

BADJI MOKTAR – Annaba university
faculty of technology
Computer Science department

Course material:

Web development

2nd year computer science bachelor's degree

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2024-2025

Content

- **Generalities**

- Web Development, Website
- Internet, Protocol, Internet Service
- Client/Server, Hosting, Browser, DNS, IP
- Web Page, Hyperlink, Web Language
- Front-end/Back-end Development

- **HTML**

- Introduction, Tags, Attributes
- Basic Tags and Structure
- Common Tags
- Lists, Images, Tables, Forms, Other Elements
- Deployment (Hosting)

- **CSS**

- Introduction, principles, rules, selectors
- Text, background, borders, positioning
- Responsive web design

- **JavaScript**

- Introduction, Language Basics
- Common objects
- DOM manipulation

- **PHP**

- Principle, Installation & Usage
- Language Basics
- Forms
- Databases

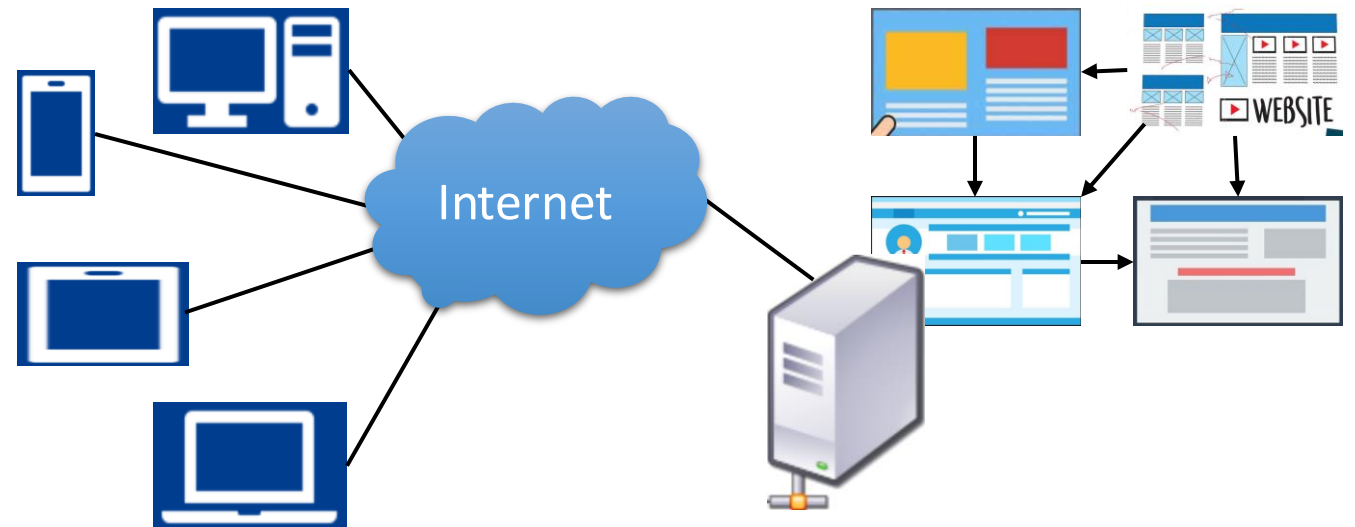
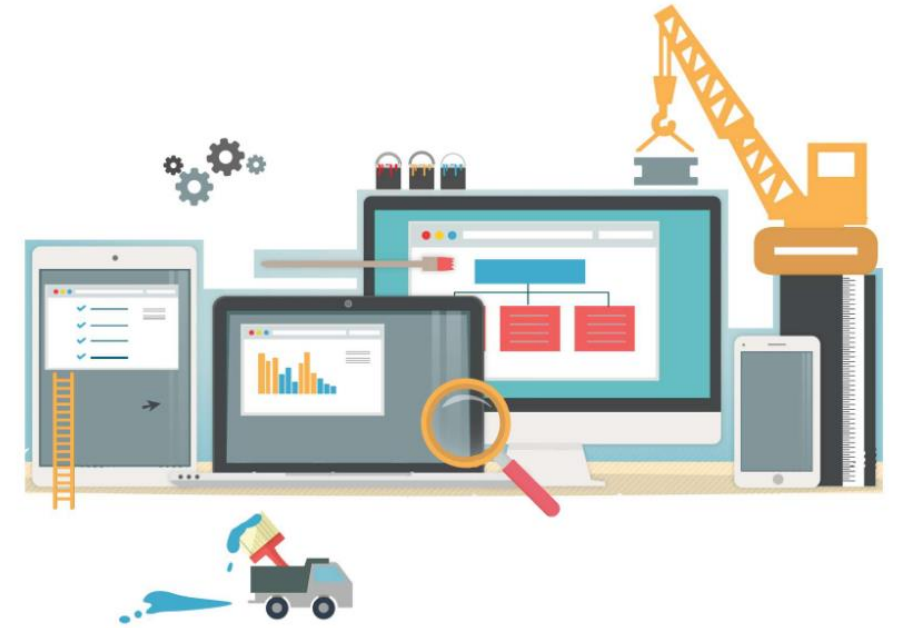
- **Advanced tools**

