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**FACULTY OF SCIENCE AND TECHNOLOGY**

**FINAL PROJECT FOR THE**

**BIS(HONS) IN MOBILE COMPUTING WITH ENTERPRENEURSHIP; YEAR 2**

**BSC (HONS) SOFTWARE ENGINEERING; YEAR 2**

**ACADEMIC SESSION 2022; SEMESTER 2,3,4**

**MBC2014 / CSC2074: MOBILE APPLICATION DEVELOPMENT I / MOBILE APPLICATION DEVELOPMENT**

**DEADLINE: 8TH JULY 2022 (FRIDAY), 5:00 PM**

**INSTRUCTIONS TO CANDIDATES**

* This assignment will contribute 60% to your final grade.
* This is an individual assignment

**IMPORTANT**

Any work submitted after the deadline, or after any period of extension granted shall be marked as a Fail or awarded a zero.

**Academic Honesty Acknowledgement**

“I …....Wong Cheng Kit......., (student name). verify that this paper contains entirely my own

work. I have not consulted with any outside person or materials other than what was specified (an interviewee, for example) in the assignment or the syllabus requirements. Further, I have not copied or inadvertently copied ideas, sentences, or paragraphs from another student. I realize the penalties *(refer student handbook undergraduate programme)* for any kind of copying or collaboration on any assignment.”

…........Wong Cheng Kit 30/6/2022............ (Student’s signature / Date)

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# Introduction

## Project Overview

A project with the title of “Mobile Child Day Care Centre Management System Project” is conducted to develop a mobile application of child day care centre management system for the company, CKare. The company, CKare is a child day care centre that has been operated for a period of 20 years. The business location of the day care centre is located at Klang Valley in Malaysia. The day care centre focuses on taking care and teaching the children with their professionally trained teachers. The day care centre has multiple teachers where each of the teachers would take care and teach the children that had make an appointment with them. For example, teacher A is responsible for child A and B while teacher B is responsible for child C. The responsibility of the teachers is based on the appointment the parents make. In addition, the day care centre also has an admin to manage the appointments, contacting the parents of the children, and finance collecting. The appointments are noted down on a piece of paper and stored in a file each time an appointment has to be made. The payment system for the day care centre is collected by days, whereby the parents would have to pay before or when the parents pick their children from the centre.

The problem statement currently faced by the company, CKare that needs to be address is the inefficiency of recording the appointments with papers and files as the day care centre uses a paper-based document management system for their business operations. Therefore, the objective of the project is to develop a mobile application of child day management system for the company, CKare to increase the efficiency to improve their business operations. The project objective is constructed on using the SMART methodology which is smart, measurable, assignable, realistic, and time frame. The main project success criteria is to submit the deliverables within the time constraint. The deliverables of the project are to develop the final system along with the documentation and a presentation recorded video. The time scope or duration for the project is a period of 1 month time, where the starting date of the project is on 7th June 2022, and the completion date is on 7th July 2022. A duration of 2 weeks is spent on the planning of the project; A duration of 1.5 weeks is spent on implementation and documenting the system; A duration of 0.5 weeks is spent on finalizing the project with a presentation video. A monitoring and controlling process is conducted throughout the project schedule to ensure the project requirements, objective, and success criteria are met. The justification of a longer time is spent on planning is because improper planning could arise a large number of changes in the later phase of the project, which could potentially cause the deliverables to be submitted later than the expected date. According to Schwalbe (2015), alpha project managers spend almost twice the amount of time in the planning process compared to other project managers. The cost constraint in the project is 0. This is because the tools of the system such as IDE and programming languages are open source and free.

## Rationale behind the creation of this mobile app

The rationales behind the creation of this mobile application are to contribute to the Sustainable Development Goal 15, which is “Life on Land” of the Sustainable Development Goals (SDGs) and to increase the efficiency of the business processes.

As the company CKare still uses paper-based document management system to run their business operations, it consumes a relatively large number of papers to record the appointments. The action of consuming large number of papers are potentially destroying the habitats of the animals because deforestation is performed to produce the papers. Therefore, the creation of the mobile application for the child day care centre is to contribute to the SGPs by combating the target of 15.2 and 15.c of the SDG 15. According to The Global Goals (2022), the target 15.2 is end deforestation and restore degraded forests while the target 15.c is combat global poaching and trafficking. Therefore, the implementation of the mobile application for the child day care centre can highly reduce the number of papers supply to the centre world and thus, reducing the number of deforestations globally.

Secondly, the creation of the mobile application can increase the efficiency of the business processes. As the company CKare has operated for 20 years, there are a lot of paper records stored within the centre. Hence, the administrators of the centre might need to spend a lot of time in searching a specific record when the search is needed. According to Condon (2021), professionals spend 27 days in reviewing documents and searching for misplaced files with a traditional paper-based process. Therefore, the amount of time spent on searching the records can be significantly reduced with the mobile application. This is because the mobile application keeps the records in an organised format as the way in handling the records is performed with a systematic programming process.

## Project requirements

### System functional requirements

1. The system should display a list of records from the database in the respective List Page correctly.
2. The system should allow the users to view the detailed record in the respective Record Page correctly.
3. The system should display both portrait and landscape mode with the correct layout to the users correctly.
4. The system should display the correct appointment record with the selected teacher record correctly.
5. The system should allow the users to navigate the pages within the application correctly.
6. The system should allow the users to add a teacher or appointment records to the application.
7. The system should allow the users to update the teacher or appointment records in the application.
8. The system should allow the users to delete the teacher or appointment records in the application.
9. The system should allow the users to pick a date value from the Date Picker.
10. The system should allow the users to pick a time value from the Time Picker.
11. The system should generate a button clicking sound effect when the user clicks on a button in the application.
12. The system should generate a notification when the users delete a teacher or appointment record from the application.
13. The system should have input validations to validate the inputs inserted by the users.

### System quality attributes

1. Security

The system shall implement prepared statement methods to query the database to prevent SQL injection to the system from stealing or altering the database data. In addition, the system shall generate an immutable universally unique identifier (UUID) for each of the records ID in the system. The UUID provides a unique identifier in a 128-bit format that is immutable (Wagner, 2021). Hence, the cyber attackers could not alter the records ID.

1. Usability

The system shall adopt human computer interaction (HCI) principles such as integrating the user interface design patterns to be intuitive and easy to use. According to Lindgaard et al. (2006), a user typically takes an approximately of 0.05 seconds to determine the worthiness of continuing the application for a web application. The users would not proceed using the system if the system does not appear to be easy to use. Hence, the system shall adopt the user interface design patterns such as menu. This is because the menu design patterns are typically adopted in other system. Therefore, it would seem to be easier for the users to use.

