Task 0 Report: Basics of HTTP and HTTPS

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1. Difference between HTTP and HTTPS

- HTTP (Hypertext Transfer Protocol) is the protocol used for transferring data between a client (like a browser) and a server. The data is sent in plain text without encryption, which makes it vulnerable to interception and eavesdropping.
- HTTPS is the secure version of HTTP. It adds an encryption layer using SSL/TLS protocols to protect the data from being read or modified during transmission.
- The main difference is that HTTPS ensures data privacy and security, and it is commonly used on websites handling sensitive information like banks and online stores.

2. Structure of an HTTP Request and Response

- HTTP Request consists of:
  - Method: The action to be performed (e.g., GET, POST).
  - Path: The URL or resource being requested.
  - Headers: Additional information like browser type, accepted languages, etc.
  - Body: Data sent with the request (optional, mainly in POST, PUT).

- HTTP Response consists of:
  - Status Code: Indicates the result of the request (e.g., 200 means success).
  - Headers: Information about the response like content type.
  - Body: The actual data or content returned.

3. Common HTTP Methods and Their Usage

Method	Description	Typical Use Case
GET	Retrieve data from the server	Loading a web page or fetching API data
POST	Send data to the server	Submitting a form or uploading a file
PUT	Update or replace existing data	Updating database records
DELETE	Remove data from the server	Deleting a post or file

4. Common HTTP Status Codes with Explanation

Status Code	Description	Example Scenario
200	Success	Page or data successfully loaded
301	Moved Permanently	Redirecting to a new URL
400	Bad Request	Client sent an invalid request
404	Not Found	Requested page or resource does not exist
500	Internal Server Error	Server encountered an error processing the request

5. Practical Steps to Explore HTTP Requests

- When visiting any website, use the browser's developer tools (Right-click -> Inspect -> Network tab) to see all HTTP requests made.
- Reload the page to capture requests.
- Select the first request (usually the main page) to inspect the method, headers, status code, and response.