**TASK -1**

**Q2: HTTP Version History**

The Hypertext Transfer Protocol (HTTP) is one of the most ubiquitous and widely adopted application protocols on the Internet: it is the common language between clients and servers, enabling the modern web. From its simple beginnings as a single keyword and document path, it has become the protocol of choice not just for browsers, but for virtually every Internet-connected software and hardware application.

**HTTP0.9- The one-line protocol:**

* Initial version of HTTP — a simple client-server, request-response, telenet-friendly protocol
* Request nature: single-line (method + path for requested document)
* Methods supported: GET only
* Response type: hypertext only
* Connection nature: terminated immediately after the response
* No HTTP headers (cannot transfer other content type files), No status/error codes, No URLs, No versioning

**HTTPS:**

* Hyper Text Transfer Protocol Secure (HTTPS) is the secure version of HTTP. It uses SSL/TLS for secure encrypted communications.
* Originally developed by Netscape in mid-1990s, SSL (Secure Socket Layer) is a cryptographic protocol enhancement to HTTP, which defines how client and server should communicate with each other securely. TLS (Transport Layer Security) is the successor of SSL.
* An HTTPS connection can protect the data transfer from the man-in-the-middle attacks and common security threats by providing bidirectional encryption for communications between a client and server.

**HTTP1.0-Buliding Extensibility:**

* Browser-friendly protocol
* Provided header fields including rich metadata about both request and response (HTTP version number, status code, content type)
* Response: not limited to hypertext (Content-Type header provided ability to transmit files other than plain HTML files — e.g. scripts, stylesheets, media)
* Methods supported: GET , HEAD , POST
* Connection nature: terminated immediately after the response

**HTTP1.1-The standardized protocol:**

* HTTP/1.1, the first standardized version of HTTP, was introduced in 1997.
* It presented significant performance optimizations (over HTTP/0.9 and HTTP/1.0) and transformed the way requests and responses were exchanged between clients and servers.
* Introduced critical performance optimizations and feature enhancements — persistent and pipelined connections, chunked transfers, compression/decompression, content negotiations, virtual hosting (a server with a single IP Address hosting multiple domains), faster response and great bandwidth savings by adding cache support.
* Methods supported: GET , HEAD , POST , PUT , DELETE , TRACE , OPTIONS
* Connection nature: long-lived

**HTTP2-A protocol for greater performance:**

* [HTTP/2](https://en.wikipedia.org/wiki/HTTP/2) is a more efficient expression of HTTP's semantics "on the wire", and was published in 2015, and is used by 50.0% of websites;
* It is now supported by virtually all web browsers and major web servers over [Transport Layer Security](https://en.wikipedia.org/wiki/Transport_Layer_Security) (TLS) using an [Application-Layer Protocol Negotiation](https://en.wikipedia.org/wiki/Application-Layer_Protocol_Negotiation) (ALPN) extension where [TLS 1.2](https://en.wikipedia.org/wiki/TLS_1.2) or newer is required.

**HTTP3-HTTP over QUIC:**

* The next major version of HTTP, HTTP/3, will use QUIC instead TCP/TLS for the transport layer portion. The next major version of HTTP, HTTP/3, will use QUIC instead TCP/TLS for the transport layer portion.