# Implementation Details

## Basic Features and Justification

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| Basic Features | Justification |
| 1. Display of records list and detailed records | The records list and detailed records are displayed in the Recycler View and View Pager layout respectively. The Recycler View enables the administrators to view the long list of records by swiping the device downwards or upwards. Hence, the administrators do not need to change activities or use a larger device to view the full list. Meanwhile, the View Pager are used to allow the administrators to easily navigate the detailed records by swiping left or right of the device. The administrators do not need to select on every record to view its detailed information. |
| 2. Adding of a new record | The adding of a new record is a mandatory functionality for a management system because it is used to store the data into the application for management. |
| 3. Updating of an existing record | The updating of an existing record helps to correct the information that was stored. It is useful when the users would want to change the appointment date, time or contact numbers. Hence, the feature helps to ensure the records stored in the application can be accommodated with the users’ changes. |
| 4. Date Picker and Time Picker | The date picker and time picker are shown in a dialog that is used to provide a graphical user interface for the administrators to pick the intended date and time conveniently instead of manually typing in the dates and time. |

## Additional Features and Justification

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| Additional Features | Justification |
| 1. Deletion of teacher and appointment records | The CKare application is a day care management system where the basic features include adding a new record and updating a new record. There may times where the administrators of the application have made a mistake in creating a new record despite there is not a need to. In this case, the deletion function helps to remove the unwanted records in the application to provide the only necessary information.  In addition, there may be times where the teachers have stopped working in the day care centre and the records have been validated to be removed. The deletion of the records can be made and only keeping the teachers that are still working in the centre.  The deletion of the records keeps the application organised. It includes only the necessary information and thus, improving the efficiency while using the application. The administrators of the application do not need to scroll throughout the page a lot to look for the specific record. |
| 2. Deletion of photos in the appointment records | The deletion of the photos in the appointments records allows the administrators to remove the unwanted photos in the appointment record. The record might store an incorrect information if the administrators have made a mistake in taking a photo whether it is the wrong evidence or misclicked. Hence, the deletion of the photos feature helps to remove this inaccuracy of data stored within the records. |
| 3. Notification System | The notification system is generated when the administrators delete a teacher or appointment record. The justification of this feature is to keep a list of the deleted records in the phone until the notification is dismissed. The action of adding and updating a record displays the record in the application at the list page. However, the deleted records will not be shown. Hence, the notification system is generated to help the administrators to track the deleted records to ensure that the intended records are being deleted and not the unintended ones. |
| 4. Sound Effect | A button clicking sound effect will be generated upon every button on the application is clicked. The justification of this feature is to indicate or notify the administrators that they have performed a button clicking action in the application. Hence, the administrators may know if they have misclicked any buttons on the application. |
| 5. Input validation | The input validation validates the input in the edit text fields inserted by the administrators. Each of the input has a specific regular expression pattern to match. This ensures that the input can be inserted with the right values, increasing the accuracy of the data in the application. |

## Navigation Flow Graph

A group of cell phones

Description automatically generated with low confidence

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| User Interface | Description |
| A picture containing text, monitor, electronics, screen  Description automatically generatedA screenshot of a cell phone  Description automatically generated with medium confidence | Main Page  The main page is the first page to be displayed to the users when the users launch the application. It consists of the application logo and a button to start the application. The users can exit the application by clicking on the device back button at this page. |
| A picture containing text, monitor, screenshot, electronics  Description automatically generatedA screenshot of a phone  Description automatically generated with medium confidence | Teacher List Page  The teacher list page consists of all the teacher records in the database. The order of the teacher records is based on the active status of the records. If the teachers are active, the teachers will be placed at the top and vice versa. The gender icon next to the record labels are based on the teacher’s gender.  In addition, the page consists of an add teacher button on the right side of the menu to add a new teacher record.  The users can exit the application by clicking on the device back button at this page. |
| Graphical user interface, application, Teams  Description automatically generatedA screenshot of a phone  Description automatically generated with medium confidence | Teacher Page  The teacher page consists of the inputs to the teacher’s information. The inputs will only be stored and updated if they are validated.  In addition, the page consists of an “APPOINTMENT” and delete button on the right side of the menu to navigate to Appointment List Page and delete the teacher record respectively.  The users can navigate back to the previous page by clicking on the back button located on the left side of the menu or device back button. |
| Graphical user interface, text, application  Description automatically generatedA screenshot of a phone  Description automatically generated with low confidence | Appointment List Page  The appointment list page consists of all the appointment records in the database. The order of the appointment records is based on the settled status and the date of the records. If the appointment has settled, the appointment will be placed at the bottom and vice versa. The later dates of the records will be placed at the top and vice versa. The appointment record would also have a tick icon next to the record label if the record is settled.  In addition, the page consists of an add appointment button on the right side of the menu to add a new appointment record. However, if the teacher’s active status is false, the add appointment button will not be shown. The appointment record also could not be clicked.  The users can navigate back to the previous page by clicking on the back button located on the left side of the menu or device back button. |
| Graphical user interface, application  Description automatically generated | Appointment Page  The appointment page consists of the inputs to the appointment’s information. The inputs will only be stored and updated if they are validated.  In addition, the page consists of a delete button on the right side of the menu to delete the appointment record. The page also consists of a date, time, and camera button and each of the button navigates to the respective page.  If the teacher’s active status is false, the inputs cannot be inserted. The edit text fields, checkbox and buttons will be disabled. However, the delete button can still be clicked and delete the record.  The users can navigate back to the previous page by clicking on the back button located on the left side of the menu or device back button. |
| Graphical user interface, Teams, calendar  Description automatically generatedCalendar  Description automatically generated | Date Picker Dialog  The date picker dialog displays a calendar user interface for the users to pick a date conveniently. The dialog consists of a “cancel” and a “ok” button which cancels the dialog and sends the date selected to the Appointment Page respectively.  The users can navigate back to the previous page by clicking on the “cancel” or device back button. |
| A picture containing text, monitor, screenshot, screen  Description automatically generatedA screenshot of a phone  Description automatically generated with medium confidence | Time Picker Dialog  The time picker dialog displays a user interface for the users to pick a time conveniently. The dialog consists of a “cancel” and a “ok” button which cancels the dialog and sends the time chose to the Appointment Page respectively.  The users can navigate back to the previous page by clicking on the “cancel” or device back button. |
| A screenshot of a computer  Description automatically generated with low confidence | Device Camera Application  The users will be directed to the device camera application when the users clicked on the camera button at the Appointment Page.  The users can navigate back to the previous page by clicking on the device back button. |

