

Assignment Project Exam Help

XML Documents

<https://eduassistpro.github.io>

Massey University

Add WeChat edu_assist_pro

Assignment Project Exam Help

- Well-formed XML: adheres to basic structural requirements.
- Vali

<https://eduassistpro.github.io>

Two Sche

- Document Type Definition (DTD)
- XML Schema Definition (XSD)

Add WeChat edu_assist_pr

Assignment Project Exam Help

- XML Schema: the most widely used schema standard. XML schema is developed and maintained by W3C, and is designed to define a vocabulary.
- <https://eduassistpro.github.io>
- Instance Document: the document to be validated against a specific XML schema.

Assignment Project Exam Help

XML schema is more powerful than DTD.

Document		Form (EBNF)
Standard		
Supports		
Mixed content	easy to develop	
Namespace	completely supported	ted
Entities	no	
Supported Keys	global typed keys	

<https://eduassistpro.github.io>

Add WeChat edu_assist_pro

XML: Namespace

- Purpose: to avoid duplicated tag names in merging XML files.
- Method: prepend each tag with a Unique Resource Identifier (URI).
- Namespace: define an abbreviation for URIs

Assignment Project Exam Help

An instance document with namespace:

```
<xsi:Bo
  <xsi
  <
  <
    <xsi:Author>
      <xsi:First_Name>Jeffrey</
      <xsi:Last_Name>Ullman</xs
    </xsi:Author>
    <xsi:Author>
      <xsi:First_Name>Jennifer</xsi:First_Name>
      <xsi:Last_Name>Widom</xsi:Last_Name>
    </xsi:Author>
  </xsi:Authors>
</xsi:Book>
```

Assignment Project Exam Help

- By convention, the namespace prefix, typically `xsd` or `xs`, is assigned to the XML Schema namespace to identify elements and attributes that
- The

<https://eduassistpro.github.io>

```
<?xml ver
```

```
<xsd:schema xmlns:xsd="http://www
```

```
content
```

```
</xsd:schema>
```

```
a">
```

Add WeChat edu_assist_pr

Assignment Project Exam Help

See docu

<https://eduassistpro.github.io>

Add WeChat edu_assist_pr

Assignment Project Exam Help

- Sim
attr
- Co
attributes.

<https://eduassistpro.github.io>

Add WeChat edu_assist_pr

XSD: Define a Simple Type Element

Define a simple type element:

```
<xsd:element name="Last_Name" type="xsd:string" />
```

An instance of "Last_Name"

```
<Last_Name>Ullman</Last_Name>
```

Common

- xsd:
- xsd:decimal
- xsd:integer
- xsd:boolean
- xsd:date
- xsd:time

Their instances are all texts.

Assignment Project Exam Help

<https://eduassistpro.github.io/>

Add WeChat edu_assist_pr

XSD: Define a Complex Type

Define a complex type called BookType:

```
<xs:complexType name="BookType">  
  Declaration...  
</xs:complexType>
```

Define an element:

```
<xs:element
```

Or define the element directly:

```
<xs:element name="Book">  
  <xs:complexType>  
    Declaration...  
  </xs:complexType>  
</xs:element>
```

Assignment Project Exam Help

Content

- Att
- Bas
- Nested child element

<https://eduassistpro.github.io>

Add WeChat edu_assist_pr

Assignment Project Exam Help

Content

- Att <https://eduassistpro.github.io>
- Bas
- Nested child element

Add WeChat edu_assist_pr

Assignment Project Exam Help

Define an attribute:

```
<xsd:at
```

Define an i

```
<Book ISBN="ISBN-0-13-713526-2" Pri
```

```
>
```

```
...
```

```
</Book>
```

<https://eduassistpro.github.io>

Add WeChat edu_assist_pr

Use indicator: the requirement on the appearance of an attribute.

