**1. Purpose of the document**

This document is to show the test approach for Church financial recordkeeping. This document sets the scope of various tests to be conducted, the activities to be completed, the general resources required and the methods and processes to be used to test the software before releasing it.

**2. Overview of the document**

Section 3 describes testing strategies. Section 4 describes testing techniques.  
Section 5 describes test cases schedule. Section 6 lists the test cases. Section 7 shows the test results.

**3. Testing strategy**

Testing strategy is an outline that describes the process of testing performed on a software product. There are various stages in testing software, from each module to the whole system.

**3.1. Unit testing**

The purpose of Unit testing is to discover any incorrect, insufficient or extraneous code. After each module is developed, it is tested by the programmers for its functionality and presence of any bugs in the code. It is the initial stage of testing software.

**3.2. Integration testing**

Integration testing is a software testing methodology used to check whether there is any deviation from the original functionality when different modules are integrated, and if there are any interface defects. Components are tested as a single group or organized in an iterative manner. After integration testing has been performed on the modules, the testing team can proceed to system testing.

**3.3. System testing**

Once the system has been completed and the integration testing is performed, the software is put in place into the working environment and a system test done. In this phase the system interacts with actual user input.

**3.4. Alpha testing**

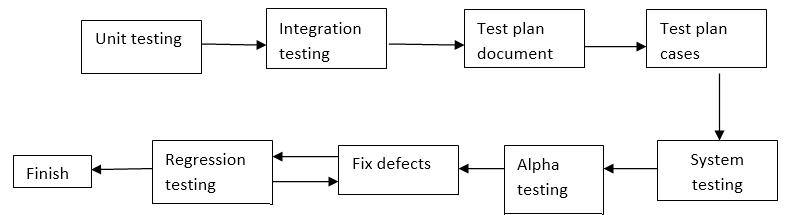
The team that conducts the alpha test is often an independent test team, perhaps made up of potential users/customers. Alpha testing involves simulating a real user environment by carrying out tasks and operations that the actual users might perform.

**3.5. Regression testing**

The purpose of regression testing is to confirm that a recent program or code change has not adversely affected existing features. Regression testing is nothing but full or partial selection of already executed test cases which are re-executed to ensure existing functionalities work fine. This testing is done to make sure that new code changes should not have side effects on the existing functionalities. It ensures that old code still works once the new code changes are done.

**3.6. Testing process**

The following diagram shows the testing process that we followed in testing the Church Financial Recordkeeping application.



**Fig 1: Testing process**

**4. Testing techniques**

These are testing methods performed in testing strategies. This section describes the testing methods performed on the software.

**4.1. Path testing:**

Path testing is a structural testing method that involves using the source code of a program in order to find every possible executable path. It helps to determine all faults lying within a piece of code. This method is designed to execute all or selected path through a computer program.

**4.2. Equivalence partitioning:**

  Equivalence partitioning is a software testing technique that divides the input data of a software unit into partitions of equivalent data from which test cases can be derived. In principle, test cases are designed to cover each partition at least once. This technique tries to define test cases that uncover classes of errors, thereby reducing the total number of test cases that must be developed. An advantage of this approach is reduction in the time required for testing software due to lesser number of test cases.

Equivalence partitioning is typically applied to the inputs of a test component, but may be applied to the outputs in rare cases. The equivalence partitions are usually derived from the requirements specification for input attributes that influence the processing of the test object.

The equivalence classes in our project are login data, fund amount, fund number for a specific type of fund and date range in the reports section.

**4.3. Use case testing:**

Use case testingis a technique that helps us identify test cases that exercise the whole system on a transaction by transaction basis from start to finish. A use case is a description of a particular use of the system by an actor (a user of the system). Each use case describes the interactions the actor has with the system in order to perform a specific task. Actors are generally people but they may also be other systems.

Use cases are defined in terms of the actor, not the system, describing what the actor does and what the actor sees rather than what inputs the system expects and what the system’s outputs.

