Testing Web Based Applications

- Web testing is a software testing technique to test web applications or websites for finding errors and bugs.
- A web application must be tested properly before it goes to the end-users. Also, testing a web application does not only mean finding common bugs or errors but also testing the quality-related risks associated with the application.
- Software Testing should be done with proper tools and resources and should be done effectively. We should know the architecture and key areas of a web application to effectively plan and execute the testing.
- Testing a web application is very common while testing any other application like testing functionality, configuration, or compatibility, etc.
- Testing a web application includes the analysis of the web fault compared to the general software faults.
- Web applications are required to be tested on different browsers and platforms so that we can identify the areas that need special focus while testing a web application.

Types of Web Testing:

Basically, there are 4 types of web-based testing that are available and all four of them are discussed below:

1. **Static Website Testing:** A static website is a type of website in which the content shown or displayed is exactly the same as it is stored in the server. This type of website has a great UI but does not have any dynamic features that a user or visitor can use. In static testing, we generally focus on testing things like UI as it is the most important part of a static website. We check things font size, color, spacing, etc. testing also includes checking the contact us form, verifying URLs or links that are used in the website, etc.

2. **Dynamic Website Testing:** A dynamic website is a type of website that consists of both a frontend i.e, UI, and the backend of the website like a database, etc. This type of website gets updated or changed regularly as per the user's requirements. In this website, there are a lot of functionalities involved like what a button will do if it is pressed, are error messages shown properly at their defined time, etc. We check if the backend is working properly or not, like entering the data or information in the GUI or the frontend gets updated in the databases or not.

3. **E-Commerce Website Testing:** An e-commerce website is very difficult to maintain as it consists of different pages and functionalities, etc. In this testing, the tester or developer has to check various things like checking if the shopping cart is working as per the requirements or not, are user registration or login functionality is also working properly or not, etc. The most important thing in this testing is whether a user can successfully do payment or not and if the website is secured. And there are a lot of things that a tester needs to test apart from the given things.

4. **Mobile-Based Web Testing:** In this testing, the developer or tester basically checks the website compatibility on different devices and generally on mobile devices because many of the users open the website on their mobile devices. So, keeping that thing in mind, we must check that the site is responsive on all devices or platforms.

Objectives of Web Based Testing:

- **Testing for functionality:** Make that the web application performs as expected for all features and functions. Check that user interface elements like form submissions and navigation work as intended.
- **Testing for Compatibility:** To make sure it is compatible, test the web application across a variety of devices, operating systems, and browsers. Verify that the program operates consistently in a range of settings.
- **Evaluation of Performance:** Analyze the online application's overall performance, speed, and responsiveness. Any performance bottlenecks, such as slow page loads or delayed server response times, should be located and fixed.
- **Testing for load:** Examine how well the web application can manage a particular load or multiple user connections at once. Determine and fix performance problems when there is a lot of traffic.
- **Testing for accessibility:** Make sure the online application complies with applicable accessibility standards (e.g., WCAG) and is usable by people with disabilities. Make sure the program can communicate with assistive technologies efficiently.
- **Testing Across Browsers:** Make sure the operation and appearance of the web application are consistent by testing it in various web browsers. Determine and fix any problems that might develop with a particular browser.

Steps in Software Testing:

There are a total of 11 steps in software testing. You can read all of them from the article "General Steps of Software Testing Process". In web-based testing, various areas have to be tested for finding the potential errors and bugs, and steps for testing a web app are given below:

- **App Functionality:** In web testing, we verify if a web application's functions, features, and behavior align with its specifications. This includes checking mandatory fields, ensuring asterisks display correctly, verifying error messages for optional fields, and validating various types of links (external, internal, anchor, and email) for functionality and integrity. Functional Testing is utilized to assess the app's functional requirements and specifications.
- **Usability:** While testing usability, the developers face issues with scalability and interactivity. As different numbers of users will be using the website, it is the responsibility of developers to make a group for testing the application across different browsers by using different hardware. For example, Whenever the user browses an online shopping website, several questions may come to his/her mind like, checking the credibility of the website, testing whether the shipping charges are applicable, etc.

- **Browser Compatibility:** For checking the compatibility of the website to work the same in different browsers we test the web application to check whether the content that is on the website is being displayed correctly across all the browsers or not.
- **Security:** Security plays an important role in every website that is available on the internet. As a part of security, the testers check things like testing the unauthorized access to secure pages should not be permitted, files that are confined to the users should not be downloadable without the proper access.
- **Load Issues:** We perform this testing to check the behavior of the system under a specific load so that we can measure some important transactions and the load on the database, the application server, etc. are also monitored.
- **Storage and Database:** Testing the storage or the database of any web application is also an important component and we must be sure that the database is properly tested. We test things like finding errors while executing any DB queries, checking the response time of a\the query, testing whether the data retrieved from the database is correctly shown on the website or not.

Web-based testing is an essential and comprehensive procedure designed to guarantee the usability, security, performance, functionality and quality of web applications. It contributes to the delivery of a seamless and relaxing user experience while maintaining the highest standards of functionality, performance and security through the systematic review and validation it provides.