Use is one of the following three values:

- req
- optional
- prohibited: the attribute cannot be used with the

Example:

```
<xsd:attribute name="ISBN" type="xsd:string" use="optional"/>
```

See documents “Bookstore.xsd” and “Bookstore-XSD.xml”.

Contents of a complex type:

- Attribute
- Basic text
- Nest

A complex

- 1 Empty element: contain only attributes.
- 2 Basic text + attributes
- 3 Nested child elements
- 4 Nested child elements + attributes
- 5 Mixed: Nested child elements + attributes + basic text

Contents of a complex type:

- Attribute
- Basic text
- Nested child elements

A complex type can be defined in one of the following ways:

- 1 Empty element: contain only attributes.
- 2 Basic text + attributes
- 3 Nested child elements
- 4 Nested child elements + attributes
- 5 Mixed: Nested child elements + attributes + basic text

XSD: Define a Empty Element

Define an empty element of Book:

```
<xsd:element name="Book">
  <xsd:complexType>
    <
      <https://eduassistpro.github.io/>
    </xsd:complexType>
  </xsd:element>
```

Define an instance of Book:

```
<Book ISBN="ISBN-0-13-713526-2" Price="85" Edition="3rd"/>
```

Contents of a complex type:

- Attribute
- Basic text
- Nest

A complex

- 1 Empty element: contain only attributes.
- 2 Basic text + attributes
- 3 Nested child elements
- 4 Nested child elements + attributes
- 5 Mixed: Nested child elements + attributes + basic text

XSD: Define an Basic Text with Attributes

Define an element of Book:

```
<xsd:element name="Book">
```

```
  <xsd:complexType>
```

```
    <xsd:simpleContent>
```

```
      <xsd:extension base="xs:string">
```

```
        string" />
```

```
      integer" />
```

```
    string" />
```

```
  </xsd:simpleContent>
```

```
  </xsd:complexType>
```

```
</xsd:element>
```

Define an instance of Book:

```
<Book ISBN="ISBN-0-13-713526-2" Price="85" Edition="3rd">
```

```
  A First Course in Database Systems
```

```
</Book>
```

Assignment Project Exam Help

<https://eduassistpro.github.io/>

Add WeChat edu_assist_pro

Contents of a complex type:

- Attribute
- Basic text
- Nest

A complex

- 1 Empty element: contain only attributes.
- 2 Basic text + attributes
- 3 Nested child elements
- 4 Nested child elements + attributes
- 5 Mixed: Nested child elements + attributes + basic text

XSD: Define an Element with Nested Child Elements

Define an element of Author:

```
<xs:element name="Author">  
  <xs:complexType>  
    <xs:sequence>
```

```
      <xs:element name="ring" type="string" />  
    </xs:sequence>  
  </xs:complexType>  
</xs:element>
```

Define an instance of Author:

```
<Author>  
  <First_Name>Jeffrey</First_Name>  
  <Last_Name>Ullman</Last_Name>  
</Author>
```

XSD: Order Indicators for Nested Child Elements

Order indicators: to specify the order of the appearances of the child elements.

- All the child elements can appear in any order, and that each child element must occur only once.

- Cho

- Seq

```
<xs:ele
```

```
  <xsd:complexType>
```

```
    <xsd:choice>
```

```
      <xsd:element name="First"
```

```
      <xsd:element name="Last_"
```

```
    </xsd:choice>
```

```
  </xsd:complexType>
```

```
</xs:element>
```

See documents "Bookstore.xsd" and "Bookstore-XSD.xml".

XSD: Occurrence Indicators for Nested Child Elements

Occurrence indicator: to define how often an element can occur.

```
<xsd:element name="Bookstore">  
  <xsd:complexType>  
    <  
      <  
        </xsd:complexType>  
      </xsd:element>  
    </xsd:element>  
  </xsd:complexType>  
</xsd:element>
```

<https://eduassistpro.github.io>

Add WeChat edu_assist_pr

The default value for both maxOccurs and minOccurs is 1.

