**Experiment 9**

**On the basis of required validations map the different test cases to handle all possible critical cases which may arise during the life cycle of the software.**

**Validations play a crucial role in ensuring the reliability and functionality of a blood donation project. Here are some test cases mapped to handle different critical scenarios throughout the software life cycle:**

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| 1. | **Donor Registration and Management:** | | | | | | |  | | |
|  | |  | **Test Cases:** | |  | | | | | |
|  | | | | * Validate that all mandatory fields in the donor registration form are filled. * Ensure that the system prevents duplicate donor registrations. * Verify that the system validates and accepts only genuine and valid contact information. * Test the system's response to invalid data formats (e.g., incorrect email format). | | | | | | |
| 2. | **Blood Collection and Inventory Management:** | | | | | | | | |  |
|  | |  | **Test Cases:** | |  | | | | | |
|  | | | | * Confirm that the system records blood donations accurately and updates inventory. * Validate that the system issues alerts for approaching blood expiry dates. * Test the handling of exceptional cases, such as entering negative quantities or incorrect blood types. * Verify that the system prevents overwriting or deleting critical inventory data. | | | | | | |
| 3. | **Donation Center Operations:** | | | | |  | | | | |
|  | |  | **Test Cases:** | |  | | | | | |
|  | | | | * Validate the appointment scheduling system, ensuring it handles various time slots and availability scenarios. * Test the system's response to unexpected user inputs during walk-in donations. * Confirm that the system can handle high loads during peak hours. * Verify that the center performance tracking accurately reflects key metrics. | | | | | | |
| 4. | **Community Engagement and Outreach:** | | | | | | | |  | |
|  | |  | **Test Cases:** | |  | | | | | |
|  | | | | * Validate the planning and execution of outreach events, including location accuracy. * Confirm that the system accurately records community engagement metrics. * Test the system's response to changes in event schedules or locations. * Verify that the system handles large attendance numbers without performance issues. | | | | | | |
| 5. | **Health and Safety Compliance:** | | | | | |  | | | |

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|  | |  | **Test Cases:** | |  | | |
|  | | | | * Validate that the system enforces health and safety standards during blood collection. * Test the incident reporting mechanism, ensuring accurate recording and notifications. * Confirm that the audit system accurately checks compliance at regular intervals. * Verify that corrective actions are triggered and recorded appropriately. | | | |
| 6. | **Recipient Management:** | | | | |  | |
|  | |  | **Test Cases:** | |  | | |
|  | | | | * Validate the registration and updating of recipient information. * Test the system's response to multiple blood transfusion requests for the same recipient. * Confirm that the system accurately maintains recipient medical history. * Verify that the system handles emergency cases with appropriate priority. | | | |
| 7. | **Financial Management:** | | | | |  | |
|  | |  | **Test Cases:** | |  | | |
|  | | | | * Validate the budget management system, ensuring accurate allocation and tracking. * Test the recording of donations, including different payment methods. * Verify that financial reports are generated accurately and in a timely manner. * Test the system's response to discrepancies in financial data. | | | |
| 8. | **Public Relations and Media Coverage:** | | | | | |  |
|  | |  | **Test Cases:** | |  | | |
|  | | | | * Validate the management of PR campaigns, ensuring accurate scheduling and execution. * Test the tracking of media coverage, including social media mentions. * Confirm that success stories are shared and displayed correctly. * Verify that the system responds appropriately to negative publicity. | | | |
| 9. | **Volunteer Engagement:** | | | | |  | |
|  | |  | **Test Cases:** | |  | | |
|  | | | | * Validate the volunteer recruitment process, ensuring accurate recording of volunteer information. * Test the scheduling and notification system for volunteer activities. * Confirm that the system accurately recognizes and rewards volunteers. * Verify that the system handles volunteer cancellations or rescheduling. | | | |

These test cases cover a range of scenarios to ensure the blood donation project functions reliably and effectively. Depending on the specific features and functionalities of the software, additional test cases may be necessary to address unique requirements. Regular testing and updates to the test cases throughout the software life cycle are essential to maintaining a robust and secure blood donation system.