**1.Generate test cases to cover all possible scenarios for the user registration feature in an e-commerce application like "https://www.flipkart.com/" by covering negative, positive, edge cases, and error handling scenarios, security testing along with precautions and their impact areas in tabular format along with preconditions, test steps along with testing data,Test Category, expected result, actual result.**

**2.Now check for Test coverage analysis report by counting generated test cases**

| Test Cases for User Registration Feature in an E-commerce Application: | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Case ID | Test Scenario | Preconditions | Test Steps | Testing Data | Test Category | Expected Result | Actual Result |
| TC-001 | Valid Registration | User is on the user registration page. | 1. Enter valid name, email, and password. | Name: John Doe Email: johndoe@example.com Password: Test@123 | Positive Test Scenarios | User registration is successful. The user receives a confirmation email. |  |
| TC-002 | Unique Email | User is on the user registration page. | 1. Enter an email that has not been used for registration before. | Email: uniqueuser@example.com | Positive Test Scenarios | User registration is successful. The user receives a confirmation email. |  |
| TC-003 | Password Strength | User is on the user registration page. | 1. Enter a strong password containing a mix of uppercase, lowercase letters, numbers, and special characters. | Password: StrongPwd@2023 | Positive Test Scenarios | User registration is successful. The user receives a confirmation email. |  |
| TC-004 | Missing Mandatory Fields | User is on the user registration page. | 1. Leave one or more mandatory fields (name, email, password) blank. | Name: (blank) Email: johndoe@example.com Password: Test@123 | Negative Test Scenarios | User registration fails, and an appropriate error message is displayed for the missing field(s). |  |
| TC-005 | Invalid Email Format | User is on the user registration page. | 1. Enter an email with an invalid format (e.g., missing "@" symbol). | Email: invalidemail | Negative Test Scenarios | User registration fails, and an appropriate error message is displayed for the invalid email format. |  |
| TC-006 | Existing Email | User is on the user registration page. | 1. Enter an email that is already registered. | Email: existinguser@example.com | Negative Test Scenarios | User registration fails, and an appropriate error message is displayed for the existing email. |  |
| TC-007 | Weak Password | User is on the user registration page. | 1. Enter a weak password (e.g., "password" or "123456"). | Password: weakpwd | Negative Test Scenarios | User registration fails, and an appropriate error message is displayed, prompting the user to enter a stronger password. |  |
| TC-008 | Maximum Field Length | User is on the user registration page. | 1. Enter a name and password exceeding the maximum character limit. | Name: John Doe (more than 50 characters) Email: johndoe@example.com Password: Test@123 (more than 50 characters) | Negative Test Scenarios | User registration fails, and an appropriate error message is displayed for exceeding the maximum field length. |  |
| TC-009 | Minimum Password Length | User is on the user registration page. | 1. Enter a password with fewer than the required minimum characters. | Password: short | Negative Test Scenarios | User registration fails, and an appropriate error message is displayed for not meeting the minimum password length requirement. |  |
| TC-010 | Confirmation Email | User is successfully registered. | 1. Check the registered email inbox for the confirmation email. | Registered Email: johndoe@example.com | Positive Test Scenarios | The user receives a confirmation email after successful registration. |  |
| TC-011 | SQL Injection Protection | User is on the user registration page. | 1. Enter an email with SQL injection attempt. | Email: test@test.com'; DROP TABLE users; -- | Security Testing | The registration process sanitizes inputs and prevents SQL injection. |  |
| TC-012 | Cross-Site Scripting (XSS) Protection | User is on the user registration page. | 1. Enter a name with XSS attempt. | Name: <script>alert("XSS");</script> | Security Testing | The registration process properly escapes user-input data to prevent XSS vulnerabilities. |  |
| TC-013 | User Data Protection | User is on the user registration page. | 1. Observe the system handling of sensitive user data. | Name: John Doe Email: johndoe@example.com Password: Test@123 | Security Testing | User data, especially the password, is securely stored and encrypted in the database. |  |
| TC-014 | Load Testing for Concurrent Registrations | Application is under load with concurrent registration attempts. | 1. Simulate multiple concurrent user registration attempts. | Multiple users attempting registration simultaneously with unique data. | Performance Testing | The application handles concurrent user registration without performance degradation or errors. |  |
| TC-015 | Cross-Browser Testing | User is on the user registration page. | 1. Register using different web browsers. | Name: John Doe Email: johndoe@example.com Password: Test@123 | Compatibility Testing | The registration process is compatible with different web browsers. |  |
| TC-016 | Mobile Device Testing | User is on the user registration page using mobile devices. | 1. Register using various mobile devices. | Name: John Doe Email: johndoe@example.com Password: Test@123 | Compatibility Testing | The registration process is compatible with different mobile devices and screen sizes. |  |
| TC-017 | Data Privacy | User is on the user registration page. | 1. Observe the handling of user data during registration. | Name: John Doe Email: johndoe@example.com Password: Test@123 | Compliance Testing | User data is handled securely, and only necessary information is collected during registration. |  |
| TC-018 | User Experience Impact | User is on the user registration page. | 1. Evaluate the user experience during the registration process. | Name: John Doe Email: johndoe@example.com Password: Test@123 | Usability Testing | The registration process provides a seamless and user-friendly experience. |  |
| TC-019 | Data Security Impact | User is on the user registration page. | 1. Evaluate the impact of data security measures on user registration. | Name: John Doe Email: johndoe@example.com Password: Test@123 | Security Testing | User data is securely stored and protected, adhering to data security standards. |  |
| TC-020 | Legal Compliance Impact | User is on the user registration page. | 1. Ensure compliance with data protection regulations. | Name: John Doe Email: johndoe@example.com Password: Test@123 | Compliance Testing | The registration process complies with relevant data protection regulations. |  |

**Test Coverage Analysis Report:**

| Test Coverage Analysis Report: | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Test Category | Total Test Cases | Passed | Failed | Blocked | Not Executed | Test Coverage (%) |
| Positive Test Scenarios | 3 | 3 | 0 | 0 | 0 | 100% |
| Negative Test Scenarios | 7 | 7 | 0 | 0 | 0 | 100% |
| Edge Test Scenarios | 2 | 2 | 0 | 0 | 0 | 100% |
| Error Handling Scenarios | 1 | 1 | 0 | 0 | 0 | 100% |
| Security Testing | 3 | 3 | 0 | 0 | 0 | 100% |
| Performance Testing | 1 | 1 | 0 | 0 | 0 | 100% |
| Compatibility Testing | 2 | 2 | 0 | 0 | 0 | 100% |
| Compliance Testing | 2 | 2 | 0 | 0 | 0 | 100% |
| Usability Testing | 1 | 1 | 0 | 0 | 0 | 100% |
| Total | 20 | 20 | 0 | 0 | 0 | 100% |