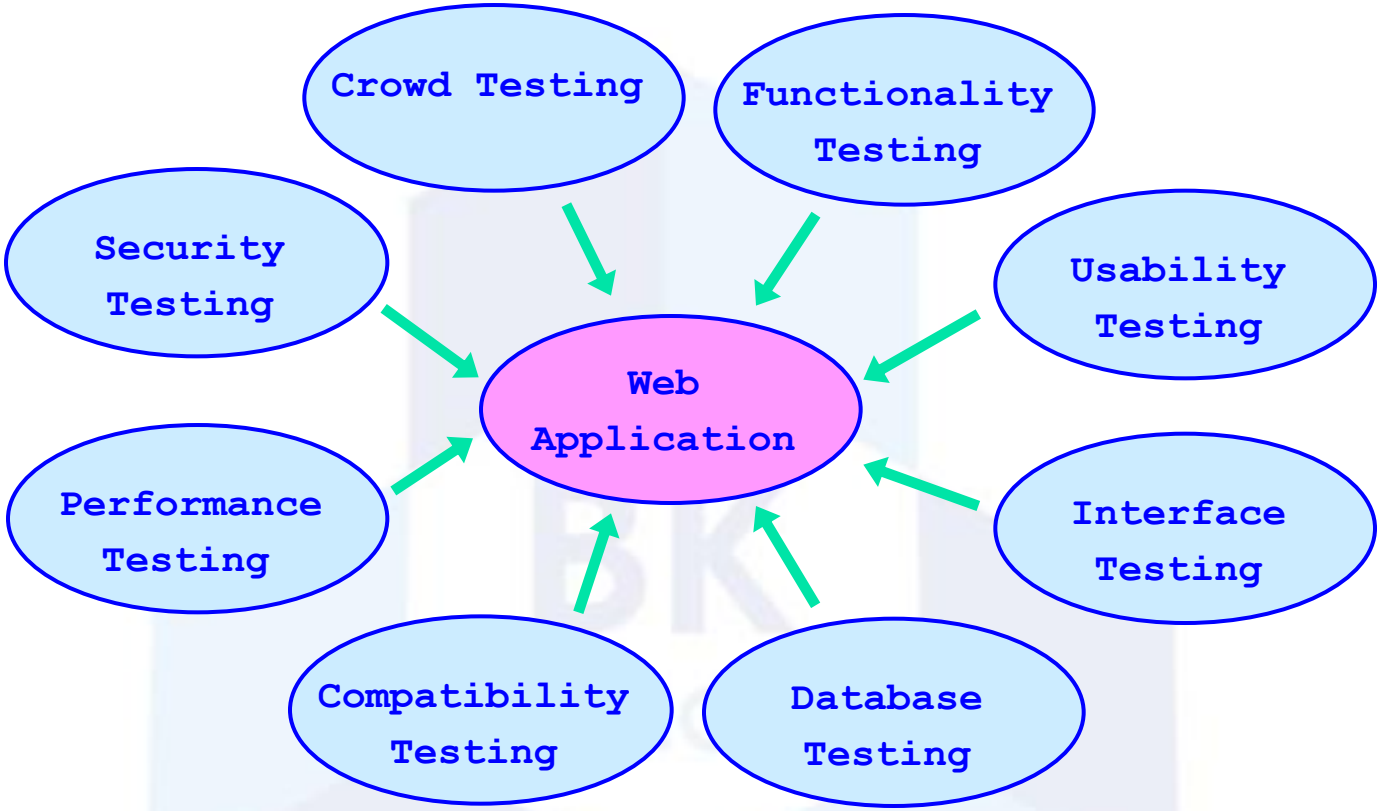
WEB APPLICATION TESTING

Web Application Testing



Functionality Testing

- **Check the specifications, functional requirements in the developmental documentation.**
  - **Test all links in webpages to be certain they are working correctly and make sure there are no broken links:**
    - **Test the outgoing links from all the pages to the specific domain under test.**
    - **Test all internal links.**
    - **Test links jumping on the same pages.**
    - **Test links used to send email to admin or other users from the web pages.**
    - **Test to check if there are any orphan pages.**
    - **Finally link checking includes, check for broken links in all the above-mentioned links.**

Functionality Testing

- Test forms in all pages are working as expected. Forms are the integral part of any website. Forms are used for receiving information from users and to interact with them.
  - Check all the validations on each field.
  - Scripting checks on the form are working as expected. For example, if a user does not fill a mandatory field in a form an error message is shown.
  - Check default values of the fields are being populated.
  - Wrong inputs in the forms to the fields in the forms.
  - Once submitted, the data in the forms is submitted to a live database or is linked to a working email address.
  - Forms are optimally formatted for better readability.
  - Options to create forms if any form, delete, view or modify the forms.

