Computer System Architecture

By

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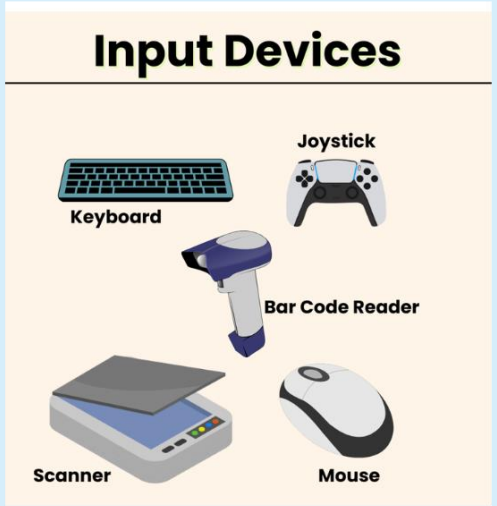
Computer Science: Computer science is the study of computers, theory and design of software, algorithms, data structures, programming languages, and artificial intelligence.

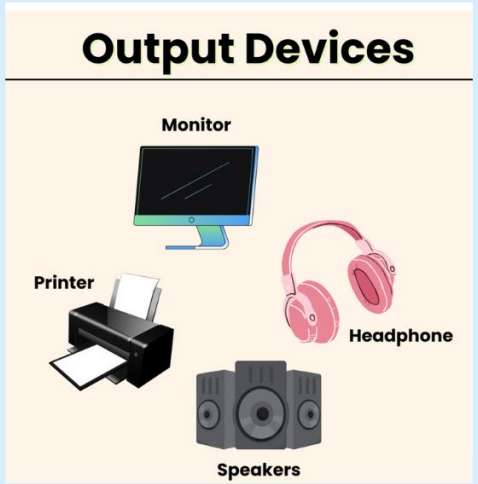
User: User interacts with Software / Applications.

Software: The programs and applications that run on a computer.

Hardware: The physical components of a computer, such as the CPU, RAM, and hard drive.

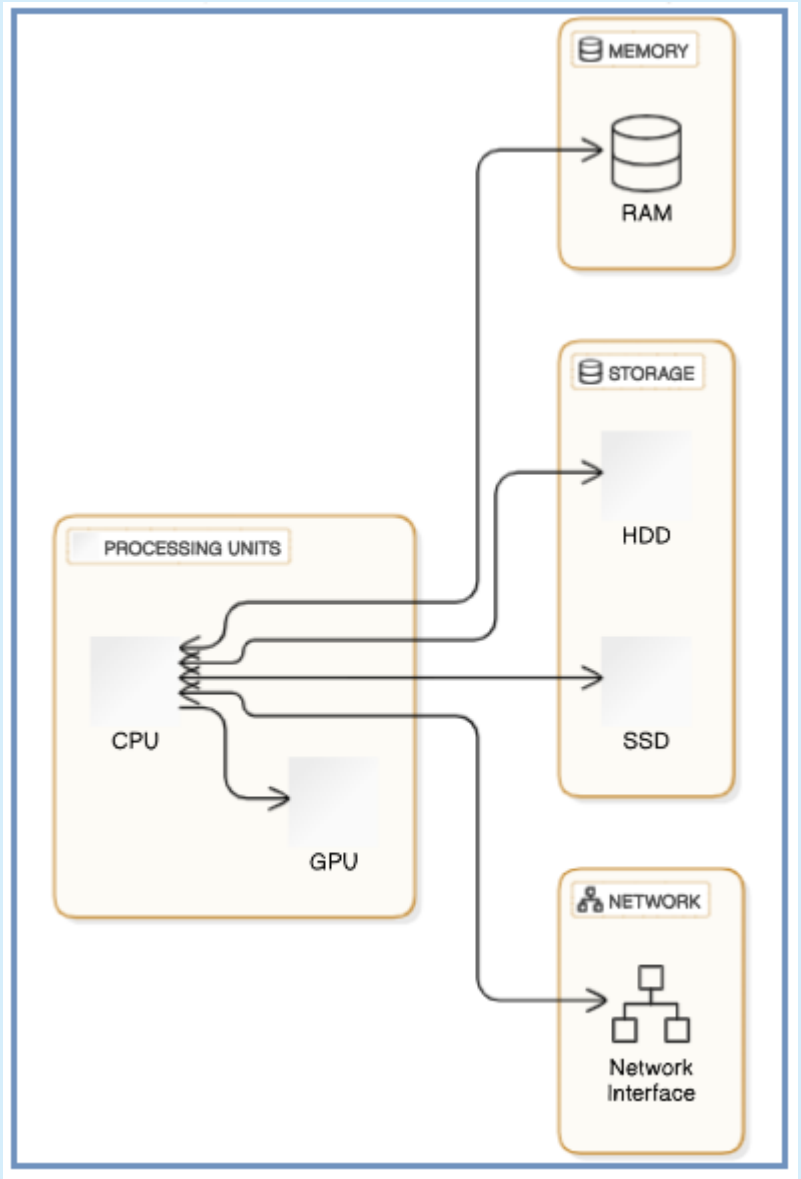
Input Devices: These devices allow users to feed data and instructions into a computer. For example: Keyboard, mouse & touchscreen … etc.



