HTML5

What is HTML5?

HTML5 is the new standard for HTML.

The previous version of HTML was – HTML 4.01, came in 1999.

HTML5 is designed to deliver almost everything you want to do online without requiring additional plugins. It does everything from animation to apps, music to movies, and can also be used to build complicated applications that run in your browser.

HTML5 is also cross-platform (it does not care whether you are using a tablet or a smartphone, a notebook, notebook or a Smart TV).

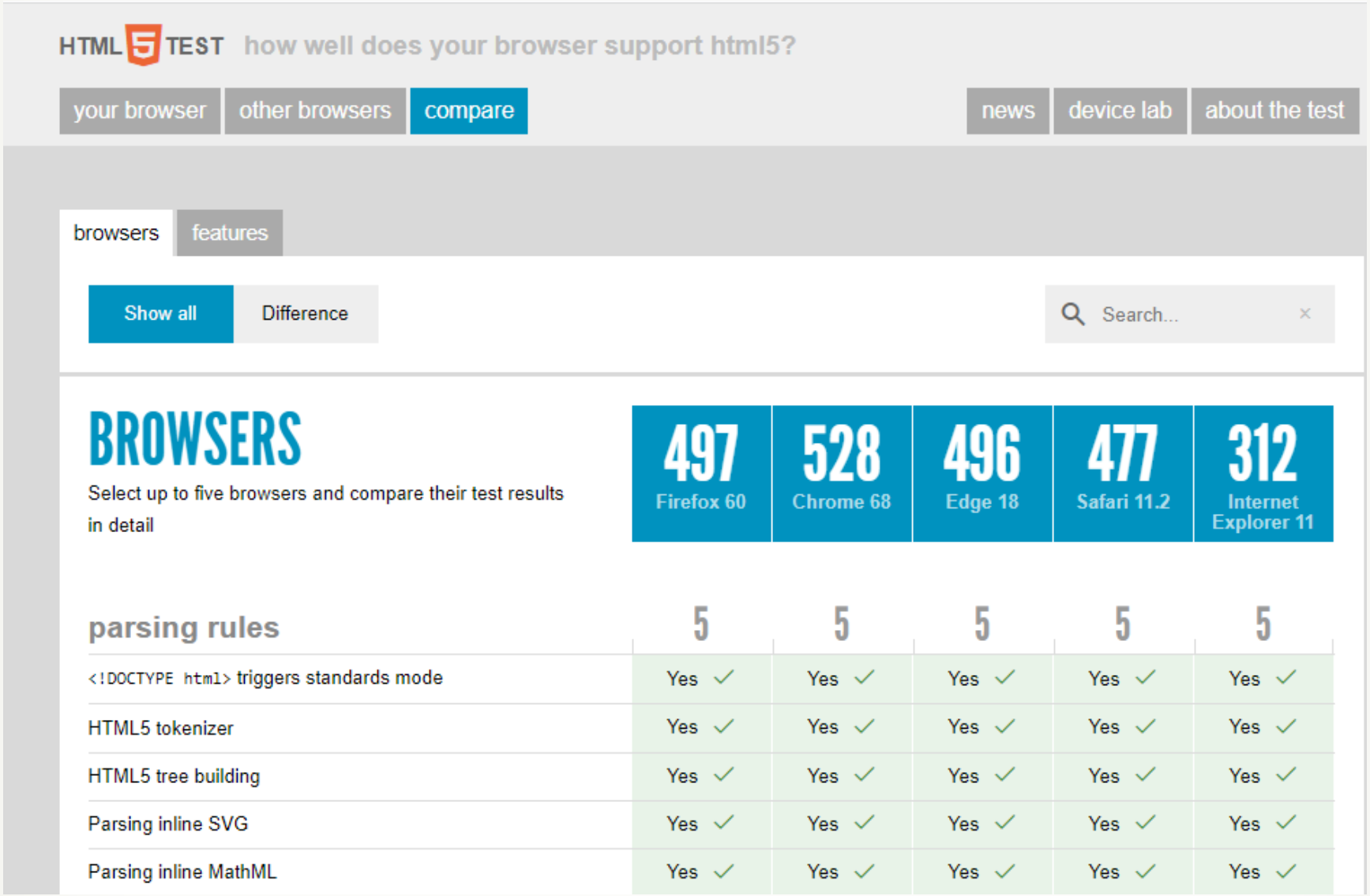
Differences Between HTML4 & HTML5

1. Simplified Syntax
2. The New <canvas> Element for 2D drawings
3. New content-specific elements, like <article>, <header>, <footer>, <nav>, <section>
4. New <menu> and <figure> Elements
5. New <audio> and <video> Elements
6. New form controls, like calendar, date, time, email, url, search
7. No More <frame>, , <big>, and <b>, <font>
8. Support for local storage

Browser Support for HTML5

HTML5 is not yet an official standard, and no browsers have full HTML5 support.

