Software Testing and Automation

Summarized Questions and answers

Contents

Type of software testing and process

Validation:
Spec is meet customer requirement
Validation is the process of checking whether the specification captures the customer's needs

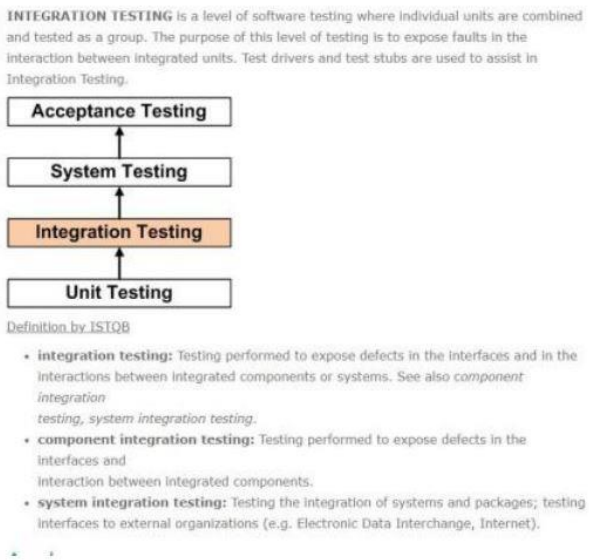
Verification:
QA team does verification and make sure that the software is as per the requirement in the **SRS** document.

Requirements and Acceptance Tests

Requirements are what you are supposed to do. Acceptance criteria are agreed upon measures to call a project “done.” Acceptance Criteria are a set of statements, each with a clear pass/fail result. Testability has a close connection with acceptance criteria.

The user story focuses on the experience — what the person using the product wants to be able to do. A traditional requirement focuses on functionality — what the product should do. The remaining differences are a subtle, yet important, list of “how,” “who,” and “when.”

Unit testing =>integration=>system testing=>Acceptance testing



ACCEPTANCE TESTING is a level of software testing where a system is tested for acceptability. The purpose of this test is to evaluate the system's compliance with the business requirements and assess whether it is acceptable for delivery.
Link:
http://softwaretestingfundamentals.com/acceptance-testing/#:~:text=ACCEPTANCE%20TESTING%20is%20a%20level,it%20is%20acceptable%20for%20delivery.

Types of Software Testing

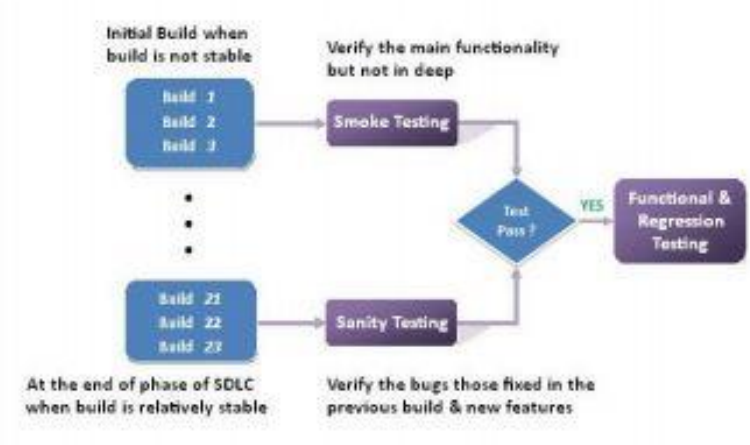
Test plan and test strategy:

Test strategy is a guideline to be followed to achieve the test objective and execution of test types mentioned in the testing plan. It deals with test objective, test environment, test approach, automation tools and strategy, contingency plan, and risk analysis

In the Test Plan, test focus and project scope are defined. It deals with test coverage, scheduling, features to be tested, features not to be tested, estimation and resource management

Function testing	Non function testing type
Unit testing, smoke testing, Sanity testing, Integration testing, interface testing, system testing, regression testing, UAT	Stress testing, usability testing, localization testing and internationalization testing

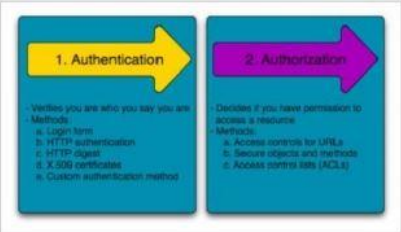
Sanity testing and smoke testing:



