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## XSD reuse interview questions and answers

Posted on April 14, 2015 by Arulkumaran Kumaraswamipillai



**#1.** Reuse by defining a "ComplexType". EmployeeType is reused.

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <xsd:schema xmlns="http://www.w3.org/2001/XMLSchema"
3   xmlns:tns="http://www.myapp.com/Person" xmlns:
4   elementFormDefault="qualified">
5
6   <!-- XML root element -->
7   <xsd:element name="CompanyRequest" type="tns
8
9   <xsd:complexType name="CompanyType">
10     <xsd:sequence>
11       <xsd:element name="PermanentStaff" type="tns:EmployeeType" minOccurs="0" maxOccurs="1"/>
12       <xsd:element name="ContractStaff" type="tns:EmployeeType" minOccurs="0" maxOccurs="1"/>
13     </xsd:sequence>
14   </xsd:complexType>
15
16   <xsd:complexType name="EmployeeType">
17     <xsd:sequence>
18       <xsd:element name="firstName" type="string" minOccurs="1" maxOccurs="1"/>
19       <xsd:element name="lastName" type="string" minOccurs="1" maxOccurs="1"/>

```

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```

20         </xsd:sequence>
21     </xsd:complexType>
22 </xsd:schema>
23

```

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Once JAXB annotated classes are created

```

1  public void process() throws XmlMappingException
2      CompanyRequest req = new CompanyRequest(
3
4      EmployeeType ps = new EmployeeType();
5      ps.setFirstName("Peter");
6      ps.setLastName("Smith");
7
8
9      EmployeeType cs = new EmployeeType();
10     cs.setFirstName("John");
11     cs.setLastName("Lewis");
12
13     req.setPermanentStaff(ps);
14     req.setContractStaff(cs);
15
16     StringResult result = new StringResult()
17     marshaler.marshal(req, result);
18     System.out.println(result.toString());
19 }
20

```

**XML output:**

```

1  <?xml version="1.0" encoding="UTF-8" standalone="yes">
2  <CompanyRequest xmlns="http://www.myapp.com/Pers">
3      <PermanentStaff>
4          <firstName>Peter</firstName>
5          <lastName>Smith</lastName>
6      </PermanentStaff>
7      <ContractStaff>
8          <firstName>John</firstName>
9          <lastName>Lewis</lastName>
10     </ContractStaff>
11 </CompanyRequest>
12

```

**#2.** Inheritance reuse where sub types can define additional elements like “salary”, “contractRate”, etc.

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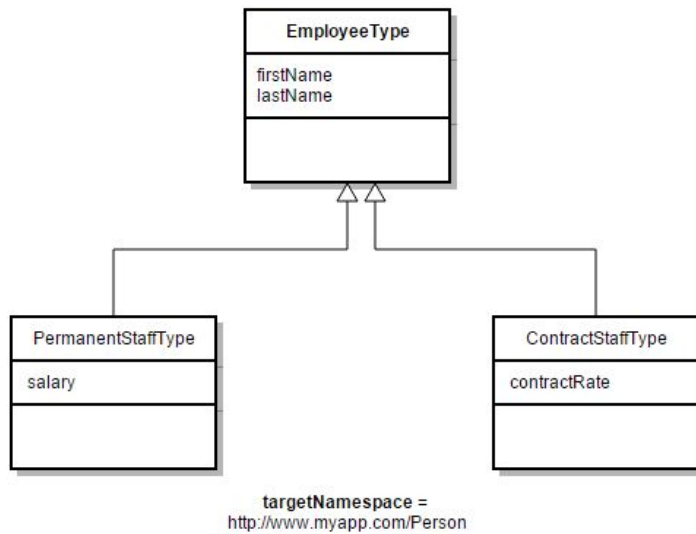
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```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <xsd:schema xmlns="http://www.w3.org/2001/XMLSchema"
3   xmlns:tns="http://www.myapp.com/Person" xmlns:
4   elementFormDefault="qualified">
5
6   <!-- XML root element -->
7   <xsd:element name="CompanyRequest" type="tns:
8
9   <xsd:complexType name="CompanyType">
10     <xsd:sequence>
11       <xsd:element name="PermanentStaff" type="tns:PermanentStaffType"/>
12       <xsd:element name="ContractStaff" type="tns:ContractStaffType"/>
13     </xsd:sequence>
14   </xsd:complexType>
15
16   <xsd:complexType name="EmployeeType">
17     <xsd:sequence>
18       <xsd:element name="firstName" type="string"/>
19       <xsd:element name="lastName" type="string"/>
20     </xsd:sequence>
21   </xsd:complexType>
22
23
24   <xsd:complexType name="PermanentStaffType">
25     <xsd:complexContent>
26       <xsd:extension base="tns:EmployeeType"/>
27       <xsd:sequence>
28         <xsd:element name="salary" type="float"/>
29       </xsd:sequence>
30     </xsd:extension>
31   </xsd:complexContent>
32 </xsd:complexType>
33
34   <xsd:complexType name="ContractStaffType">
35     <xsd:complexContent>
36       <xsd:extension base="tns:EmployeeType"/>
37       <xsd:sequence>
38         <xsd:element name="contractRate" type="float"/>
39       </xsd:sequence>
40     </xsd:extension>
  
```

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```
41         </xsd:complexContent>
42     </xsd:complexType>
43
44 </xsd:schema>
45
```

