**JAVA WEB SERVICES & REST API-RESTFULL SOAP**

# What is web service

Service delivered over the web.

* Web services are designed for machine-to-machine (or application-to-application) interaction
* Web services should be interoperable - Not platform dependent
* Web services should allow communication over a network

# Types of Web Services

* SOAP
* REST

# SOAP

* SOAP was earlier an abbreviation for Simple Object Access Protocol. In SOAP, the request and response are in XML format. However, not all types of XML are valid SOAP Requests.
* SOAP defines a standard XML format. We will use WSDL (Web Service Definition Language) to define the format of request xml and the response xml.
* SOAP format defines a SOAP-Envelope which envelopes the entire document.
* SOAP-Header (optional) contains any information needed to identify the request. Also, part of the Header is authentication, authorization information.
* SOAP-Body contains the real xml content of request or response.
* In case of error response, server responds back with SOAP-Fault

# REST

* REST stands for REpresentational State Transfer.
* REST is an architectural style not a protocol.
* The main goal of RESTful web services is to make web services more effective.
* We can build REST services with both XML and JSON.
* The **key abstraction** is a resource in REST.
* A resource can be anything. It can be accessed through a Uniform Resource Identifier (URI).
* The resource has representations like XML, HTML, and JSON.

HTTP also defines the following standard status code:

* 404: RESOURCE NOT FOUND
* 200: SUCCESS
* 201: CREATED
* 401: UNAUTHORIZED
* 500: SERVER ERROR

# RESTful Service Constraints

* There must be a service producer and service consumer.
* The service is stateless.
* The service result must be cacheable.
* The interface is uniform and exposing resources.
* The service should assume a layered architecture.

# Advantages of RESTful web services

* RESTful web services are platform-independent.
* It can be written in any programming language and can be executed on any platform.
* It provides different data format like JSON, text, HTML, and XML.
* It is fast in comparison to SOAP because there is no strict specification like SOAP.
* These are reusable.
* They are language neutral.

# Advantages of Soap Web Services

* WS Security: SOAP defines its own security known as WS Security.
* Language and Platform independent: SOAP web services can be written in any programming language and executed in any platform.