

Due on: **Wednesday 09.05.2007 by 13:00** (via email: tso@ismll.uni-hildesheim.de)

Exercise 4.1

a) Download the **products.xsd** (you can get the file from our department webpage).

1. [4 points] Complete the XML schema so that it fulfils the following restriction:

The productCode of a company has the following form:

E.g. hP SC 12345

- The first component (e.g. hP) consists of 2 letters. With LOWERCASE OR UPPERCASE letters from a to z.
- The second component (e.g. SC) consists of 1 OR 2 letter.
- The last component (e.g. 12345) is a number with up to 5 digits.

b) Given a fragment of an XML schema.

1. [1 points] Does the following XML schema violate the Unique Particle Attribution?

```
<xs:element name="names">
  <xs:choice maxOccurs="unbounded">
    <xs:element ref="first-name"/>
    <xs:sequence>
      <xs:element ref="first-name" minOccurs="0"/>
      <xs:element ref="middle-name" minOccurs="0"/>
      <xs:element ref="last-name"/>
    </xs:sequence>
  </xs:choice>
</xs:element>
```

2. [5 points] If yes, explain why and model it correctly such that it allows the following names combination.

```
<first-name>      <first-name>      <first-name>      <middle-name>
  Michael          Michael          Michael          Joseph
</first-name>    </first-name>    </first-name>    </middle-name>
<middle-name>    <last-name>      <last-name>
  Joseph          Jackson          Jackson
</middle-name>  </last-name>    </last-name>
<last-name>
  Jackson
</last-name>
```

Exercise 4.2

- a) [10 points] Given the following example xml document, design a suitable schema such that the document is valid w.r.t. the schema.

```
<bank xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:noNamespaceSchemaLocation="bank.xsd">
  <account account_num="_1"
    sin="123456789"
    name="Ben"
    city="Crazy Town">
    <accountType
      account_type="Checking"
      balance="100">
      <account_activity
        operation_type="W"
        operation_date="2007-05-04T09:13:12"
        amount="99"/>
      </accountActivity>
    </accountType>
    <accountType
      account_type="Saving"
      balance="100"/>
  </account>
  <account
    account_num="_2"
    sin="234567801"
    name="Tony"
    city="City of Angel">
    <accountType
      account_type="Checking"
      balance="890">
      <account_activity
        operation_type="D"
        operation_date="2007-04-23T10:12:04"
        amount="800"/>
      </accountActivity>
    </accountType>
  </account>
</bank>
```