Once the JAXB annotated classes are created

```
1  public void process() throws XmlMappingException
2      CompanyRequest req = new CompanyRequest(
3
4      PermanentStaffType ps = new PermanentSta
5      ps.setFirstName("Peter");
6      ps.setLastName("Smith");
7      ps.setSalary(300.00);
8
9      ContractStaffType cs = new ContractStaff
10     cs.setFirstName("John");
11     cs.setLastName("Lewis");
12     cs.setContractRate(25.00);
13
14     req.setPermanentStaff(ps);
15     req.setContractStaff(cs);
16
17     StringResult result = new StringResult()
18     marshaler.marshal(req, result);
19     System.out.println(result.toString());
20 }
21
```

**XML output:**

```
1  <?xml version="1.0" encoding="UTF-8" standalone=
2  <CompanyRequest xmlns="http://www.myapp.com/Pers
3      <PermanentStaff>
4          <firstName>Peter</firstName>
5          <lastName>Smith</lastName>
6          <salary>300.0</salary>
7      </PermanentStaff>
8      <ContractStaff>
9          <firstName>John</firstName>
10         <lastName>Lewis</lastName>
11         <contractRate>25.0</contractRate>
12     </ContractStaff>
13 </CompanyRequest>
14
```

**#3. using "substitutionGroup"**

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <xsd:schema xmlns="http://www.w3.org/2001/XMLSchema
3      xmlns:tns="http://www.myapp.com/Person" xmlns
4      elementFormDefault="qualified">
5
6      <!-- XML root element -->
```

```

7      <xsd:element name="CompanyRequest" type="tns:CompanyRequestType"/>
8
9      <xsd:element name="Employee" type="tns:EmployeeType"/>
10     <xsd:element name="PermanentStaff" type="tns:PermanentStaffType"/>
11     <xsd:element name="ContractStaff" type="tns:ContractStaffType"/>
12
13     <xsd:complexType name="CompanyType">
14         <xsd:sequence>
15             <xsd:element ref="tns:Employee" minOccurs="1" maxOccurs="1"/>
16         </xsd:sequence>
17     </xsd:complexType>
18
19     <xsd:complexType name="EmployeeType" abstract="true">
20         <xsd:sequence>
21             <xsd:element name="firstName" type="string"/>
22             <xsd:element name="lastName" type="string"/>
23         </xsd:sequence>
24     </xsd:complexType>
25
26     <xsd:complexType name="PermanentStaffType">
27         <xsd:complexContent>
28             <xsd:extension base="tns:EmployeeType" name="PermanentStaffType"/>
29             <xsd:sequence>
30                 <xsd:element name="salary" type="float"/>
31             </xsd:sequence>
32         </xsd:complexContent>
33     </xsd:complexType>
34
35     <xsd:complexType name="ContractStaffType">
36         <xsd:complexContent>
37             <xsd:extension base="tns:EmployeeType" name="ContractStaffType"/>
38             <xsd:sequence>
39                 <xsd:element name="contractRate" type="float"/>
40             </xsd:sequence>
41         </xsd:complexContent>
42     </xsd:complexType>
43
44 </xsd:schema>
45
46
47
48

```

and Java class that make use of the JAXB generated classes

```

1  public void process() throws XmlMappingException {
2      CompanyRequest req = new CompanyRequest();
3
4      PermanentStaffType ps = new PermanentStaffType();
5      ps.setFirstName("Peter");
6      ps.setLastName("Smith");
7      ps.setSalary(300.00);
8
9      ContractStaffType cs = new ContractStaffType();
10     cs.setFirstName("John");
11     cs.setLastName("Lewis");
12     cs.setContractRate(25.00);
13
14     ObjectFactory of = new ObjectFactory();
15
16     JAXBElement<PermanentStaffType> permStaff = of.createPermanentStaffType(ps);
17     JAXBElement<ContractStaffType> contractStaff = of.createContractStaffType(cs);
18
19     req.setEmployee(permStaff);
20     req.setContractStaff(contractStaff);
21 }

```

```
19     List<JAXBElement<? extends EmployeeType>  
20         employees.add(permStaff);  
21         employees.add(contractStaff);  
22  
23         req.setEmployees(employees);  
24  
25  
26         StringResult result = new StringResult()  
27         marshaler.marshal(req, result);  
28         System.out.println(result.toString());  
29     }  
30 }
```

### XML output:

```
1  <?xml version="1.0" encoding="UTF-8" standalone=  
2  <CompanyRequest xmlns="http://www.myapp.com/Pers  
3      <PermanentStaff>  
4          <firstName>Peter</firstName>  
5          <lastName>Smith</lastName>  
6          <salary>300.0</salary>  
7      </PermanentStaff>  
8      <ContractStaff>  
9          <firstName>John</firstName>  
10         <lastName>Lewis</lastName>  
11         <contractRate>25.0</contractRate>  
12     </ContractStaff>  
13 </CompanyRequest>  
14
```

**Q.** How did we generate the JAXB annotated classes?

**A.** Refer to [Basic JAXB tutorial with Maven & XSD – 1](#)

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