Mark-up Languages Sample Solutions

Question 1

Consider the following two XML fragments:

```
<a xmlns="http://example.com">
      <b>
            <c xmlns="http://another.com">Hello</c>
      </b>
</a>

<x:d xmlns:x="http://another.com">
      <x:e>
            <x:f xmlns:y="http://example.com">Hello</x:f>
      </x:e>
</x:d>
```

a. Which elements have namespace “http://example.com” in each fragment?

Sample Solution

a. Elements named “a” and “b” in the first fragment, but no elements in the second fragment. All the other elements have namespace “http://another.com”.

Question 2

Write two very simple XHTML pages containing links to each other. You can omit the XML prolog from the pages.

Sample Solution

First.html:

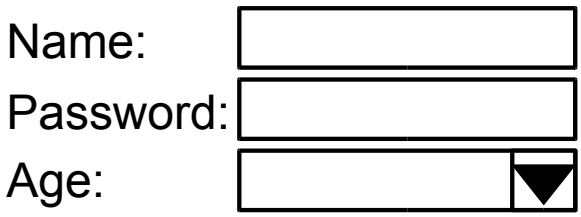
```
<html>
       <head><title>First page</title></head>
       <body>
            <a href = “Second.html”>Link to second page</a>.
       </body>
</html>
```

Second.html:

```
<html>
       <head><title>Second page</title></head>
       <body>
            <a href = “First.html”>Link to first page</a>.
       </body>
</html>
```

Question 3

Consider the HTML form below. The drop-down Age menu contains the options “0 to 25”, “26 to 50”, ”51 to 75” and “76 to 100”. Give an example of the encoded form data sent over HTTP when the submit button is clicked.



Sample Solution

name=Simon+Miles&password=itsasecret&age=26+to+50

Question 4

Write a fragment of XML Schema to define a simple type with name postCodeType. It should allow only string values of the following form:

- one or more upper case letters or digits, followed by
- one space, followed by
- one or more upper case letters or digits

Sample Solution

```
<xs:simpleType name = “postCodeType”>
  <xs:restriction base = “xs:string”>
    <xs:pattern value = “([A-Z0-9])+ ([A-Z0-9])+”/>
  </xs:restriction>
</xs:simpleType>
```

Question 5

Write a fragment of XML Schema to define a complex type with name addressType. It should allow only element hierarchies of the following form:

- two or more elements named line, each containing an arbitrary string of text, followed by
- one element named postCode of type postCodeType

Use tns: as the prefix mapped to the target namespace, if required.

Sample Solution

```
<xs:complexType name = "addressType">
  <xs:sequence>
    <xs:element name = "line"   type = "xs:string"
                minOccurs = "2" maxOccurs = "unbounded"/>
    <xs:element name = "postCode" type = "tns:postCodeType"/>
  </xs:sequence>
</xs:complexType>
```

Question 6

Write a fragment of XML Schema to define an element named employee. It should allow only element hierarchies of the following form:

- one element named name, containing an arbitrary string of text, followed by
- one element named address of type addressType

Sample Solution

```
<xs:element name = "employee">
  <xs:complexType>
    <xs:sequence>
      <xs:element name = "name"    type = "xs:string"/>
      <xs:element name = "address" type = "tns:addressType"/>
    </xs:sequence>
  </xs:complexType>
</xs:element
```