***SELF-REVIEW EXERCISES***

**7.1** State whether the following are *true* or *false*. If *false*, explain why.

a) Web site authors can define data types and constraints for the contents of an element using

schemas.

b) An application can use a schema to validate a document’s contents, but not its structure.

c) Microsoft XML Schema provide a means for defining the structure of HTML documents.

d) The element **ElementType** is used to define elements using a Microsoft XML Schema.

e) The **collect** element is used to group a set of **element** elements together.

f) The **AttributeType** element defines an attribute type, which is referred to by the

**attribute** element.

g) An enumeration is a list of possible values for an attribute.

h) Element **AttributeType** is identical to element **ElementType**, except for the fact

that it cannot contain **description** elements and **datatype** elements.

i) The **dt:type** attribute and the **datatype** element are each designed for use in specific

locations in an XML document.

j) Any parser can be used to validate an XML document against a Microsoft W3C Schema.

**7.2** Fill in the blanks in each of the following statements.

a) If the content of a document conforms to a schema, then the document is said to be \_\_\_\_\_\_\_\_\_\_\_\_\_.

b) The root element of a Microsoft XML Schema document is the \_\_\_\_\_\_\_\_\_\_\_\_\_ element.

c) Element **Schema** can contain **ElementType**, **AttributeType** \_\_\_\_\_\_\_\_\_\_\_\_\_ and elements.

d) Valid values for **ElementType**’s **content** attribute include **empty**, **eltOnly**,

\_\_\_\_\_\_\_\_\_\_\_\_\_ and\_\_\_\_\_\_\_\_\_\_\_\_\_ .

e) Element \_\_\_\_\_\_\_\_\_\_\_\_\_ is the root element for all W3C Schema documents.

f) Element **element**’s \_\_\_\_\_\_\_\_\_\_\_\_\_ attribute specifies the maximum occurrences a child element can have.

g) Attributes can be created in Microsoft XML schema using the \_\_\_\_\_\_\_\_\_\_\_\_\_ element.

h) In Microsoft Schema documents, namespace prefix **dt** is defined with the URI

**uri:schemas-microsoft-com:** \_\_\_\_\_\_\_\_\_\_\_\_\_.

i) Data type \_\_\_\_\_\_\_\_\_\_\_\_\_ indicates a real number, like 5.3672887.

j) Element **AttributeType**’s \_\_\_\_\_\_\_\_\_\_\_\_\_ attribute contains enumeration values.

***EXERCISES***

**7.3** Write a XML Schema document for the XML document in Fig. 7.2 that would allow element **note** to be a child element of element **myMessage**. Element **note** can contain only text. Validate your document using XML Validator.

**1 <?xml version = "1.0"?>**

**23**

**<!-- Fig. 7.2 : intro.xml -->**

**4 <!-- Introduction to XML Schema -->**

**56**

**<myMessage xmlns = "x-schema:intro-schema.xml">**

**78**

**<greeting>Welcome to XML Schema!**

**9 <message>This is the first message.</message>**

**10 </greeting>**

**11**

**12 <message>This is the second message.</message>**

**13 </myMessage>**

Fig. 7.2 XML document that conforms to **intro-schema.xml**.

**7.4** Write a schema to validate the XML document shown in Fig. 7.22. This XML document contains information about products in a grocery store. Each product is represented by a **product** element that contains the name, manufacturer, quantity and price of the product. Each product has a unique ID and is categorized as either perishable or nonperishable. If the product is perishable, it contains a **food** element. Element **food** contains the expiration date and nutrition facts. Nutrition facts describe the amount of proteins, fats and calcium in the food. If the product is nonperishable, it contains details of the stock available in one or more warehouses. A warehouse element has a unique ID and contains a description of the warehouse, along with product stock available at the warehouse.

**1 <?xml version = "1.0"?>**

**23**

**<!-- Exercise 7.4 : exer07\_4.xml -->**

**45**

**<products xmlns = "x-schema:exer07\_4-schema.xml">**

**67**

**<product id = "p12" perishable = "yes">**

**8 <name>Ice cream</name>**

**9 <manufacturer>xsz Co.</manufacturer>**

**10 <quantity>25</quantity>**

**11 <price>2</price>**

**12**

**13 <food>**

**14 <nutrition>**

**15 <calcium>10.30</calcium>**

**16 <proteins>35.5</proteins>**

**17 <fat>10</fat>**

**18 </nutrition>**

**19**

**20 <expirationDate>2000-09-12</expirationDate>**

**21 </food>**

**22 </product>**

**23**

**24 <product id = "p13" perishable = "no">**

**25 <name>AA Battries</name>**

**26 <manufacturer>DCells</manufacturer>**

**27 <quantity>100</quantity>**

**28 <price>4</price>**

**29**

**30 <stock>**

**31 <warehouse id = "w12">**

**32 xsz warehouse**

**33 <stock>25000</stock>**

**34 </warehouse>**

**35**

**36 <warehouse id = "w13">**

**37 rza warehouse**

**38 <stock>5000</stock>**

**39 </warehouse>**

**40 </stock>**

**41**

**42 </product>**

**43 </products>**

Fig. 7.22 XML document containing food product information.

***ANSWERS TO SELF-REVIEW EXERCISES***

**7.1** a) True. b) False. An application can use a schema to validate the contents of an XML document,

in addition to the document’s structure. c) False. Microsoft XML Schema provide a means for

defining the structure of XML documents. d) True. e) False. The **group** element is used to group a

set of **element** elements together. f) True. g) True. h) False. Element **AttributeType** is similar

to element **ElementType** in that they can both contain the **description** and **datatype** elements.

i) False. The **dt:type** attribute and the **datatype** element can be used interchangeably in

an element type of attribute type. j) False. Only msxml can be used.

**7.2** a) schema valid. b) **Schema**. c) **description**. d) **textOnly**, **mixed**. e) **schema**. f)

**maxOccurs**. g) **AttributeType**. h) **datatypes**. i) **float**. j) **dt:values**.