DTD - Attributes

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In a DTD, attributes are declared with an ATTLIST declaration.

Declaring Attributes

An attribute declaration has the following syntax:

```
<!ATTLIST element-name attribute-name attribute-type attribute-value>

DTD example:

<!ATTLIST payment type CDATA "check">

XML example:

<payment type="check" />
```

The **attribute-type** can be one of the following:

Type	Description
CDATA	The value is character data
(*en1*|*en2*|..)	The value must be one from an enumerated list
ID	The value is a unique id

NMTOKEN	The value is a valid XML name
NMTOKENS	The value is a list of valid XML names
ENTITY	The value is an entity
ENTITIES	The value is a list of entities
NOTATION	The value is a name of a notation
xml:	The value is a predefined xml value

The **attribute-value** can be one of the following:

Value	**Explanation**
value	The default value of the attribute
#REQUIRED	The attribute is required
#IMPLIED	The attribute is optional
#FIXED *value*	The attribute value is fixed

A Default Attribute Value

```
<!ATTLIST square width CDATA "0" >

Valid XML:
<square width="100" />
```

In the example above, the "square" element is defined to be an empty element with a "width" attribute of type CDATA. If no width is specified, it has a default value of 0.

#REQUIRED

Syntax

```
<!ATTLIST element-name attribute-name attribute-type #REQUIRED>
```

Example

```
DTD:
<!ATTLIST person number CDATA #REQUIRED>

Valid XML:
<person number="5677" />

Invalid XML:
<person />
```

Use the #REQUIRED keyword if you don't have an option for a default value, but still want to force the attribute to be present.

#IMPLIED

Syntax

Example

```
DTD:
<!ATTLIST contact fax CDATA #IMPLIED>

Valid XML:
<contact fax="555-667788" />

Valid XML:
<contact />
```

Use the #IMPLIED keyword if you don't want to force the author to include an attribute, and you don't have an option for a default value.

#FIXED

Syntax

```
<!ATTLIST element-name attribute-name attribute-type #FIXED "value">
```

Example

```
DTD:
<!ATTLIST sender company CDATA #FIXED "Microsoft">

Valid XML:
<sender company="Microsoft" />
```

Use the #FIXED keyword when you want an attribute to have a fixed value without allowing the author to change it. If an author includes another value, the XML parser will return an error.

Enumerated Attribute Values

Syntax

```
<!ATTLIST element-name attribute-name (en1|en2|..) default-value>
```

Example

```
DTD:
<!ATTLIST payment type (check|cash) "cash">

XML example:
<payment type="check" />
or
<payment type="cash" />
```

Use enumerated attribute values when you want the attribute value to be one of a fixed set of legal values.

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