



Semantic Web Services PS

Exercise Sheet 3 – 01.04.2014

Please answer the following questions. Provide your elaborated answers in a PDF or a plain text file. If you make use of references when elaborating your answers, please add the proper citations to your document. The deadline for submissions to the tutors (ioan.toma@sti2.at and jose.garcia@sti2.at) is 7th April 2014 at 20:00 CET.

Exercise 1 (5 points)

Complete the WSDL file from Listing 1 in a way that the operations it provides correspond to the following procedure calls:

- float add(float x, int y)
- boolean lessThan(int a, int b)
- String trim (String s)

Listing 1. Web service – WSDL

```
<?xml version="1.0" encoding="utf-8"?>

<wsdl:definitions name="CompService" targetNamespace="urn:Foo" xmlns:tns="urn:Foo"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">

  <wsdl:types />
  <wsdl:message name="_____">
    <wsdl:part name="parameter_1" type="xsd:integer" />
    <wsdl:part name="parameter_2" type="_____" />
  </wsdl:message>
  <wsdl:message name="_____">
    <wsdl:part name="par_1" type="_____" />
    <wsdl:part name="par_2" type="_____" />
  </wsdl:message>
  <wsdl:message name="_____">
    <wsdl:part name="trimRequestIn" type="_____" />
  </wsdl:message>
  <wsdl:message name="_____">
    <wsdl:part name="resultAdd" type="_____" />
  </wsdl:message>
  <wsdl:message name="_____">
    <wsdl:part name="resultLessThan" type="_____" />
  </wsdl:message>
  <wsdl:message name="_____">
    <wsdl:part name="resultTrim" type="_____" />
  </wsdl:message>
</wsdl:definitions>
```

```

</wsdl:message>
<wsdl:portType name="CompIF">
  <wsdl:operation name="add" parameterOrder="_____ ">
    <wsdl:input message="_____ " />
    <wsdl:output message="_____ " />
  </wsdl:operation>
  <wsdl:operation name="lessThan"
parameterOrder="_____ ">
    <wsdl:input message="_____ " />
    <wsdl:output message="_____ " />
  </wsdl:operation>
  <wsdl:operation name="trim">
    <wsdl:input message="_____ " />
    <wsdl:output message="_____ " />
  </wsdl:operation>
</wsdl:portType>
<wsdl:binding name="CompIFBinding" type="tns:CompIF">
  <soap:binding transport="http://schemas.xmlsoap.org/soap/http" style="rpc"/>
  <wsdl:operation name="add">
    <soap:operation soapAction="" />
    <wsdl:input>
      <soap:body encodingStyle="http://schemas.xmlsoap.org/soap/encoding" use="encoded"
namespace="urn:Foo" />
    </wsdl:input>
    <wsdl:output>
      <soap:body encodingStyle="http://schemas.xmlsoap.org/soap/encoding" use="encoded"
namespace="urn:Foo" />
    </wsdl:output>
  </wsdl:operation>
  ...
</wsdl:operation>
</wsdl:binding>
<wsdl:service name="CompService">
  <wsdl:port name="CompIFPort" binding="tns:CompIFBinding">
    <soap:address location="_____ " />
  </wsdl:port>
</wsdl:service>
</wsdl:definitions>

```

Exercise 2 (5 points)

Given the WSDL file depicted in Listing 2 (<http://www.webserviceX.net/stockquote.asmx?WSDL>) for a Stock Quote Web service, design a SOAP request and a SOAP response for the GetQuote operation in the StockQuoteSoap port type.

Listing 2. Stock Quote Web service – WSDL

```

<?xml version="1.0" encoding="utf-8"?>
<wsdl:definitions xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/" xmlns:tns="http://www.webserviceX.NET/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:s="http://www.w3.org/2001/XMLSchema"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
targetNamespace="http://www.webserviceX.NET/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">