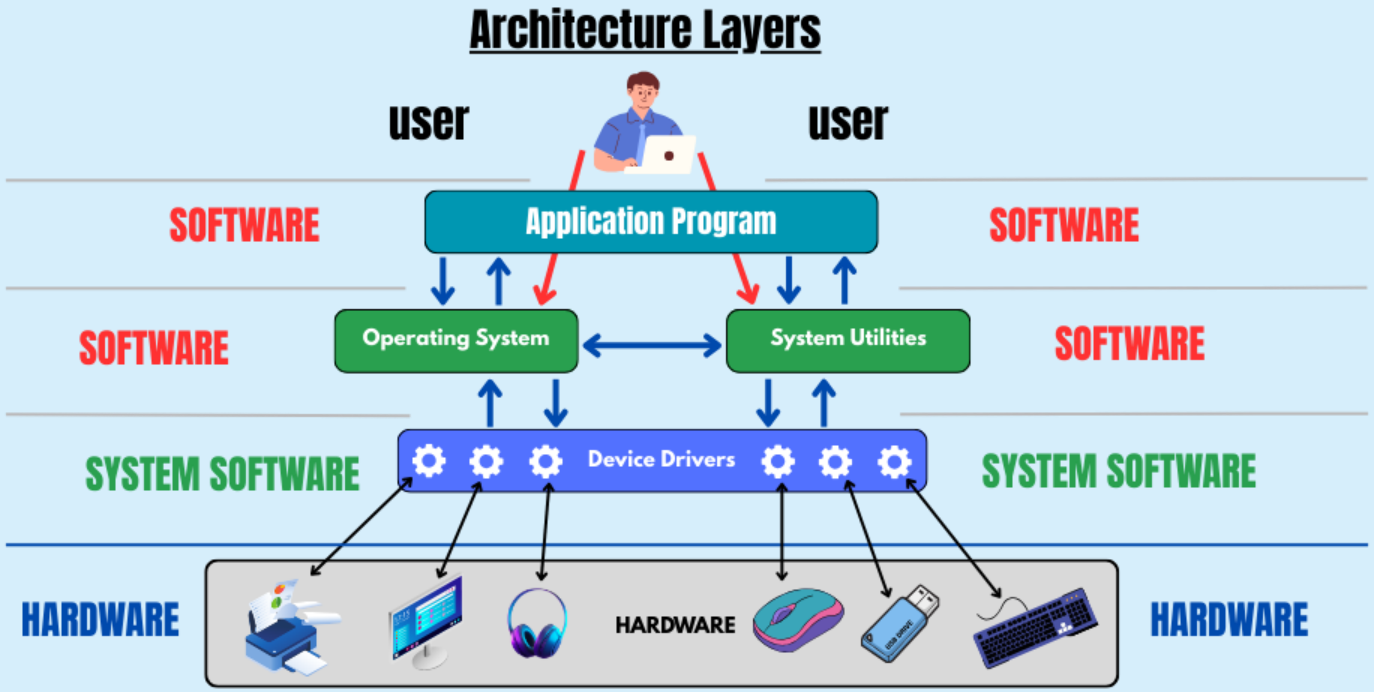


Output Devices: These devices display or present information processed by the computer to the user. For example: Monitor, Printer & Speakers … etc.

