THE WINDOW OBJECT

THE BROWSER OBJECT MODEL

The Browser Object Model (or BOM for short) is a collection of properties and methods that contain information about the browser and computer screen. We would use global variables to access this.

Global variables can be accessed in all parts of the program.

Global variables are actual properties of a global object. In a browser environment, the global object is the window object.

```
x = 6;  // global variable created
<< 6

window.x // same variable can be accessed as a property of the window object
<< 6

// both variables are exactly the same
window.x === x;
<< true
```

You should generally refer to global variables without using the window object; it's less typing, and your code will be more portable between environments.

FINDING OUT BROWSER INFORMATION

The window object has a navigator property that returns a reference to the Navigator object. The Navigator object contains information about the browser being used. Its userAgent property will return information about the browser and operating system used.

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Several properties can be used with window.(something) like window.location.href gets the website's URL.

Others:

Windows.alert
Windows.prompt
Window.navigator.userAgent
Window.location.href
Window.location.protocol – returns the string to what protocol is used.
Window.location.host or hostname
Window.location.port
Also has methods as well:
Windows.location.assign()
Windows.location.toString()
Windows.location.reload()
Windows.location.assign()

BROWSER HISTORY

The window.history property can access information about any previously visited pages in the current browser session. Avoid confusing this with the new HTML5 History API.

The window.history.length property shows how many pages have been visited before arriving at the current page.

The window.history.go() method can be used to go to a specific page, where o is the current page:

The window.screen object contains information about the screen the browser is displayed on. You can find out the height and width of the screen in pixels using the height and width properties, respectively:

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COOKIES

Cookies are small files that are saved locally on a user's computer. Netscape invented them as a way of getting around HTTP, being a stateless protocol. A browser does not remember anything from one request to another. So, every time a user visits a page, nothing about any previous visits is remembered. Cookies can be used to sidestep this problem by storing information that can then be retrieved between requests.

TIMING FUNCTIONS

The window.setTimeout() method accepts a callback to a function as its first parameter and several milliseconds as its second parameter.

It can also cancel the timeout using the window.clearTimeout() method.

The window.setInterval() method works similarly to window.setTimeout(), except that it will repeatedly invoke the callback function after every given number of milliseconds.

HTML5 APIS:

THE WEB STORAGE API HAS SOME CRUCIAL DIFFERENCES WITH COOKIES:

Information stored is not shared with the server on every request.

Information is available in multiple windows of the browser (but only if the domain is the same).

Storage capacity limit is much larger than the 4KB limit for cookies (There is no actual limit in the specification, but most browsers have a limit set at 5GB per domain.).

Any data stored does not automatically expire as it does with cookies. This makes cookies a better choice for showing a popup once a day.

STORAGE

If a browser supports the Web Storage API, the window object will have a property called localStorage, which is a native object with a number of properties and methods used to store data. The information is saved in the form of key-value pairs, and the values can only be strings. A sessionStorage object works similarly, although the data is only saved for the current session.

The Geolocation API is used to obtain the geographical position of the device. This means it can be used to find the user's exact location, then link to nearby places or measure the speed at which the user is moving.

WEB WORKERS:

Web workers use the concept of messages to communicate back and forth between the main script and worker script. The postMessage() method can be used to send a message and start the worker working.

Share web workers: You can also create shared web workers that allow lots of different scripts on the same domain to access the same worker object

Service workers: The Service Worker API allows a worker script to run in the background with the added benefit of being able to intercept network requests.

WEB SOCKET:

Websocket is a new protocol that allows two-way communication with a server – also known as push messaging. This means that a connection is kept open, and responses are 'pushed' to the client as soon as they are received.

NOTIFICATIONS

The Notification API allows you to show messages using the system's notifications. This is usually a popup in the corner of the screen, but it changes depending on the operating system. An advantage of using the system notification is that they will still be displayed even if the web page that calls them isn't the current tab.

CHAPTER SUMMARY

HTML5.1 is the latest incarnation of the Hypertext Markup Language. It covers a variety of technologies, including several APIs that are accessible using JavaScript.

data- attributes help to embed custom data into a web page that can then be used to enhance the user experience with JavaScript.

The Web Storage API allows key-value pairs to be stored on the user's device in a similar way to cookies, but without the same storage restrictions.

The Geolocation API allows you to access the geographic coordinates of the user's device, as long as the user gives permission.

The Web Worker API can be used to perform computationally intensive tasks in the background, which helps to avoid websites becoming unresponsive.

Websockets are a new protocol for communicating over the internet, and allow real-time, two-way communication.

The Notification API allows you to display notifications on the user's system.

The <audio> and <video> elements can be employed to embed audio tracks and video clips in a web page. They also have a Media API that can help control the playback using JavaScript.

The canvas element can be used to dynamically draw geometric shapes, text, and images on a web page in real-time using JavaScript.

A shim or polyfill is a piece of code that adds support of missing features to older browsers.