**Practical No – 6**

**AIM:** Design test cases and test suits for testing the different components of project.

**Introduction**

Library management system is a project which aims in developing a computerized system to maintain all the daily work of library .This project has many features which are generally not available in normal library management systems like facility of user login and a facility of teachers login .It also has a facility of admin login through which the admin can monitor the whole system .It also has facility of an online notice board where teachers can student can put up information about workshops or seminars being held in our colleges or nearby colleges and librarian after proper verification from the concerned institution organizing the seminar can add it to the notice board . It has also a facility where student after logging in their accounts can see list of books issued and its issue date and return date and also the students can request the librarian to add new books by filling the book request form. The librarian after logging into his account i.e. admin account can generate various reports such as student report , issue report, teacher report and book report Overall this project of ours is being developed to help the students as well as staff of library to maintain the library in the best way possible and also reduce the human efforts.

**Software Testing**

Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. Testing presents an interesting of a system using various test data. Preparation of the test data plays a vital role in the system testing. After preparation the test data, the system under study is tested those test data. Errors were found and corrected by using the following testing steps and corrections are recorded for future references. Thus, series of testing is performed on the system before it is already for implementation.

The development of software systems involves a series of production activities where opportunities for injection of human errors are enormous. Errors may begin to occur at the very inception of the process where the objectives may be erroneously or imperfectly specified as well as in later design and development stages. Because of human in ability to perform and communicate with perfection, software development is followed by assurance activities.

Quality assurance is the review of software products and related documentation for completeness, correctness, reliability and maintainability. And of course it includes assurances that the system meets the specification and the requirements for its intended use and performance. The various levels of quality assurance are described in the following sub sections.

**Different types of testing**

* Black-box Testing
* White-box Testing
* Alpha Testing
* Beta Testing
* Smoke Testing
* Sanity Testing
* Regression Testing
* Sanity Testing
* A/B Testing
* Automation Testing

**The various levels of testing on the system are**:

* Unit testing
* Integrated testing
* Validation testing
* Output testing
* User acceptance testing

**Unit testing**

Unit testing focuses on verification effort on the smallest unit of software design module. Using the unit test plans. Prepared in the design phase of the system as a guide, important control paths are tested to uncover errors within the boundary of the modules. The interfaces of each of the modules under consideration are also tested. Boundary conditions were checked. All independent paths were exercised to ensure that all statements in the module are executed at least once and all error-handling paths were tested. Each unit was thoroughly tested to check if it might fall in any possible situation. This testing was carried out during the programming itself. At the end of this testing phase, each unit was found to be working satisfactorily, as regarded to the expected out from the module.

**Integration Testing**

Data can be across an interface one module can have an adverse effect on another’s sub function, when combined may not produce the desired major function; global data structures can present problems. Integration testing is a symmetric technique for constructing tests to uncover errors associated with the interface. All modules are combined in this testing step. Then the entire program was tested as a whole.

**Validation Testing**

At the culmination of integration testing, software is completely assembled as a package. Interfacing errors have been uncovered and corrected and final series of software test-validation testing begins. Validation testing can be defined in many ways, but a simple definition is that validation succeeds when the software functions in manner that is reasonably expected by the consumer. Software validation is achieved through a series of black box tests that demonstrate conformity with requirement. After validation test has been conducted, one of two conditions exists.

* The function or performance characteristics confirm to specification that are accepted.
* A validation from specification is uncovered and a deficiency created.

Deviation or errors discovered at this step in this project is corrected prior to completion of the project with the help of user by negotiating to establish a method for resolving deficiencies. Thus the proposed system under consideration has been tested by using validation testing and found to be working satisfactorily.

**Output Testing**

After performing the validation testing, the next step is output testing of the proposed system, since a system is useful if it does not produce the required output in the specific format required by them tests the output generator displayed on the system under consideration. Here the output is considered in two ways: - one is onscreen and the other is printed format. The output format on the screen is found to be correct as the format was designed in the system design phase according to the user needs. As far as hardcopies are considered it goes in terms with the user requirement. Hence output testing does not result any correction in the system.

**User Acceptance Testing**

User acceptance of the system is a key factor for success of any system. The system under consideration is tested for user acceptance by constantly keeping in touch with prospective system and user at the time of developing and making changes whenever required.

**TEST RESULT: UNIT TESTING**

**LOGIN FORM:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr.No** | **Test Case** | **Excepted Result** | **Test Result** |
| 1 | Enter valid name and password & click on login button | Software should display main window | Successful |
| 2 | Enter invalid | Software should not display main window | successful |

**BOOK ENTRY FORM:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr.No** | **Test Case** | **Excepted Result** | **Test Result** |
| 1 | On the click of ADD button | At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering number instead of text..is found then it gives proper message otherwise Adds Record To the Database | successful |
| 2. | On the Click of DELETE Button | This deletes the details of book by using Accession no. | Successful |
| 3. | On the Click of UPDATE Button | Modified records are Updated in database by clicking UPDATE button. | Successful |
| 4. | On the Click of SEARCH Button | Displays the Details of book for entered Accession no. Otherwise gives proper Error message. | Successful |
| 5. | On the Click of CLEAR Button | Clears all fields | Successful |
| 6. | On the Click of EXIT button | Exit the current book details form | successful |
| 7. | On the Click of NEXT button | Display the next form | successful |

**USER ACCOUNT FORM:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr.No** | **Test Case** | **Excepted Result** | **Test Result** |
| 1 | On the click of ADD button | At first user have to fill all fields with proper data , if any Error like entering text data instead of number or entering number instead of text. Is found then it gives proper message otherwise Adds Record To the Database | successful |
| 2. | On the Click of DELETE Button | This deletes the details of student by using Register no. | Successful |
| 3. | On the Click of UPDATE Button | Modified records are Updated in database by clicking UPDATE button. | Successful |
| 4. | On the Click of SEARCH Button | Displays the Details of book for entered Register no. Otherwise gives proper Error message. | Successful |
| 5. | On the Click of CLEAR Button | Clears all fields | Successful |
| 6. | On the Click of EXIT button | Exit the current book details form | successful |
| 7. | On the Click of NEXT button | Display the next form | successful |

**BOOK ISSUE FORM:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr.No** | **Test Case** | **Excepted Result** | **Test Result** |
| 1 | On the click of ADD button | At first user have to fill all fields with proper data ,if the accession number book is already issued then it will giving proper msg. | successful |
| 2. | On the Click of DELETE Button | This deletes the details of book by using Register no. | Successful |
| 3. | On the Click of UPDATE Button | Modified records are Updated in database by clicking UPDATE button. | Successful |
| 4. | On the Click of SEARCH Button | Displays the Details of issued book. Otherwise gives proper Error message. | Successful |
| 5. | On the Click of CLEAR Button | Clears all fields | Successful |
| 6. | On the Click of EXIT button | Exit the current book details form | successful |
| 7. | On the Click of NEXT button | Display the next form | successful |