# Test cases and test results

## Sound Effect

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| Test Case ID | TC-01-001 |
| Objective | Test if the application has the button clicking sound effect when the “Get Started” button is clicked at the Main Page. |
| Condition | The volume of the device the user must be above 0. |
| Test Steps | 1. Launch the app. 2. Click on the “Get Started” button. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-002 |
| Objective | Test if the application has the button clicking sound effect when the “Get Started” button is clicked at the Main Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Launch the app. 3. Click on the “Get Started” button. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-003 |
| Objective | Test if the application has the button clicking sound effect when the “+” button on the right side of the menu is clicked at the Teacher List Page. |
| Condition | The volume of the device the user must be above 0. |
| Test Steps | 1. Enter Teacher List Page. 2. Click on the “+” button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-004 |
| Objective | Test if the application has the button clicking sound effect when the “+” button on the right side of the menu is clicked at the Teacher List Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Teacher List Page. 3. Click on the “+” button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-005 |
| Objective | Test if the application has the button clicking sound effect when the teacher record is clicked at the Teacher List Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher List Page. 2. Click on the teacher record. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-006 |
| Objective | Test if the application has the button clicking sound effect when the teacher record is clicked at the Teacher List Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Teacher List Page. 3. Click on the teacher record. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-007 |
| Objective | Test if the application has the button clicking sound effect when the back button on the left side of the menu is clicked at the Teacher Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the back button on the left side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-008 |
| Objective | Test if the application has the button clicking sound effect when the back button on the left side of the menu is clicked at the Teacher Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Teacher Page. 3. Click on the back button on the left side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-009 |
| Objective | Test if the application has the button clicking sound effect when the “APPOINTMENT” button on the right side of the menu is clicked at the Teacher Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the “APPOINTMENT” button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-010 |
| Objective | Test if the application has the button clicking sound effect when the “APPOINTMENT” button on the right side of the menu is clicked at the Teacher Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Teacher Page. 3. Click on the “APPOINTMENT” button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-011 |
| Objective | Test if the application has the button clicking sound effect when the delete button on the right side of the menu is clicked at the Teacher Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the delete button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-012 |
| Objective | Test if the application has the button clicking sound effect when the delete button on the right side of the menu is clicked at the Teacher Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Teacher Page. 3. Click on the delete button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-013 |
| Objective | Test if the application has the button clicking sound effect when the back button on the left side of the menu is clicked at the Appointment List Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Appointment List Page. 2. Click on the back button on the left side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-0014 |
| Objective | Test if the application has the button clicking sound effect when the back button on the left side of the menu is clicked at the Appointment List Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Appointment List Page. 3. Click on the back button on the left side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-015 |
| Objective | Test if the application has the button clicking sound effect when the “+” button on the right side of the menu is clicked at the Appointment List Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Appointment List Page. 2. Click on the “+” button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-016 |
| Objective | Test if the application has the button clicking sound effect when the “+” button on the right side of the menu is clicked at the Appointment List Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Appointment List Page. 3. Click on the “+” button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-017 |
| Objective | Test if the application has the button clicking sound effect when the teacher record is clicked at the Appointment List Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Enter Appointment List Page. 2. Click on the teacher record. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-018 |
| Objective | Test if the application has the button clicking sound effect when the teacher record is clicked at the Appointment List Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Appointment List Page. 3. Click on the teacher record. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-019 |
| Objective | Test if the application has the button clicking sound effect when the back button on the left side of the menu is clicked at the Appointment Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the back button on the left side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-020 |
| Objective | Test if the application has the button clicking sound effect when the back button on the left side of the menu is clicked at the Appointment Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Appointment Page. 3. Click on the back button on the left side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-021 |
| Objective | Test if the application has the button clicking sound effect when the delete button on the right side of the menu is clicked at the Appointment Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the delete button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-022 |
| Objective | Test if the application has the button clicking sound effect when the delete button on the right side of the menu is clicked at the Appointment Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Appointment Page. 3. Click on the delete button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-023 |
| Objective | Test if the application has the button clicking sound effect when the camera button is clicked at the Appointment Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the camera button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-024 |
| Objective | Test if the application has the button clicking sound effect when the camera button is clicked at the Appointment Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Appointment Page. 3. Click on the camera button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-025 |
| Objective | Test if the application has the button clicking sound effect when the remove photo button is clicked at the Appointment Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the remove photo button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-026 |
| Objective | Test if the application has the button clicking sound effect when the remove photo button is clicked at the Appointment Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Appointment Page. 3. Click on the remove photo button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-027 |
| Objective | Test if the application has the button clicking sound effect when the date button is clicked at the Appointment Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the date button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-028 |
| Objective | Test if the application has the button clicking sound effect when the date button is clicked at the Appointment Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Appointment Page. 3. Click on the date button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-029 |
| Objective | Test if the application has the button clicking sound effect when the time button is clicked at the Appointment Page. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the time button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-01-030 |
| Objective | Test if the application has the button clicking sound effect when the time button is clicked at the Appointment Page and when the device is on landscape mode. |
| Condition | 1. The volume of the device the user must be above 0. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. |
| Test Steps | 1. Rotate the device to turn on the landscape mode. 2. Enter Appointment Page. 3. Click on the time button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application generates the button clicking sound effect successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

## Notification System

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| Test Case ID | TC-02-001 |
| Objective | Test if the application generates a notification when deleting a teacher record with empty teacher name field that has not filled before by clicking on the delete button on the right side of the menu in Teacher Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. The teacher name edit text field must be empty. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Empty the teacher name field. |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Teacher – null got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-002 |
| Objective | Test if the application generates a notification when deleting a teacher record with a valid teacher name input by clicking on the delete button on the right side of the menu in Teacher Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. The teacher name edit text field must be filled. 4. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Enter a valid teacher name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Teacher Name: Wong Cheng Kit |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Teacher – Wong Cheng Kit got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-003 |
| Objective | Test if the application generates a notification when deleting a teacher record with a valid teacher name input by clicking on the delete button on the right side of the menu in Teacher Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. The teacher name edit text field must be filled. 4. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Enter a valid teacher name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Teacher Name: wong cheng kit |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Teacher – wong cheng kit got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-004 |
| Objective | Test if the application generates a notification when deleting a teacher record with a valid teacher name input by clicking on the delete button on the right side of the menu in Teacher Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. The teacher name edit text field must be filled. 4. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Enter a valid teacher name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Teacher Name: wongchengkit |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Teacher – wongchengkit got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-005 |
| Objective | Test if the application generates a notification when deleting a teacher record with empty teacher name field by clicking on the delete button on the right side of the menu in Teacher Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Enter values to the teacher name edit text field. 3. Empty the values in the teacher name edit text field. 4. Click on the delete button on the right side of the menu in Tea. |
| Input Data | 1. Teacher Name: Wong Cheng Kit 2. Teacher Name: |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Teacher – got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-006 |
| Objective | Test if the application generates a notification when deleting a teacher record with an invalid teacher name input by clicking on the delete button on the right side of the menu in Teacher Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. The teacher name edit text field must be filled. 4. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Enter an invalid teacher name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Teacher Name: wong,, |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Teacher – Wong Cheng Kit got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-007 |
| Objective | Test if the application generates a notification when deleting a teacher record with an invalid teacher name input by clicking on the delete button on the right side of the menu in Teacher Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. The teacher name edit text field must be filled. 4. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Enter an invalid teacher name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Teacher Name: 1234 |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Teacher – got deleted”. |
| Actual Results | Matches the expected results. |

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| Test Case ID | TC-02-008 |
| Objective | Test if the application generates a notification when deleting a teacher record with an invalid teacher name input by clicking on the delete button on the right side of the menu in Teacher Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. The teacher name edit text field must be filled. 4. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Enter an invalid teacher name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Teacher Name: wongwongwongwongwongwongwong |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Teacher – got deleted”. |
| Actual Results | Matches the expected results. |

