UNIT – IV WEB SERVICES

1. What is Web Services?

A web service is used to implement architecture according to service oriented architecture (SOA) concepts. The basic unit of communication is message.

2. What are the basic parts comprised in the web services framework?

The basic parts comprised in the web services framework are:

i. one or more architectures
ii. technologies
iii. concepts
iv. models
v. sub-frameworks

3. List out the characteristics of web services framework.

The various characteristics of web services framework are:

i. An abstract (vendor-neutral) existence defined by standards organizations and implemented by (proprietary) technology platforms.
ii. Core building blocks that include web services, service descriptions, and messages.
iii. A communication agreement centered around service descriptions based on WSDL.
iv. A messaging framework comprised of SOAP technology and concepts.
v. A service description registration and discovery architecture sometimes realized through UDDI.
vi. A well-defined architecture that supports messaging patterns and compositions.
vii. A second generation of web services extensions (also known as the WS-* specifications) continually broadening its underlying feature-set.

4. Write down the advantage of web services.

The various advantages of web services are:

i. Flexible
ii. Adaptable
iii. Promotes interoperability
iv. Reduces complexity by encapsulation
v. Enables just-in-time integration

5. Give the classification of web services design.

The different classification of web services design is:

i. Temporary classification (service roles)
ii. Permanent classification (service models)

6. Define Service.

A service is a unit of software capable of altering its role, depending on its processing responsibility in a given scenario.

7. What are the fundamentals in role of service?

The different fundamental in role of services are:

i. Service provider
ii. Service consumer
iii. Intermediaries
iv. Initial sender and ultimate receiver
v. Service compositions

8. What is the service provider?

The service provider is used to identify the organization (or individual) responsible for actually providing the web service. It simply referred as the service being invoked.

9. What is service requestor?

Service requestor is a processing logic unit capable of issuing a request message that can be understood by the service provider.

10. What are referred to as intermediaries?

Web services and service agents route and process a message after it is initially sent and before it arrives at its ultimate destination are referred to as intermediaries or intermediary services.

11. Give the types of intermediaries.

The different types of intermediaries are:

i. Passive intermediary
ii. Active intermediary

12. What is initial sender?

Initial senders are simply service requestors that initiate the transmission of message. It is the first web service in a message path.

13. What is ultimate receiver?

Ultimate receiver identifies service consumer that exist as the last web service along a messages' path.

14. What is service composition?

A service composition is a coordinated aggregate of services each is assigned with service composition number to complete a given task. Service compositions also are referred to as service assemblies.

15. What is referred as service models?

Service models refer to permanent classifications that represent the logic housed by the service, as well as its role within the overall solution.

16. What are the basic sets of common service models?

The basic sets of communication service models are:

i. Business service model
ii. Utility service model
iii. Controller service model

17. What is business service model?

The business service model is a model that encapsulates a distinct set of business logic within a well-defined functional boundary. The business service model corresponds to the business service layer in SOA abstraction layer.

18. List out some of the usage of business service model.

Business services are used within SOAs as follows:

i. as functional building blocks for the representation of business logic
ii. to represent a corporate entity or information set
iii. to represent business process logic
iv. as service composition members

19. What is utility service model?

Utility service is generic and non-application specific web service or service agent that is designed for potential reuse.

20. List out some of the usage of utility service model.

Utility services are used within SOAs as follows:

i. as services that enable the characteristic of reuse within SOA
ii. as solution-agnostic intermediary services
iii. as services that promote the intrinsic interoperability characteristic of SOA
iv. as the services with the highest degree of autonomy

21. What does controller service model represent?

The controller service represents a service with a capability that is executing the parent composition logic required to compose capabilities within other services. The controller services can become subordinate service composition members.

22. List out some of the usage of controller service model.

Controller services are used within SOAs as follows:

i. to support and implement the principle of composability
ii. to leverage reuse opportunities
iii. to support autonomy in the other services

23. What is referred to as service description documents?
The individual documents that comprise a service contract are referred to as service description documents.

24. What do service endpoints provide?
Service endpoint provides a formal definition of the endpoint interface and also establishes the physical location of the service.

25. What are service descriptions?
A WSDL service description explains how the service description document itself is organized. It is also known as WSDL service definition or just WSDL definition.

26. What are the categories of service description?
Service description id divided into two categories
i. Abstract description
ii. Concrete description

27. What does abstract description establish?
An abstract description establishes the interface characteristics of the web service without any reference to the technology used to host or enable a web service to transmit messages.

28. What are the parts that comprise an abstract description?
The three main parts that comprise an abstract description are
i. Port type
ii. Operation
iii. Message

29. What does port type in abstract description provide?
Port type provides a high-level view of the service interface by sorting the messages a service can process into groups of functions.

30. Define concrete description.
The concrete description portion of the WSDL file defines the connection needed from the abstract web service interface to a physical transport protocol.

31. What are the parts that comprise concrete description?
The three main parts that comprise concrete description are
i. Binding
ii. Port
iii. Service

32. What is metadata?

Metadata provides information about the service.

33. What is the use of SOAP?

The Simple Object Access Protocol (SOAP) is used to define a standard message format which is used for communication between services running on different operating systems.

34. List out some of the characteristics of SOAP messaging framework.

SOAP messaging framework ha the following three characteristics that are

i. Extensible
ii. Interoperable
iii. Independent

35. What are the parts of SOAP message?

SOAP message consists of the three parts: SOAP envelope
SOAP header (optional) SOAP body
SOAP fault

36. List out messaging styles offered by SOAP.

i. RPC (Remote Procedure Call) style
ii. Document – style

37. Sketch the anatomy of a SOAP message.

```
<?xml version=”1.0”?>
<soap:Envelope xmlns:soap=”http://www.w3.org/2001/12/soap-envelope”
soap:encodingStyle=”http://www.w3.org/2001/12/soap-encoding”>
<soap:Header>
.....

</soap:Header>
<soap:Body>
.....
<soap:Fault>
.....
</soap:Fault>
</soap:Body>
</soap:Envelope>
```

38. What is SOAP node?

The programs that use services to transmit and receive SOAP messages are referred to as SOAP nodes.

39. What is called the SOAP message path?

The route taken by the message is called the SOAP message path. The set of SOAP nodes through which the SOAP message passes, including the initial sender, the ultimate receiver and one or more intermediaries are called the SOAP message path.

40. Define Message Exchange Pattern.

Message Exchange Pattern (MEP) defines the way that SOAP messages are exchanged between the web service requester and web service provider. It represents a set of templates.

41. List out some primitive MEPs.

A common set of primitive MEPs are listed below

i. Request-response
ii. Fire-and-forget
iii. Complex MEPs

42. What is Publish-and-subscribe pattern?

Publish-and-subscribe pattern is an asynchronous MEP in which publisher sends messages to all interested subscribers.

43. What is coordination?

Coordination is the act of one entity (known as the coordinator) disseminating information to a number of participants for coordinating the activities of the web services that are part of a business process.

44. Write down the layers of abstraction identified for SOA.

The three layers of abstraction identified for SOA are:

i. the application service layer
ii. the business service layer
iii. the orchestration service layer

45. List some of the characteristics of Application Service layer.

i. Expose functionality within a specific processing context
ii. Draw upon available resources within a given platform
iii. Solution – agnostic
iv. Generic and reusable
v. Achieve point-to-point integration with other application services
vi. Inconsistent in terms of the interface granularity they expose
vii. Mixture of custom-developed and third-party purchased services