Top-Level Schema

This Quick Reference primarily describes ISO Schematron. See the "Difference" panel for Schamatron 1.5 and 1.6.

<schema id="ID" icon="URI" see="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}
schemaVersion="VERSION"
defaultPhase="IDREF"
queryBinding="BINDING-NAME"
xmlns=
"http://purl.oclc.org/dsdl/schematron">
<title>?, <ns>*, *, <let>*, <phase>*,
<pattern>+, *, <diagnostics>?, plus
interspersed <include>
</schema>

<ns prefix="NMTOKEN" **uri**="URI"/>

All namespaces used in validated documents, and referenced in the schema, must be declared using <ns>.

<**let name**="NAME" **value**="VALUE"/>

<include href="URI"/>

Patterns

<pattern abstract="false" id="ID"
icon="URI" see="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}>
, <let>, <rule>*, plus interspersed
<include>
</pattern>

Within each pattern, only the first non-abstract <rule> whose **@context** matches is used.

Abstract patterns

<pattern abstract="true" id="ID"
icon="URI" see="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}>
, <let>, <rule>*, plus interspersed
<include>
</pattern>

Using abstract patterns

<pattern abstract="false" **is-a**="IDREF" id="ID"
icon="URI" see="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}>
, <param>, and interspersed <include>
</pattern>

<param name="NCNAME" **value**="VALUE"/>
@value must be non-empty-string

Phases

<phase id="ID" icon="URI" see="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}>
, <let>, <active>*, plus interspersed
<include>
</phase>

<active pattern="IDREF">
any number of text, <dir>, <emph> and

</active>

Rules, Assertions and Reports

<rule flag="NAME" abstract="false"?
context="PATH" id="ID" icon="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}
see="URI" role="ROLE" subject="PATH">
any number of <let>, followed by any number
(at least one) of <assert>, <report> and
<extends>, plus interspersed <include>
</rule>

<extends rule="IDREF"/>
plus any foreign attributes

<assert test="EXPR" flag="NAME" id="ID"
diagnostics="IDREFS" icon="URI" see="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}
role="ROLE" subject="PATH">
any number of text, <name>, <value-of>,
<emph>, <dir> and
</assert>

<report test="EXPR" flag="NAME" id="ID"
diagnostics="IDREFS" icon="URI" see="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}
role="ROLE" subject="PATH">
any number of text, <name>, <value-of>,
<emph>, <dir> and
</report>

Abstract rules (used to <extends> others)

<rule flag="NAME" **abstract="true"**
id="ID" icon="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}
see="URI" role="ROLE" subject="PATH">
any number of <let>, followed by any number
(at least one) of <assert>, <report> and
<extends>, plus interspersed <include>
</rule>

XSL-List:
http://www.mulberrytech.com/xsl/xsl-list

Diagnostics

<diagnostics>
any number of <diagnostic> and <include>
</diagnostics>

<diagnostic id="ID" icon="URI" see="URI"
fpi="FORMAL-PUBLIC-ID" xml:lang="LANG"
xml:space={"preserve" | "default"}>
any number of text, <value-of>, <emph>,
<dir> and
</diagnostic>

Formatting Output

<title>
any number of <dir> and text
</title>

<p id="ID" class="CLASS" icon="URI">
any number of text, <dir>, <emph> and

** **

<dir value={"ltr" | "rtl"}>
text
</dir>

<emph>
text
</emph>

<span class="CLASS">
text
****

<value-of select="PATH"/>

<name path="PATH"/>

If **@path** not specified, <name> returns the name of the current node.

Attribute Specification Options

{ }	alternate allowed values
bold =	required attribute
non-bold =	optional attribute

W3C XSLT 1.0 Specification:
http://www.w3.org/TR/xslt

W3C XPath 1.0 Specification:
http://www.w3.org/TR/xpath

W3C XSLT 2.0 Specification:
http://www.w3.org/TR/xslt20

W3C XPath 2.0 Specification:
http://www.w3.org/TR/xpath20

Which Patterns Are Used?

All non-abstract <pattern>s are used if:

- there's no <phase> in the <schema>,
- there's no <phase> selected by its @id attribute, or
- the <schema> is invoked with the #ALL option.

If there's a **@defaultPhase**, and the <schema> is invoked with the #DEFAULT option, then all <pattern>s referenced in the <active> children of the default <phase> are used.

If the implementation selects a <phase> using its **@id** attribute, then all <pattern>s referenced in the <active> children of that <phase> are used.

How #ALL, #DEFAULT and named phases are specified is implementation-determined.

More About Attributes

@abstract indicates whether a <pattern> or <rule> is to be used as-is (if "false") or by another <pattern> or <rule> (if "true").

@defaultPhase (on <schema>) indicates which <phase> is used to determine which <pattern>s are selected by the #DEFAULT option.

@flag on a fired <rule>, on a failing <assert> or on a succeeding <report> sets a flag for further processing.

@fpi is a public identifier associated with the element it appears on.

@icon is the URI of the location of a graphic.

