**WSDL**: WSDL stands for Web Services Description Language. It is the standard format for describing a web service.

WSDL is an XML format for describing network services as a set of endpoints operating on messages containing either document-oriented or procedure-oriented information. The operations and messages are described abstractly, and then bound to a concrete network protocol and message format to define an endpoint

* WSDL is an XML-based protocol for information exchange in decentralized and distributed environments.
* WSDL definitions describe how to access a web service and what operations it will perform.
* WSDL is a language for describing how to interface with XML-based services.
* WSDL is pronounced as 'wiz-dull' and spelled out as 'W-S-D-L'.

**WSDL Elements:**

A WSDL document contains the following elements:

1. **Definition** : It is the root element of all WSDL documents. It defines the name of the web service, declares multiple namespaces used throughout the remainder of the document, and contains all the service elements described here.
2. **types** : The data types to be used in the messages are in the form of XML schemas.
3. **Message** : It is an abstract definition of the data, in the form of a message presented either as an entire document or as arguments to be mapped to a method invocation.
4. **Operation** : It is the abstract definition of the operation for a message, such as naming a method, message queue, or business process, that will accept and process the message.
5. **Port type**: It is an abstract set of operations mapped to one or more end-points, defining the collection of operations for a binding; the collection of operations, as it is abstract, can be mapped to multiple transports through various bindings.
6. **Binding** : It is the concrete protocol and data formats for the operations and messages defined for a particular port type.
7. **Port** : It is a combination of a binding and a network address, providing the target address of the service communication.
8. **Service** : It is a collection of related end-points encompassing the service definitions in the file; the services map the binding to the port and include any extensibility definitions.

The WSDL Document Structure

The main structure of a WSDL document looks like this:

<definitions>

<types>

definition of types........

</types>

<message>

definition of a message....

</message>

<portType>

<operation>

definition of a operation.......

</operation>

</portType>

<binding>

definition of a binding....

</binding>

<service>

definition of a service....

</service>

</definitions>

Given below is a WSDL file that is provided to demonstrate a simple WSDL program.

<definitions name="CalculationService"

targetNamespace="http://www.examples.com/wsdl/CalculationService.wsdl"

xmlns="http://schemas.xmlsoap.org/wsdl/"

xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"

xmlns:tns="http://www.examples.com/wsdl/CalculationService.wsdl"

xmlns:xsd="http://www.w3.org/2001/XMLSchema">

<message name="CalculationRequest">

<part name="input" type="xsd:string"/>

</message>

<message name="CalculationResponse">

<part name="param" type="xsd:string"/>

</message>

<portType name="Calculation\_PortType">

<operation name="Calculation">

<input message="tns: CalculationRequest"/>

<output message="tns: CalculationResponse"/>

</operation>

</portType>

<binding name="Calculation\_Binding" type="tns:Calculation\_PortType">

<soap:binding style="rpc"

transport="http://schemas.xmlsoap.org/soap/http"/>

<operation name="Calculation">

<soap:operation soapAction="Calculation"/>

<input>

<soap:body

encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"

namespace="urn:examples:Calculationservice"

use="encoded"/>

</input>

<output>

<soap:body

encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"

namespace="urn:examples:Calculationservice"

use="encoded"/>

</output>

</operation>

</binding>

<service name="Calculation\_Service">

<documentation>WSDL File for CalculationService</documentation>

<port binding="tns:Calculation\_Binding" name="Calculation\_Port">

<soap:address

location="http://www.examples.com/Calculation/" />

</port>

</service>

</definitions>

Example Details:

* Definitions : CalculationService
* Type : Using built-in data types and they are defined in XMLSchema.
* Message :
* CalculationRequest : input parameter
* Calculationresponse: grtting return value
* Port Type : Calculation operation that consists of a request and a response service.
* Binding : Direction to use the SOAP HTTP transport protocol.
* Service : Service available at http://www.examples.com/Calculation/
* Port : Associates the binding with the URI http://www.examples.com/Calculation/ where the running service can be accessed.