Contents

Introduction

Thanks for choosing to learn with **Coding for Kids in easy steps**. This book will introduce you to web page coding and demonstrate by example how you can create your own great web pages.

Conventions in this book

To clarify the code listed in the steps given in each example, the tags, properties, and keywords are colored **blue**, assigned values and names are colored **red**, and literal content is colored **black**:

```
<html lang="en" >       <title>Coding for Kids in easy steps</title>

h1       { color : red ; background : yellow }

var counter = 0 ;
```

Each example is accompanied by a file icon and file name for identification, like this:

hello.html

Check your code easily

You can download a single ZIP archive file containing all the example files by following these easy steps:

1. Browse to **www.ineasysteps.com** then navigate to **Free Resources** and choose the **Downloads** section
2. Next, find **Coding for Kids in easy steps** in the list, then click on the hyperlink entitled **All Code Examples** to download the ZIP archive file
3. Now, extract the archive contents to any convenient location on your computer

If you don't achieve the result illustrated in any example, simply compare your code to that in the original example files you have downloaded to discover where you went wrong.

How to use this book

Each chapter contains examples that build your knowledge of web page coding in the three essential web coding languages – **HTML**, **CSS**, and **JavaScript**.

Chapter 10 brings together all you have learned throughout this book to create a complete web page containing a fun interactive game. Go ahead and skip to Chapter 10 (page 139) to take a peek at what you will be able to create, then get started with coding from Chapter 1.

1 Get Started with Web Pages

This chapter introduces the HyperText Markup Language (HTML) and shows you how to create a simple valid web page.

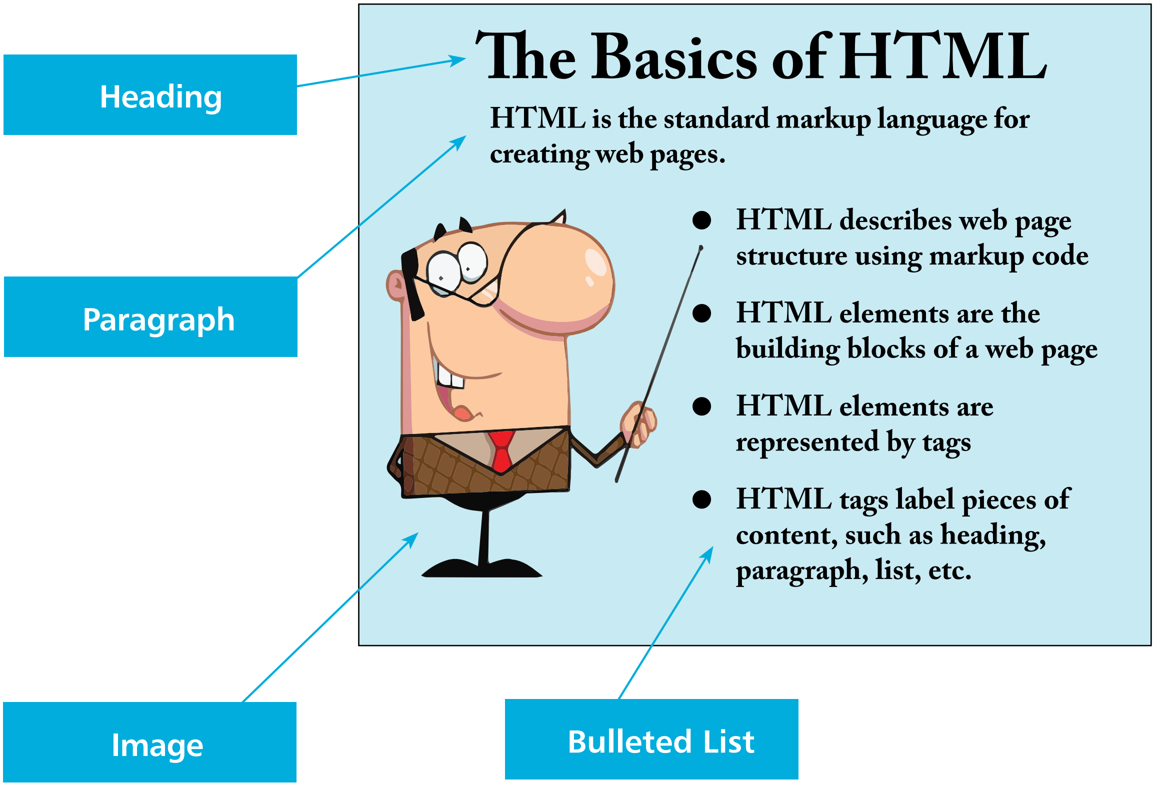
What is “HTML”?

