



Basics of XHTML

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Unit Outcomes

- Explain the concept of different XHTML tags used to enhance the structure, and organize the web contents for readability.
- Explain the role of XHTML tags in developing well-formed and standard web applications using images, hyperlinks, lists, tables, etc
- Explain the use of hyperlinks to navigate between web pages.
- Differentiate between HTML and XHTML





Introduction to XHTML

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Introduction

- XHTML stands for Extensible HyperText Markup Language and is used to create web pages.
- XHTML combines the rules and syntax of Hypertext Markup Language (HTML) and also eXtensible Markup Language (XML) with a stricter approach.
- All valid HTML tags can be used to create an XHTML document, but XHTML follows strict rules and is case-sensitive.



Introduction

- XHTML adheres to using **lowercase tags**, **closing all tags**, and proper **nesting of elements**.
- XHTML documents can be opened and viewed using a **web browser**.
- XHTML is **well-formed**, **modular**, and **compatible** with other XML-based technologies.



Characteristics of XHTML

- Well-formed: XHTML document follows the rules of XML like having a single root element <html>, closing all tags that have opened, proper nesting of elements, using lowercase tags, and using quotes for values that are specified for the attributes.
- Compatibility: XHTML is compatible with other XML-based technologies.



Characteristics of XHTML

- Strictness: XHTML enforces **strict rules** than HTML providing cleaner **coding practices**. XHTML documents can be checked for **syntactic correctness using validation tools**.
- Modularity: XHTML promotes the use of **external JavaScript** and **cascading style sheets** making the code easier to understand and thereby separating content from presentation and behavior.



Characteristics of XHTML

- Accessibility: XHTML provides support for accessibility features such as alternative text for images, semantic markup for better screen reader interpretation, and adherence to web content accessibility guidelines.



Standard Structure of XHTML Document

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
  <head>
    <!-- Header related tags appear here -->
    <title>
      The Title of the document given here is displayed on the
      browsers
      Top left corner in the title bar
    </title>
  </head>
  <body>
    <!-- Document body related tags appear here -->
    <h1> Heading of the document to be displayed on the browser </h1>
    <p> The document content is given here..... </p>
  </body>
</html>
```





Basic Text Markup Elements

Introduction

- XHTML documents contain various basic text markup elements/tags that are used to display the contents on the browser.
- These include the heading, paragraph, line breaks, horizontal lines, superscripts, subscripts, boldface, italics tags, etc.



Heading Tags

- **Headings** are usually used in any document to start a new section.
- Headings are used to provide a hierarchical structure to the content on a web page.
- There are six levels of heading tags that can be used and are specified by the element tags **<h1>**, **<h2>**, **<h3>**, **<h4>**, **<h5>**, **<h6>**
- **<h1>** represents the highest level and **<h6>** is the lowest level
- All headings are displayed in boldface font but the size of the font depends on the **level of the heading tag**.



Heading Tags

- The **lower the number of the heading, the larger the font size used for the heading.**
- When the headings are displayed/rendered on the browser, browsers usually add one line or some vertical space before and after the heading.



Heading Tags - Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
  <head>
    <title>Example of Headings in XHTML</title>
  </head>
  <body>
    <h1>This is a level 1 heading with a larger font size </h1>
    <h2>This is a level 2 heading with a font size smaller than heading 1
    </h2>
    <h3>This is a level 3 heading with a font size smaller than heading 2
    </h3>
    <h4>This is a level 4 heading with a font size that is the same as the
        normal/default text. </h4>
    <p><b>Paragraph content being displayed using the default font size for
        the text </b></p>
    <h5>This is a level 5 heading with a font size smaller than heading 4
    </h5>
    <h6>This is a level 6 heading with a font size smaller than heading 5
    </h6>
  </body>
</html>
```



Heading Tags - Example

This is a level 1 heading with a larger font size

This is a level 2 heading with a font size smaller than heading 1

This is a level 3 heading with a font size smaller than heading 2

This is a level 4 heading with a font size that is the same as the normal/default text.

Paragraph content being displayed using the default font size for the text

This is a level 5 heading with a font size smaller than heading 4

This is a level 6 heading with a font size smaller than heading 5



Paragraph Tag

- A paragraph tag `<p>` in XHTML is used to define a paragraph of text.
- `<p>` tag is used to start a paragraph and `</p>` tag is used to close a paragraph
- The textual contents to be displayed in the browser are encapsulated within the opening and closing paragraph tags.



Paragraph Tag

- Each **< p >** tag starts displaying the contents on a new line.
- It represents a **block-level element**.
- It is typically used to **separate** and **structure** **textual content** within a web page.
- Browsers automatically add some **vertical spacing** before and after the paragraphs, which helps visually distinguish them.