- Bootstrap, React/Angular, jQuery, JSON, GIT

Part I: Generalities

Generalities

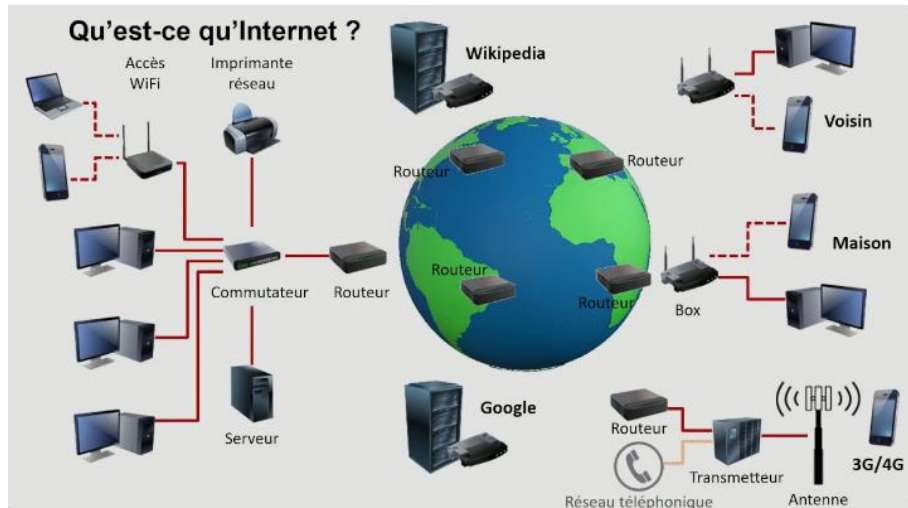
- **WebDev ?** Construction of **web sites**
- **Web site ?** Set of interconnected **web pages hosted** in a **server** connected to the **internet**, the pages are **requested** by **clients** also connected to the internet



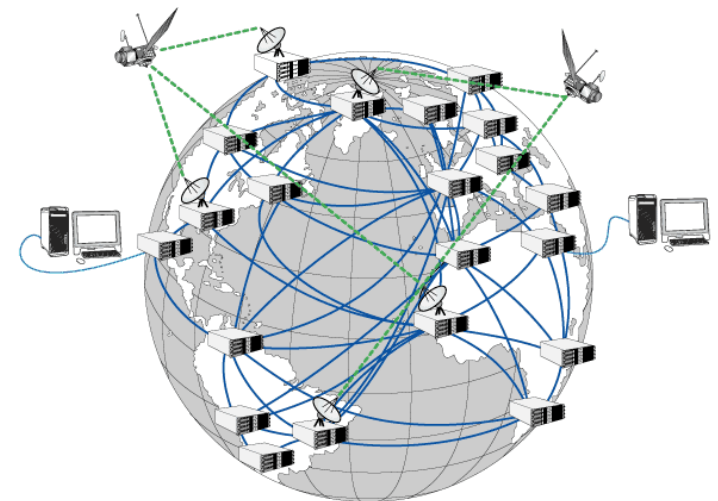
Generalities

Web site ? set of interconnected **web pages hosted** in a **server** connected to the **internet**, The pages are **requested** by **clients** also connected to the internet

Internet ? Global public computer network composed of a very large number of interconnected machines (computers, phones, modems, routers, repeaters, switches, etc.), where information transfer occurs through a set of transfer **protocols**, offering various **services**.