The first coding language you need to create a web page is called “HTML” – short for **H**yper**T**ext **M**arkup **L**anguage. Despite its scary-sounding name, HTML is simple to learn and is not a complex programming language.

HTML was developed by a scientist named Tim Berners-Lee in 1990 and is the hidden code that displays web page content using ordinary text. It is the standard language on the World Wide Web, and the latest version (HTML5) is described in this book.

When writing HTML code, you add “tags” to the content – to create the structure of the web page. These tags tell the web browser how to display the text and images of the web page. Browsers display the content, but do not display your tags.

The document below has a simple structure of four parts. There is one heading, one paragraph, one image, and one list:



The Basics of HTML

HTML is the standard markup language for creating web pages.

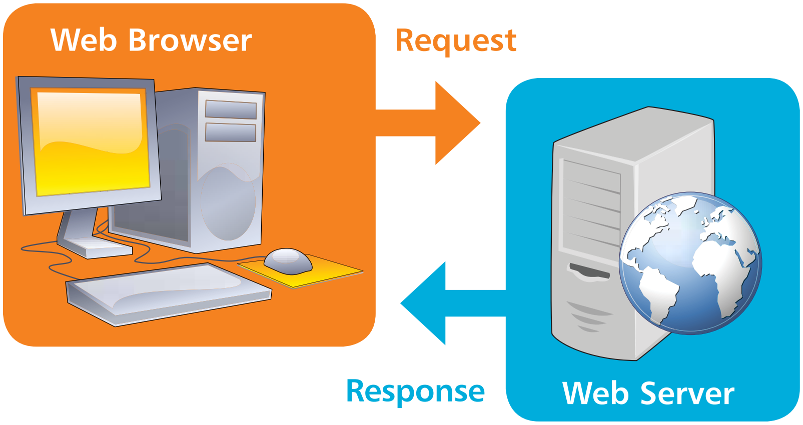
- **HTML describes web page structure using markup code**
- **HTML elements are the building blocks of a web page**
- **HTML elements are represented by tags**
- **HTML tags label pieces of content, such as heading, paragraph, list, etc.**

How do web browsers work?

Each web page is actually an HTML file. These are just plain text files that have been saved with an **.html** (or **.htm**) file extension – instead of a typical **.txt** file extension; for example, **mypage.html**.

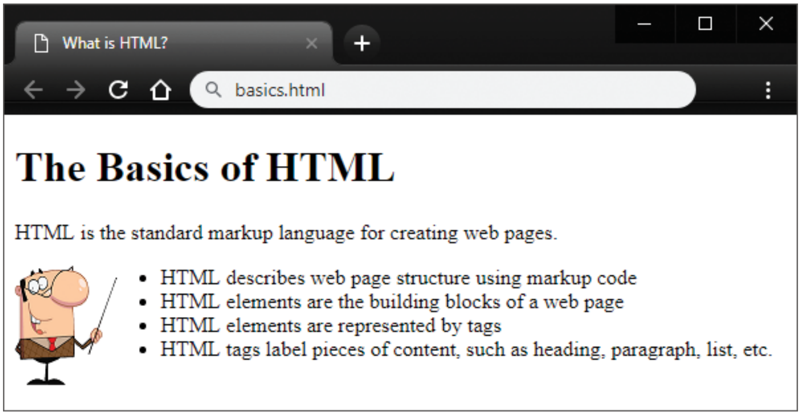
When you open an HTML file in a web browser, such as Google Chrome, the browser reads the file from top to bottom. It understands the HTML tags and uses them to display the content in the correct structure. Where the HTML file refers to other files, such as image files, the browser grabs those too and builds them into the entire web page.