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| Test Case ID | TC-02-009 |
| Objective | Test if the application generates a notification when deleting an appointment record with empty child name field that has not filled before by clicking on the delete button on the right side of the menu in Appointment Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. 4. The child name edit text field must be empty. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Empty the child name field. |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the child record that was deleted, which is “Appointment – null got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-010 |
| Objective | Test if the application generates a notification when deleting an appointment record with a valid child name input by clicking on the delete button on the right side of the menu in Appointment Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. 4. The child name edit text field must be filled. 5. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Enter a valid child name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Child Name: Wong Cheng Kit |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Appointment – Wong Cheng Kit got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-011 |
| Objective | Test if the application generates a notification when deleting an appointment record with a valid child name input by clicking on the delete button on the right side of the menu in Appointment Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. 4. The child name edit text field must be filled. 5. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Enter a valid child name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Child Name: wong cheng kit |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Appointment – wong cheng kit got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-012 |
| Objective | Test if the application generates a notification when deleting an appointment record with a valid child name input by clicking on the delete button on the right side of the menu in Appointment Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. 4. The child name edit text field must be filled. 5. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Enter a valid child name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Child Name: wongchengkit |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the teacher record that was deleted, which is “Appointment – wongchengkit got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-013 |
| Objective | Test if the application generates a notification when deleting an appointment record with empty child name field by clicking on the delete button on the right side of the menu in Appointment Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. 4. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Enter values to the child name edit text field. 3. Empty the values in the child name edit text field. 4. Click on the delete button on the right side of the menu in Tea. |
| Input Data | 1. Child Name: Wong Cheng Kit 2. Child Name: |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the child record that was deleted, which is “Appointment – got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-014 |
| Objective | Test if the application generates a notification when deleting an appointment record with an invalid child name field by clicking on the delete button on the right side of the menu in Appointment Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. 4. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Enter an invalid child name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Child Name: wong,. |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the child record that was deleted, which is “Appointment – got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-015 |
| Objective | Test if the application generates a notification when deleting an appointment record with an invalid child name field by clicking on the delete button on the right side of the menu in Appointment Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. 4. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Enter an invalid child name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Child Name: 1234 |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the child record that was deleted, which is “Appointment – got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-02-016 |
| Objective | Test if the application generates a notification when deleting an appointment record with an invalid child name field by clicking on the delete button on the right side of the menu in Appointment Page. |
| Condition | 1. The app permission for notification system must be allowed. 2. There must be at least 1 teacher record in the database. 3. There must be at least 1 appointment record in the teacher record database. 4. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Enter an invalid child name. 3. Click on the delete button on the right side of the menu in Tea. |
| Input Data | Child Name: wongwongwongwongwongwongwong |
| Expected Results | The application generates a notification with the title of “Deletion” and the content of the child record that was deleted, which is “Appointment – got deleted”. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

## Navigation

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| Test Case ID | TC-03-001 |
| Objective | Test if the user can launch the application at Main Page. |
| Condition | None. |
| Test Steps | 1. Click on the application icon in the device. 2. Launch the app. |
| Input Data | None. |
| Expected Results | The device will launch the application and load the application with the Main Page successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-002 |
| Objective | Test if the user can exit the application from the Main Page with the device back button. |
| Condition | None. |
| Test Steps | 1. Click on the application icon in the device. 2. Launch the app. 3. Click on the device back button. |
| Input Data | None. |
| Expected Results | The device will close the application and load the device with the previous loaded screen. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-003 |
| Objective | Test if the user can navigate to the Teacher List Page. |
| Condition | None. |
| Test Steps | 1. Enter Main Page. 2. Click on the “Get Started” button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Teacher List Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-004 |
| Objective | Test if the user can exit the application from the Teacher List Page with the device back button. |
| Condition | None. |
| Test Steps | 1. Enter Teacher List Page. 2. Click on the device back button. |
| Input Data | None. |
| Expected Results | The device will close the application and load the device with the previous loaded screen. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-005 |
| Objective | Test if the user can navigate to the Teacher Page by clicking on the “+” button on the right side of the menu at Teacher List Page. |
| Condition | None. |
| Test Steps | 1. Enter Teacher List Page. 2. Click on the “+” button on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Teacher Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-006 |
| Objective | Test if the user can navigate to the Teacher Page by clicking on the teacher record at Teacher List Page. |
| Condition | There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher List Page. 2. Click on the teacher record. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Teacher Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-007 |
| Objective | Test if the user can navigate back to Teacher List Page from Teacher Page by clicking on the device back button. |
| Condition | There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the device back button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Teacher List Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-008 |
| Objective | Test if the user can navigate back to Teacher List Page from Teacher Page by clicking on the back button located at the left side of the menu at Teacher Page. |
| Condition | There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the back button at the left side of the menu. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Teacher List Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-009 |
| Objective | Test if the user can navigate back to Teacher List Page from Teacher Page by clicking on the delete button located at the right side of the menu at Teacher Page. |
| Condition | There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the delete button at the right side of the menu. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Teacher List Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-010 |
| Objective | Test if the user can navigate to Appointment List Page by clicking on the “APPOINTMENT” button located at the right side of the menu at Teacher Page when the active checkbox is checked. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. |
| Test Steps | 1. Enter Teacher Page. 2. Check the active checkbox. 3. Click on the “APPOINTMENT” button at the right side of the menu. |
| Input Data | Check the active checkbox. |
| Expected Results | The application will direct the user to the Appointment List Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-011 |
| Objective | Test if the user can navigate to Appointment List Page by clicking on the “APPOINTMENT” button located at the right side of the menu at Teacher Page when the active checkbox is unchecked. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. |
| Test Steps | 1. Enter Teacher Page. 2. Uncheck the active checkbox. 3. Click on the “APPOINTMENT” button at the right side of the menu. |
| Input Data | Uncheck the active checkbox. |
| Expected Results | The application will not direct the user to the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-012 |
| Objective | Test if the user can navigate back to Teacher Page from Appointment List Page by clicking on the back button located at the left side of the menu at Appointment List Page. |
| Condition | 1. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Appointment List Page. 2. Click on the back button located at the left side of the menu. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Teacher Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-013 |
| Objective | Test if the user can navigate back to Teacher Page from Appointment List Page by clicking on the device back button. |
| Condition | 1. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Appointment List Page. 2. Click on the device back button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Teacher Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |
| Test Case ID | TC-??-014 |
| Objective | Test if the user can navigate to Appointment Page by clicking on the “+” button located at the right side of the menu at Appointment List Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. |
| Test Steps | 1. Enter Appointment List Page. 2. Click on “+” button located at the right side of the menu. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-015 |
| Objective | Test if the user can navigate back to Appointment List Page by clicking on the back button located on the left side of the menu at Appointment Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the back button located on the left side of the menu. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment List Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-016 |
| Objective | Test if the user can navigate back to Appointment List Page by clicking on the device back button. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the device back button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment List Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-017 |
| Objective | Test if the user can navigate back to Appointment List Page by clicking on the delete button located on the right side of the menu at Appointment Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the delete button located on the right side of the menu. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment List Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-018 |
| Objective | Test if the user can navigate to the device camera application by clicking on the camera button located below the image view at Appointment Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. 4. The app permission for camera must be allowed. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the camera button located below the image view. |
| Input Data | None. |
| Expected Results | The application will direct the user to the device camera application successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-019 |
| Objective | Test if the user can navigate back to Appointment Page from the device camera application by clicking on the device back button. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter device camera application. 2. Click on the device back button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-020 |
| Objective | Test if the user can navigate to the Date Picker Page from the Appointment Page by clicking on the date button at Appointment Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the date button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Date Picker Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-021 |
| Objective | Test if the user can navigate back to Appointment Page from Date Picker Page by clicking on the device back button. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Date Picker Page. 2. Click on the device back button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-022 |
| Objective | Test if the user can navigate back to Appointment Page from Date Picker Page by clicking on the “cancel” button on the Date Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Date Picker Page. 2. Click on the “cancel” button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-023 |
| Objective | Test if the user can navigate back to Appointment Page from Date Picker Page by clicking on the “ok” button on the Date Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Date Picker Page. 2. Click on the “ok” button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-024 |
| Objective | Test if the user can navigate to Time Picker Page by clicking on the time button on the Appointment Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the time button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Time Picker Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-025 |
| Objective | Test if the user can navigate back to Appointment Page from Time Picker Page by clicking on the device back button. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Time Picker Page. 2. Click on the device back button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-026 |
| Objective | Test if the user can navigate back to Appointment Page from Time Picker Page by clicking on the “cancel” button at the Time Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Time Picker Page. 2. Click on the “cancel” button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-03-027 |
| Objective | Test if the user can navigate back to Appointment Page from Time Picker Page by clicking on the “ok” button at the Time Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Time Picker Page. 2. Click on the “ok” button. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment Page and load the screen with the layout successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