Paragraph Tag - Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
<title>Example of Paragraph in XHTML</title>
</head>
<body>
<h1> Graphic Era University </h1>
<h2> Welcome to Learning XHTML </h2>
<p>This is the first paragraph. </p>
<p>This is the second paragraph. </p>
<p>This is the third paragraph. </p>
</body>
</html>
```



Paragraph Tag - Example

Graphic Era University

Welcome to Learning XHTML

This is the first paragraph.

This is the second paragraph.

This is the third paragraph.



Line Break

-
 tag is used for inserting line breaks wherever it is required.
- It does not have any content and a closing tag so it is called an empty element.
- It is used when the contents or text needs to be rendered on separate lines in a web browser.
- Use of line breaks
 should be limited as it may make the markup less readable and maintainable.



Line Break - Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
<title>Example of Line Breaks in XHTML</title>
</head>
<body>
<p><b> Graphic Era University <br /> Clement Town <br /> Dehradun
<br /> Uttarakhand </b> </p>
</body>
</html>
```



Line Break - Example

Graphic Era University
Clement Town
Dehradun
Uttarakhand



Horizontal Line

- <hr /> tag is used for placing horizontal lines on the web page.
- Parts of the document can be separated and made more readable by using <hr /> tag .
 - It does not have any content or a closing tag.
 - The <hr /> tag creates/draws a line starting from the current position to the end i.e. the right margin on the web page.



Horizontal Line - Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
```

```
<title>Example of Horizontal Lines in XHTML </title>
```

```
</head>
<body>
```

```
<p><b> Graphic Era (Deemed to be University) was in existence as
a Graphic Era Institute of Technology.
```

```
<br />
The University has been featured in the Top 100 Universities
of India
```

```
<br />
</b>
</p>
</body>
</html>
```



Horizontal Line - Example

Graphic Era (Deemed to be University) was in existence as a Graphic Era Institute of Technology.

GRAPHIC ERA has 30 Years of Academic Excellence

The Graphic Era Educational Society (GEES) is a non-profit organization established in 1993.

The University has been featured in the Top 100 Universities of India



Preserving Whitespace

- Browsers while rendering the text from an XHTML document usually eliminate multiple spaces if present in the text.
- Sometimes it is required that the text should be rendered by the browser exactly as it is written in the XHTML document.
- For preserving whitespaces in XHTML, preformatted tag `<pre>` ... `</pre>` is used.



Preserving Whitespace

- The pre-formatted text/content including spaces, line breaks, and tabs when placed between the opening <pre> tag and closing </pre> tag appears the same on the browser with a fixed-width monospace font.
- The default font style of the <pre> tag can be changed by using cascading style sheets.



Preformatted Tag - Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
<title>Example of Preserving whitespace in XHTML</title>
</head>
<body>
<pre> <b>
Graphic Era University
Clement Town
Dehradun
Uttarakhand </b>
</pre>
</body>
</html>
```



Preformatted Tag - Example

```
Graphic Era University  
Clement Town  
Dehradun  
Uttarakhand
```



Subscript, Superscript, Bold, Italic

- Subscript and Superscript text are usually used in expressions and formulas.
- Subscript: <sub> tag is used to specify a subscript text.
 - The text enclosed within the opening _{tag and closing} text appears half a character below the normal line with a smaller font size.



Subscript, Superscript, Bold, Italic

- **Superscript:** `<sup>` tag is used to specify a *superscript text*.
 - The text enclosed within the opening `^{` tag and closing `}` text appears **half a character above the normal line** with a smaller font size.
- **Bold:** `` tag is used to specify **text in boldface**.
 - The text enclosed within the opening `` tag and closing `` text appears in **boldface**.



Subscript, Superscript, Bold, Italic

- **Italics:** `<i> tag` is used to specify text in italics.
- The text enclosed within the opening `<i>` tag and closing `</i>` text appears in italics.



Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
<title>Example of subscript superscript bold and italics tags in
XHTML
</title>
</head>
<body>
<p> <b> An expression written using subscript, superscript, bold,
and
italics tags in XHTML </b> </p>
<p> <b> a <i> x </i> <sub> 1 </sub> <sup> 2 </sup> + <b>
b <i> x </i> <sub> 1 </sub> + c = 0 </b>
</p>
</body>
</html>
```



Example

An expression written using subscript, superscript, bold and italics tags in XHTML

$$a {x_1}^2 + bx_1 + c = 0$$





Character Entities

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Introduction

- Special characters like <, >, &, etc cannot be used in XHTML as content directly since they have a special meaning in XHTML.
- < and > characters are used in tags in XHTML.
- The elements in XHTML themselves are embedded within <> characters.
- An entity defined in an XHTML document is replaced by its associated character by the browser.



Introduction

- Syntax for character entity is
&entity_name or &entity_number



Commonly used Character Entities

Special Characters	Entity name	Description
&	&	Ampersand
<	<	Less than
>	>	Greater than
space	&nbsp	Non-breaking space
"	"	Double quotation mark
'	'	Single quotation mark (apostrophe)
©	©	Copyright
®	®	Registered trademark





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Images in XHTML

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Introduction

- Images can be inserted in XHTML documents using the `` tag.
- The image tag has no closing tag and is an empty tag that has only attributes.
- The image gets displayed in line with the text where it is used.
- Images are stored in different formats like Graphic Interchange Format (GIF), Joint Photographic Experts Group Format (JPEG, JPG), and Portable Network Graphic (PNG).



Attributes of Image Tag

Attribute Name	Description
src	Used to specify the source of the image. It is the image file's URL. The URL is the location where the image file is stored. The image may be available on a local disk or the web.
alt	Used to display the message/text when there is a problem in displaying the image.
width	Used to specify the width of the image being displayed
height	Used to specify the height of the image being displayed
border	Used to specify the thickness of the image border in terms of pixels. By default, a borderless image is usually displayed since the thickness of the border is "0".





Demonstration of Images in XHTML



Hyperlinks in XHTML

Introduction

- A **webpage** usually consists of various **clickable links** that are used to navigate to other web pages, to other parts/sections within a web page or another web page, and even to another website.
- These links are called "**Hyperlinks**" in XHTML and are represented by using an **anchor < a > tag/element**.
- A **Hyperlink** can be a **text or image** and is embedded within the opening **< a >** and closing **< / a >** tags.



Introduction

- Most of the websites contain more than one web page and hence links are essential for navigation.
- The anchor tag `<a>` is an inline element.



Attributes of Anchor Tag

Attribute Name	Description
href	It consists of the address of the document to be linked or the destination of the link. It can be a filename, a directory path and a filename, a Uniform resource locator i.e. a URL or a specific target location.
Target (optional)	It specifies where the linked document should be opened. It can take the values <u>_blank</u> - opens in a new window or tab <u>_self</u> - opens in the same window or tab <u>_parent</u> - opens in the parent frame <u>_top</u> - opens in the full-body window
Title (optional)	It is used to provide information about the link when the mouse is hovered over it





Demonstration of Hyperlinks in XHTML



Lists in XHTML

Types of Lists

- In XHTML, to group, present, and organize information in a structured manner lists are used.
- There are 3 types of lists in XHTML:
 - **Unordered lists**
 - **Ordered lists**
 - **Definition lists**



Unordered lists

- A group of related items can be displayed using an **unordered list** when the **order or sequence of items to be listed is not of importance.**
- ** tag is used to create an unordered list.**
- **Each item in the list is specified by using a tag.**
- **In the list items, any tags can appear and can even be nested.**
- **To list the items in an unordered list, bullets are used.**





Unordered lists

- Types of bullets that can be used with unordered lists are of 3 types "disc" (default), "square", and "circle", which can be specified by using the "type" attribute.

Unordered lists - Example

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE html>
<html>
<head>
<title>Example of Unordered List
in XHTML
</title>
</head>
<body>
<h1> Graphic Era University </h1>
<ul>Courses Offered
<li> B. Tech </li>
<li> MCA </li>
<li> MBA </li>
<li> BCA </li>
</ul>
</body>
</html>
```

Graphic Era University

Courses Offered

- B.Tech
- MCA
- MBA
- BCA



Ordered lists

- tag is used to create an ordered list.
- Each item in the list is specified by using a tag.
- In the list items, any tags can appear and can even be nested.
- An ordered list in XHTML is used when the items in the list are to be numbered.
- The numbering of the items can be in numerical order format or alphabetical order format depending on the value of the “type” attribute.



Ordered lists

- The numbering starts at one by default and for each successive item embedded in the tag in the list, it is incremented by one.
- The default numbering can be changed by using the "start" attribute.
- The "type" attribute can be any one of the values "1", "I", "i", "A", or "a".
- The "start" attribute can be used to specify the starting point of required numbering.