**5. Test schedule**

The testing is divided into phases and scheduled as below:

The unit testing was done soon after each module was ready. After developing the whole system, we have taken 2 days to perform unit testing. After each module is tested, they are integrated and integration testing is done 4 days. The whole system is ready, and we have performed alpha testing in 1 day. We found some issues and we worked on fixing them for a day. After correcting the defects, we performed regression testing. The whole system testing took two days.

**6. Test cases**

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| **Test Name** | **Test ID** | **Steps Performed** | **Expected Result** | **Actual Result** |
| **Login** | LOG 001 | Input username: “wutrich”, password: “secretary” and click Sign in | Logs in Successfully and View member page gets displayed | Logins Successfully and View member page is displayed and Member, Fund, Donation, Report tabs are seen at the top |
| LOG 002 | Input username : “baduser”, password: “badpswd” and click Sign in | Error message should be generated asking user to enter valid credentials | Displays message: please enter valid username and password |
| LOG 003 | Input username: “wutrich”, password: “badpswd” and click Sign in | Error message should be generated asking user to enter valid credentials | Displays message :please enter valid username and password |
| LOG 004 | Input username: “baduser”, password: “secretary” and click Sign in | Error message should be generated asking user to enter valid credentials | Displays message :please enter valid username and password |
| LOG 005 | Leave username password fields blank and click Sign in. | Error message should be generated showing , all fields are mandatory | Displays message : Username and password required |
| LOG 006 | Leave username field blank ,enter password: “secretary” and click login | Error message should be generated username field is mandatory | Displays message as, password field is mandatory |

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|  | LG 007 | Enter username: “wutrich” , leave password field blank click Sign in | Error message should be generated telling user that password field is mandatory | Displays message : password field is mandatory |
| LG 008 | Click on forgot password link | Pointer able to click on forgot password link and message showing, contact admin for help | A dialogue box opens showing, please contact admin for assistance |
| **Add**  **Member** | Add 001 | Click on add member tab | Add member page should be displayed | Add member page is displayed showing all the user details fields |
| Add 002 | Do the following and click add member button  a)Input first name: “Clive”, last name: “Matiku”, city: “Wichita Falls”  b)Input zip code: “76308”, envelope no.: “12345”  c)Input Address: “4700,Taft Blvd Apt #101” and from the drop menu select state: “Texas” | Member should be added successfully | A message is displayed showing, member added successfully |
| Add 003 | Input first name: “Clive Matiku”  (OR)  first name: 123@#3 | Error message should be generated showing the instruction on how to input the first name field | A message is displayed showing, enter the first name for ex. Rachel |
|  | Add 004 | Input last name: “Clive Matiku”  (OR)  last name: “123@%” | Error message should be generated showing the instruction on how to input the last name field | A message is displayed showing, enter the last name for ex. Stewart |
| Add 005 | Input city: “Wichita falls” (OR) city: “3@!” | Error message should be generated showing the instruction on how to input the city field | A message is displayed showing, enter the city for ex. Dallas |
| Add 006 | Input zip code: “s@!”  (OR)  Zip code: “763.2345” | Error message should be generated showing the instruction on how to input the zip code field | A message is displayed showing, please enter only numbers for ex 762 |
| Add 007 | Input envelope no.: “asd! @”  (OR)  Envelope no. : “123.456” | Error message should be generated showing the instruction on how to input the envelope No. field | A message is displayed showing, please enter only numbers. For ex 1245 |
| Add 008 | Click on any one of the tabs located at the top of the page (fund or donation or report) | Page should navigate to the respective tab page | Page navigates to the page that is clicked |

