**Test Plan for Blockchain Node Onboarding and Private Blockchain Creation Web Application**

**1. Introduction**

This test plan outlines the testing strategy for the CRUD web application designed for blockchain node onboarding and private blockchain creation. The plan includes different types of testing with test cases covering both positive and negative scenarios.

**2. Testing Types**

**a. Functional Testing**

Testing all functionalities working as expected.

**b. UI Testing**

Verifying the user-friendly elements and its behaviour.

**c. Performance Testing**

Test the stability of the application and its response time by applying different loads.

**d. Security Testing**

Checks for authorization and data protection.

**e. Integration Testing**

Communication between different modules.

**f. Regression Testing**

Validates existing functionalities that new changes do not break old functionality

**g. User Acceptance Testing (UAT)**

Testing the application with all the possible scenarios its Confirms that the application meets business requirements or not

**3. Test Cases**

**1. Sign Up**

**Positive Cases:**

1. Register with a valid email and strong password
2. Register with an email that is not already in use
3. Verify email confirmation process after successful sign-up

**Negative Cases:**

1. Register with an invalid email format
2. Register with a weak password (e.g., less than 8 characters)
3. Register with an already registered email
4. Attempt sign-up without filling required fields
5. Attempt sign-up with mismatched password confirmation

**2. Sign In**

**Positive Cases:**

1. Sign in with valid credentials
2. Sign in and remain logged in after refreshing the page
3. Sign in and ensure session expires correctly upon inactivity

**Negative Cases:**

1. Sign in with incorrect email
2. Sign in with incorrect password
3. Sign in without filling required fields
4. Attempt login with an unverified email

**3. Submit Request to Onboard Nodes to Existing Blockchain**

**Positive Cases:**

1. Add a valid node request
2. Add multiple nodes successfully
3. Add a valid wallet with appropriate permissions
4. Successfully proceed through all steps and submit the request

**Negative Cases:**

1. Enter an invalid Node ID format
2. Enter an invalid Public IP format
3. Try adding a duplicate node
4. Try proceeding without adding nodes
5. Enter an invalid wallet address
6. Try adding a duplicate wallet
7. Submit request without completing required fields

**4. Submit Request to Create New Private Blockchain**

**Positive Cases:**

1. Create a new blockchain with a valid network name and wallet address
2. Add a valid node with correct details
3. Successfully proceed through all steps and submit

**Negative Cases:**

1. Create blockchain with an empty or invalid network name
2. Enter an invalid wallet address
3. Try adding duplicate nodes
4. Submit request without completing required fields

**5. Sign Out**

**Positive Cases:**

1. Sign out from the application successfully
2. Ensure session is terminated upon sign-out

**Negative Cases:**

1. Try accessing pages after sign-out
2. Sign out and attempt back navigation to a log in page

**4. Automation Strategy**

* Automate high-priority functional test cases using Selenium and Java.
* Implement BDD framework (Cucumber) for test case execution.
* Include data-driven testing for multiple input scenarios.
* Integrate tests into CI/CD pipeline for continuous validation.