main type of testing done on the E-tendance System is Unit Testing. Unit Testing is a level of software testing where individual units and components of a software are tested. The purpose of adopting unit testing is to validate that each component of the system performs as designed.

After conducting Unit Testing, Integration Testing was conducted. Integration testing is a level of software testing where individual units are combined and tested as a group. The purpose of integration testing is to ensure that the E-tendance system works well as a whole. This is important as there are dependencies between components in the E-tendance web application.

3. Unit Testing

Individual components of the E-tendance web application will be tested.

3.1 LoginPage

3.1.1 Description

The purpose of the "LoginPage" test is to check if the application directs to the MainPage when user enter the relevant information. This test will check alternative flows and document the alternative flows and the respective outputs of each alternative flow.

3.1.2 Testing Results

Test Input	Expected Output	Actual Output	Remarks
User inputs valid course index number and valid class index number. User clicks "Show Attendance" button.	User is directed to the MainPage.	User is directed to the MainPage.	Test succeeded
User inputs **invalid** course index number and valid class index number. User clicks "Show Attendance" button.	Error message displayed. User prompted to re-enter course index and class index numbers.	Error message displayed. User prompted to re-enter course index and class index numbers.	Test succeeded
User inputs valid course index number and **invalid** class index number. User clicks "Show Attendance" button.	Error message displayed. User prompted to re-enter course index and class index numbers.	Error message displayed. User prompted to re-enter course index and class index numbers.	Test succeeded
User inputs **invalid** course index number and **invalid** class index number. User clicks "Show Attendance" button.	Error message displayed. User prompted to re-enter course index and class index numbers.	Error message displayed. User prompted to re-enter course index and class index numbers.	Test succeeded
No input from User. User clicks "Show Attendance" button.	Error message displayed. User prompted to enter course index and class index numbers.	Error message displayed. User prompted to enter course index and class index numbers.	Test succeeded

3.2 MainPage

3.2.1 Description

The purpose of this test is to check if the "Main Page" works, specifically the facial-recognition function and accurate attendance recording. The purpose of this test is to check the accuracy of the facial-recognition system implemented according to skin colour and gender and number of people.

3.2.2 Testing Results

Test Input	Expected Output	Actual Output	Remarks
Group Member Simon El Nahas Christensen stands in front of the laptop webcam and presses the check-in button.	Simon's face is recognised and "Welcome Simon" message is displayed and Simon's name is removed from absent list and added to the present list.	Simon's face is recognised and "Welcome Simon" message is displayed and Simon's name is removed from absent list and added to the present list.	Test succeeded
Group Member Zeng Jinpo stands in front of the laptop webcam and presses the check-in button.	Jinpo's face is recognised and "Welcome Jinpo" message is displayed and Jinpo's name is removed from absent list and added to the present list.	Jinpo's face is recognised and "Welcome Jinpo" message is displayed and Jinpo's name is removed from absent list and added to the present list.	Test succeeded
Group Member MN Shaanmugam stands in front of the laptop webcam and presses the check-in button.	Jinpo's face is recognised and "Welcome Shaan" message is displayed and Shaan's name is removed from absent list and added to the present list.	Jinpo's face is recognised and "Welcome Shaan" message is displayed and Shaan's name is removed from absent list and added to the present list.	Test succeeded
Group Member Li Shanlan stands in front of the laptop webcam and	Shanlan's face is recognised and "Welcome Shanlan" message is	Shanlan's face is recognised and "Welcome Shanlan" message is	Test succeeded

presses the check-in button.	displayed and Shanlan's name is removed from absent list and added to the present list.	displayed and Shanlan's name is removed from absent list and added to the present list.	
Group Member Akshaya Muthu stands in front of the laptop webcam and presses the check-in button.	Akshaya's face is recognised and "Welcome Akshaya" message is displayed and Akshaya's name is removed from absent list and added to the present list.	Akshaya's face is recognised and "Welcome Akshaya" message is displayed and Akshaya's name is removed from absent list and added to the present list.	Test succeeded
Group Member Cao Ngoc Thai stands in front of the laptop webcam and presses the check-in button.	Thai's face is recognised and "Welcome Thai" message is displayed and Thai's name is removed from absent list and added to the present list.	Thai's face is recognised and "Welcome Thai" message is displayed and Thai's name is removed from absent list and added to the present list.	Test succeeded
Members Simon, Jinpo and Akshaya stand in front of the laptop webcam and press the check-in button.	All three members' faces are recognised and all 3 names are deleted from absent list and added to the present list.	All three members' faces are recognised and all 3 names are deleted from absent list and added to the present list.	Test succeeded
Members Jinpo, Shanlan and Ngoc Thai stand in front of the laptop webcam and press the check-in button.	All three members' faces are recognised and all 3 names are deleted from absent list and added to the present list.	All three members' faces are recognised and all 3 names are deleted from absent list and added to the present list.	Test succeeded
Members Simon, Akshaya and Shaan stand in front of the laptop webcam and press the check-in button.	All three members' faces are recognised and all 3 names are deleted from absent list and added to the present list.	All three members' faces are recognised and all 3 names are deleted from absent list and added to the present list.	Test succeeded

3.3 AttendanceTiming

3.3.1 Description

The purpose of this test is to check if students' names are categorised in the correct list according to the time their attendance is recorded. Categories include present, late and absent.