Functionality Testing

- Test cookies are working as expected. Cookies are small files used by websites to primarily remember active user sessions.
  - Testing cookies (sessions) are deleted either when cache is cleared or when they reach their expiry.
  - Delete cookies (sessions) and test that login credentials are asked for when you next visit the site.
- Test HTML and CSS to ensure that search engines can crawl your site easily.
  - Checking for Syntax Errors
  - Readable Color Schemas
  - Check if the site is crawl able to different search engines.

Functionality Testing

- **Test business workflow**
  - **Testing our end - to - end workflow/ business scenarios which takes the user through a series of webpages to be completed.**
  - **Test negative scenarios as well, such as that when a user executes an unexpected step, appropriate error message or help is shown in our web application.**

Usability Testing

- Test the site Navigation
  - Website should be easy to use.
  - Menus, buttons or Links to different pages on our site should be easily visible and consistent on all webpages.
- Test the Content
  - Content should be legible with no spelling or grammatical errors.
  - Content should be logical, meaningful and easy to understand.
  - Images if present should contain an "alt" text.
  - Instructions provided should be very clear.
  - Check if the instructions provided are perfect to satisfy its purpose.
  - Main menu should be provided on each page.
  - It should be consistent enough.

Interface Testing

- Check if all the interactions between these servers are executed and errors are handled properly.
  - If database or web server returns any error message for any query by the application server then the application server should catch and display these error messages appropriately to the users.
  - Check what happens if the user interrupts any transaction?
  - Check what happens if the connection to the web server is reset?

Interface Testing

- **Application**
  - Test requests are sent correctly to the Database and output at the client side is displayed correctly.
  - Errors if any must be caught by the application and must be only shown to the administrator and not the end user.
- **Web Server**
  - Test Web server is handling all application requests without any service denial.
- **Database Server**
  - Make sure queries sent to the database give expected results.

Database Testing

- Test if any errors are shown while executing queries.
- Data Integrity is maintained while creating, updating or deleting data in a database.
- Check response time of queries and fine tune them if necessary.
- Test data retrieved from our database is shown accurately in our web application.
- Check if all the database queries are executing correctly, data is retrieved and also updated correctly.

Compatibility Testing

- **Compatibility tests ensures that our web application displays correctly across different devices.**
  - **Browser compatibility**
  - **Operating system compatibility**
  - **Mobile browsing**
  - **Printing options**

Compatibility Testing

- **Browser compatibility**
  - Different browsers have different configurations and settings that your web page should be compatible with.
  - Website coding should be a cross browser platform compatible.
  - Same website in different browsers will display differently.
  - Need to test if web application is being displayed correctly across browsers, JavaScript, AJAX and authentication is working fine.
  - Check for Mobile Browser Compatibility.

Compatibility Testing

- **Operating system compatibility**
  - Some functionality in web application is that it may not be compatible with all operating systems.
  - All new technologies used in web development like graphic designs, interface calls like different API's may not be available in all Operating Systems.
  - The rendering of web elements like buttons, text fields etc. changes with change in Operating System.
  - Make sure website works fine for various combination of Operating systems such as Windows, Linux, Mac and Browsers such as Firefox, Internet Explorer, Google Chrome etc.

Compatibility Testing

- **Mobile browsing**
  - Test web pages on mobile browsers. Compatibility issues may be there on mobile devices as well.
- **Printing options**
  - Make sure fonts, page alignment, page graphics etc., are getting printed properly.
  - Pages should fit to the paper size or as per the size mentioned in the printing option.

Performance Testing

- Web application should sustain to heavy load. This will ensure website works under all loads.
  - Web Load Testing
  - Web Stress Testing
- Test application performance on different internet connection speed.

Performance Testing

- **Web Load Testing**
  - Load test web application to determine its behavior under normal and peak loads.
  - Need to test if many users are accessing or requesting the same page.
  - Can the system sustain in peak load times?
  - Site should handle many simultaneous user requests, large input data from users, simultaneous connection to DB, heavy load on specific pages etc.
  - Test if a crash occurs due to peak load, how does the site recover from such an event.
  - Make sure optimization techniques like gzip compression, browser and server side cache enabled to reduce load times.