But all major browsers (Safari, Chrome, Firefox, Opera, Internet Explorer) continue to add new HTML5 features to their latest versions.



https://html5test.com/compare/browser/firefox-60/chrome-68/edge-18/safari-11.2/ie-11.html

Minimum HTML5 Document

Below is a simple HTML5 document, with the minimum of required tags:

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Title of the document</title>
</head>

<body>
Content of the document.....
</body>

</html>
```

Removed Elements

The following HTML 4.01 elements are removed from HTML5:

- ✓ <acronym>
- ✓ <applet>
- ✓ <basefont>
- ✓ <big>
- ✓
- ✓ <dir>
- ✓ <font>
- ✓ <frame>
- ✓ <frameset>
- ✓ <noframes>
- ✓ <strike>
- ✓ <tt>

HTML5 Canvas

- ✓ The HTML5 <canvas> element is used to draw graphics, on the fly, via scripting (usually JavaScript).
- ✓ The <canvas> element is only a container for graphics. You must use a script to actually draw the graphics.
- ✓ Canvas has several methods for drawing paths, boxes, circles, text, and adding images.

```
<canvas id="myCanvas" width="200" height="100"
    style="border:1px solid #d3d3d3;">
    Your browser does not support the HTML canvas tag.
</canvas>
<script>
    var c = document.getElementById("myCanvas");
    var ctx = c.getContext("2d");
    ctx.beginPath();
    ctx.arc(95,50,40,0,2*Math.PI);
    ctx.stroke();
</script>
```

HTML5 Inline SVG

- ✓SVG stands for Scalable Vector Graphics
- ✓SVG is used to define vector-based graphics for the Web
- ✓SVG defines the graphics in XML format
- ✓SVG graphics do NOT lose any quality if they are zoomed or resized
- ✓Every element and every attribute in SVG files can be animated
- ✓SVG is a W3C recommendation

SVG Advantages

Advantages of using SVG over other image formats (like JPEG and GIF) are:

- ✓SVG images can be created and edited with any text editor
- ✓SVG images can be searched, indexed, scripted, and compressed
- ✓SVG images are scalable
- ✓SVG images can be printed with high quality at any resolution
- ✓SVG images are zoomable (and the image can be zoomed without degradation)

Difference Between SVG & Canvas

Canvas	SVG
Resolution dependent	Resolution independent
No support for event handlers	Support for event handlers
Poor text rendering capabilities	Best suited for applications with large rendering areas (Google Maps)
You can save the resulting image as .png or .jpg	Slow rendering if complex (anything that uses the DOM a lot will be slow)
Well suited for graphic-intensive games	Not suited for game applications

New Media Elements

Tag	Description
<audio>	Defines sound content
<video>	Defines a video or movie
<source>	Defines multiple media resources for <video> and <audio>
<embed>	Defines a container for an external application or interactive content (a plug-in)