Computer components



Computer System - Architecture Layers



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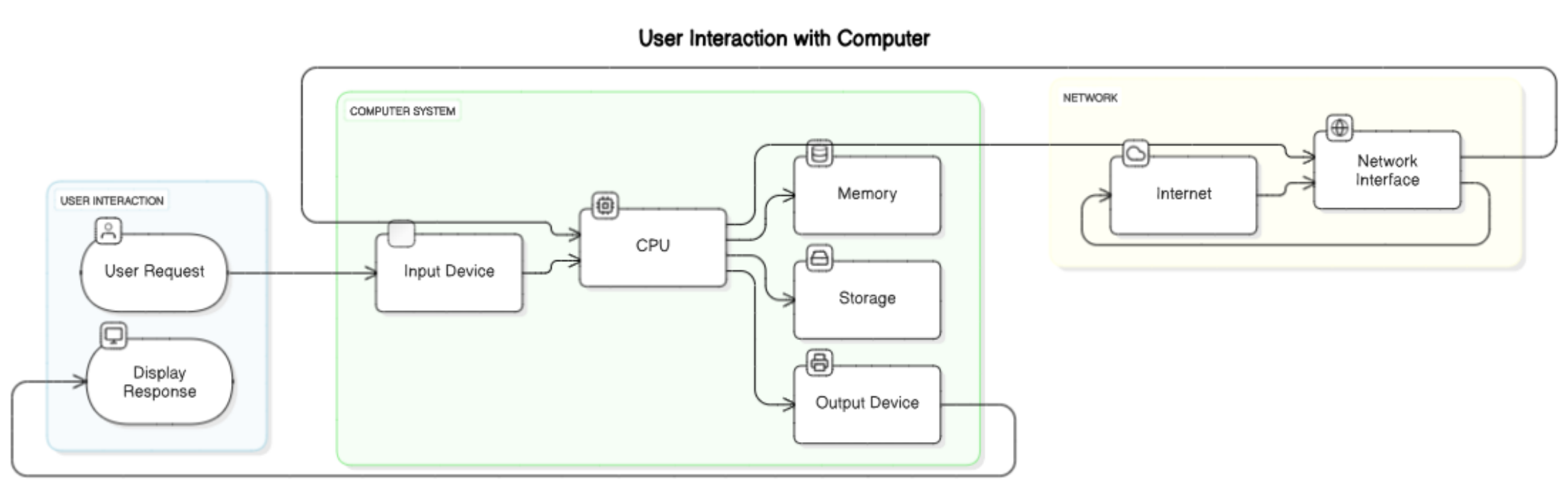
Operating System

- An OS is system software that manages computer hardware and software resources.
- It acts as an intermediary between the user and the computer hardware, providing a platform for applications to run.
- It's the foundation that allows you to interact with your computer.
- OS handles tasks like Process Management, Memory Management, File System Management, I/O Device Management.

e.g. Windows, Mac OS & Linux.