## Picture Utils

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| Test Case ID | TC-04-001 |
| Objective | Test if the user can store the photo in the image view at Appointment Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. 4. The app permission for camera must be allowed. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the camera button below the image view. 3. Snap a photo. 4. Click the “ok” button in the camera application. |
| Input Data | None. |
| Expected Results | The application will store the photo in the file path and direct the user to the Appointment Page and load the screen with the layout and image view with the photo taken successfully. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-04-002 |
| Objective | Test if the user can remove the photo stored in the file path from the image view at Appointment Page by clicking on the delete button below the image view at Appointment Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the delete button below the image view. |
| Input Data | None. |
| Expected Results | The application will remove the photo stored and remove it from the image view. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-04-003 |
| Objective | Test if the user can remove the photo stored in the file path from the image view at Appointment Page by clicking on the delete button below the image view at Appointment Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the delete button below the image view. 3. Click on the back button on the left side of the menu. 4. Click on the appointment record where the photo was deleted. |
| Input Data | None. |
| Expected Results | The application will remove the photo stored and remove it from the image view. The application will then direct the user to the Appointment List Page and direct it back to the Appointment Page when the appointment record is clicked. The image view at the Appointment Page is removed. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

## Date Picker

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| Test Case ID | TC-05-001 |
| Objective | Test if the Date Picker Page loads the values from the database. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the date button. |
| Input Data | None. |
| Expected Results | The Date Picker Page loads the correct value from the database. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-05-002 |
| Objective | Test if the application could set the date button with the specified date format at Appointment Page with the data value selected from Date Picker Page if the user clicked the “ok” button at the Date Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the date button. 3. Select the desired date. 4. Click on the “ok” button at the Date Picker Page. |
| Input Data | Select the desired date at the Date Picker Page. |
| Expected Results | The application will direct the user to the Date Picker Page. After a desired date has selected and the “ok” button is clicked, the application will direct the user to the Application Page and set the date button with the values obtained with the correct date format. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-05-003 |
| Objective | Test if the application could set the date button with the specified date format at Appointment Page with the data value selected from Date Picker Page if the user clicked the “cancel” button at the Date Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the date button. 3. Select the desired date. 4. Click on the “cancel” button at the Date Picker Page. |
| Input Data | Select the desired date at the Date Picker Page. |
| Expected Results | The application will direct the user to the Date Picker Page. After a desired date has selected and the “cancel” button is clicked, the application will direct the user to the Application Page and not set the date button at the Application Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-05-004 |
| Objective | Test if the application could set the date button with the specified date format at Appointment Page with the data value selected from Date Picker Page if the user clicked the device back button at the Date Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the date button. 3. Select the desired date. 4. Click on the device back button at the Date Picker Page. |
| Input Data | Select the desired date at the Date Picker Page. |
| Expected Results | The application will direct the user to the Date Picker Page. After a desired date has selected and the device back button is clicked, the application will direct the user to the Application Page and not set the date button at the Application Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

## Time Picker

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| Test Case ID | TC-06-001 |
| Objective | Test if the Time Picker Page loads the values from the database. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the time button. |
| Input Data | None. |
| Expected Results | The Time Picker Page loads the correct value from the database. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-06-002 |
| Objective | Test if the application could set the time button with the specified time format at Appointment Page with the data value selected from Time Picker Page if the user clicked the “ok” button at the Time Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the time button. 3. Select the desired time. 4. Click on the “ok” button at the Time Picker Page. |
| Input Data | Select the desired time at the Time Picker Page. |
| Expected Results | The application will direct the user to the Time Picker Page. After a desired time has selected and the “ok” button is clicked, the application will direct the user to the Application Page and set the time button with the values obtained with the correct time format. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-06-003 |
| Objective | Test if the application could set the time button with the specified time format at Appointment Page with the data value selected from Time Picker Page if the user clicked the “cancel” button at the Time Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the time button. 3. Select the desired time. 4. Click on the “cancel” button at the Time Picker Page. |
| Input Data | Select the desired time at the Time Picker Page. |
| Expected Results | The application will direct the user to the Time Picker Page. After a desired time has selected and the “cancel” button is clicked, the application will direct the user to the Application Page and not set the time button at the Application Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-06-004 |
| Objective | Test if the application could set the time button with the specified time format at Appointment Page with the data value selected from Time Picker Page if the user clicked the device back button at the Time Picker Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. The active checkbox of the teacher must be checked. 3. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Time Page. 2. Click on the time button. 3. Select the desired time. 4. Click on the device back button at the Time Picker Page. |
| Input Data | Select the desired time at the Time Picker Page. |
| Expected Results | The application will direct the user to the Time Picker Page. After a desired time has selected and the device back button is clicked, the application will direct the user to the Application Page and not set the time button at the Application Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

## Delete Records

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| Test Case ID | TC-07-001 |
| Objective | Test if the user can delete a teacher record in the Teacher List Page from Teacher Page. |
| Condition | 1. There must be at least 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher List Page. 2. Select the teacher record to be deleted. 3. Click on the delete button on the right side of the menu at Teacher Page. |
| Input Data | None. |
| Expected Results | The application will first direct the user to Teacher Page when the teacher record is clicked. The application will then delete the record and generate a toast and a notification to the user, stating that a teacher record has been deleted. The application will then direct the user back to the Teacher List Page and the record will not be shown in the Teacher List Page anymore. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-07-002 |
| Objective | Test if the user can delete an appointment record in the Appointment List Page from Appointment Page. |
| Condition | 1. There must be at least 1 teacher record in the database. 2. There must be at least 1 appointment record in the teacher record in database. |
| Test Steps | 1. Enter Appointment List Page. 2. Select the appointment record to be deleted. 3. Click on the delete button on the right side of the menu at Appointment Page. |
| Input Data | None. |
| Expected Results | The application will first direct the user to Appointment Page when the appointment record is clicked. The application will then delete the record and generate a toast and a notification to the user, stating that an Appointment record has been deleted. The application will then direct the user back to the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

