

XML Schema

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What is an XML Schema?



➤ An XML Schema is a description of a type of XML document, typically expressed in terms of constraints on the structure and content of documents of that type.

➤ There are several different schema languages in widespread use, but the main ones are:

- Document Type Definitions(DTDs)
- Relax-NG
- Schematron
- W3C XSD.



➤ Document Type Definitions(DTDs)

- Is a set of markup declarations that define a document type for a family markup language (GML, SGML, XML, HTML). It defines the document structure with a list of validated elements and attributes.



➤ Example of a DOCTYPE Declaration

```
1  <?xml version="1.0"?>
2  <!DOCTYPE customers
3  [
4  <!ENTITY add1 "15, G Street, Chennai, india">
5  <!ENTITY add2 "25, C Street, Bangalore, india">
6  ]>
7
8  [-] <customers>
9  [-]   <CUSTOMER>
10      <NAME> James </NAME>
11      <ADDRESS> &add1; </ADDRESS>
12      <PHONE> 805056 </PHONE>
13      </CUSTOMER>
14  [-] <CUSTOMER>
15      <NAME> Jerry </NAME>
16      <ADDRESS> &add2; </ADDRESS>
17      <PHONE> 8904425 </PHONE>
18      </CUSTOMER>
19  </customers>
```

XML Declaration

DOCTYPE Declaration

Root Element

Details of Customer



➤ RELAX- NG

- RELAX NG (REgular LAnguage for XML Next Gen) is a schema language for XML. RELAX NG schema specifies a pattern for the structure and content of an XML document.

➤ SCHEMATRON

- Is a rule-based validation language for making assertions about the presence or absence of pattern in XML trees.

➤ W3C XSD

- XSD. A recommendation of the World Wide Web Consortium (W3C), specifies how to formally describe the elements in an Extensible Markup Language document.



What is XML Schema used for?



➤ A Schema can be used:

- to provide a list of elements and attributes in a vocabulary.
- to associate types, such as integer, string, or more specifically such as `hatsize`, `sock_colour`, with values found in documents.
- to constrain where elements and attributes can appear, and what can appear inside those elements, such as saying that a chapter title occurs inside a chapter, and that a chapter must consist of a chapter title followed by one or more paragraphs of text.
- to provide documentation that is both human-readable and machine processable.
- to give a formal description of one or more documents.



➤ Sample Code:

```
<?xml version = "1.0" encoding = "UTF-8"?>  
<xs:schema xmlns:xs = "http://www.w3.org/2001/XMLSchema">  
  <xs:element name = "contact">  
    <xs:complexType>  
      <xs:sequence>  
        <xs:element name = "name" type = "xs:string" />  
        <xs:element name = "company" type = "xs:string" />  
        <xs:element name = "phone" type = "xs:int" />  
      </xs:sequence>  
    </xs:complexType>  
  </xs:element>  
</xs:schema>
```



