

What is XML?

XML (eXtensible Markup Language) is a flexible text format used to store and transport data, designed to be both human-readable and machine-readable.

Key features

- Platform-independent
- Designed for information exchange
- Hierarchical structure with custom tags

1. DTD Declaration

External DTD file:

```
<!DOCTYPE root_element SYSTEM "file.dtd">
```

Internal DTD file:

```
<!DOCTYPE root_element [
  <!-- DTD declarations go here -->
]>
```

SYSTEM: Points to an external DTD file.

Root Element & Hierarchy

Every XML document has one root element that holds the entire structure.

```
<!ELEMENT candy_store (category_chocolate, category_gummy?)>
```

Entities

&	&
<	<
>	>
'	'
"	"

```
<!ENTITY copy "Copyright SweetWorld 2023">
```

Called in the XML document with `©`.

Parameter Entities

Reusable definitions within a DTD.

Allows complex content to be reused in multiple elements.

```
<!ENTITY % product " (price, manufacturer?, images?,
  description?, nutritional_info?) ">
<!ELEMENT chocolate_bar %product;>
```

Element Occurrence

What is a DTD?

DTD (Document Type Definition) defines the structure and rules for an XML document. It ensures that the XML follows a specific schema.

Key features

- Elements
- Attributes
- Entities

2. Element Declarations

```
<!ELEMENT element_name (content)>
```

```
<!ELEMENT element_name EMPTY>
```

Example with sub-elements:

```
<!ELEMENT candy_types (chocolate, gummy,
  hard_candy)>
```

Example with text content:

```
<!ELEMENT description (#PCDATA)>
```

EMPTY: If the element has no content

PCDATA: Parsed Character Data is text that will be parsed by the XML parser. Tags inside are treated as markup and entities will be expanded.

CDATA: (Unparsed) Character data is text which is not parsed further in an XML document.

Tags inside are not treated as markup and entities will not be expanded.

Attributes

```
<!ATTLIST element_name attribute_name type status>
```

Status:

#REQUIRED must be present

#IMPLIED optional

#FIXED fixed value

Types: CDATA (any character string)

Enumerations (predefined values)

Example:

```
<!ATTLIST candy chocolate_flavor CDATA #REQUIRED
  sugar_content CDATA #REQUIRED>
```

Attributes: chocolate_flavor, sugar_content

Element: candy

- ? Optional, zero or one occurrence
- * Optional, zero, one, or more occurrences
- + At least one occurrence
- , Elements must appear in the given order
- | Either one element or the other

```
<!ELEMENT nutrit ion al_info (calor ies?, fat_cont  
ent?,  
sugar_ con ten t?)>
```

Calories, fat_content, and sugar_content are optional.



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Page 1 of 2.

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