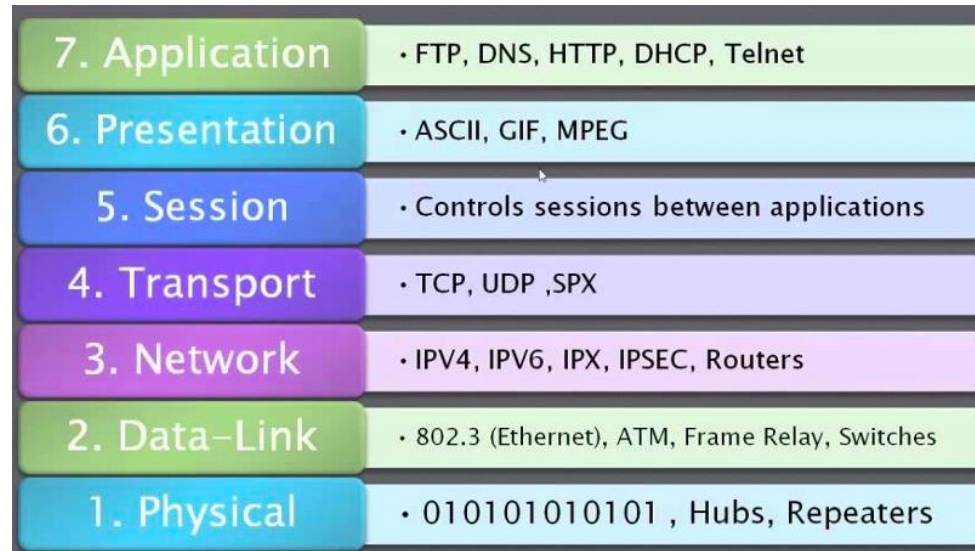
Internet ?



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Protocoles ? Set of rules managing data transfer via the network (rules ensuring communication between two machines on the same network abstraction layer).



Generalities

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Services ? Web, messaging, file transfer (FTP), streaming, podcasting, chat, forum, telephony, ...



Web



Messaging



Files

Generalities

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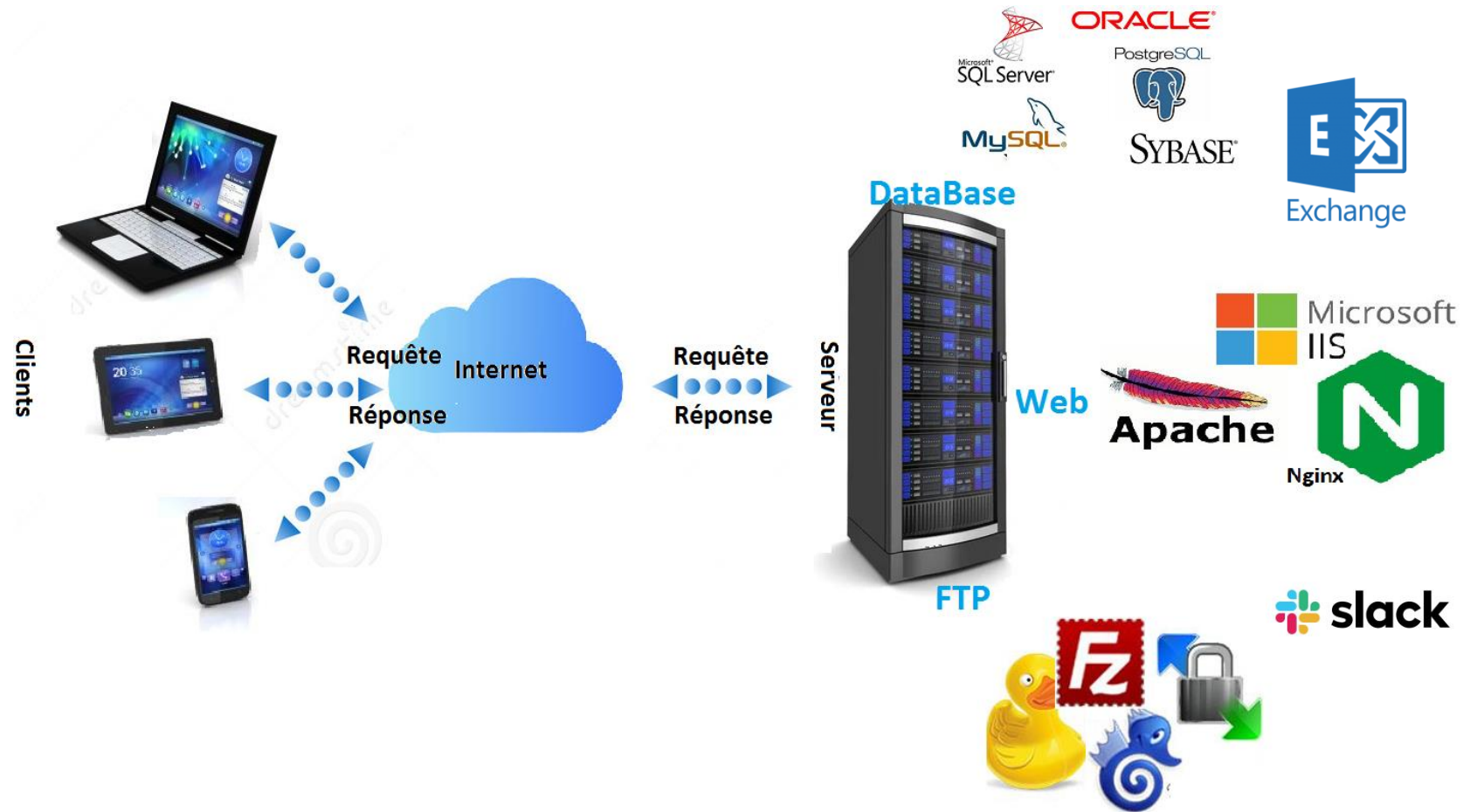
- **Client/serveur ?** Client is the one who sends requests (e.g., requesting a page) to the server, which responds to them. The server thus provides a service to the client.
 - Client: machine equipped with client software (e.g., web browser).
 - Server: machine equipped with server software (e.g., web server).