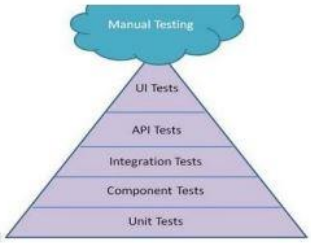
Type of performance:

Load testing - checks the application's ability to perform under anticipated user loads. The objective is to identify performance bottlenecks before the software application goes live.
Stress testing - involves testing an application under extreme workloads to see how it handles high traffic or data processing. The objective is to identify the breaking point of an application.
Example Performance Test Cases (Long Load time /Poor response time /Poor scalability /Bottlenecking (Disk usage, Network utilization))
Verify response time is not more than 4 secs when 1000 users access the website simultaneously.
Verify response time of the Application Under Load is within an acceptable range when the network connectivity is slow
Verify response time of the application under low, normal, moderate and heavy load conditions.
Check the maximum number of users that the application can handle before it crashes.
Check database execution time when 500 records are read/written simultaneously.
Check CPU and memory usage of the application and the database server under peak load conditions

Authentication and authorization:



he terms are often used in conjunction with each other in terms of security,



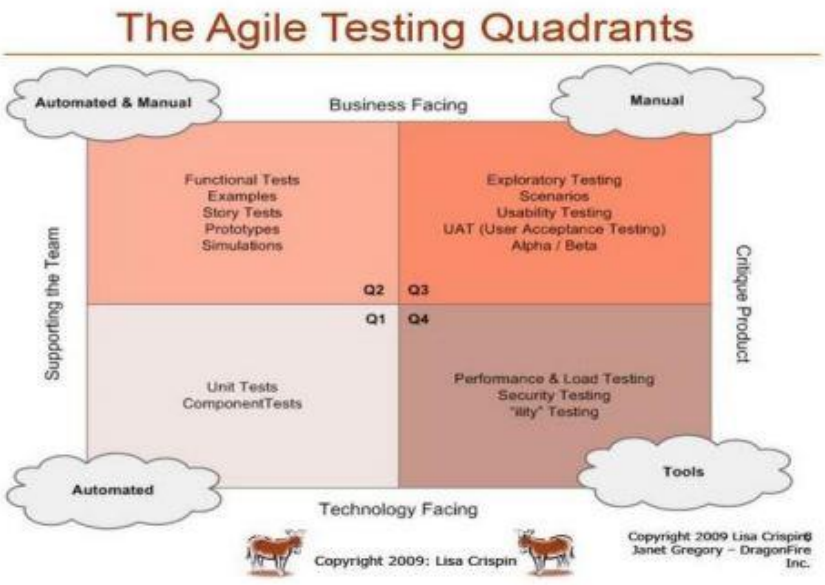
ıe test pyramid

nd the agile testing quadrants

Testing in Agile:

PI planning -> grooming feature, initial backlog Sprint meeting for a one Month or four- week, for two week sprint , breakdown use story ->write down the acceptance criteria , define the work In sprint Daily scrum meeting about 15 mins, talk about risk and problem.

Agile testing and automation:



Rest API testing

What exactly needs to be verified in API Testing?

Basically, on API Testing, we send a request to the API with the known data and we analyse the response

Data accuracy	HTTP status codes	Response time
Error codes in case API returns any errors	Authorization checks	Non-functional testing such as performance testing, security testing

What is Rest API?

REST stands for Representational State Transfer. It is a set of functions helping developers in performing requests and receives responses. Interaction is made through HTTP Protocol in REST API.

What are differences between SOAP and REST?

SOAP	REST
SOAP is a protocol.	REST is an architectural style.
SOAP can't use REST because it is a protocol.	REST can use SOAP web services because it is a concept and can use any protocol like HTTP, SOAP.
SOAP only permits XML.	REST permits many different data formats including plain text, HTML, XML, and JSON...
SOAP requires more bandwidth and more resources.	REST requires less bandwidth and less resources.
SOAP supports both SMTP and HTTP protocols.	REST requires use of HTTP only.
SOAP is more reliable than REST.	REST is less secure than SOAP.
In most cases, SOAP is faster than REST.	REST is slower than SOAP.
SOAP defines its own security.	RESTful web services inherits security measures from the underlying transport.