Ordered lists - Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
    <title>Example of Ordered List in XHTML</title>
</head>
<body>
    <h1> Example of ordered list </h1>

    <!-- default List is numerically numbered -->
    <p><b>1.</b> The ordered list by default is numbered using numeric </b> </p>
    <ol> <b>courses Offered at Graphic Era </b>
        <li> B.Tech </li>
        <li> MCA </li>
        <li> MBA </li>
        <li> BCA </li>
    </ol>

    <!-- List is numbered using Uppercase Roman numbers, starting with vi -->
    <p><b>2.</b> The ordered list is numbered using Uppercase Roman numbers </b> </p>
    <ol type="I" > <b>Courses Offered at Graphic Era </b>
        <li> B.Tech </li>
        <li> MCA </li>
        <li> MBA </li>
        <li> BCA </li>
    </ol>

    <!-- List is numbered using Lowercase Roman numbers, starting with "vi" -->
    <p><b>3.</b> The ordered list is numbered using Lowercase Roman numbers </b> </p>
    <ol type="i" start="4" > <b>Courses Offered at Graphic Era </b>
        <li> B.Tech </li>
        <li> MCA </li>
        <li> MBA </li>
        <li> BCA </li>
    </ol>
</body>
</html>
```





Ordered lists - Example

Example of ordered list

1. The ordered list by default is numbered using numeric

Courses Offered at Graphic Era

- I. B.Tech
- II. MCA
- III. MBA
- IV. BCA

2. The ordered list is numbered using Uppercase Roman numbers

Courses Offered at Graphic Era

- I. B.Tech
- II. MCA
- III. MBA
- IV. BCA

3. The ordered list is numbered using Lowercase Roman numbers starting with "vi"

Courses Offered at Graphic Era

- iv. B.Tech
- v. MCA
- vi. MBA
- vii. BCA

Definition lists

- A **definition list** is usually used to present a **list of terms** and their **meaning, description, or definition**.
- It is used to present a **glossary**.
- The definition list makes use of the following tags:
 - **<dl>** and **</dl>** for opening and closing the **definition list**
 - **<dt>** and **</dt>** for **defining a term**
 - **<dd>** and **</dd>** for specifying the **term description/definition**



Definition lists - Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
<title>Example of Definition List in XHTML</title>
</head>
<body>
<h1> Example of Definition list </h1>
</body>
<dt><b> MBA </b> </dt>
<dd> Master of Business Administration </dd>
<dt><b> MCA </b> </dt>
<dd> Master of Computer Application </dd>
</dl>
</html>
```

dt Graphic Era University **dd**

dt Graphic Era (Deemed to be University) was in existence as
Graphic Era Institute of Technology since 1997, with the goal
of providing world-class education with a clear focus on
cutting-edge technologies, professional development of
students, critical thinking, and quality research.

dd



Definition lists - Example

Example of Definition list

Graphic Era University

Graphic Era (Deemed to be University) was in existence as Graphic Era Institute of Technology since 1997, with the goal of providing world-class education with a clear focus on cutting-edge technologies, professional development of students, critical thinking, and quality research.

MBA

Master of Business Administration

MCA

Master of Computer Application





Tables

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Introduction

- Information/data can be organized and presented in a tabular format by using **tables**.
- A **table** is a **matrix**, that consists of **rows** and **columns**.
- A **table** is created by using opening **<table>** and closing **</table>** tags.
- A **table** can be divided into **rows** by using the **<tr>** tag and each row is divided into **cells** by using either **<th>** tag for **header cells** or **<td>** tag for **data cells**.



Introduction

- **<th>** stands for “**table header**” also called “**header cell**” which is used to specify the header for a cell in a **table** .
- **<td>** stands for “**table data**” also called “**data cell**” which is used to specify the content within a cell in a **table**.
- The content of a cell in the **table** can be of any type - **text, paragraphs, lists, images, hyperlinks, forms, tables, and so on.**



Basic Tags used in Tables

Tags	Description
<table> .. </table>	Defines the beginning and end of a table
<tr> .. </tr>	Defines the beginning and end of each row in the table
<th> .. </th>	Defines the beginning and end of each header cell in a table
<td> .. </td>	Defines the beginning and end of each data cell in a table
<caption> .. </caption>	Defines a caption for the table
<thead> .. </thead>	Defines a table's header section
<tbody> .. </tbody>	Defines a table's body section
<tfoot> .. </tfoot>	Defines a table's footer section
<caption> .. </caption>	It is used to specify the caption/title for a table





Attributes used with Table Tag

Attribute name	Description
border	It is used to specify the width of the table border in pixels. By default its value is “0” Zero.
width	It is used to specify the width of the table
rowspan	It is used to specify the number of rows to be merged
colspan	It is used to specify the number of columns to be merged
cellpadding	It is used to specify the spacing between the content/text and the inner wall of the cell border
cellspacing	It is used to specify the spacing between two cells/borders or adjacent cells
align	It is used to specify the horizontal placement of content within a cell in the table and can be used with <tr> , <th> , and <td> tags. align attribute can take the values “right”, “left” or “center”. For <td> default alignment is “left” For <th> default alignment is “center”