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|  | | Add 009 | Leave first name, last name, address, city, state, zip code, envelop no. fields blank and click on Add member button | Error message displays stating, all fields are required | A message is displayed showing, all fields are mandatory |
| Add 010 | Enter first name: “Clive”, last name: “Matiku”, address: “4700 Taft Blvd.”, state: “Texas”, zip code: “76308”, envelope no.: “1234” and click on clear button | All fields should be cleared | Text in all the fields is erased |
| **View Member** | | View 001 | Click on view tab | View members page should be displayed in a grid | View members page is displayed showing all the members with their details in a grid. |
| View 002 | a)enter member name: “Majesh” or 12245 in the search box | Should display all the members details matching with keywords entered in the search box | Displaying all the members details in the grid that are matched with the member name: “Majesh”, city: “Wichita Falls”, state: “Texas” , envelope no.: “12245”. |
| View 003 | Leave member name, city, state, envelope no. Fields blank and click on search button. | An error message should appear asking user to enter search keyword texts in the search box | An error message is displayed showing, please enter search keyword |
| View 004 | Change any details of the member if required as per guidelines shown for add member and click update button | A message should appear showing that member information is successfully updated | It displays a message confirming member details updated successfully |
|  | View 005 | | Click on delete button | Should ask for confirmation and delete the particular member information | A dialogue box appears asking user, are “you sure you want to delete?” member information gets deleted if user clicks ok or ignores if user clicks cancel. |
|  | View 006 | | Click on any one of the tabs located at the top of the page (member or donation or report) | Page should navigate to the respective tab page | Page navigates to the page that is clicked |
| **Add**  **Fund** | ADDF 001 | | Click on add fund tab | Add and view fund page should be displayed | Add and view fund page is displayed. |
| ADDF 002 | | Input fund name: “general fund” and fund number click on add fund button | Fund name should be created successfully | A message appears saying, fund name created successfully |
| ADDF 003 | | Input fund name : “123@#$” and click add fund button | An error message should be generated asking user to enter valid fund name in the fund name field | Error message is generated asking the user to enter a valid fund name for ex. General fund |
| ADDF 004 | | Leave fund name field blank and click on add fund button | An error message should be generated saying that all fields are required | An error message is displayed saying all fields are mandatory |
|  | VIEWF 001 | | Click on view button in the funds main tab | Should display a grid containing created fund types. | A grid appears showing the available fund types |
| **View**  **Fund** |  | |  |  |  |
| VIEWF 002 | | Enter fund number: for ex “2” and fund name: “general fund” in the search box. | Should display all the fund names and fund number details of those that are matching those searched. | Displays all the funds details in the grid that are matching with fund number and name searched. If not matching, it will display, no records to display |
|  | VIEWF 003 | | Leave all the fields blank and try to search icon | An error message should appear asking user to enter the texts in the search box in order to search. | An error message is displayed asking user to enter text in the search box to search. |
| VIEWF 004 | | Double click on fund name to make changes | Should make field editable so one can edit. | Field editable to make changes |
| VIEWF 005 | | Change any details of the fund if required as per guidelines shown for add fund and click update button | A message should appear showing that fund name is successfully updated | Displays a message showing, fund successfully updated |

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|  | VIEWF 006 | Click on delete button | Should confirm and delete the particular fund information | A dialogue box appears asking the user, are you sure you want to delete? If user clicks ok, fund is deleted. If clicks cancel, delete action is ignored |
| VIEWF 007 | Click on any one of the tabs located at the top of the page (member or donation or report) | Page should navigate to the respective tab page | Page navigates to the page that is clicked |
| **Add**  **Donation** | ADD 001 | Click on donation tab | New add donation page should be displayed | Navigates to new add donations page |
| ADD 002 | Do the following and click Add Donation button. a)enter amount: “20” (or) amount: “20.12”  b) Select envelope no.: “123”, fund name: “general fund”, money type: “check” from the menu.  c) Select date: “12/23/2014” by clicking the date calendar icon. | Donation should be created successfully | A message is displayed showing, donation added successfully |
|  | AD 003 | Input amount : “123@#$abcd” | Error message should be generated asking user to put valid amount in the amount field | A message is displayed asking user to enter numbers only |
| ADD 004 | Leave envelope no., money type, amount ,fields blank and click on add donation button | Error message displayed informing user that all fields are required | An error message is displayed informing user that all fields are mandatory |
| ADD 005 | enter amount: “20”, envelope no.: “123”, fund name: “general fund”, money type: “check” from the menu and click on clear button | All fields should be cleared | All fields cleared |
| ADD 006 | Click on view button | Should display detailed information about donations in a grid. | navigates to view donation page and displays the grid with detailed information about donations |
| ADD007 | Click on any one of the tabs located at the top of the page (member or fund or report) | Page should navigate to the respective tab page | Page navigates to the page that is clicked |