## Add/Update Record

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| Test Case ID | TC-08-001 |
| Objective | Test if the user can add a teacher record by clicking on the “+” button located on the right side of the menu at the Teacher List Page. |
| Condition | None. |
| Test Steps | 1. Enter Teacher List Page. 2. Click on the “+” button located on the right side of the menu. 3. Check the teacher record in Teacher List Page. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Teacher Page and prompt a toast with a “A teacher record has been added” message. The application will display the record in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-002 |
| Objective | Test if the user can update a teacher name with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter a valid teacher name input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Name: Wong Cheng Kit |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher name to the valid input inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the updated value in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-003 |
| Objective | Test if the user can update a teacher name with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter a valid teacher name input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Name: wongchengkit |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher name to the valid input inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the updated value in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-004 |
| Objective | Test if the user can update a teacher name with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter a valid teacher name input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Name: wOnGcHeNgKiT |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher name to the valid input inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the updated value in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-005 |
| Objective | Test if the user can update a teacher name with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter an invalid teacher name input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Name: |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will set the value to empty string and prompt a toast with a “Teacher Name must contain at least 1 to 25 letters or whitespace only” message for every key the input is inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the record with empty string teacher name in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-006 |
| Objective | Test if the user can update a teacher name with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter an invalid teacher name input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Name: 12345 |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will set the value to empty string and prompt a toast with a “Teacher Name must contain at least 1 to 25 letters or whitespace only” message for every key the input is inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the record with empty string teacher name in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-007 |
| Objective | Test if the user can update a teacher name with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter an invalid teacher name input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Name: wongwongwongwongwongwongwong |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will set the value to empty string and prompt a toast with a “Teacher Name must contain at least 1 to 25 letters or whitespace only” message for every key the input is inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the record with empty string teacher name in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-008 |
| Objective | Test if the user can update a teacher gender with choices provided in the spinner. |
| Condition | There must be 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Select the desired choice for teacher gender. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Gender: Select a gender. |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher gender to the choice selected by the user. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display a “unknown” icon in the teacher record. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-009 |
| Objective | Test if the user can update a teacher gender with choices provided in the spinner. |
| Condition | There must be 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Select the desired choice for teacher gender. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Gender: Male. |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher gender to the choice selected by the user. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display a “male” icon in the teacher record. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-010 |
| Objective | Test if the user can update a teacher gender with choices provided in the spinner. |
| Condition | There must be 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Select the desired choice for teacher gender. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Gender: Female. |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher gender to the choice selected by the user. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display a “female” icon in the teacher record. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-011 |
| Objective | Test if the user can update a teacher gender with choices provided in the spinner. |
| Condition | There must be 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Select the desired choice for teacher gender. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Gender: Others. |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher gender to the choice selected by the user. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display a “unknown” icon in the teacher record. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-012 |
| Objective | Test if the user can update a teacher subject teaches with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher subject teaches must contain at least 2 to 40 letters or whitespace or comma only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter a valid teacher subject teaches input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Subject Teaches: Mathematics |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher subject teaches to the valid input inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the updated value in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| --- | --- |
| Test Case ID | TC-08-013 |
| Objective | Test if the user can update a teacher subject teaches with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher subject teaches must contain at least 2 to 40 letters or whitespace or comma only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter a valid teacher subject teaches input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Subject Teaches: mathematics, science |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher subject teaches to the valid input inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the updated value in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-014 |
| Objective | Test if the user can update a teacher subject teaches with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher subject teaches must contain at least 2 to 40 letters or whitespace or comma only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter an invalid teacher subject teaches input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Subject Teaches: |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher subject teaches to an empty string and prompt a toast with a “Subject Teaches must contain at least 2 to 40 letters or whitespace or comma only”. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display an empty string for teacher subject teaches in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| --- | --- |
| Test Case ID | TC-08-015 |
| Objective | Test if the user can update a teacher subject teaches with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher subject teaches must contain at least 2 to 40 letters or whitespace or comma only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter an invalid teacher subject teaches input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Subject Teaches: w |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher subject teaches to an empty string and prompt a toast with a “Subject Teaches must contain at least 2 to 40 letters or whitespace or comma only”. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display an empty string for teacher subject teaches in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-016 |
| Objective | Test if the user can update a teacher subject teaches with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher subject teaches must contain at least 2 to 40 letters or whitespace or comma only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter an invalid teacher subject teaches input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Subject Teaches: Mathem.atics |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher subject teaches to an empty string and prompt a toast with a “Subject Teaches must contain at least 2 to 40 letters or whitespace or comma only”. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display an empty string for teacher subject teaches in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-017 |
| Objective | Test if the user can update a teacher payment per day with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher payment per day must contain up to 2 whole numbers and 2 decimal points only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter a valid teacher payment per day input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Payment Per Day: 20.00 |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher payment per day to the valid input inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the updated value in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-018 |
| Objective | Test if the user can update a teacher payment per day with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher payment per day must contain up to 2 whole numbers and 2 decimal points only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter a valid teacher payment per day input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Payment Per Day: 30 |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher payment per day to the valid input inserted. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display the updated value in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| --- | --- |
| Test Case ID | TC-08-019 |
| Objective | Test if the user can update a teacher payment per day with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher payment per day must contain up to 2 whole numbers and 2 decimal points only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter a valid teacher payment per day input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Payment Per Day: |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher payment per day to a value of 0 and prompt a toast with a “Payment per day can contain up to 2 whole numbers and 2 decimal points only (Eg. 30.50)  ”. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display a 0 for payment per day in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-020 |
