PATİKA.DEV & PAYCORE JAVA SPRING BOOTCAMP HOMEWORK 3

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1 – SOAP vs Restful ?

SOAP stands for Simple Object Access Protocol. It is an XML-based messaging protocol to Exchange information between computers.

- SOAP is a communication protocol
- SOAP can extend http
- Provides data transport for Web Services
- Can Exchange complete documents or call a remote procedure
- Can be used to broadcast a message
- Platfom independent and language independent
- It is XML way of clarifying what and how information sent.

REST stands for REpresentational State Transfer. It is an architecture that uses http protocol. There exists a client-server structure in REST architecture. REST server provides Access to resources and REST client accesses ,and modifies the resources. Here each resource is defined by URIs. Resources can be represented as text,XML or JSON.

- Can use SOAp services because it is a concept.
- FAX-RS is te Java API for REST services.
- REST requires less bandwith.
- Inherits security measures from underlaying transport.
- Generally more preferred than SOAP.

2 - Difference between acceptance test and functional test ?

Testing is a crucial part of software development. There are different types pf tests: Unit tests;Integration Tests;functional tests;end-to-end tests; acceptance tests; performance tests; smoke tests.

Functional tests focus on the business requirements. They check the outcome of the action. They require multiple components to interact with each other. Integration tests and functional tests

generally confused with each other. The difference is however while functional tests expects a specific result, integration tests check for connectivity of the system.

Acceptance tests are also tests that whether system satisfies the business requirements. They require all application to be up and running. However they can do more than that by measuring the performance of the system and reject changes if goals aren't made.

3 - What is Mocking ?

Mocking means creating a fake version of any service that can stand for the real one, helping the test to be executed faster and a more reliable way. Especially useful for when application requires to interact with an objects properties.

4 - What is a reasonable code coverage % for unit tests (and why) ?

Simple answer for this question is 80%. However, it should be added that the real answer is much more complex than that. First of all, there is no textbook all case answer for this question. Amount of testing can vary from number of factors inside the code. There are different requirements for every task and code. Also different types of coverages such as branch coverage and statement coverage. However coverage standards exists in the industry for specific purposes like satisfying stakeholders, normalizing team behaviour, and keeping the coder honest. You can choose 100% testing , but this can be inefficient due to testing the parts that are not necessarily require testing. More modest version of this would be 95% coding which relaxes the tester especially on the parts that are harder to test, or may seem not necessary to test. 80% is generally accepted as industry standard, it means quite most of the code but not the all, therefore creates reliability and flexibility on Test-Driven Development. But according to most testers this is not a solid rule and can change by case to case.

5 – HTTP/POST vs HTTP/PUT ?

HTTP POST is a HTTP method to insert an input , like it is creating a new object. HTTP PUT is the method for insert, but if it exists update. POST method is a non-idempotent method while PUT is idempotent.

6 - What are the Safe and Unsafe methods of HTTP ?

HTTP methods are safe if it doesn't alter the state of the server. Also can be told as read-only methods. Some of the safe HTTP methods are : GET, HEAD, or OPTIONS. All safe methods are also idempotent. But not all idempotent methods are safe. DELETE and PUT are examples of this. Servers can alter the state of the safe only methods such as for purposes of logging.

7 - How does HTTP Basic Authentication work ?

In a HTTP transaction , basic authentication is a method for an http user agent to provide user id and password when making a request. A request has been made with contains a header in form of Authorization: Basic <information(userid:password)>, and information part includes an encoding of ID and password given to user in Base64 format.

8 - Define RestTemplate in Spring ?

RestTemplate is used to create applications that consume RESTful web services. You can use the Exchange() method to consume the web services for all HTTP methods. Spring introduced a new http client called WebClient. WebClient is a modern alternative to RestTemplate.

9 – What is idempotant and which HTTP methods are idempotant ?

Idempotent methods HTTP are idempotent if an identical request can be made once or several times in a row with the same effect while leaving the server in the same state. In other words, an idempotent method should not have any side effects. GET, HEAD, PUT, DELETE,OPTIONS,TRACE are idempotent methods.

10 – What is DNS Spoofing ? How to prevent ?

DNS spoofing a.k.a DNS cache poisoning is an attack in which altered DNS records are used to redirect traffic to a fraudulent website that resembles its intended destination. It can be done in two ways as Man in the Middle(MITM) and DNS server compromise. MITM is intercepting the communications between users and server in order to route them into fraudulent IP addresses. DNS server compromise is when attacker gain the control of DNS server and configured to return a malicious IP address. To prevent it end-to-end encryption for requests should be used, to do that

Secure Socket Layers(SSL) Certicates is a good thing. Also spoof detection tools such as Xarp is reasonable. Incrasing the Time-To-Live (TTL) values for DNS cache would help.

11 – What is content negotiation ?

In http, content negotiation is the mechanism that is used for serving differnet representations of a resource to the same URI to help the user agent specify which representation is best for the user. There are some disadvantages to the use of http content negotiations, in HTML5 <source> tag provides an alternative to content negotiation. It is basically grouping some alterations o fresource to same URI and user agents deciding of what is best suited for you.

12 – What is statelessness in RESTful Web Services ?

Statelessness is a restriction related to REST architecture, it states RESTful services should not keep a client state on the server. Passing this to server is clients' responsibility.

13 - What is CSRF attack? How to prevent ?

CSRF stands for cross-site request forgery. It is an attack that forces end user to execute unwanted actions on the site they're authenticated in. With an exploitation they would succeed such as sending a link etc. attacker may control the things that exploitee is authorized at, therefore if this attack becomes successful at someone with admin privileges it becomes tremendously risky. To prevent it there exists CSRF supports that are built-in for many frameworks. There is tool called OWASP CSRFGuard for Java projects.

14 - What are the core components of the HTTP request and HTTP response ?

HTTP request has five major parts :

- **Verb** – Defines the method, such as GET,POST,DELETE etc.,
- **URI** – Uniform Resource Identifier to identify the resource on the server,
- **HTTP Version** – Version of HTTP,
- **Request Header** – Contains metadata of HTTP request,
- **Request Body** – Body of HTTP request message.

HTTP Response has four major parts :

- **Status/Response Code** – Server status for the requested resource.
- **HTTP Version** – Version of HTTP,
- **Response Header** – Contains metadata for HTTP response message,
- **Response Body** – Contains message content.