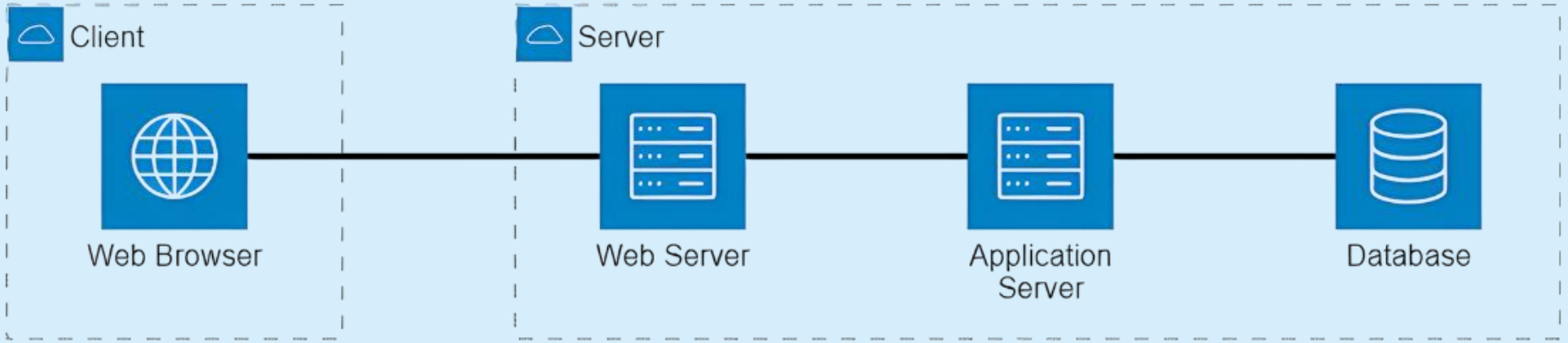
User - Computer - Internet



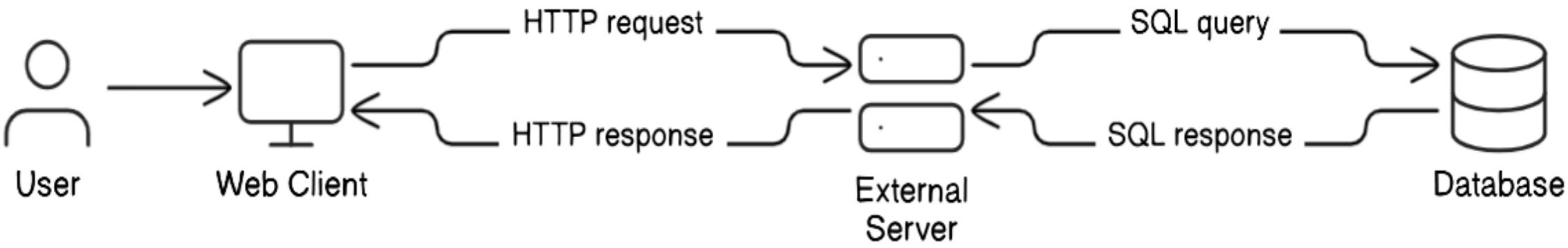
Client Server architecture

Client: A device or software application that requests services or resources.

- **Server:** A device or software application that provides those services or resources.