<track>	Defines text tracks for <video> and <audio>

HTML5 Geolocation

- ✓ The HTML5 Geolocation API is used to get the geographical position of a user.
- ✓ Since this can compromise user privacy, the position is not available unless the user approves it.

Information you get from Geolocation API

Property	Description
coords.latitude	The latitude as a decimal number
coords.longitude	The longitude as a decimal number
coords.accuracy	The accuracy of position
coords.altitude	The altitude in meters above the mean sea level
coords.altitudeAccuracy	The altitude accuracy of position
coords.heading	The heading as degrees clockwise from North
coords.speed	The speed in meters per second
timestamp	The date/time of the response

HTML5 Input Types

HTML5 has several new input types for forms. These new features allow better input control and validation.

- ✓ color
- ✓ Date
- ✓ datetime
- ✓ datetime-local
- ✓ email
- ✓ month
- ✓ number
- ✓ range
- ✓ search
- ✓ tel
- ✓ time
- ✓ url
- ✓ week

HTML5 Form Elements

HTML5 has the following new form elements:

- ✓ <datalist>
- ✓ <keygen>
- ✓ <output>

HTML5 <datalist> Element

The <datalist> element specifies a list of pre-defined options for an <input> element.

The <datalist> element is used to provide an "autocomplete" feature on <input> elements. Users will see a drop-down list of pre-defined options as they input data.

Use the <input> element's list attribute to bind it together with a <datalist> element.

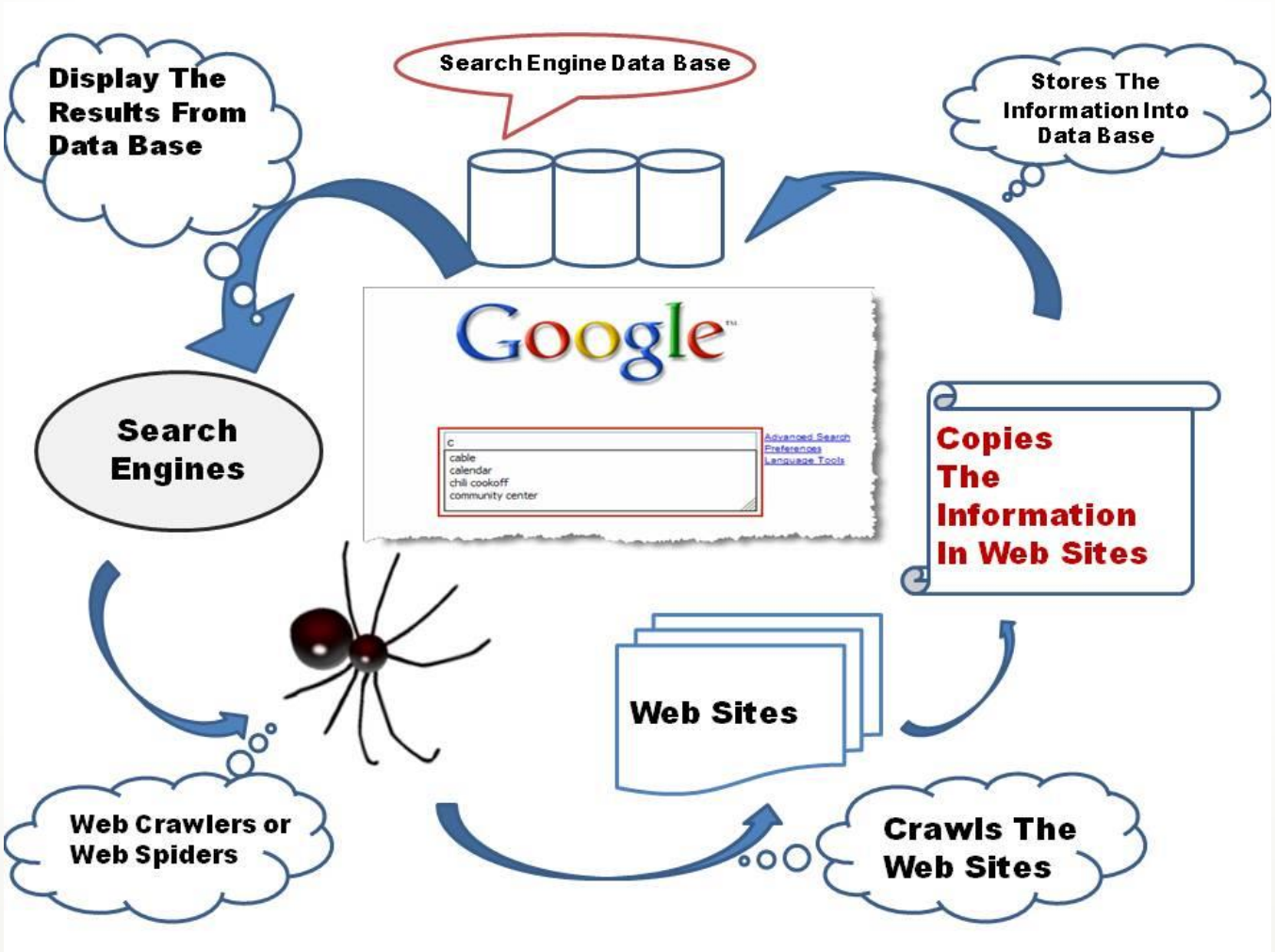
HTML5 <keygen> Element

- ✓ The purpose of the <keygen> element is to provide a secure way to authenticate users.
- ✓ The <keygen> tag specifies a key-pair generator field in a form.
- ✓ When the form is submitted, two keys are generated, one private and one public.
- ✓ The private key is stored locally, and the public key is sent to the server. The public key could be used to generate a client certificate to authenticate the user in the future.

HTML5 <output> Element

The <output> element represents the result of a calculation (like one performed by a script).

Web Crawler

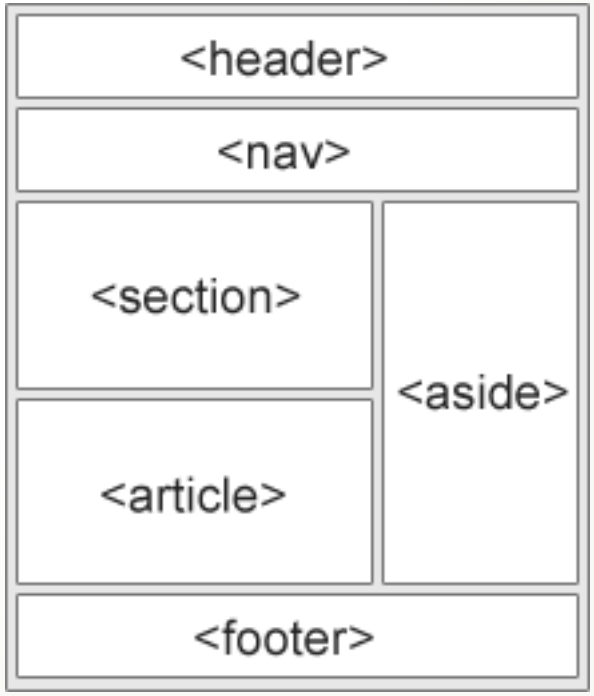

Display The Results From Data Base
Search Engine Data Base
Stores The Information Into Data Base
Google
Search Engines
Copies The Information In Web Sites
Web Sites
Web Crawlers or Web Spiders
Crawls The Web Sites

HTML5 Semantic Elements

- ✓ A semantic element clearly describes its meaning to both the browser and the developer.
- ✓ Examples of **non-semantic** elements: and - Tells nothing about its content.
- ✓ Examples of **semantic** elements: <form>, <table>, and <img> - Clearly defines its content.

HTML5 Semantic Elements

