History (WWW)

The World Wide Web is a global combination of all resources in the internet that uses Hypertext Transfer Protocol(HTTP). Tim-Berners Lee, father of the web, the inventor of the web and director of the World Wide Web Consortium(W3C) which was founded in September 1994 at the Massachusetts Institute of Technology with support from Defense Advanced Research Projects Agency (DARPA) and the European Commission.

The World Wide Web accesses info over the internet and it sends data over the network. Basic Advantages of the internet is when you are connected to the devices.

Internet is a global system of interconnected computer network that uses Internet Protocol Suite(TCP/IP) and writes via computers accessed over the internet.

**HTTP Version History:**

* HTTP 0.9 (1991)
* HTTP 1.0 (RFC 1945, May 1996)
* HTTP 1.1 (RFC 2068 Jan 1997, RFC 2616 June 1999)
* RFC 7230-7235 (June 2014)
* HTTP 2 (RFC 7540 May 2015)

- HTTP is a stateless communications protocol and servers do not keep information about client’s in-between requests.

* HTTP provides support for other functionalities such as:
* Cache control
* Content media type (MIME) Specification
* Language and character set specification

**HTTP Resource Addressing**

* HTTP resources are identified using URLs (RFC 3986)
* Scheme (http or https)
* Authority is a user information or authentication credentials
* Domain name (resolved to an IP address using) of the server where the resource resides

**HTTP Request Message**

Request Line

* Method
* Request Target
* Protocol version

**HTTP Response Message**

**Status Line:**

* Protocol version
* Status code
* Reason Phrase

**Message Headers:**

* General Header Fields
* Request Header Fields
* Entity Headers Fields
* Response Header Fields

**Standard Methods:**

GET – acquire Resource

HEAD – identical to GET. Retrieve metadata

POST– HTML form data, data is too long so use this

DELETE – remove resource

OPTIONS – communications available for the resource

TRACE – request a remote, loop-back, response

CONNECT – establish tunnel between server and client.

* Encryption

**Method Properties:**

Safe Methods

* Read-only
* GET, HEAD, OPTIONS, TRACE
* No change of state on the origin server

Idempotent Methods

* Intended effect on the server of multiple
* GET, HEAD, OPTIONS, TRACE, PUT, DELETE
* Same as the effect of a single request
* Change in server with confirmation

**HTTP Status Codes**

Status Codes – Starts with 3 digits

**Informational (1XX)**

* 100 Continue
* 101 Switching Protocols

**Success (2XX)**

* 200 OK
* 201 Created
* 202 Accepted
* 203 Non-Authoritative Information
* 204 No Content
* 205 Reset Content
* 206 Partial Content

**Redirection (3XX)**

* 300 Multiple Choices
* 301 Moved Permanently
* 302 Found
* 303 See other
* 304 Not modified
* 305 Use proxy
* 307 Temporal Redirect

**Client Error (4XX)**

* 400 Bad Request
* 401 Unauthorized
* 402 Payment Required
* 403 Forbidden
* 404 Not Found
* 405 Method Not Allowed
* 406 Not Acceptable
* 407 Proxy Authentication Required
* 408 Request Timeout
* 409 Conflict
* 410 Gone
* 411 Length required
* 412 Precondition failed
* 413 Request Entity Too Large
* 414 Request-URL Too Long
* 415 Unsupported Media Type
* 416 Request Range Not Satisfiable
* 417 Expectation Failed

**Server Error (5XX)**

* 500 Internal Server Error
* 501 Not Implemented
* 502 Bad Gateway
* 503 Service Unavailable
* 504 HTTP Version Not Supported

**Message Headers**

**General header fields**

|  |  |
| --- | --- |
| Cache-control | It specifies directives that is to be obeyed by caching mechanism |
| Connection | It allows the sender to specify |
| Pragma | It is used to include implementation – specifically directives |
| Date | It represents the date and time at which message was originated |
| Trailer | It indicates the given set of header fields that is present |
| Transfer-encoding | It indicates what type of transformation has been applied to the message body |
| Upgrade | It allows the client to specify what additional communication protocol it supports |
| Via | It is used by gateways and proxies to indicate the intermediate protocols. |
| Warning | It is used to transfer information for additional status. |

**Request header fields**

|  |  |
| --- | --- |
| Accept | It requires a set of media types |
| Accept-charset | It is used to indicate what character sets are acceptable  It indicates what set of characters could be acceptable |
| Accept-encoding | It is the same with accept but you could not place any content codes |
| Accept-language | It is the same with accept but you could not set the natural language |
| Authorization | It is composed of the authentication for credentials |
| Expect | It is used to indicate the behaviors of the server that are required by the client |
| From | It should contain an email address for the client and controls the inviting client agent. |
| Host | the internet host and port number is specified |
| If-match | It is used in a method for it to be conditional |
| If-modified-since | It is used with a method to make it conditional. Request has not been modified |
| If-none-match | It allows updates to be efficient for the cached information |
|  |  |

**Response Header Fields**

|  |  |
| --- | --- |
| Accept-Range | The server enables the indication of acceptance of range and requests for a resource |
| Age | It sends the sender’s approximate time |
| E-tag | It delivers the value entity tag for the request variant |
| Location | It redirects the location of the recipient rather than the request-url |
| Retry after | The requesting client notifies how long does the service is to be unavailable. |
| Server | The server contains all the information to the software to be use |
| Vary | It is represented directly by the user agent to the criteria to be used |

**Entity header fields**

|  |  |
| --- | --- |
| Allow | The set of methods is listed and supports the resource to be identified by the request URL |
| Content encoding | From the media type it is used as a converter |
| Content language | It explains the content of the natural language |
| Content length | The entity body is displayed by a size |
| Content location | The entity is being supplied from the resource location. |
| Content-range | The entity that is applied is sent to the partial entity body |
| Content type | The entity body is sent and to be displayed by the media type. |