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- **Clients:** personal computers, smartphones, tablets.
- **Servers:** computers having superior characteristics in terms of: computing power, storage capacity, permanent internet connection, security, etc.
- Depending on the service offered, we distinguish, among others:
 - **Web server** publishing web pages requested by web browsers.
 - **Mail server** transferring emails to mail client.
 - **File server** transferring files to file client
 - **Database server** sending data from a database to requesting clients.

Generalities



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- **Web hosting provider:** company providing server machines to host websites in a secure manner (protection against disconnection, power outage, various attacks, etc.).
 - **Exemples:** Hostinger, LWS, O2Switch, Ionos, Godaddy, ...

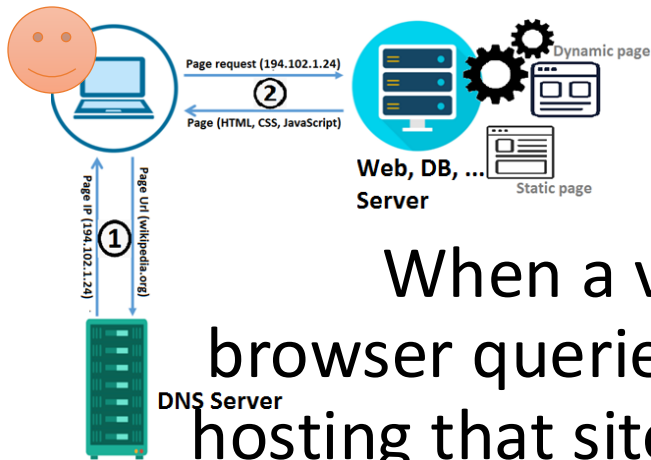


- **Web browser:** software designed to browse and display web pages that have been requested from servers.
 - **Exemples:** chrome, safari, mozilla firefox, opera, ...