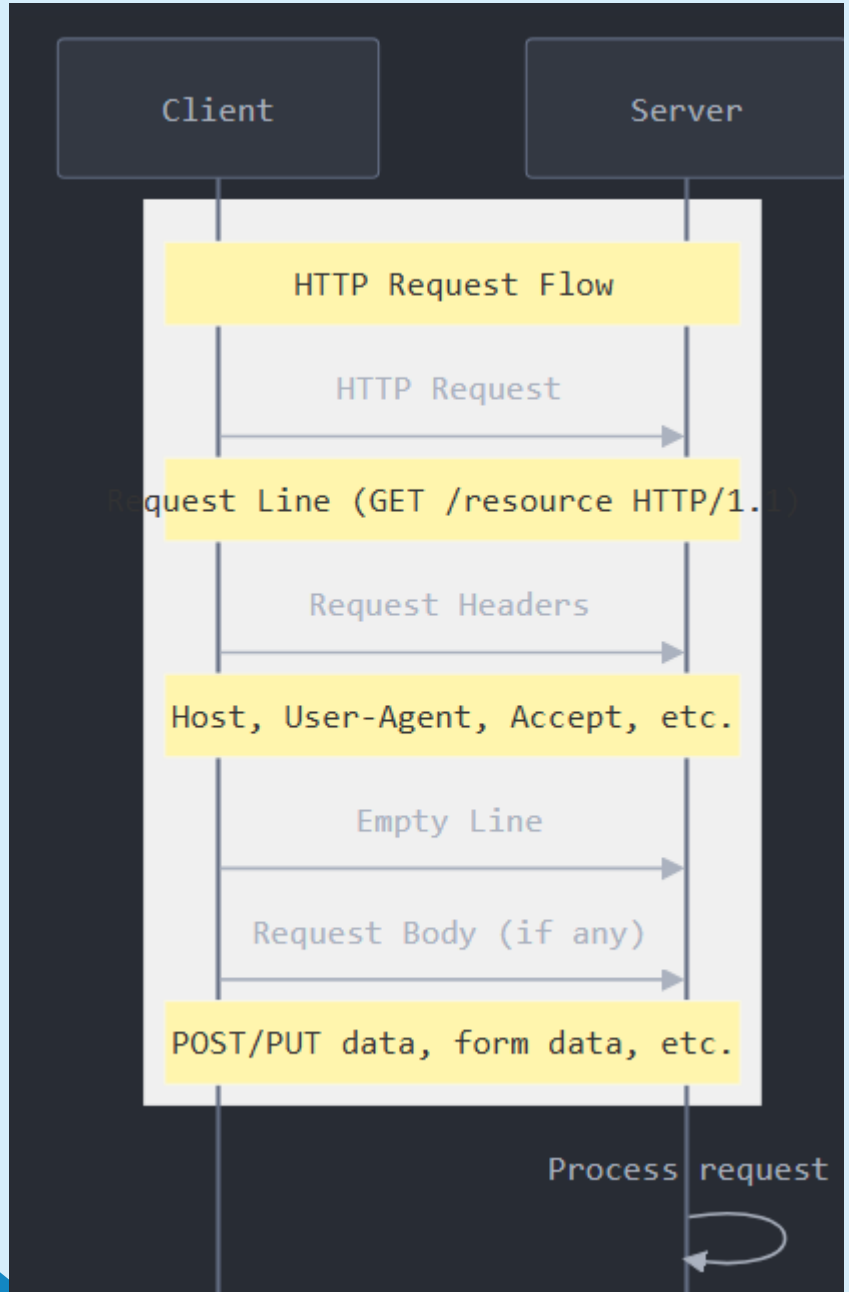
Client Sever architecture



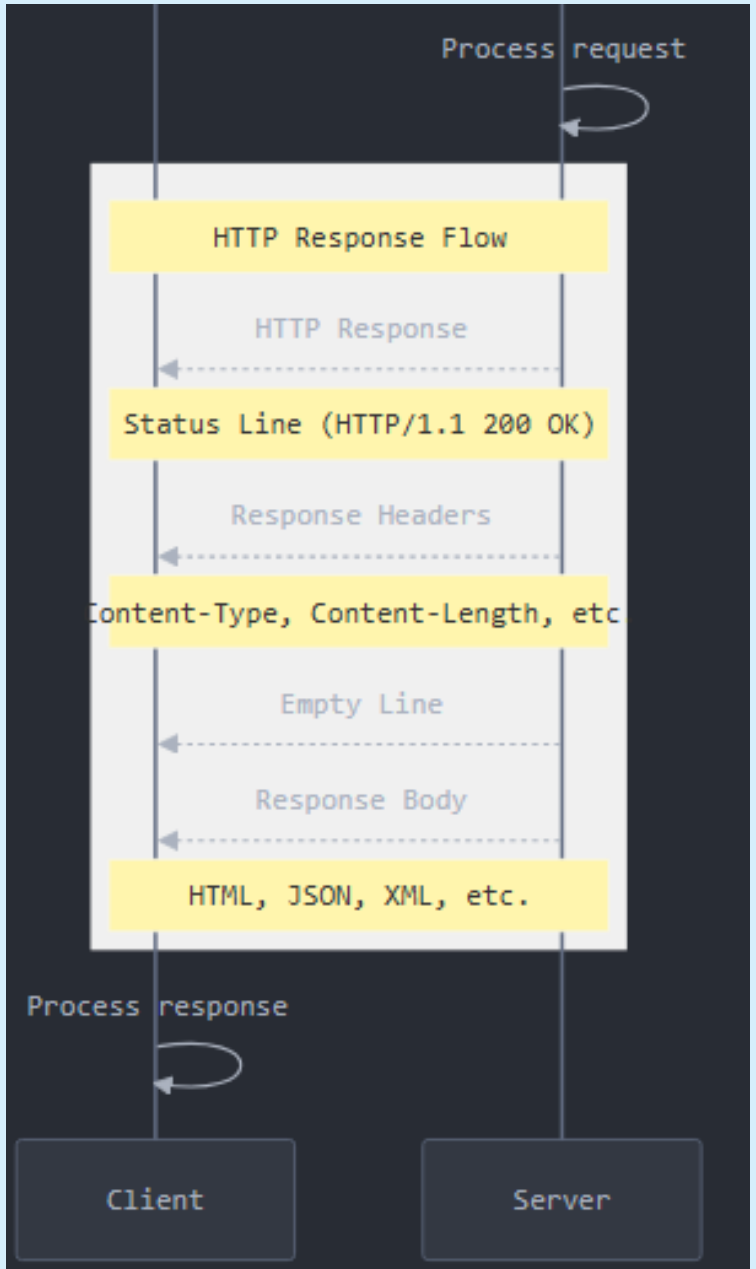
HTTP : It transmits data in plain text, meaning anyone who intercepts the communication can read the information.