SOAP UI	**Postman**
SoapUI allows you to test REST and SOAP APIs with ease – as it has been built specifically for API testing.	Postman is a plugin in Google Chrome, and it can be used for testing API services. It is a powerful HTTP client to test web services. For manual or exploratory testing, Postman is a good choice for testing API.
➢ Quick and Easy Test Creation: Point-and-click, drag-and-drop, functionality makes complicated tasks (like working with JSON and XML) simple ➢ Powerful data-driven testing: Load data from Excel, files, and databases to simulate the way consumers interact with your APIs ➢ Seamless Integrations: Integrates with 13 API management platforms, supports REST, SOAP, JMS, and IoT	➢ With Postman, almost all modern web API data can be extracted ➢ You can create a collection of REST calls and save each call as part of a collection for execution in future ➢ For transmitting and receiving REST information, Postman is more reliable ➢ Unlike CURL, it is not a command line based tool, which makes this tool hassle free of pasting text into command line window

Web service and API

WEB SERVICE	API
All web services are APIs.	All APIs are not web services.
It can only be hosted on IIS.	It can be hosted within an application or IIS.
It is not open source but can be used by any client that understands XML.	It is open source and it can be used by any client that understands JSON or XML.
It requires a SOAP protocol to receive and send data over the network, so it is not a light-weight architecture.	It is light-weight architectured and good for devices which have limited bandwidth, like mobile devices.
A Web service uses only three styles of use: SOAP, REST and XML-RPC for communication.	API may use any style of communication.
It only supports the HTTP protocol.	It supports the HTTP protocol: URL, Request/Response Headers, caching, versioning, content formats.

HTTP code error:

400 (Bad Request)	401 (Unauthorized) unauthorized	403 (Forbidden) F b den
404 (Not Found)	405 (Method Not Allowed)	500 (Internal Server Error) 501(no implemented)

UI testing –system testing

How is UI testing is not similar to API testing?

UI (User Interface) testing is to test the graphical interface part of the application. Its main focus is to test the look and feel of an application. On the other hand, API testing enables communication between two different software systems. Its main focus is in business layer of the application.

Automation Testing – integration testing

UI automaton:

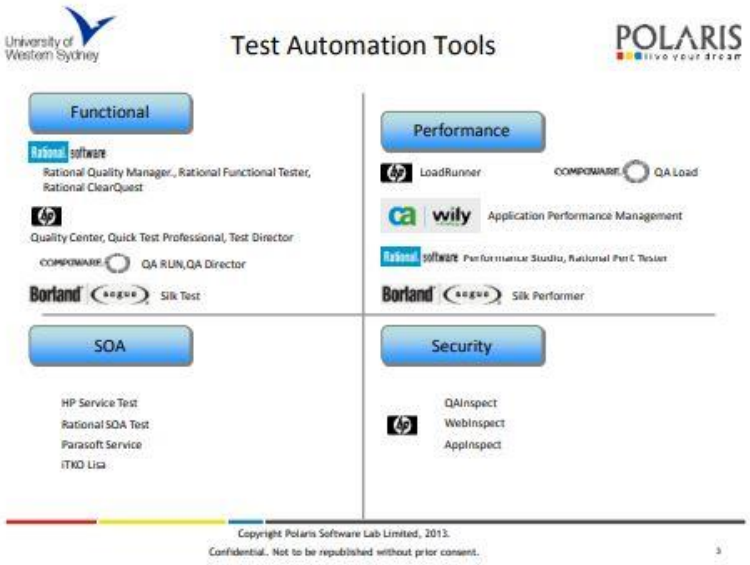
Implicit Wait: In Implicit wait, if WebDriver cannot find an element in the Document Object Model (DOM), it will wait for a defined amount of time for the element to appear in the DOM. The Implicit wait may slow down your tests, because once set, the implicit wait is set for the life of the WebDriver object's instance. Explicit waits: are better than implicit wait. Unlike an implicit wait, you can write custom code or conditions for wait before proceeding further in the code. An explicit wait can be used where synchronization is needed, for example the page is loaded but we are still waiting for a call to complete

