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Institut für Informatik
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Lecuture XML and Databases
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Exercise Sheet 3

XML Data Modelling, XML Schema

For exercises 1 to 3, you need to implement a software for a flight company. The data must be expressed in XML, so as to ensure compatibility with other flight companies.

An international flight company operates flights between several airports. A passenger has a name, an address and a passport number. When a passenger books a ticket, the flight company registers a credit card number. A flight has an id, number of seats, and a date. Each airport is characterised by its name, code, and tax value in dollars. Create a software which is able to retrieve all reservations on a given date, the passengers flying through a certain airport on a given date [etc.]

Exercise 1: XML Data

1.1. Build an XML document containing some sample data corresponding to the text.
1.2. How can you stop a user of the document from adding data entities which do not correspond to the requirements? (such as the types of pasta served at his favorite restaurant around the corner). Should you apply restrictions?
1.3. Use oXygen or Eclipse XML tools to model the XML data.

Exercise 2: XML Schema Modelling

2.1. Build an E/R or UML model of this specification.
2.2. Identify problems occurring in the attached document (**exercise3-2.xml**)
2.3. Model the XML Schema type of the following entities (do not worry about booking yet):

          a) Passenger
          b) Flight
          c) Airport

2.4. Again, use oXygen/Eclipse to model the data and write the XML Schema (you need to define a root element in addition to the three entities of 1.3.). You will complete this schema with the booking, as well as keys and keyrefs in an exercise next week.

Exercise 3: DTD and XML Schema

Remember the following document from the first exercise sheet:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE movies [
<!ELEMENT movies (Movie+) >
<!ELEMENT Movie ( title, year, _director, (comment | newcomment)+)>
<!ATTLIST Movie id ID #REQUIRED>
<!ELEMENT title (#PCDATA)>
<!ELEMENT year (#PCDATA) >
<!ELEMENT _director (#PCDATA)>
<!ATTLIST _director name CDATA #IMPLIED>
<!ELEMENT comment (#PCDATA)>
<!ELEMENT newcomment (#PCDATA)>
<!ATTLIST comment lang CDATA #IMPLIED>
]>
<movies>
    <Movie id="y56225">
        <title>Love Story</title>
        <year>1980</year>
        <_director name="Coppola"/>
        <comment lang=""/>
        <newcomment >Oscar</newcomment>
        <comment lang="de">1980 Warner Bros.</comment>
        <!-- Famous movie of the 80s -->
    </Movie>
</movies>
```

Create an XML Schema which is equivalent to this DTD, and add additional restrictions which could not be expressed with the DTD (e.g., enforce type of year...).