| Objective | Test if the user can update a teacher payment per day with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. A valid input for the teacher payment per day must contain up to 2 whole numbers and 2 decimal points only. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Enter a valid teacher payment per day input. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Teacher Payment Per Day: 111111 |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher payment per day to a value of 0 and prompt a toast with a “Payment per day can contain up to 2 whole numbers and 2 decimal points only (Eg. 30.50)  ”. The application then directs the user back to the Teacher List Page when the user presses the back button. The teacher record will display a 0 for payment per day in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-021 |
| Objective | Test if the opacity of the teacher record will be updated when the active checkbox is checked. |
| Condition | There must be 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Check the active checkbox. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Check the active checkbox. |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher active to a value of true.  The application then directs the user back to the Teacher List Page when the user presses the back button. The opacity of the teacher record will set to the maximum value in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-022 |
| Objective | Test if the opacity of the teacher record will be updated when the active checkbox is unchecked. |
| Condition | There must be 1 teacher record in the database. |
| Test Steps | 1. Enter Teacher Page. 2. Click on the teacher record to be updated. 3. Uncheck the active checkbox. 4. Click on the device back button. 5. Check the teacher record in Teacher List Page. |
| Input Data | Uncheck the active checkbox. |
| Expected Results | The application will first direct the user to the Teacher Page of the teacher record when the teacher record is clicked. The application will then set the teacher active to a value of false.  The application then directs the user back to the Teacher List Page when the user presses the back button. The opacity of the teacher record will set to the 0.5 value in the Teacher List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-023 |
| Objective | Test if the user can add an appointment record by clicking on the “+” button located on the right side of the menu at the Appointment List Page. |
| Condition | There must be 1 teacher record in the database. |
| Test Steps | 1. Enter Appointment List Page. 2. Click on the “+” button located on the right side of the menu. 3. Check the appointment record in Appointment List Page. |
| Input Data | None. |
| Expected Results | The application will direct the user to the Appointment Page and prompt a toast with a “An appointment record has been added” message. The application will display the record in the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-024 |
| Objective | Test if the user can update a child name with a valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. There must be 1 appointment record in the teacher record in the database. 3. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the appointment record to be updated. 3. Enter a valid child name input. 4. Click on the device back button. 5. Check the appointment record in Appointment List Page. |
| Input Data | Child Name: Wong Cheng Kit |
| Expected Results | The application will first direct the user to the Appointment Page of the appointment record when the appointment record is clicked. The application will then set the child name to the valid input inserted. The application then directs the user back to the Appointment List Page when the user presses the back button. The appointment record will display the updated value in the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-025 |
| Objective | Test if the user can update a child name with a valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. There must be 1 appointment record in the teacher record in the database. 3. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the appointment record to be updated. 3. Enter a valid child name input. 4. Click on the device back button. 5. Check the appointment record in Appointment List Page. |
| Input Data | Child Name: wongchengkit |
| Expected Results | The application will first direct the user to the Appointment Page of the appointment record when the appointment record is clicked. The application will then set the child name to the valid input inserted. The application then directs the user back to the Appointment List Page when the user presses the back button. The appointment record will display the updated value in the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-026 |
| Objective | Test if the user can update a child name with a valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. There must be 1 appointment record in the teacher record in the database. 3. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the appointment record to be updated. 3. Enter a valid child name input. 4. Click on the device back button. 5. Check the appointment record in Appointment List Page. |
| Input Data | Child Name: wOnGcHeNgKiT |
| Expected Results | The application will first direct the user to the Appointment Page of the appointment record when the appointment record is clicked. The application will then set the child name to the valid input inserted. The application then directs the user back to the Appointment List Page when the user presses the back button. The appointment record will display the updated value in the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-027 |
| Objective | Test if the user can update a child name with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. There must be 1 appointment record in the teacher record in the database. 3. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the appointment record to be updated. 3. Enter a valid child name input. 4. Click on the device back button. 5. Check the appointment record in Appointment List Page. |
| Input Data | Child Name: 123456 |
| Expected Results | The application will first direct the user to the Appointment Page of the appointment record when the appointment record is clicked. The application will set the value to empty string and prompt a toast with a “Child name must contain at least 1 to 25 letters or whitespace only” message for every key the input is inserted. The application then directs the user back to the Appointment List Page when the user presses the back button. The appointment record will display an empty string for child name in the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-028 |
| Objective | Test if the user can update a child name with invalid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. There must be 1 appointment record in the teacher record in the database. 3. A valid input for the child name must contain at least 1 to 25 letters or whitespace only. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the appointment record to be updated. 3. Enter a valid child name input. 4. Click on the device back button. 5. Check the appointment record in Appointment List Page. |
| Input Data | Child Name: wongwongwongwongwongwongwong |
| Expected Results | The application will first direct the user to the Appointment Page of the appointment record when the appointment record is clicked. The application will set the value to empty string and prompt a toast with a “Child name must contain at least 1 to 25 letters or whitespace only” message for every key the input is inserted. The application then directs the user back to the Appointment List Page when the user presses the back button. The appointment record will display an empty string for child name in the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-029 |
| Objective | Test if the user can update a contact number with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. There must be 1 appointment record in the teacher record in the database. 3. A valid input for the contact number name must contain at least 9 to 11 numbers only. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the appointment record to be updated. 3. Enter a valid contact number name input. 4. Click on the device back button. 5. Check the appointment record in Appointment List Page. |
| Input Data | Contact Number: 0123456789 |
| Expected Results | The application will first direct the user to the Appointment Page of the appointment record when the appointment record is clicked. The application will then set the contact number to the valid input inserted. The application then directs the user back to the Appointment List Page when the user presses the back button. The appointment record will display the updated value in the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-030 |
| Objective | Test if the user can update a contact number with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. There must be 1 appointment record in the teacher record in the database. 3. A valid input for the contact number name must contain at least 9 to 11 numbers only. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the appointment record to be updated. 3. Enter a valid contact number name input. 4. Click on the device back button. 5. Check the appointment record in Appointment List Page. |
| Input Data | Contact Number: 012 |
| Expected Results | The application will first direct the user to the Appointment Page of the appointment record when the appointment record is clicked. The application will set the value to empty string and prompt a toast with a “Contact number must contain at least 9 to 11 numbers only (Eg. 0123456789)” message for every key the input is inserted. The application then directs the user back to the Appointment List Page when the user presses the back button. The appointment record will display an empty string for contact number in the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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| Test Case ID | TC-08-031 |
| Objective | Test if the user can update a contact number with valid input. |
| Condition | 1. There must be 1 teacher record in the database. 2. There must be 1 appointment record in the teacher record in the database. 3. A valid input for the contact number name must contain at least 9 to 11 numbers only. |
| Test Steps | 1. Enter Appointment Page. 2. Click on the appointment record to be updated. 3. Enter a valid contact number name input. 4. Click on the device back button. 5. Check the appointment record in Appointment List Page. |
| Input Data | Contact Number: 0123456789012345 |
| Expected Results | The application will first direct the user to the Appointment Page of the appointment record when the appointment record is clicked. The application will set the value to empty string and prompt a toast with a “Contact number must contain at least 9 to 11 numbers only (Eg. 0123456789)” message for every key the input is inserted. The application then directs the user back to the Appointment List Page when the user presses the back button. The appointment record will display an empty string for contact number in the Appointment List Page. |
| Actual Results | Matches the expected results. |
| Test Results | Pass. |