HTTPS : This is the **secure** version of HTTP.

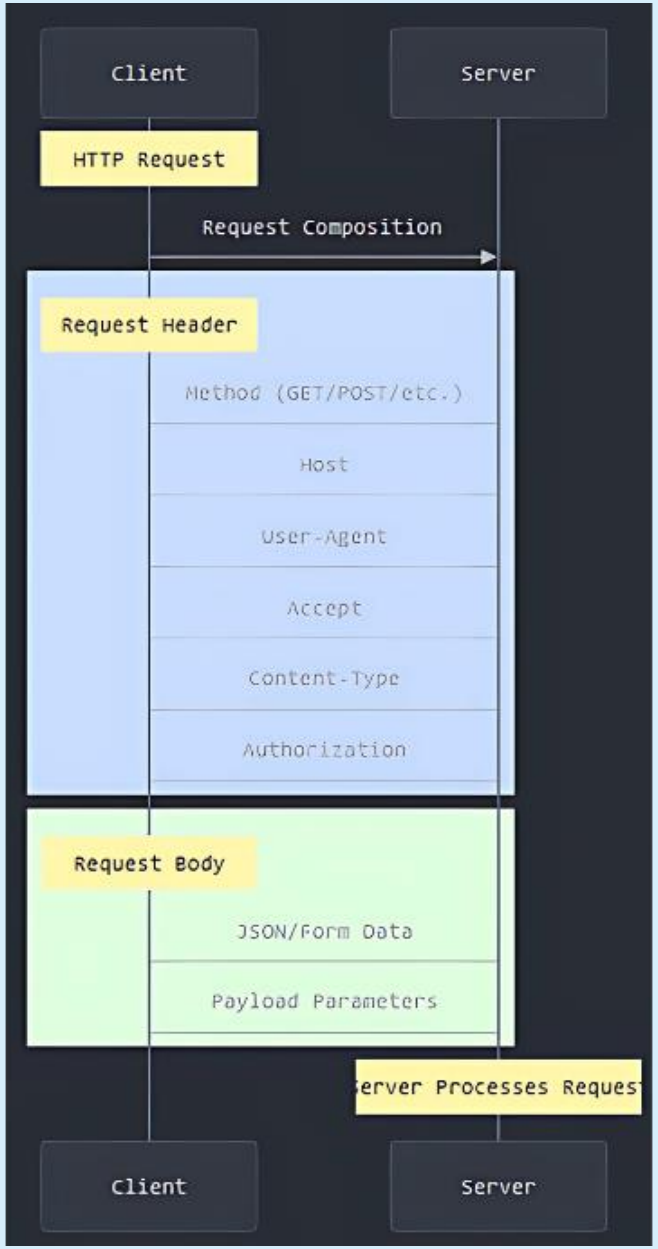
Request Client to Server



Response Back from Server to Client



HTTP Request



What is a Request ?

- A request is an action initiated by one system (the "client") to ask another system (the "server") to Perform a specific task or provide certain information.
- It is essentially a message sent to a server asking for something.
- In web contexts, this is often an **HTTP request**, which can ask for things like:
  - Retrieving a web page (GET request)
  - Submitting a form (POST request)
  - Updating data (PUT request)
  - Deleting data (DELETE request)

What is a Response ?

- A response is the server's reply to the client's request.
- It's the server's way of providing the requested information or indicating the outcome of the requested action.
- An HTTP response, for example, includes:
  - A status code (e.g., 200 OK, 404 Not Found) indicating whether the request was **successful** (200) **or NOT** (404).
  - Headers that provide additional information.
  - A body that contains the requested data (e.g., the content of a web page).

In essence, the request-response model is a two-way communication flow:

1. Client: Sends a request.
2. Server: Processes the request.
3. Server: Sends a response.
4. Client: Receives and processes the response.

Assignment

Research on Client – Server – Request - Response