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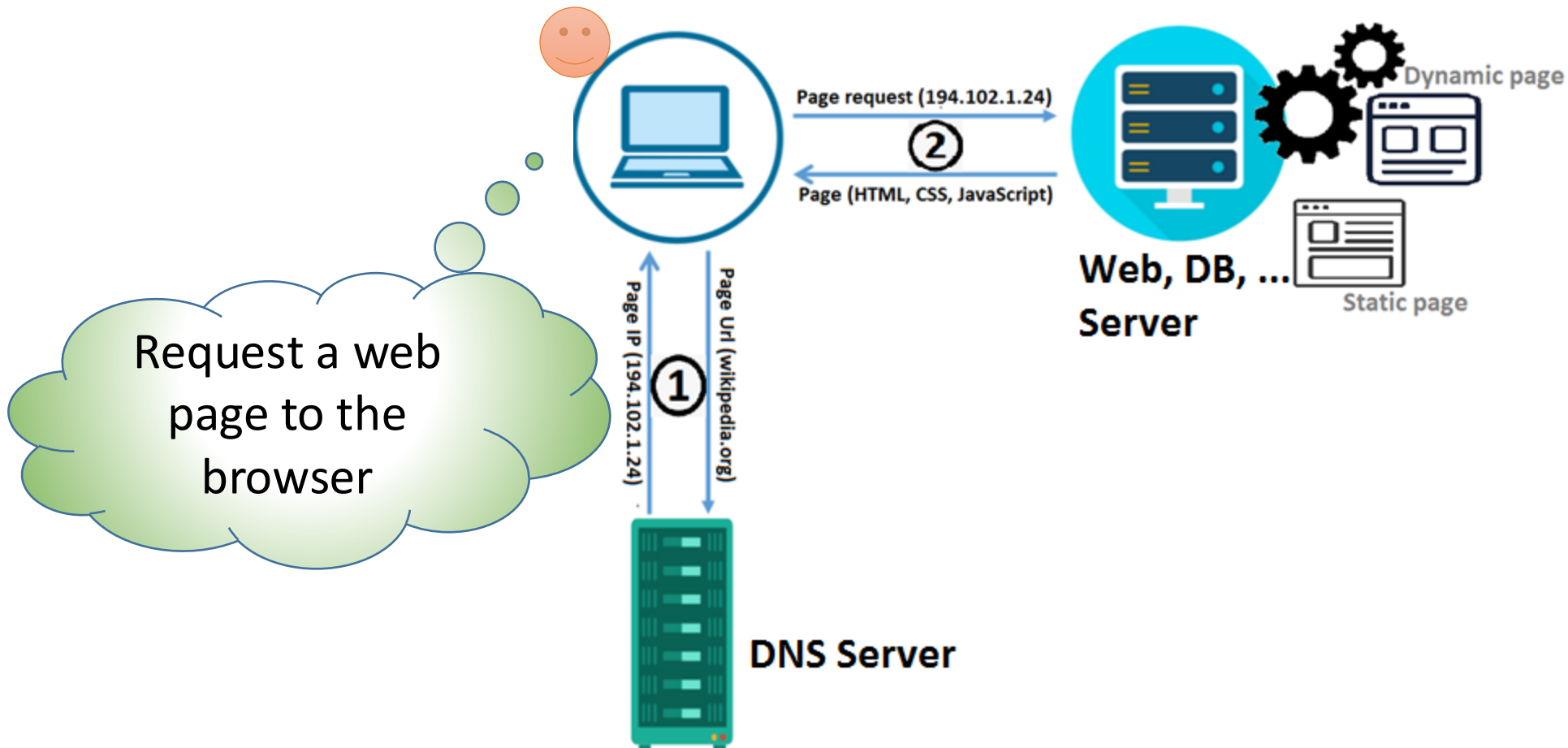


How does it work?

When a visitor requests a page through their web browser, the browser queries **DNS servers** to find out the **IP address** of the server hosting that site. With the IP address, the browser queries the server and requests the page. The server looks for the page in its storage space (**static page**) or generates it using a script (**dynamic page**), then sends it to the browser, which displays it on the visitor's screen.

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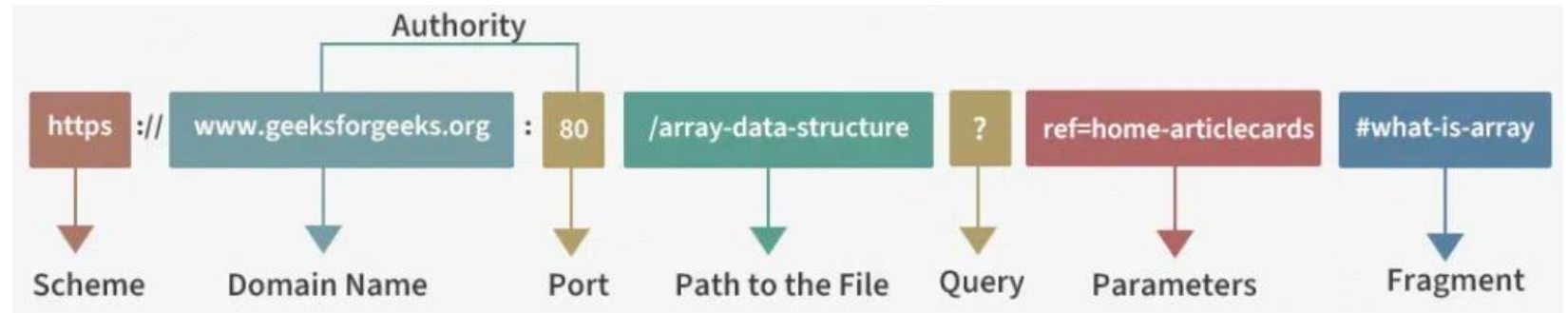
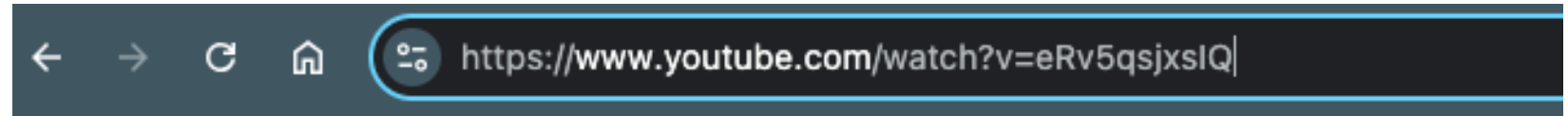
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URL