3.3.2 Testing Result

Test Input	Expected Output	Actual Output	Remarks
User's face is recognised and attendance is recorded before the set late time.	User's name is deleted from absent list and added to the present list.	User's name is deleted from absent list and added to the present list.	Test succeeded
User's face is recognised and attendance is recorded after the set late time and before absent time.	User's name is deleted from absent list and added to the late list.	User's name is deleted from absent list and added to the late list.	Test succeeded
User's face is recognised and attendance is recorded after absent time.	User's name remains in absent list.	User's name remains in absent list.	Test succeeded

3.4 UnrecognisedButton

3.4.1 Description

The purpose of this test is to check that the unrecognised button functionality is implemented correctly. The flow of the "Unrecognised" button is checked and documented as well.

3.4.2 Testing Result

Test Input	Expected Output	Actual Output	Remarks
User clicks on "Unrecognised?" button on the Main Page.	Pop-up window appears with webcam livestream and rotate head message.	Pop-up window appears with webcam livestream and rotate head message.	Test succeeded
User enters their matriculation number.	User prompted to rotate head for 10 seconds. 10 second countdown starts.	User prompted to rotate head for 10 seconds. 10 second countdown starts.	Test succeeded
User rotates their head and ten seconds elapsed.	Users name is added to the respective list, late or present.	Users name is added to the respective list, late or present.	Test succeeded

3.5 SummaryPage

3.5.1 Description

The purpose of this test is to check if the Summary Page is implemented correctly. The page should accurately display students' attendance in a table format.

3.5.2 Testing Results

Test Input	Expected Output	Actual Output	Remarks
User clicks on "Summary Page" button on the Navigation Bar.	User is directed to the Summary Page and students' attendance is displayed in a table format.	User is directed to the Summary Page and students' attendance is displayed in a table format.	Test succeeded

3.6 EditSummarypage

3.6.1 Description

The purpose of this test is to check if the tutors can edit the summary page as intended. The flow of editing a students' attendance is also documented.

3.6.2 Testing Results

Test Input	Expected Output	Actual Output	Remarks
Tutor clicks on edit button in Summary Page.	Popup appears. Tutor required to enter password.	Popup appears. Tutor required to enter password.	Test succeeded
Tutor enters password.	Popup closes. Tutor can edit students' attendance.	Popup closes. Tutor can edit students' attendance.	Test succeeded
Tutor presses save button.	Changes made are saved.	Changes made are saved.	Test succeeded

4 Integration Testing

3.6.1 Description

The purpose of the integration testing is to ensure that the E-tendance performs as intended as a whole. This integration testing is also documented as the demo video.

3.6.2 Testing Results

Test Input	Expected Output	Actual Output	Remarks
Tutor (MN Shaanmugam) enters course index of the tutorial/lab.	The main page appears. Absent list is complete with registered students' names.	The main page appears. Absent list is complete with registered students' names.	Test succeeded
Groupmate Li Shanlan enters tutorial class and stands infront of the webcam. She presses the check-in button.	Shanlan's name is moved from the absent to present list. Successful check in message displayed.	Shanlan's name is moved from the absent to present list. Successful check in message displayed.	Test Succeeded
Groupmate Zeng Jinpo enters tutorial class after a recent haircut and stands infront of the webcam. He presses the check-in button.	Jinpo is not recognised. Unrecognised message is displayed.	Jinpo is not recognised. Unrecognised message is displayed.	Test Succeeded
Jinpo clicks on unrecognised button.	Unrecognised popup appears. Jinpo enters Matriculation number and ten images captured. Jinpo's name is moved to present list.	Unrecognised popup appears. Jinpo enters Matriculation number and ten images captured. Jinpo's name is moved to present list.	Test Succeeded
Groupmate Akshaya Muthu arrives late for tutorial. She stands infront of the webcam and presses check-in button.	Akshaya's name is moved from the absent list to late list. Successful check in message displayed.	Akshaya's name is moved from the absent list to late list. Successful check in message displayed.	Test Succeeded
Class ends. Tutor presses "Show summary page" button to see	Summary Page appears with final attendance table.	Summary Page appears with final attendance table.	Test Succeeded

attendance summary.			
Tutor receives valid reason for absence from Simon El Nahas Christensen. Tutor presses edit attendance button in summary page.	Password control popup appears. Tutor enters password to change Simon's attendance from absent to exempted.	Password control popup appears. Tutor enters password to change Simon's attendance from absent to exempted.	Test succeeded
Tutor presses save button to save changes made in the summary page.	Simon's attendance is saved as exempted.	Simon's attendance is saved as exempted.	Test succeeded

4. Conclusion

At the end of unit testing, we can conclude that E-tendance components are implemented accurately and work as intended. More details on the Test Plan can be found in the Test Plan Report, while more details on our Software Quality Assurance can be found in the Software Quality Assurance Report Plan.