See documents "Bookstore.xsd" and "Bookstore-XSD.xml".

Contents of a complex type:

- Attribute
- Basic text
- Nested child elements

A complex type can be defined in one of the following ways:

- 1 Empty element: contain only attributes.
- 2 Basic text + attributes
- 3 Nested child elements
- 4 Nested child elements + attributes
- 5 Mixed: Nested child elements + attributes + basic text

XSD: Define an Element with Child Elements + Attributes

Define an element “Book” with both child elements and attributes:

```
<xsd:element name="Book" type="BookType"
    minOccurs="0" maxOccurs="unbounded" />
<xsd:complexType>
  <xsd:sequence>
    <xsd:element name="Title" type="xsd:string" />
    <xsd:element name="Authors">
      <xsd:sequence>
        <xsd:complexType>
          <xsd:sequence>
            <xsd:attribute name="ISBN" type="xsd:string" />
            <xsd:attribute name="Price" type="xsd:integer" />
            <xsd:attribute name="Edition" type="xsd:string" use="optional" />
          </xsd:sequence>
        </xsd:complexType>
      </xsd:sequence>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
```

See documents “Bookstore.xsd” and “Bookstore-XSD.xml” for an instance.

Contents of a complex type:

- Attribute
- Basic text
- Nested child elements

A complex type can be defined in five ways:

- 1 Empty element: contain only attributes.
- 2 Basic text + attributes
- 3 Nested child elements
- 4 Nested child elements + attributes
- 5 Mixed: Nested child elements + attributes + basic text

XSD: Define a Mixed Element

Define a mixed element by setting its complextype attribute mixed="true".

```
<xs:element name="letter">  
  <xs:complexType mixed="true">  
    <xs:sequence>  
      <  
        <xs:element name="integer"/>  
      </xs:element>  
    </xs:sequence>  
  </xs:complexType>  
</xs:element>
```

An instance of letter:

```
<letter shipdate="2001-07-13">  
  Dear Mr.<name>John Smith</name>.  
  Your order <orderid>1032</orderid>  
</letter>
```

XSD: Keys and Foreign Keys

Specify an attribute (ISBN) of an element (Book) is a key:

```
<xsd:key name="BookKey">  
  <xsd:selector xpath="Book" />  
  <xsd:field xpath="@ISBN" />  
</xsd:key>
```

Assignment Project Exam Help

<https://eduassistpro.github.io>

Add WeChat edu_assist_pr

XSD: Keys and Foreign Keys

Specify an attribute (ISBN) of an element (Book) is a key:

```
<xsd:key name="BookKey">  
  <xsd:selector xpath="Book" />  
  <xsd:field xpath="@ISBN" />  
</xsd:key>
```

Specify an
foreign key of key "BookKey" defined above:

```
<xsd:keyref name="BookKeyRef" refer="BookKey">  
  <xsd:selector xpath="Book/Item" />  
  <xsd:field xpath="@book" />  
</xsd:keyref>
```

XSD: Keys and Foreign Keys

Specify an attribute (ISBN) of an element (Book) is a key:

```
<xsd:key name="BookKey">  
  <xsd:selector xpath="Book" />  
  <xsd:field xpath="@ISBN" />  
</xsd:key>
```

Specify an
foreign key of key "BookKey" defined above:

```
<xsd:keyref name="BookKeyRef" refer="BookKey">  
  <xsd:selector xpath="Book/Item" />  
  <xsd:field xpath="@book" />  
</xsd:keyref>
```

See documents "Bookstore-key.xsd" and "Bookstore-XSD-key.xml".

Assignment Project Exam Help

- W3School:

https://www.w3schools.com/xml/schema_intro.asp

- W3

<https://eduassistpro.github.io>

- Chapter 10, "Database System Concepts (Fif
Silberschatz, H. F., Korth, S., Sudarshan

- Introduction to Databases, Stanford Univers

Add WeChat edu_assist_pro