URL (Uniform Resource Locator)

Address used to access resources (web pages, images, or files) on the internet.



`https://www.example.com/products/item?id=123&sort=asc#reviews`

`http://www.google.com`

`https://www.google.com/search?q=neural+networks`

`https://www.youtube.com/watch?v=dQw4w9WgXcQ`

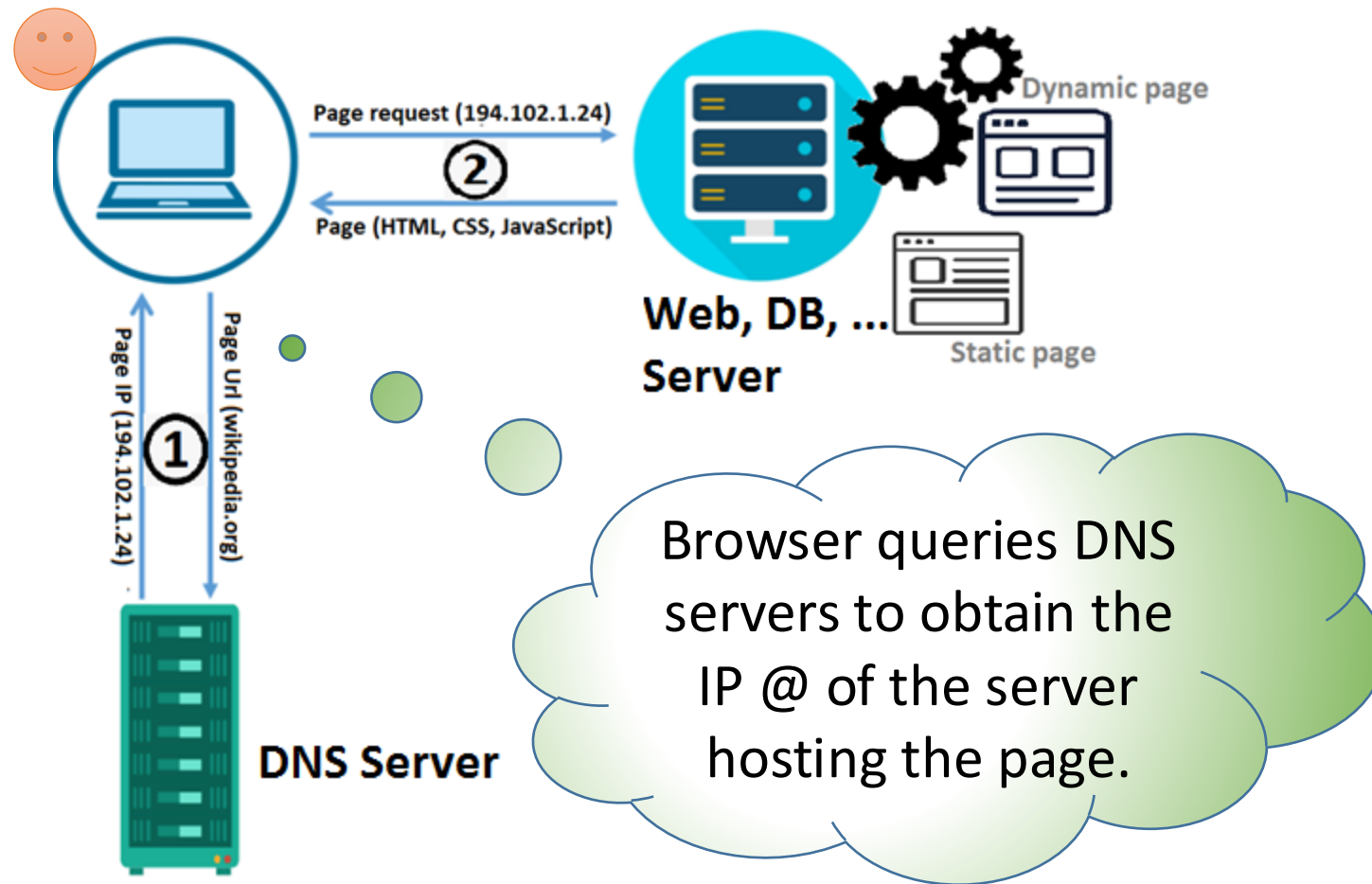
`https://github.com/torvalds/linux`

`http://localhost:3000`