```

```

<wsdl:types>
  <s:schema elementFormDefault="qualified" targetNamespace="http://www.webserviceX.NET/">
    <s:element name="GetQuote">
      <s:complexType>
        <s:sequence>
          <s:element minOccurs="0" maxOccurs="1" name="symbol" type="s:string" />
        </s:sequence>
      </s:complexType>
    </s:element>
    <s:element name="GetQuoteResponse">
      <s:complexType>
        <s:sequence>
          <s:element minOccurs="0" maxOccurs="1" name="GetQuoteResult" type="s:string" />
        </s:sequence>
      </s:complexType>
    </s:element>
    <s:element name="string" nillable="true" type="s:string" />
  </s:schema>
</wsdl:types>
<wsdl:message name="GetQuoteSoapIn">
  <wsdl:part name="parameters" element="tns:GetQuote" />
</wsdl:message>
<wsdl:message name="GetQuoteSoapOut">
  <wsdl:part name="parameters" element="tns:GetQuoteResponse" />
</wsdl:message>
<wsdl:message name="GetQuoteHttpGetIn">
  <wsdl:part name="symbol" type="s:string" />
</wsdl:message>
<wsdl:message name="GetQuoteHttpGetOut">
  <wsdl:part name="Body" element="tns:string" />
</wsdl:message>
<wsdl:message name="GetQuoteHttpPostIn">
  <wsdl:part name="symbol" type="s:string" />
</wsdl:message>
<wsdl:message name="GetQuoteHttpPostOut">
  <wsdl:part name="Body" element="tns:string" />
</wsdl:message>
<wsdl:portType name="StockQuoteSoap">
  <wsdl:operation name="GetQuote">
    <wsdl:documentation xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">Get Stock quote for a
company Symbol</wsdl:documentation>
    <wsdl:input message="tns:GetQuoteSoapIn" />
    <wsdl:output message="tns:GetQuoteSoapOut" />
  </wsdl:operation>
</wsdl:portType>
<wsdl:portType name="StockQuoteHttpGet">
  <wsdl:operation name="GetQuote">
    <wsdl:documentation xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">Get Stock quote for a
company Symbol</wsdl:documentation>
    <wsdl:input message="tns:GetQuoteHttpGetIn" />
    <wsdl:output message="tns:GetQuoteHttpGetOut" />
  </wsdl:operation>
</wsdl:portType>
<wsdl:portType name="StockQuoteHttpPost">
  <wsdl:operation name="GetQuote">
    <wsdl:documentation xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/">Get Stock quote for a
company Symbol</wsdl:documentation>

```

```

        <wsdl:input message="tns:GetQuoteHttpPostIn" />
        <wsdl:output message="tns:GetQuoteHttpPostOut" />
    </wsdl:operation>
</wsdl:portType>
<wsdl:binding name="StockQuoteSoap" type="tns:StockQuoteSoap">
    <soap:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="GetQuote">
        <soap:operation soapAction="http://www.webserviceX.NET/GetQuote" style="document" />
        <wsdl:input>
            <soap:body use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap:body use="literal" />
        </wsdl:output>
    </wsdl:operation>
</wsdl:binding>
<wsdl:binding name="StockQuoteSoap12" type="tns:StockQuoteSoap">
    <soap12:binding transport="http://schemas.xmlsoap.org/soap/http" />
    <wsdl:operation name="GetQuote">
        <soap12:operation soapAction="http://www.webserviceX.NET/GetQuote" style="document" />
        <wsdl:input>
            <soap12:body use="literal" />
        </wsdl:input>
        <wsdl:output>
            <soap12:body use="literal" />
        </wsdl:output>
    </wsdl:operation>
</wsdl:binding>
<wsdl:binding name="StockQuoteHttpGet" type="tns:StockQuoteHttpGet">
    <http:binding verb="GET" />
    <wsdl:operation name="GetQuote">
        <http:operation location="/GetQuote" />
        <wsdl:input>
            <http:urlEncoded />
        </wsdl:input>
        <wsdl:output>
            <mime:mimeXml part="Body" />
        </wsdl:output>
    </wsdl:operation>
</wsdl:binding>
<wsdl:binding name="StockQuoteHttpPost" type="tns:StockQuoteHttpPost">
    <http:binding verb="POST" />
    <wsdl:operation name="GetQuote">
        <http:operation location="/GetQuote" />
        <wsdl:input>
            <mime:content type="application/x-www-form-urlencoded" />
        </wsdl:input>
        <wsdl:output>
            <mime:mimeXml part="Body" />
        </wsdl:output>
    </wsdl:operation>
</wsdl:binding>
<wsdl:service name="StockQuote">
    <wsdl:port name="StockQuoteSoap" binding="tns:StockQuoteSoap">
        <soap:address location="http://www.websvicex.net/stockquote.asmx" />
    </wsdl:port>
    <wsdl:port name="StockQuoteSoap12" binding="tns:StockQuoteSoap12">

```

```
<soap12:address location="http://www.websvcex.net/stockquote.asmx" />
</wsdl:port>
<wsdl:port name="StockQuoteHttpGet" binding="tns:StockQuoteHttpGet">
  <http:address location="http://www.websvcex.net/stockquote.asmx" />
</wsdl:port>
<wsdl:port name="StockQuoteHttpPost" binding="tns:StockQuoteHttpPost">
  <http:address location="http://www.websvcex.net/stockquote.asmx" />
</wsdl:port>
</wsdl:service>
</wsdl:definitions>
```

Exercise 3 (5 points)

Consider a bus transportation company as one company that provides tourism services as part of the VTA scenario introduced in the lecture 4. Design a WSDL Web service for one of the services this company provides and explain all its elements. The service must contain at least two operations of different type. The binding to SOAP should be used. All the messages must have complex types.

Exercise 4 (5 points)

Create the XML representation of at least two of the UDDI elements `businessEntity`, `businessService`, `bindingTemplate`, and `tModel` for a bus transportation company and its bus service. Additionally, explain why UDDI can be described as being both a name service and a directory service, mentioning the types of enquiries that can be made.