Attributes used with Table Tag

Attribute name	Description
valign	It is used to specify the vertical placement of content within a cell in the table and can be used with <th> and <td> tags. The valign attribute can take the values “top”, and “bottom”. For both <th> and <td> default alignment is “center”
bgcolor	It is used to specify a background color for the table or cell
background	It is used to specify a background image for the table or cell

Tables - Example

```
<?Xml Version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
<title>Example of Tables in XHTML</title>
</head>
<body>

<!-- use of border, cellpadding, cellspacing, and width attributes with table tag -->
<table border="2" cellpadding="10" cellspacing="5" width="25%">
    <!-- Use of caption tag -->
    <caption> Courses at Graphic Era University </caption>
    <tr>
        <!-- Use of colspan and background attributes -->
        <td colspan="2" background="geuhospitall.png">
            <h2>Graphic Era University</h2>
        </td>
        <tr>
            <!-- Use of border, cellspacing, and width attributes -->
            <td rowspan="3" align="center" >UG Courses</td>
            <td >B.Tech</td>
        </tr>
        <!-- Use of rowspan and bgcolor attributes -->
        <tr> <td>BBA</td> </tr>
        <tr> <td>BCA </td> </tr>
        <tr>
            <!-- Use of border, cellpadding, cellspacing, and width attributes with table tag -->
            <td rowspan="2" bgcolor="cyan">PG Courses</td>
            <td>MBA</td>
        </tr>
        <tr> <td>MCA</td> </tr>
    </table>
</body>
</html>
```



Tables - Example

Courses at Graphic Era University

Graphic Era University

Courses at Graphic Era University	
UG Courses	B.Tech BBA BCA
PG Courses	MBA MCA





Div and Span Tags

Introduction

- **<div>** and **** tags are used for **grouping** and **structuring content** in a document.
- Both tags act as “**containers**” but serve different purposes.
- **<div> tag** is used for **block-level elements**.
- ** tag** is used for **inline-level elements**.



Div Tag

- The `<div>` tag is used to divide an XHTML document into sections.
- Related content to be grouped and formatted/styled by using cascading style sheets are embedded in the opening `<div>` and closing `</div>` tags.



Div Tag - Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
<title>Example of div tag in XHTML</title>
</head>
<body>
<div>
<p> This is first paragraph </p>
<p> This is second paragraph </p>
<p> This is third paragraph </p>
</div>
<div>
<p> This is fourth paragraph </p>
<p> This is fifth paragraph </p>
</div>
</body>
</html>
```



Span Tag

- The `` tag is used to apply styles or perform operations on a specific portion of text within a larger block of content.
- Related content to be grouped and formatted/styled by using cascading style sheets are embedded in the opening `` and closing `` tags.
- The `` tag does not have any default rendering or meaning.



Span Tag - Example

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html>
<html>
<head>
<title>Example of span tag in XHTML</title>
</head>
<body>
<div>
<p> Example of span tag in XHTML </p>
<p> This is <span> first </span> paragraph </p>
<p> This is <span> second </span> paragraph </p>
<p> This is third paragraph </p>
</div>
</body>
</html>
```





HTML vs XHTML

Difference between HTML and XHTML

HTML	XHTML
It is HyperText Markup Language	It is an extensible HyperText Markup Language
All tags and attribute names are not case-sensitive For example, <HTML> and <html> tags mean the same	All tags and attribute names must be in lowercase. They are case-sensitive. For example, <HTML> and <html> are not same
Closing tags can be omitted. For example, if <p> opening tag is used then </p> can be omitted	Closing tags are mandatory For example, if <p> opening tag is used then closing tag </p> is mandatory



Difference between HTML and XHTML

HTML	XHTML
Attribute values must be given in quotes only if it consists of special characters or whitespaces in them.	All attribute values must be given in quotes regardless of the value type or whether it consists of special characters or whitespaces in them.
Numeric values are usually not given in quotes.	Numeric values must also be given in quotes. For example, <code><table border=2></code> is invalid in XHTML <code><table border="2"></code> is valid in XHTML
In HTML, the "name" attribute can be used in an anchor tag.	In XHTML, instead of the "name" attribute "id" attribute is used in an anchor tag. However, the form element can use the "name" attribute.
Rules are not enforced for nesting elements	Rules are enforced for nesting elements.