When you type a web address into your browser it sends a request via your internet connection to a web server. If the web page is successfully found, the web server responds by copying that page's files back to the web browser, otherwise the web server sends an error code, such as "404 – Page Not Found".



Hot tip

The request and response are sent using "HTTP". This stands for **H**yper**T**ext **T**ransfer **P**rotocol – the system that is used to transmit content over the internet.



The Basics of HTML

HTML is the standard markup language for creating web pages.

- HTML describes web page structure using markup code
- HTML elements are the building blocks of a web page
- HTML elements are represented by tags
- HTML tags label pieces of content, such as heading, paragraph, list, etc.

Make a basic web page

An HTML web page "document" has these three parts:

- **Document type declaration** – declaring precisely which version of HTML is used to markup the document.
- **Head section** – providing descriptive data about the document itself, such as the document's title and the character set used.
- **Body section** – containing the content that is to appear when the document gets loaded into a web browser.

Beware

HTML documents should not be created in word processors (such as Microsoft Word) as these add extra information in their file formats.

Document type declaration

The document type declaration must appear at the start of the first line of every HTML document to be sure the web browser will display the document in "Standards Mode" – following the HTML5 standards specification. The document type declaration tag for all HTML5 documents looks like this:

```
<!DOCTYPE HTML>
```

It is important to note that HTML is not a "case-sensitive" language – this means that the document type declaration tag, and all other tags, may be written in any combination of uppercase and lowercase characters. For example, the following are all valid:

```
<!DOCTYPE html>

<!Doctype Html>

<!doctype html>
```

You can choose which tag style you prefer but it is recommended you then always use your chosen style. The document type declaration tag style favored throughout this book uses all uppercase to emphasize its importance as the very first tag on each HTML document – but all other tags are in all lowercase.

Hot tip

Choose one tag style – and stick with it.

The entire document head section and body section can be enclosed within a pair of root **<html> </html>** tags. Most HTML tags are used in pairs like this to act as "containers" with the format **<** ***tagname*** **>** ***data*** **</** ***tagname*** **>**. The tags are known as "opening" and "closing" tags. Notice the **/** forward slash character in the closing tag.

Head section

The document's head section begins with an HTML opening **<head>** tag and ends with a corresponding closing **</head>** tag. Information describing the document (metadata) can be added later between these tags to complete the HTML head section.

An HTML "element" is any matching pair of opening and closing tags, or any single tag that does not require a closing tag.

Body section

The document's body section begins with an HTML opening **<body>** tag and ends with a corresponding closing **</body>** tag. Content to appear in the browser can be added later between these two tags to complete the HTML document's body section.

Code comments

Comments can be added between other tags in both the head and body sections inside a pair of **<!--** and **-->** tags. Anything that appears between the comment tags is ignored by the browser.

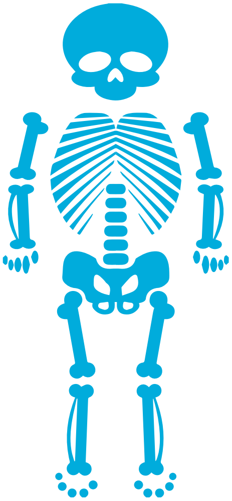
Fundamental structure

So, the markup tags that create the fundamental structure of every HTML5 document look like this:

```
<!DOCTYPE HTML>
<html>


 <head>
 <!-- Descriptive information to be added here. -->
 </head>


 <body>
 <!-- Document content to be added here. -->
 </body>

</html>
```

The "invisible" characters that represent tabs, newlines, carriage returns, and spaces are collectively known as "whitespace". They may optionally be used to inset the tags for clarity.

Add web page details



The fundamental HTML document structure, described on page 11, can be used to create a simple HTML document in any plain text editor – such as Windows' Notepad application. But in order to create a valid "barebones" HTML document some details must be added to define the document's language, character encoding format, and title.