- ✓ HTML5 offers new semantic elements to clearly define different parts of a web page:
- ✓ <header>
- ✓ <nav>
- ✓ <section>
- ✓ <article>
- ✓ <aside>
- ✓ <figcaption>
- ✓ <figure>
- ✓ <footer>



New Semantic/Structural Elements

Tag	Description
<article>	Defines an article
<aside>	Defines content aside from the page content
<bdi>	Isolates a part of text that might be formatted in a different direction from other text outside it
<command>	Defines a command button that a user can invoke
<details>	Defines additional details that the user can view or hide
<dialog>	Defines a dialog box or window
<summary>	Defines a visible heading for a <details> element

New Semantic/Structural Elements

Tag	Description
<figure>	Specifies self-contained content, like illustrations, diagrams, photos, code listings, etc.
<figcaption>	Defines a caption for a <figure> element
<footer>	Defines a footer for a document or section
<header>	Defines a header for a document or section
<mark>	Defines marked/highlighted text
<meter>	Defines a scalar measurement within a known range (a gauge)
<nav>	Defines navigation links

New Semantic/Structural Elements

Tag	Description
<progress>	Represents the progress of a task
<ruby>	Defines a ruby annotation (for East Asian typography)
<rt>	Defines an explanation/pronunciation of characters (for East Asian typography)
<rp>	Defines what to show in browsers that do not support ruby annotations
<section>	Defines a section in a document
<time>	Defines a date/time
<wbr>	Defines a possible line-break

HTML5 Web Storage

- ✓ With HTML5, web pages can store data locally within the user's browser.
- ✓ Earlier, this was done with cookies. However, Web Storage is more secure and faster. The data is not included with every server request, but used ONLY when asked for. It is also possible to store large amounts of data, without affecting the website's performance.
- ✓ The data is stored in key/value pairs, and a web page can only access data stored by itself.

HTML5 Web Storage

- There are two new objects for storing data on the client:
  - localStorage - stores data with no expiration date
  - sessionStorage - stores data for one session
- The sessionStorage object is equal to the localStorage object, **except** that it stores the data for only one session. The data is deleted when the user closes the browser window.

HTML5 Application Cache

HTML5 introduces application cache, which means that a web application is cached, and accessible without an internet connection.

Application cache gives an application three advantages:

- ✓ Offline browsing - users can use the application when they're offline
- ✓ Speed - cached resources load faster
- ✓ Reduced server load - the browser will only download updated/changed resources from the server