Assignment - 5

Page No.:
Date. / /

1) "SOAP fault is caused due to client or server failure" State T/F with justification.

→ - SOAP provides a model for handling faults arise.
- It distinguishes between the conditions that result in a fault, & the ability to signal that fault to the originator of the faulty message or another node.
- The SOAP <Body> is the place where fault information is placed.

2) Give the use of SOAP actor attribute.

→ The actor attribute is optional, but if it is used, it must appear in a SOAPHeaderElement object. It purpose is to indicate the recipient of a header element. The default actor is the message ~~it~~ ultimate recipient; that is, if no actor attribute is supplied, the message goes directly to the ultimate recipient.
An actor is an application that can both receive SOAP message & forward them to the next actor. The ability to specify one or more actors as intermediate recipients makes it possible to route a message to multiple recipients & to supply header information that applies specifically to each of the recipients.

Date. / /

3) What do you mean by wire protocol & transport protocol ?

→ In a network a wire protocol is the mechanism for transmitting data from point a to point b. The term is a bit confusing, because it sounds like layer 1 of the network, which physically places the bits "onto the wire". In some cases it may refer to layer 1; however, it generally refers to higher layers, including Ethernet & ATM & even higher layer distributed object protocols such as SOAP, CORBA or RMI

Transport protocols are key to the success of any network, including the world wide web & the Internet in general. A through understanding of transport & how they work is key to understanding web services. One of the most powerful design decision with SOAP was to make it transport independent, which means that you can send message over any transport you choose.

4) What is SOAP message path ?

→ A SOAP intermediary is both a SOAP receiver & a SOAP sender. It can, & in some cases must, process the header blocks in the SOAP message, & it forwards the SOAP message toward its ultimate receiver. The ultimate SOAP receiver is the final destination of SOAP message.

5) Give the use of SOAP must understand attribute.

→ The SOAP mustUnderstand attribute can be used to indicate whether a header entry is mandatory or optional for the recipient to process. If you add mustUnderstand = "1" to a child element of the Header element it ~~includes~~ indicates that the recieuer processing the Header must recognize the element.

6) Explain in short Apache Axis enuironment.

→ Axis is essentially a SOAP engine--a framework for constructing SOAP processors such as clients, seruers, gateways etc. The current version of Axis written in Java, but a C++ implementation of the client side of Axis is being deueloped.

4 Marks

1) How error are handled using SOAP faults, giue an example for adding fault in XML of SOAP message?

→ SOAP errors are handled using a specialized envelope known as fault Envelope. If an error occurs while the seruer processes a SOAP message, it constructs a SOAP fault & sends it back to the client. Here's a typical SOAP A SOAP Fault is a special element that must appear as an immediate child of the SOAP

body element. The <faultcode> & <faultstring> element are required. The <faultactor> & <detail> elements are optional. The body & Fault elements are namespace-qualified to the envelope's namespace - for example, <SOAP-ENV:body> & <SOAP-ENV:Fault>

2) What are advantages & disadvantages of SOAP?

→

Advantages	Disadvantages
i) SOAP defines it own security known as WS security.	i) SOAP uses XML format that must be parsed to be read.
ii) SOAP web services can be written in any programming language & executed in any platform.	ii) It defines many standards that must be followed while developing the SOAP applications.

3) What is SOAP? Give the structure of SOAP message, explain it.

→ SOAP is a message protocol that enables the distributed elements of an application to communicate.

A SOAP message is encoded an XML document, consisting of an <Envelope> element, which contains an optional <Header> element, & a mandatory <Body> element.

4) Write in detail on SOAP with attachment.

→ SOAP with attachement, also knocon as MIME for web services. A MIME - based attachement mechanism for SOAP. SoapUI supports plain SwA as well as SwRef attachement in accordance with the WS-I ~~attah~~ attachement profile. SOAP UI also supports specifying file names inline to insert binary contents from a file into a message body. Support & inlining require internal processing & can be disable in the project properties.

5) Give an example XML code snipet for error handling in SOAP using fault element, also explain it.

→

6) Consider an example, simple stock trading service that defines a single method for buying stock. The buy() method returns the cost of purchasing a specified quantity of a particular stock. Here is method declaration.

→* public float buy (int quantity, string symbol). Write a SOAP request for invoking the method.

→

7) Write an example of document styled SOAP body

→ Document style

```
<soap:envelope>
  <soap:body>
    <x> 5 </x>
    <y> 5.0 </y>
  </soap:body>
</soap:envelope>
```

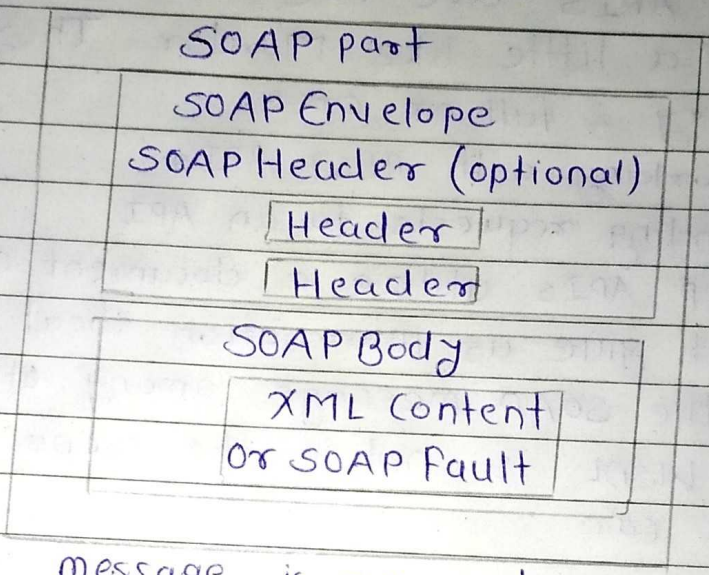
A document style SOAP message body contains an XML document that can be validated against a defined XML schema. It is a more customizable & flexible approach as the protocol relies on the pre-defined schema to determine the

Page No.:
Date. / /

structure of the SOAP message. That means we are free to customize the SOAP message as much as we want.

8) Draw the structure of SOAP with attachment message, give an example & explain it.

→



A SOAP message is an ordinary XML document containing the following element -

- Envelope - Define the start & the end of the message It is a mandatory
- Header - Contains any optional attribute of the message used in processing the message, either at an intermediary point or at the ~~attributes~~ ultimate end point. It is an optional element.
- Body - Contains the XML data comprising the message being sent. It is a mandatory element.
- Fault - An optional fault element that occur while processing the message

9) Write the anatomy of SOAP message & describe each element.

→ Most of us interact with REST API's on a regular basis, but from time-to-time we need to interact with SOAP API's as well. For those of us with less exposure to SOAP, REST API's are like the shire & SOAP APIs are a little like Mordor. They are dark & scary & full or orcs.

- Working with REST APIs
- Sending requests to an API

SOAP APIs utilize a document called a WSDL which give us information about the structure of the SOAP message, among other information. The WSDL is not in the scope of this post ~~but~~ you ~~can~~

10) A client want to invoke web service for requesting price of a book "Developing Java web services", write down the RPC request & response code for the same.

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