The document's language is defined by assigning a standard language code to a **lang** "attribute" within the opening **<html>** tag. For the English language the code is **en**, so the complete opening tag looks like this: **<html lang="en" >**

The document's character encoding format is defined by assigning a standard character-set code to a **charset** attribute within a metadata **<meta>** tag placed in the document's head section. The recommended encoding is the popular **U**nicode **T**ransformation **F**ormat **8**-bit for which the code is **UTF-8**, so the complete element looks like this: **<meta charset="UTF-8" >**

Finally, the document's title is defined by text between a pair of **<title> </title>** tags placed in the document's head section.

Follow these steps to create a valid barebones HTML document:

hello.html

1. Launch your favorite plain text editor then start a new document with the document type declaration

```
<!DOCTYPE HTML>
```

2. Below the document type declaration, add a root element that defines the document's language as English

```
<html lang="en" >
<!-- Head and Body sections to replace this comment. -->
</html>
```

3. Within the HTML element, insert a head section

```
<head>
<!-- Descriptive information to replace this comment. -->
</head>
```

4. Within the head section, insert an element defining the document's encoding character set

```
<meta charset="UTF-8" >
```

Don't forget

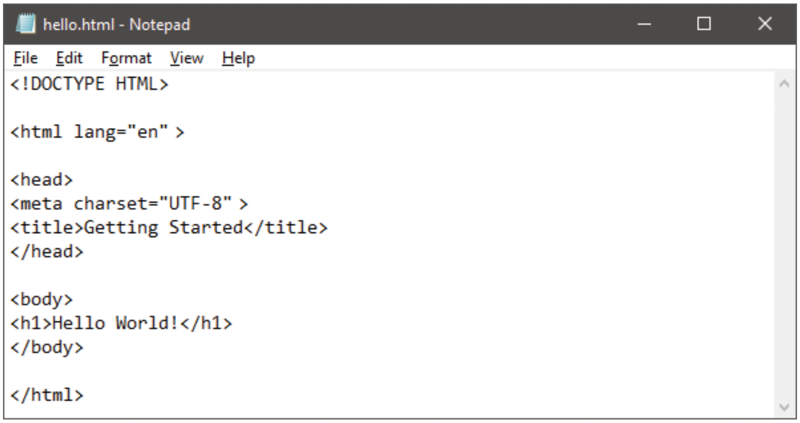
The quotation marks around an attribute value are usually optional but are required for multiple values. For consistency, attribute values in the examples throughout this book are all surrounded by quotation marks.

...cont'd

5 Next, within the head section, insert an element defining the document's title
<title>Getting Started</title>

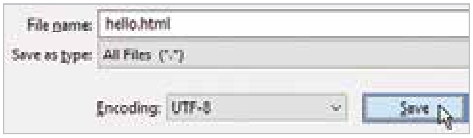
6 After the head section, insert a document body section
<body>
<!-- Document content to replace this comment. -->
</body>

7 Within the body section, insert a large (size-one) heading
<h1>Hello World!</h1>



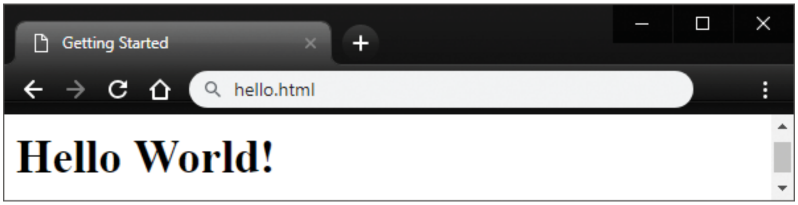
```
<!DOCTYPE HTML>

<html lang="en" >

<head>
<meta charset="UTF-8" >
<title>Getting Started</title>
</head>

<body>
<h1>Hello World!</h1>
</body>

</html>
```

8 Set the encoding to UTF-8, then save the document as **hello.html**



File name: hello.html
Save as type: All Files (*.*)
Encoding: UTF-8

9 Now, open the HTML document in your web browser to see the title displayed on the title bar or tab, and the document content displayed as a large heading



Hello World!

Hot tip

The **<meta>** tag is a single tag – it does not have a matching closing tag.

Hot tip

You can save the HTML document on your Desktop, then double-click on its file icon to open the document in your web browser.