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| **View**  **Donation** | VIEWD 001 | Click on view donations tab | View donations page should be displayed | View donation page is displayed with a grid showing the envelope no., member name, fund type, money type, amount that were added successfully and an update button and delete button is present beside each donation |
| VIEWD 002 | Do the following in search box:  enter member name or envelope number and hit return key | Should display all the donation details matching search keyword. | Displays all the donation details in a grid that are matching with keyword searched |
| VIEWD 003 | Leave search box blank and hit return key | An error message should appear asking user to enter text to search in the search box. | An error message is displayed showing, please enter search text |

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|  | VIEWD 004 | Click on a field to edit and hit update button. | Should let you to edit and update changes. | Updates changes made. |
| VIEWD 005 | Click on delete icon | Should ask user to confirm if they want to delete the particular donation information and delete if user confirms otherwise cancel the delete action. | Dialogue box appears asking user if they are sure they want to delete. If user clicks ok, donation is deleted otherwise action is cancelled |
| VIEWD 006 | Click on any one of the tabs located at the top of the page (member or fund or report or donation) | Should navigate to the respective tab page. | Navigates to the respective page that is clicked. |
| **Reports** | REPT 001 | Click on reports tab | Reports page should be displayed | Reports page is displayed showing from date, to date, member name fields, name, fund types etc. |
| REPT 002 | Input the from date 01/12/2016 to date: 01/23/2016 from date calendar, leave the name field blank and click search | Should display the information containing all the donations of all the members for that particular period, if available. | If available, displays the information of the donations made by members. For ex from 01/12/2016 to 01/23/2016 in a grid or else it informs user that there is no records to display |
| REPT 003 | Input the from date 10/12/2016 to date: 01/23/2016 from date calendar, name: “Ramesh” and click search button | If the information containing the donations made by that particular member for the specified period is available, it should be displayed in the grid. | If available, displays the information about the donations made by “Ramesh” from“01/12/2016” to “01/23/2016” else user is informed that there are no records to display |
| REPT 004 | Leave dates field blank and click on search button | An error message should be displayed asking the user to select the time period | An error message is displayed asking the user to select date range |
| REPT 005 | Input the from date: 01/12/2016 to date: 01/23/2016 from date calendar, member name: Divya and click on clear button | All fields should be cleared | Text in the date and member name fields is being erased |
| REPT 006 | Click on any one of the tabs located at the top of the page (member or fund or donation or reports) | Should navigate to the respective tab page that was clicked | Navigates to the page that is clicked |
| REPT 007 | Input the from date: 01/12/2016 to date: “01/23/2016” from date calendar, leave the member name field blank and click view button and click print button | If the information containing all the donations of all the members for that particular period is available then it’s displayed in a grid and we should be able to print. | If available, displays the information of the donations made by members from 01/12/2016 to 01/23/2016 in the grid and when we print the information it shows the record of all the donations or else if there is no record to display the printed information contains no information except the donation fields |
| RT 008 | Input the from date: 01/12/2016 to date: 01/ 23/2016 from date calendar, member name: “Majesh” and click search | If the information containing all the donations of that member for that particular period is available, it should be displayed in the grid and we should be able print that information, else it prints an empty report. | If available, displays the information about the donations made by “Majesh” from 01/12/2016 to 01/23/2016 in a grid. Able to print but prints blank reports if no information is available for the specified dates |

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| **Logout** | LOG 001 | Click on logout button located at the top right corner of the page | Should log out from the application | Logs out successfully and login page is displayed. |

**7. Testing results**

This section shows the testing of results in each testing strategy.

**7.1. Unit test results:**

In the unit testing we recorded the errors and fixed them. We tested again and all the modules are working properly.

**7.2. Integration test result:**

Initially while integrating front-end with back-end we had connection problem with the database and some fields were not updating in the database. We corrected the errors and resolved it. The navigation from one page to another page is working properly.

**7.3. System test result:**

After the integration was done successfully, the whole system was tested and the results were satisfactory.