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**Experiment No. 9**

**Aim:** To write test cases for white box testing.

**Theory:**

**White Box Testing: -**

White box testing techniques analyse the internal structures the used data structures, internal design, code structure and the working of the software rather than just the functionality as black box testing. It is also called glass box testing or clear box testing or structural testing.

Working process of white box testing:-

* Input: Requirements, Functional specification, design documents, source code.
* Processing: Performing risk analysis for guiding through the entire process.
* Proper test planning: Designing test cases to cover entire code. Execute rinse repeat until error-free software is reached. Also, the results are communicated.
* Output: Preparing final report of the entire testing process.

**Testing Techniques:**

**Statement Coverage:**

In this technique, the aim is to traverse all statement at least once. Hence, each line of code is tested. In case of a flowchart, every node must be traversed at least once.

Since all lines of code are covered, helps in pointing out faulty code.

**Branch Coverage:**

In this technique, test cases are designed so that each branch from all decision points are traversed at least once. In a flowchart, all edges must be traversed at least once. 4 test cases required such that all branches of all decision are covered, i.e. all edges of flowchart are covered.

**Condition Coverage:**

In this technique, all individual conditions must be covered as shown in the following example:

* READ X, Y
* IF (X=0 || Y==0)
* PRINT ‘0’

In this example, there are 2 conditions: X==0 and Y = 0. Now, test these conditions get TRUE and FALSE as their values. One possible example would be:

* #TC1 - X= 0, Y=55 #TC2 - X= 5, Y=0

**Multiple Condition Coverage:**

In this technique, all the possible combinations of the possible outcomes of conditions are tested at least once. Let's consider the following example:

* READ X. Y
* IF (X=0 || Y==0)
* PRINT ‘0’
* #TC1: X=0,Y=00 #TC2: X=0, Y=5 #TC3: X=55, Y=0
* #TC4: X= 55, Y= 5

Hence, four test cases required for two individual conditions. Similarly, if there are n conditions then 2^n test cases would be required.

**Basis Path Testing:**

In this technique, control flow graphs are made from code or flowchart and then Cyclomatic complexity is calculated which defines the number of independent paths so that the minimal number of test cases can be designed for each independent path.

**Loop Testing:**

Loops are widely used and these are fundamental to many algorithms hence, their testing is very important. Errors often occur at the beginnings and ends of loops.

**Test Cases For E-commerse Farming Website:**

| **Project Title: SMART FARM** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test Case 1** | | | | | | | |
| **Test Case ID:** 01 | | | | **Test Designed By**: Anas Kapadia | | | |
| **Test Priority:** High | | | | **Test Design Date:** 22/07/2023 | | | |
| **Module Name:** Registration and Login | | | | **Test Execution Date:** 24/07/2023 | | | |
| **Test Title:** User Registration and Farmer Registration | | | | **Test Executed By:** Soban Maruf | | | |
| **Test Description:** Verify that users can register and log in to the "Farmit" website. | | | |  | | | |
| **Pre-condition:** The Functionality of Registration Page is working properly. | | | | | | | |
|  | | | | | | | |
| **Steps** | **Test Steps** | **Test Data** | **Expected Result** | | **Actual Result** | **Status (Pass/Fail)** | **Notes** |
| 1 | Navigate to the "farmit" website. Create a Registration Page | User Profile: Name, Contact  Details, Pincode | Register is successfull | | Register details are incomplete | Pass | N/A |
| | **Step** | **Test Steps** | **Status (Pass/Fail)** | **Notes** | | --- | --- | --- | --- | | 2 | Click on Sign up or Register | PASS | Make sure to test the login process with both valid and invalid credentials. | | 3 | Fill in valid user registration information. | PASS |  | | 4 | Click the "Register" button. | PASS |  | | 5 | Verify that the user is successfully registered. | PASS |  | | 6 | Log out and attempt to log in using the newly created account | PASS |  | | 7 | Verify that the login is successful. | PASS |  |  | **Project Name:** Smart Farm | | --- |  | **Test Case ID:** SM-02 | **Test Designed By:** Soban Maruf | | --- | --- | | **Test Priority (Low/Medium/High):** HIGH | **Test Designed Date:** 20/10/23 | | **Test Title:** Farm Listing and Details | **Test Executed By:** Shadulla Shaikh | | **Description:** Check if users can browse and view detailed information about farms. | **Pre-condition: NO** | |  |  | | **Pre-condition:** Overview of Website |  |  | **Step** | **Test Steps** | **Status (Pass/Fail)** | **Notes** | | --- | --- | --- | --- | | 1 | Log in to the "farmit" website (if not already logged in). | PASS | Must be Enhance | | 2 | Browse the list of farms available on the platform. | PASS |  | | 3 | Fill in valid user registration information. | PASS |  | | 4 | Click on a specific farm to view its details. | PASS |  |  | **Project Name:** Smart Farm | | --- |  | **Test Case ID:** SM-03 | **Test Designed By:** Soban Maaruf | | --- | --- | | **Test Priority (Low/Medium/High):** HIGH | **Test Designed Date:** 21/10/23 | | **Test Title:** Search and Filter Functionality | **Test Executed By:** Anas Kapadia | | **Description:** Validate the website's search and filter features. | **Pre-condition: NO** | |  |  | |  |  |  | **Step** | **Test Steps** | **Status (Pass/Fail)** | **Notes** | | --- | --- | --- | --- | | 1 | Navigate to the search or filter options on the website. | PASS |  | | 2 | Enter specific search criteria (e.g., location, crop type). | PASS |  | | 3 | Click the search or filter button. | PASS |  | | 4 | Verify that the search results are accurate and match the specified criteria | PASS |  | | | | | | | | |

**Conclusion:**

In this experiment, we undertook a comprehensive black-box testing approach to evaluate the functionality, usability of the Farming Website. The objective was to ensure the Connection Between Farmer and consumer for better experience.