@queryBinding (on <schema>) indicates which query language is to be used. The default is "xslt" — for XSLT/XPath 1.0. Other appropriate values are: "stx", "xslt1.1", "exslt", "xslt2", "xpath", "xpath2", "xquery".

@role is a name classifying the <rule>, <assert> or <report>, or the **@subject**, if any.

@see is the URI of information about the schema itself.

@subject is a path describing related elements and/or attributes, if other than the context of the current <rule>.

Foreign Elements and Attributes

Schema elements can have "foreign" attributes, and non-empty schema elements can contain "foreign" child elements. Foreign attributes and elements are those in a namespace other than "http://purl.oclc.org/dsdl/schematron".

Schematron 1.5

Schamatron 1.5 differs from ISO Schmatron in the following ways:

Overall:

- The namespace for Schematron 1.5 is: "http:/www.ascc.net/xml/schematron"
- <let> and <include> elements are not supported.
- <key> element is supported:

  <**key name**="NAME" **path**="PATH" icon="URI"/>

  <key> is allowed anywhere in the content of <rule>. (In ISO Schematrons implementations supporting the use of XSLT "foreign" elements, <xsl:key> can be used in place of Schematron 1.5's <key>.)
- Abstract <pattern>s are not supported.
- Attribute pattern/@name used to name <pattern>s rather than @id. It's a required attribute.

Unsupported Attributes:

- These attributes are not supported anywhere: @xml:space, @flag.
- These attributes are not supported on <rule>: @see, @xml:lang, @icon, @fpi, @subject.
- These attributes are not supported on <diagnostics>: @see, @fpi.
- In addition, attribute @see is not supported on <schema>, <assert> or <report>.

Other Differences:

- <value-of> isn't allowed as a child of <assert> or <report>.
- Attribute @version is allowed on <schema>. (Default value is "1.5".)
- The following attributes are optional: ns/@uri, dir/@value and span/@class.

Schematron 1.6

Schematron 1.6 differs from Schematron 1.5 in supporting most ISO Schematron features, including <let>, <include>, abstract <pattern>s and <value-of> in <assert> and <report>.

Schematron 1.5/1.6 Resources:
http://xml.ascc.net/schematron/

Schematron Validation Report Language

The Schematron Validation Report Language is the standard for the output of an ISO Schematron processor. It can be post-processed to produce more readable output, if required.

<**schematron-output** title="TEXT"
phase="NMTOKEN" schemaVersion="TEXT"
xmlns="http://purl.oclc.org/dsdl/svrl">
<text>*, <ns-prefix-in-attribute-values>*,
(<active-pattern>, (<fired-rule>,
(<failed-assert> |
<successful-report>)*)+)+
</**schematron-output**>

<**ns-prefix-in-attribute-values**
prefix="NMTOKEN" **uri**="URI"/>

Only namespaces from <ns> need to be reported.

<**active-pattern** id="ID" name="TEXT"
role="NMTOKEN"/>

Only active <pattern>s are reported.

<**fired-rule** id="ID" **context**="TEXT"
role="NMTOKEN" flag="NMTOKEN"/>

Only <rule>s that are fired are reported.

<**diagnostic-reference**
diagnostic="NMTOKEN">
<text>
</**diagnostic-reference**>

Only references are reported, not the <diagnostic>.

<**failed-assert** id="ID" **location**="TEXT"
test="TEXT" role="NMTOKEN"
flag="NMTOKEN">
<diagnostic-reference>*, <text>
</**failed-assert**>

Only failed <assert>s are reported.

<**successful-report** id="ID" **location**="TEXT"
test="TEXT" role="NMTOKEN"
flag="NMTOKEN">
<diagnostic-reference>*, <text>
</**successful-report**>

Only successful <report>s are reported.

<**text**>
text
</**text**>

See other Quick References for at:
http://www.mulberrytech.com/quickref

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ISO Schematron Quick Reference

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ISO Schematron Examples

Checking a document for good practice:

```
<schema xmlns=
        "http://purl.oclc.org/dsdl/schematron"
        queryBinding="xslt2">
   <pattern>
      <title>Check paragraphs and titles for
            content</title>
      <rule context="title">
         <report test="*">A title can only contain
            text.</report>
         <assert test="normalize-space()">A title
            must have content.</assert>
      </rule>
      <rule context="p">
         <assert test="* or normalize-space()">A
            p must have content.</assert>
      </rule>
   </pattern>
   <pattern>
      <title>Report use of HTML formatting
            elements.</title>
      <rule context="b | i">
      <report test="true()">HTML <name/>
            elements shouldn't be used (found
            in<name path=".."/>).</report>
      </rule>
   </pattern>
   <pattern>
      <title>Check that titles precede
            something.</title>
      <rule context="title">
         <assert test=
         "following-sibling::*[1][not(self::title)]"
         >A title should be followed by a
            non-title element.</assert>
      </rule>
   </pattern>
</schema>
```

ISO Schematron:
Go to:
http://www.iso.org/PubliclyAvailableStandards
and search for "Schematron".

Other Schematron resources:
http://www.schematron.com