**Part 4: Case Studies**

**Case Study 1**

You are faced with a problem where Advisors, Owners, and PMs report that they cannot add new members to households. Describe the steps you would take to investigate and resolve the problem.

**Answer:**

As first step I would ask for all the preconditions, states, users, parameters, data and interactions that the users do to recreate the scenario where the users are reporting the problem.

Once I can simulate the error in an internal environment, I can know what is the exactly problem, then I would identify in which part of the system is the error to report it with the specific area or create a solution if it is under my scope.

After one solution is developed, I would test it to ensure that it solve the problem and do not generate new problems, doing regression and functional testing.

Once the solution is tested then I can document all the investigation being specific with the scenarios and parameters in case that is needed for a future problem.

**Case Study 2**

The functionality of editing household members is intermittently failing, allowing users to edit members who already have investment accounts.

What measures would you take to identify the root cause and prevent similar issues in the future?

**Answer:**

I would attempt to replicate the issue in a controlled testing environment. This would involve simulating the different scenarios reported by users, including various combinations of household members, investment accounts, and any other relevant parameters.

I would analyze system logs during the times the issue occurs to identify any anomalies or error messages that could provide insight into the root cause. This can help pinpoint whether the failure is due to data validation, system performance, or a specific code path.

If applicable, I would review recent code changes or deployments that might have introduced the issue. Understanding the context of these changes can help in identifying whether they correlate with the reported problems.

I would assess the data integrity of the household member records, focusing on those with investment accounts. This involves checking for any inconsistencies or corruption in the database that might lead to unexpected behavior during the editing process.

While investigating the root cause, I would consider implementing temporary workarounds or fixes that could minimize the impact on users, ensuring they can continue their work without significant disruptions.

I would work closely with the development team to discuss findings and potential code-related issues. Collaboration is essential to ensure that any fixes implemented are effective and do not introduce new problems.

Once a root cause is identified, I would thoroughly test any solutions or patches in a staging environment to ensure they resolve the issue without causing other functionalities to fail.

To prevent similar issues in the future, I would recommend implementing monitoring tools that can track the performance of the editing functionality and alert the team to any anomalies in real time.

Finally, I would document the entire investigation process, including findings, actions taken, and solutions implemented. This documentation will serve as a reference for future incidents and can help in improving overall system stability.

**Debugging**

Describe your process for identifying and resolving a problem where the edit and delete buttons are shown for members who already have an investment account.

**Answer:**

I would analyze the code responsible for rendering the edit and delete buttons. This involves checking the conditions under which these buttons are displayed and ensuring they align with the defined business logic. I would look for conditional statements that check whether a member has an investment account.

To better understand the state of the member’s account, I would ensure that appropriate logging is in place. If necessary, I would add additional logs to capture the relevant details when the buttons are being rendered. This would help me trace any discrepancies in logic.

Then I would write unit tests specifically designed to validate the logic that controls the visibility of the edit and delete buttons. This would include test cases for members with and without investment accounts to ensure that the buttons behave as expected in all scenarios.

In addition to unit tests, I would conduct integration tests to verify that the interaction between the backend and frontend is functioning correctly. This would ensure that the data about investment accounts is correctly passed and interpreted by the frontend.

I would check the database to confirm that the investment account statuses are being stored and retrieved correctly. This might involve executing queries directly to ensure that the expected data is present for each member.

After making initial adjustments, I would perform manual testing in a development or staging environment to verify that the issue is resolved in a real-world scenario.

Once I identify and resolve the issue, I would conduct a code review with other developers. This peer review process helps ensure that the solution is robust and does not introduce new issues.

Finally, I would document the problem, the solution implemented, and any changes made to the code. Proper documentation is essential for future reference and for keeping the development team informed.