Performance Testing

- **Web Stress Testing**
  - Web stress testing is performed to break the site by giving stress and its checked as how the system reacts to stress and how it recovers from crashes.
  - Website application response times at different connection speeds.
  - Stress test website to determine its break point when pushed to beyond normal loads at peak time.

Security Testing

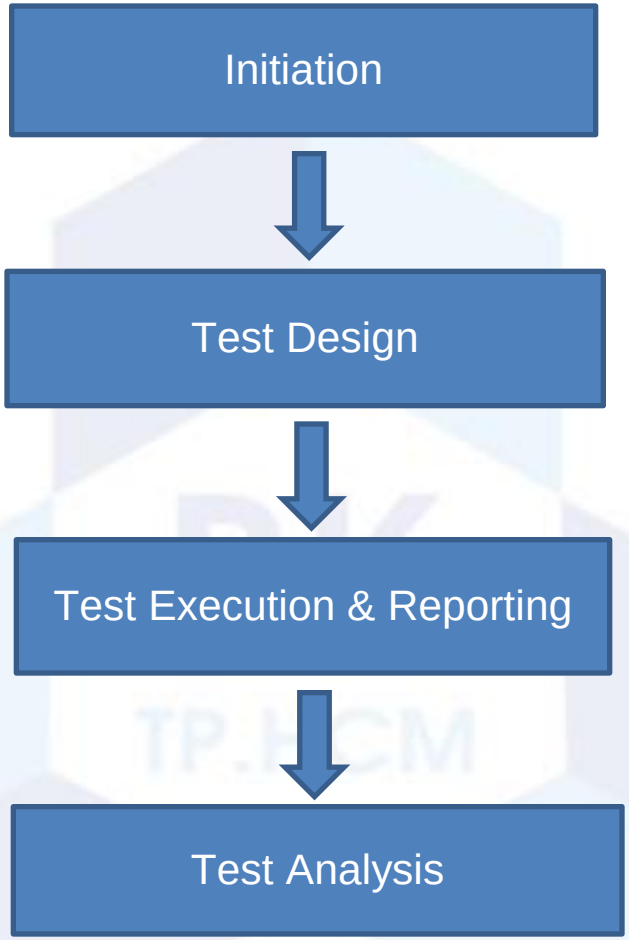
- **Security testing is vital for e-commerce website that store sensitive customer information like credit cards.**
  - **Test unauthorized access to secure pages should not be permitted. Try some invalid inputs in input fields like login username, password, input text boxes etc. Check the systems reaction on all invalid inputs.**
  - **Web directories or files should not be accessible directly unless they are given download option.**
  - **Restricted files should not be downloadable without appropriate access.**
  - **Check sessions are automatically killed after prolonged user inactivity.**
  - **All transactions, error messages, security breach attempts should get logged in log files somewhere on the web server.**

Crowd Testing

- Select a large number of people (crowd) to execute tests which otherwise would have been executed by a select group of people in the company.
- Crowdsourced testing is an interesting and upcoming concept and helps unravel many unnoticed defects.

TESTING PROCESS

Testing Process



Testing process

- **Initiation**
  - Meeting to the SW Team to understand so it helps for the design.
  - Setting up a test environment and application.
  - Identify a test approach.
  - Test planning and test strategy.

Testing process

- **Test Design**
  - Understanding the requirement of the SW: user requirements and system requirements.
  - Understanding the functionality to be tested.
  - Design test-cases: identify test data, required results for units under test in the test-case forms. Create test data.
  - Documentation of test-cases and test scenarios.
  - Plan for the testing techniques applying on the test-cases (white box, black box, script, etc..).
  - Write drivers and stubs for unit testing and integration testing.
  - Automation testing only apply if it is not complex otherwise other testing technique to be used such human test design, etc.…
  - Testing level of V-model.
  - Scheduling.

Testing process

- **Test Execution & Reporting**
  - Test-case execution: testers execute the software based on the Test Design then report any errors found to the programmers for analysis, fixing bugs, improvement, etc.
  - Test automation (if applicable).
- **Test Analysis**
  - Test result analysis.
  - Matric reporting.
  - Fixing bugs.
  - Identification of improvement areas.