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Evaluation Criteria

1. Mobile App (100% è 60%)

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|  | | **Excellent** | | **Good** | | | **Satisfactory** | | | **Unsatisfactory** | |
| **10** | **9** | **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |
| **Syntax (10%)** | Ability to code a | The app compiles | | The app compiles | | | The app may | | | The app does not | |
|  | working app | without problem. It | | without problem and | | | compile but contains | | | compile at all and | |
|  | according to the | contains no error nor | | has no major | | | errors that shows | | | contains errors. | |
|  | given requirements/ | shows and | | syntactic | | | misunderstanding of | | |  | |
|  | instructions | misunderstanding/ | | misunderstanding. It | | | syntax. | | |  | |
|  |  | misinterpretation of | | may contain non- | | |  | | |  | |
|  |  | the language | | standard usage of | | |  | | |  | |
|  |  |  | | superfluous | | |  | | |  | |
|  |  |  | | elements. | | |  | | |  | |
| **Logic (10%)** | Ability to specify | Program logic used | | Program logic used | | | Program logic used | | | The app contains | |
|  | conditions, control | in the app is correct, | | in the app is mostly | | | in the app is on the | | | some conditions that | |
|  | flow, and data | with no known | | correct, but may | | | right track with no | | | specify the opposite | |
|  | structures that are | boundary errors, and | | contain an | | | infinite loops, but | | | of what is required | |
|  | appropriate for the | no redundant or | | occasional boundary | | | shows no recognition | | | (less than vs. | |
|  | problem domain. | contradictory | | error or redundant or | | | of | | | greater than), | |
|  |  | conditions. | | contradictory | | | boundary conditions | | | confuse Boolean | |
|  |  |  | | condition. | | | (such as<vs.<=) | | | AND/OR operators, | |
|  |  |  | |  | | |  | | | or lead to infinite | |
|  |  |  | |  | | |  | | | loops. | |
| **Data model** | Ability to create | The data model | | The data model | | | The data model | | | The data model | |
| **(10%)** | appropriate data | created is well | | created is well | | | created is suitable | | | created is | |
|  | model to store data | designed and a local | | designed and a local | | | but no persistent | | | inappropriate and no | |
|  | needed for the app | data storage is well | | data storage is well | | | storage is used. | | | persistent storage is | |
|  | (including the use of | selected. The design | | selected. The model | | |  | | | used. | |

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|  | persistent storage) | is prepared for further re- use/extension. | may be restricted to current usage. |  |  |
| **UI (10%)** | Ability to use and apply suitable widgets and UI elements to achieve the given requirements | The app contains UI elements that are appropriately selected and placed. It has also additional relevant addition of UI elements that enhance beyond the given requirements | The app contains UI elements that are appropriately selected and placed to fulfil the given requirements/ functions. | The app contains UI elements that serve the requirements/ functions but there is room for improvement (better choice of UI element or placement) | The app has missing UI elements and only fulfil partial requirements/ functions |
| **Modularity** | Ability to | Program is | Program is | Program is | Program is one big |
| **(10%)** | decompose a | decomposed into | decomposed into | decomposed into | function or is |
|  | problem into | coherent and | coherent units, but | units of appropriate | decomposed in |
|  | coherent and | reusable units, and | may still contain | size, but they lack | ways that make little |
|  | reusable functions, | unnecessary | some unnecessary | coherence or | sense. |
|  | files, classes, or | repetition has been | repetition. | reusability. Program |  |
|  | objects (as | eliminated. |  | contains |  |
|  | appropriate for the |  |  | unnecessary |  |
|  | programming |  |  | repetition. |  |
|  | language and |  |  |  |  |
|  | platform). |  |  |  |  |
| **Implemented** | Ability to think and | The selected | The selected | The selected | The selected |
| **additional** | add in appropriate | additional function(s) | additional function(s) | additional function(s) | additional function |
| **feature(s)** | additional non- | is (are) well selected | is (are) nice addition | brings no added | may bring value but |
| **(10%)** | required functions | and implemented to | but brings minimal | value but is/are nice | does not work. |
|  | that enhance the | provide more value | added value to the | to have. |  |
|  | purpose of the app | to the users | users |  |  |

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|  | | **Excellent 4** | **Good 3** | **Satisfactory 2** | **Unsatisfactory 1** |
|  | | 5 | 4 | 2 | 1 |
| **Outcome/** | Quality of the finish | The app works and | The app works and | The app works and | The app does not |
| **Finish app** | app, including the | looks good. It | looks good. It | looks OK. Most of | work properly. |
| **(10%)** | look and feel of the | provides not only the | provides all the | the required | There are too many |
|  | app | required functions | required functions. | functions are | errors that make the |
|  |  | but has appropriate |  | present. A few may | app unusable. |
|  |  | addition of 1 or more |  | not work or contains |  |
|  |  | functions/ features |  | errors. |  |
| **Clarity (10%)** | Ability to format and | Program contains | Program contains | Program contains | Program contains |
|  | document code for | appropriate | some documentation | some | no documentation, |
|  | human | documentation for all | on major functions, | documentation (at | or grossly |
|  | consumption. | major functions, | variables, or non- | least the student’s | misleading |
|  |  | variables, or non- | trivial algorithms. | name and program’s | indentation. |
|  |  | trivial algorithms. | Indentation and | purpose), but has |  |
|  |  | Formatting, | other formatting is | occasionally |  |
|  |  | indentation, and | appropriate. | misleading |  |
|  |  | other white space |  | indentation. |  |
|  |  | aids readability. |  |  |  |
| **Distinctiveness** | The proportion of | The finished app has | The finished app has | The finished app | The finished app |
| **(20%)** | code and design | little code and | some identical parts | has many identical | seems to be only |
|  | found to be | design that are | (less than 50%) | parts (at least 50%) | slightly modified |
|  | identical from any | identical to any | such as code or UI | such as code or UI | from some existing |
|  | previous or | available previous | design that have | design that have | code/ example. |
|  | available work/ | work/ example. | been taught in class/ | been taught in class/ |  |
|  | example. |  | shown as example. | shown as example. |  |

1. Report and Video Presentation (100% è 40%)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Unsatisfactory | Satisfactory | Good | Exceptional |
| Introduction | Provides a poor overview of what the project is about. Sounds like nothing more than a repeat of what is said in the assignment sheet. Work is not justified at all. No requirements stated or requirements are too general and not sufficiently clear for another person to implement the  same project. | Provides an adequate overview of the project with some aims and objectives. Work is somewhat justified but either weak, unsubstantiated or anecdotal in nature. The requirements are somewhat stated but not clear and the wordings can be ambiguous. | Provides a good overview of the project with some aims and objectives. Work is moderately justified. The requirements are stated but could be improved. | An excellent overview of the project with clear aims and objectives. Set a clear stage and justification of what the project is going to achieve. Work is well justified with evidence supporting statements and claims. The requirements of website are clearly stated. |
| Functions and justifications | Features are not clearly shown nor justified. Work appears to be  done hurriedly. | Features are shown and adequately justified. Work  appears to have | Features are shown and justified. Work appears to have  some good | Excellent features |
| Implementation and Results | The implementation is poorly described and can be repetitive. No or poor justification given for the approach(es). | The implementation is adequately described. Few redundancies  and some justifications are given for the  approach(es). | The implementation is well described and justified but with some redundancies. | The implementation is concisely described with the justification for the approach(es). |
| Formatting | The format is inconsistent. Fonts and spacing can change within the document without any reason. Page numbering is incorrect. Margins and alignments are wrong. | The format is consistent. With some odd fonts and spacing within the document. Page numbering, margin, and alignments mostly correct. | The format is consistent. No odd fonts and spacing changes within the document. Any change of style is purposeful. Page numbering, margin, and alignments are correct with some  minor errors. | Consistent formatting with no errors. |
| References | References improperly cited. | Some errors in referencing. | Minor errors in referencing. | No errors in referencing. |