Web Application Testing

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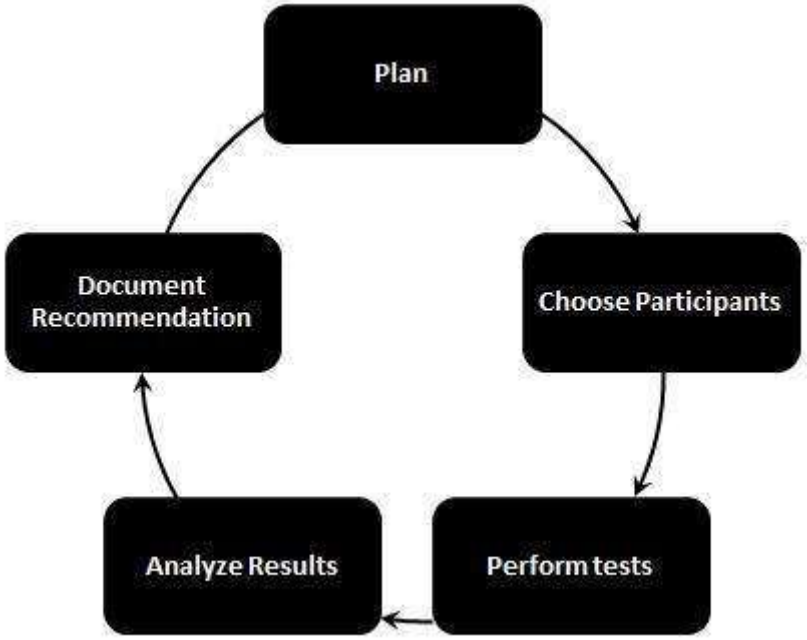
What is Web Application Testing?

- Web application testing, a software testing technique exclusively adopted to test the applications that are hosted on web in which the application interfaces and other functionalities are tested.
- Web Application Testing - Techniques:
  - Usability testing
  - Functionality Testing
  - Compatibility testing
  - Performance testing
  - Security testing

What is Usability Testing ?

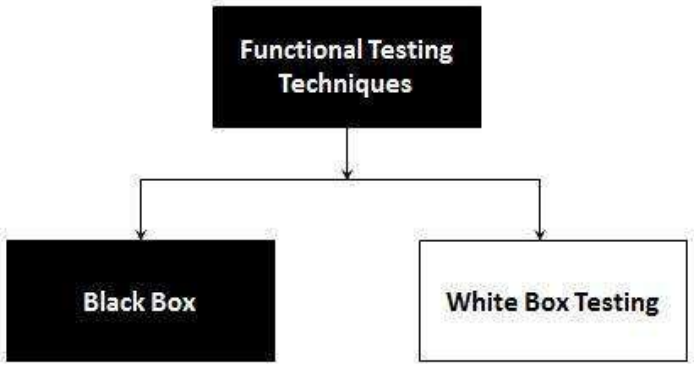
- Usability testing, a non-functional testing technique that is a measure of how easily the system can be used by end users.
- It is difficult to evaluate and measure but can be evaluated based on the below parameters:
  - Level of Skill required to learn/use the software. It should maintain the balance for both novice and expert user.
  - Time required to get used to in using the software.
  - The measure of increase in user productivity if any.
  - Assessment of a user's attitude towards using the software.

Usability Testing Process:



What is Functional Testing?

- Functional Testing is a testing technique that is used to test the features/functionality of the system or Software, should cover all the scenarios including failure paths and boundary cases.
- There are two major Functional Testing techniques as shown below:



- The other major Functional Testing techniques include:
  - Unit Testing
  - Integration Testing
  - Usability Testing
  - System Testing
  - Regression Testing
  - Globalization Testing

What is Compatibility Testing?

- Compatibility Testing is a type of Software testing to check whether your software is capable of running on different hardware, operating systems, applications, network environments or Mobile devices.
  - **Operating Systems**: It checks your software to be compatible with different Operating Systems like Windows, Unix, Mac OS etc.
  - **Browser**: It checks the compatibility of your website with different browsers like Firefox, Google Chrome, Internet Explorer etc.
  - **Devices**: It checks compatibility of your software with different devices like USB port Devices, Printers and Scanners, Other media devices and Blue tooth.
  - **Mobile**: Checking your software is compatible with mobile platforms like Android, iOS etc.

- **Backward Compatibility Testing** is a technique to verify the behavior and compatibility of the developed hardware or software with their older versions of the hardware or software. Backward compatibility testing is much predictable as all the changes from the previous versions are known.

- **Forward Compatibility Testing** is a process to verify the behavior and compatibility of the developed hardware or software with the newer versions of the hardware or software. Forward compatibility testing is a bit hard to predict as the changes that will be made in the newer versions are not known.

What is Security Testing?

- Security testing is a process to determine that an information system protects data and maintains functionality.
- To check whether there is any information leakage.
- To test the application whether it has unauthorized access and having the encoded security code.
- To finding out all the potential loopholes and weaknesses of the system.

Six basic security concepts

- Confidentiality
- Integrity
- Authentication
- Authorization
- Availability
- Non-repudiation

Security Testing Techniques

- Main security testing techniques are:
  - Vulnerability Scanning
  - Security Scanning
  - Penetration Testing
  - Ethical Hacking
  - Risk Assessment
  - Security Auditing
  - Posture Assessment & Security Testing
  - Password cracking

What is Performance Testing?

- Performance testing, a non-functional testing technique performed to determine the system parameters in terms of responsiveness and stability under various workload.
- Performance testing measures the quality attributes of the system, such as scalability, reliability and resource usage.

Performance Testing Techniques:

- **Load testing -**
  - It is the simplest form of testing conducted to understand the behavior of the system under a specific load.
  - Load testing will result in measuring important business critical transactions and load on the database, application server, etc., are also monitored.
- **Stress testing -**
  - It is performed to find the upper limit capacity of the system and also to determine how the system performs if the current load goes well above the expected maximum.

- **Soak testing -**
  - Soak Testing also known as endurance testing, is performed to determine the system parameters under continuous expected load.
  - During soak tests the parameters such as memory utilization is monitored to detect memory leaks or other performance issues.
  - The main aim is to discover the system's performance under sustained use.
- **Spike testing -**
  - Spike testing is performed by increasing the number of users suddenly by a very large amount and measuring the performance of the system.
  - The main aim is to determine whether the system will be able to sustain the workload.