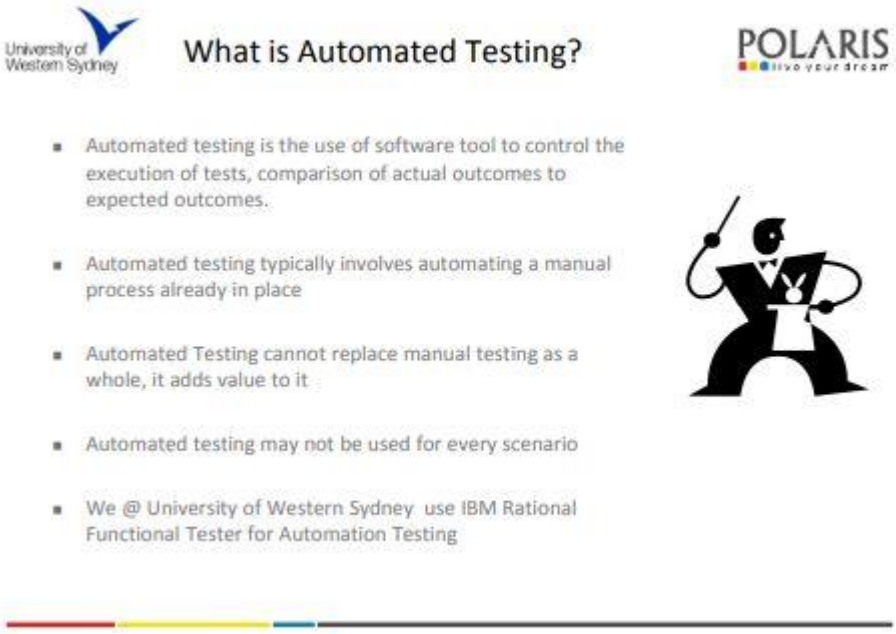
Xpath:

//a[contains(@href,test1)] //*[@type='submit' or @name='login'] //And

//lable [starts-with(@name,'btn')] //*[@id='home']/child::li ////*[@id='home']/child::li[1]
Xpath sibling:
https://www.guru99.com/using-contains-sbiling-ancestor-to-find-element-in-selenium.html

Automation structure:
Src : test script Lib : methods for invoking
Class : test class Log: output the log file/report Element files -> elements file Test files -> excel or other file to save the test data
Which test cases to automate: Repetitive tests that run for multiple builds Tests that use multiple data values for the same actions (data driven tests) Identical tests that need to be executed using different browsers Tests that run on several different hardware or software platforms and configurations
Automation tools:





Page as object in automation:
Abstraction encapsulation inheritance

References

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API testing questions	https://www.youtube.com/watch?v=ggK_MiUkKNc
Write a test plan	https://reqtest.com/testing-blog/how-to-write-a-test-plan-2/
HTTP status codes	https://restfulapi.net/http-status-codes/
Actives in Agile and automation	https://www.softwaretestinghelp.com/test-automation-interview-questions/
PostMan	https://www.youtube.com/watch?v=DR3EEhjn2OI&list=PLhW3qG5bs-L-oT0GenwPLcJAPD_SiFK3C&index=17
RestAssured BDD	https://www.youtube.com/watch?v=n3UITFRJ9KU&list=PLUDwpEzHYYLskkglxoXd0L6DKu4uOfh-m
Simple-page-object-model	https://www.seleniumeasy.com/selenium-tutorials/simple-page-object-model-framework-example
BDD and specflow	https://www.youtube.com/watch?v=tfq9FlkyaUM&list=PL6tu16kXT9Pp3wrsaYyNRnK1QkvVv6qdI
CI/CI	https://mindmajix.com/jenkins-interview-questions-answers
Jmeter	https://www.youtube.com/watch?v=M-iAXz8vs48&list=PLhW3qG5bs-L-zox1h3eIL7CZh5zJmci4c
Performance testing	https://www.guru99.com/performance-testing.html#3
TDD , BDD and ATDD	https://www.browserstack.com/guide/tdd-vs-bdd-vs-atdd