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Lecuture XML and Databases
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Exercise Sheet 8

XQuery Update Facility, XQuery Scripting Extension

Exercise 1: XQuery with Updates

Use the flight reservation XML file from exercise 7 to perform the following operations:
1.1. Return the list of flights, but without the number of seats.
1.2. Delete a passenger with a given name from the system.
1.3. Update the date of a given reservation. Make sure (programmatically) that the flight mentioned in the reservation data exists at the new date.
1.4. Insert a new reservation. Perform validity checking, e.g., whether the passenger and the flight exist and whether there are enough seats.
1.5. Delete an airport. Ensure that all depending data objects (flights, reservations) are also deleted.

Do not use schema validation when performing these operations. Perform the validity checking against the schema of exercise 6 with oXygen, after each query is executed.

Exercise 2: Halloween Problem and Snapshot Semantics

The following XML document is given:

```
<?xml version="1.0" encoding="UTF-8"?>
<root>
    <node>text<node>text</node>text</node>
    <node>text</node>
    <node>text<node><node/>text</node>text</node>
</root>
```

What is the result of the following XQuery updating expression? Why?

```
for $n in /root//node()
where count($n/element()) eq 0
return delete node $n
```

Exercise 3: Simple expressions and updating expressions

Which of the following expressions/functions are allowed, according to the composition restrictions of the XQuery Update Facility. Which ones are allowed with the XQuery Scripting Extension?

3.1. (delete node $x, insert node $y into $z)
3.2. (insert node $x as first into $y, delete node $z, <a/>)
3.3. (insert node $x before $y, (), fn:error())
3.4. insert node <a/> into insert node <b/> into doc("file.xml")
3.5. declare function local:fun($i as item()) {()};
local:fun(insert node $x into $y)
3.6. declare updating function local:upd($i as node())
{
copy $x := $i modify delete node $x/a return $x
};

Exercise 4: XQuery Scripting Extension

4.1. Using the data and schema of exercise 6, write a query that deletes the passenger Santa Claus and all its reservations. In addition, the number of deleted reservations shall be returned
4.2. Write a function/query that computes the Fibonacci numbers smaller than 100.