Don't get the same result? Check your code exactly matches the downloadable example source code – see page 6.

Test your web pages

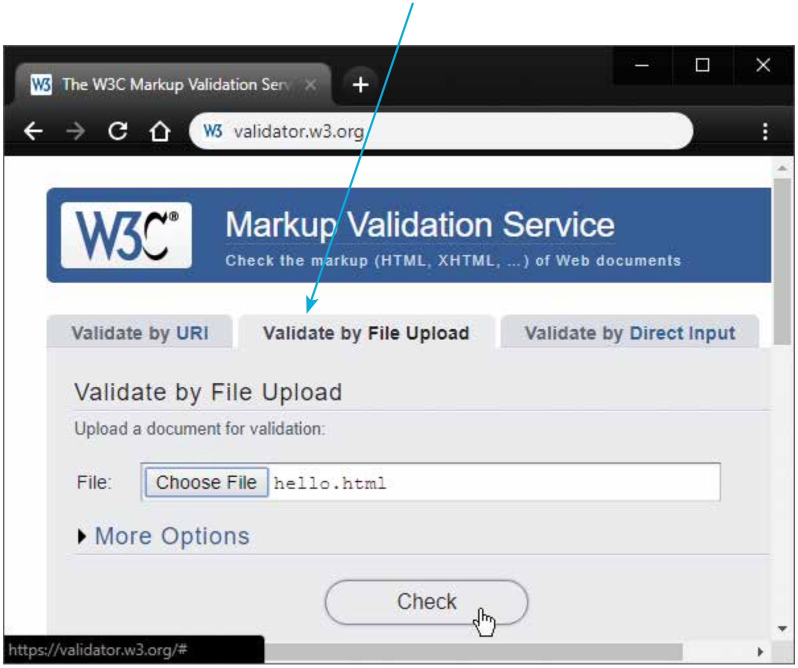
The W3C is the organization that oversees the HTML standards. Their HTML validator can be found at **validator.w3.org**

Just as text documents may contain spelling and grammar errors, HTML documents may contain various errors that prevent them from conforming to the HTML standard rules. In order to verify that an HTML document does indeed conform to the rules of its stated document type declaration it can be tested by a validator tool. Only HTML documents that pass the validation test successfully are sure to be valid documents.

Web browsers make no attempt at validation so it is well worth testing every HTML document with a validator tool before it is published, even when the content looks fine in your web browser. When the browser encounters HTML errors it will make a guess at what is intended – but different browsers can make different guesses so may display the document incorrectly. Valid HTML documents should always appear correctly in any standards-compliant browser.

The World Wide Web Consortium (W3C) provide a free online validator tool that checks the correctness of web documents:

1. With an internet connection, open your web browser and navigate to the W3C Validator Tool at **validator.w3.org**, then click on the “Validate by File Upload” tab


The W3C Markup Validation Serv
validator.w3.org
W3C
Markup Validation Service
Check the markup (HTML, XHTML, ...) of Web documents
Validate by URI
Validate by File Upload
Validate by Direct Input
More Options
Check
https://validator.w3.org/#

Validate by File Upload

Upload a document for validation:

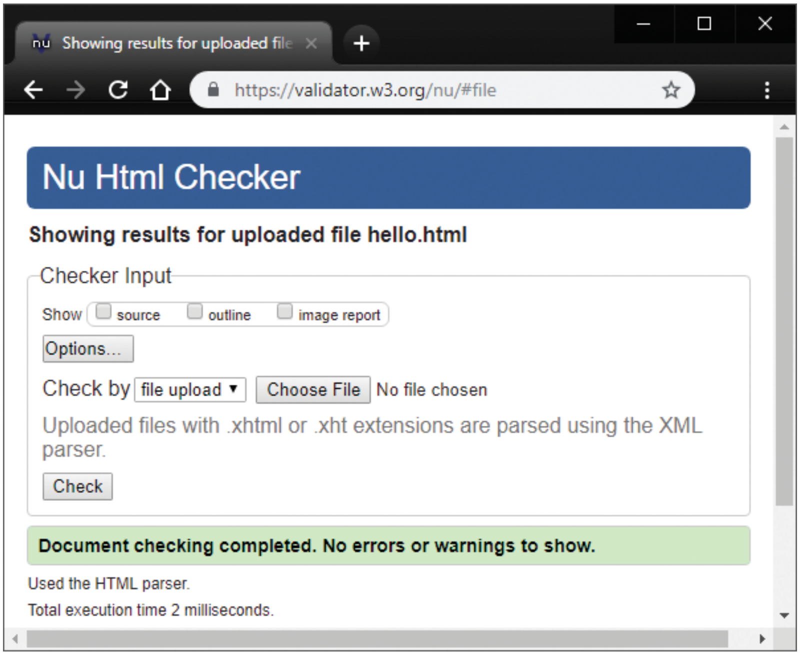
File: Choose File hello.html

Hot tip

Other tabs in the validator allow you to enter the web address of an HTML document located on a web server to “Validate by URI” or copy and paste all code from a document to “Validate by Direct Input”.

2. Click the "Choose File" button then navigate to the HTML document you wish to validate – once selected, its local path appears in the validator's "File" field

3. Next, click the validator's "Check" button to upload a copy of the HTML document and run the validation test – the results will then be displayed


Showing results for uploaded file
https://validator.w3.org/nu/#file

Nu Html Checker

Showing results for uploaded file hello.html

Checker Input

Show □ source □ outline □ image report

Options...

Check by file upload ▾ Choose File No file chosen

Uploaded files with .xhtml or .xht extensions are parsed using the XML parser.

Check

Document checking completed. No errors or warnings to show.

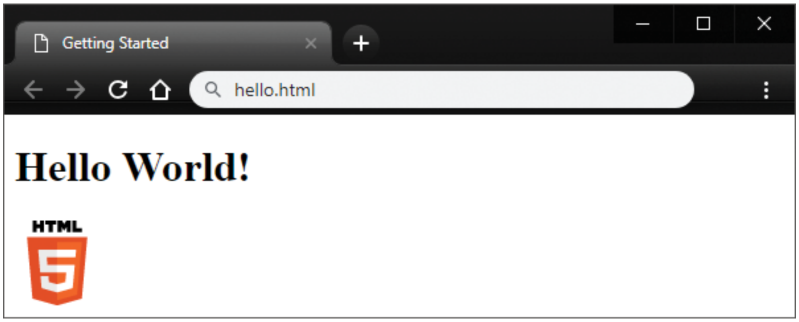
Used the HTML parser.

Total execution time 2 milliseconds.

Don't forget

The validator automatically detects the document's character set and the HTML version.

If validation fails, the errors are listed so you may easily correct them. When validation succeeds, you may choose to include an icon at the end of the document demonstrating HTML5 support:



Hello World!

Hot tip

The HTML5 support logo is available in several sizes and formats – find more details online at w3.org/html/logo

What you learned

- "HTML" stands for HyperText Markup Language.
- HTML is the standard language used on the World Wide Web – the latest version is HTML5.
- To code web pages you add HTML tags to the content to create the structure of the web page.
- HTML tags tell the web browser how to display the text and images of the web page.
- Each web page is an HTML document file.
- An HTML file is a plain text file that has been saved with an **.html** (or an **.htm**) file extension.
- Web browsers read HTML files from top to bottom and display the content in the structure defined by the tags.
- A web browser can request a web page from a web server and receive a copy of the web page in its response.
- An HTML document has three parts – a document type definition, a head section, and a body section.
- The HTML5 document type definition is **<!DOCTYPE HTML>**
- The entire document head section and body section can be enclosed within a pair of **<html> </html>** tags.
- Descriptive information about the document itself should be placed in its head section.
- Content that is to be displayed by the web browser should be placed in the document's body section.
- HTML is not case-sensitive – so tags may be written in any combination of uppercase and lowercase characters.
- Comments can be added between other tags in both the head and body sections inside a pair of **<!--** and **-->** tags.
- To be valid, an HTML document must define the document's language, character encoding format, and title.
- The World Wide Web Consortium (W3C) provides a free online validator tool that checks the web page code.