`ftp://ftp.example.com/files/document.pdf`

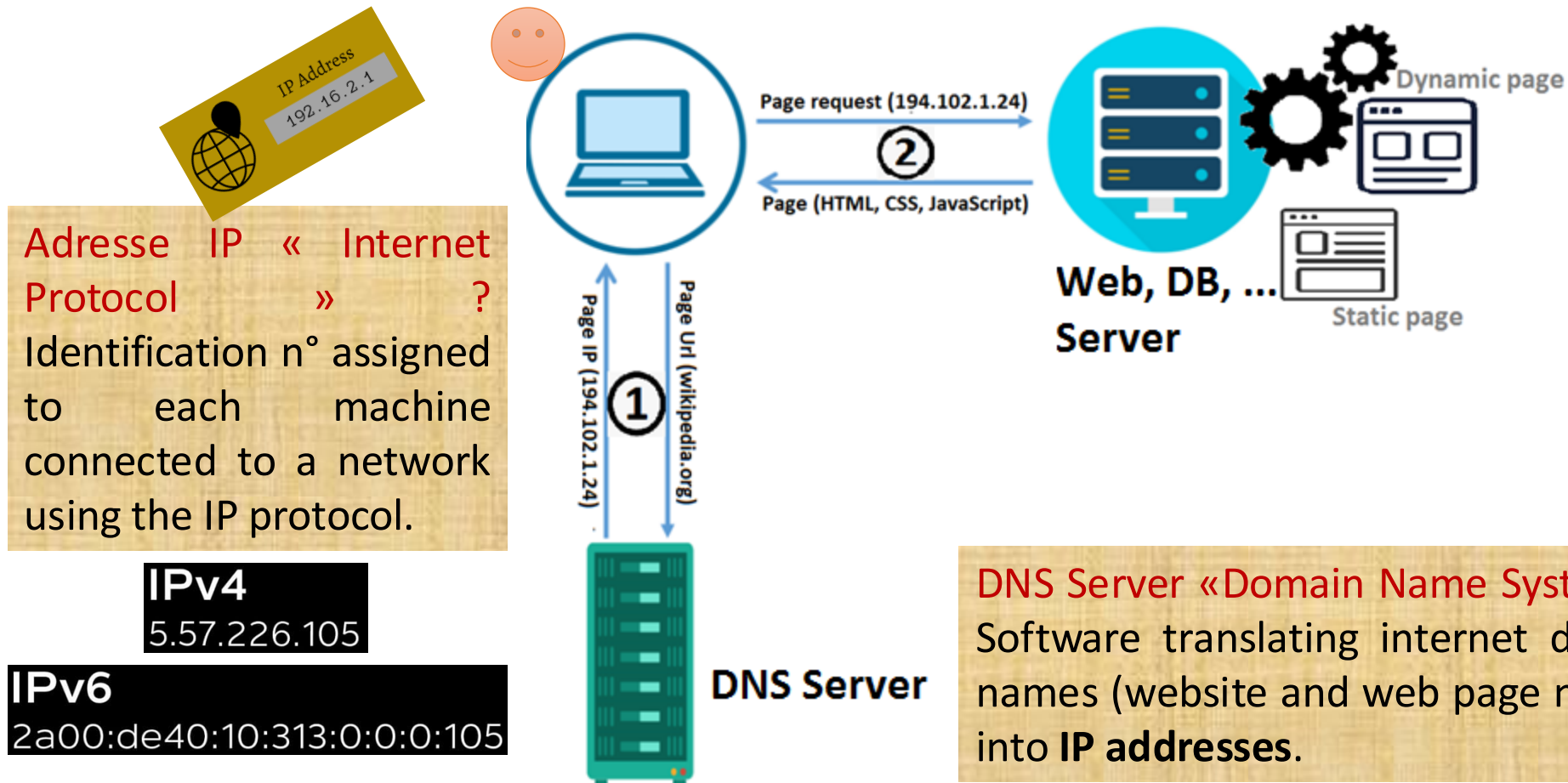
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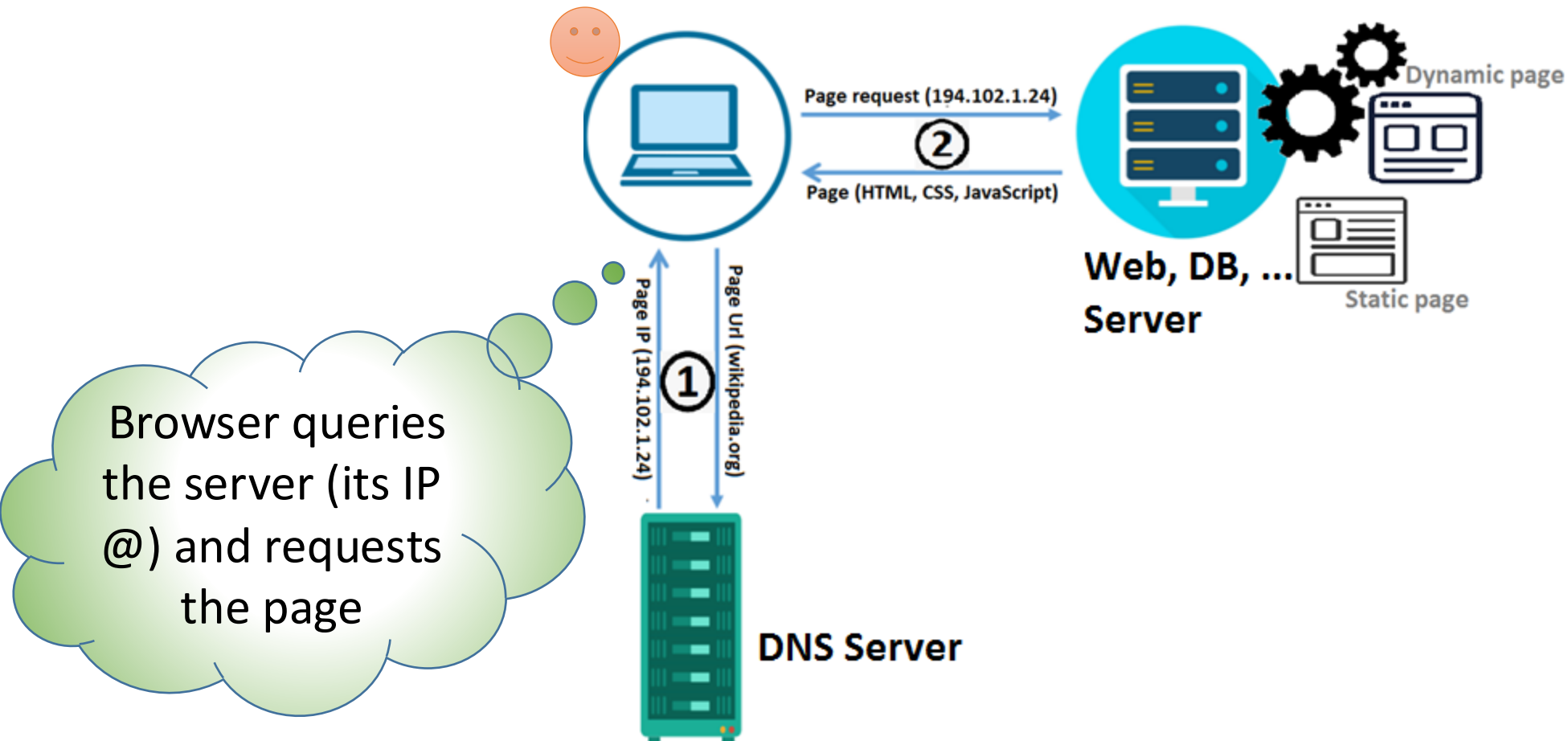
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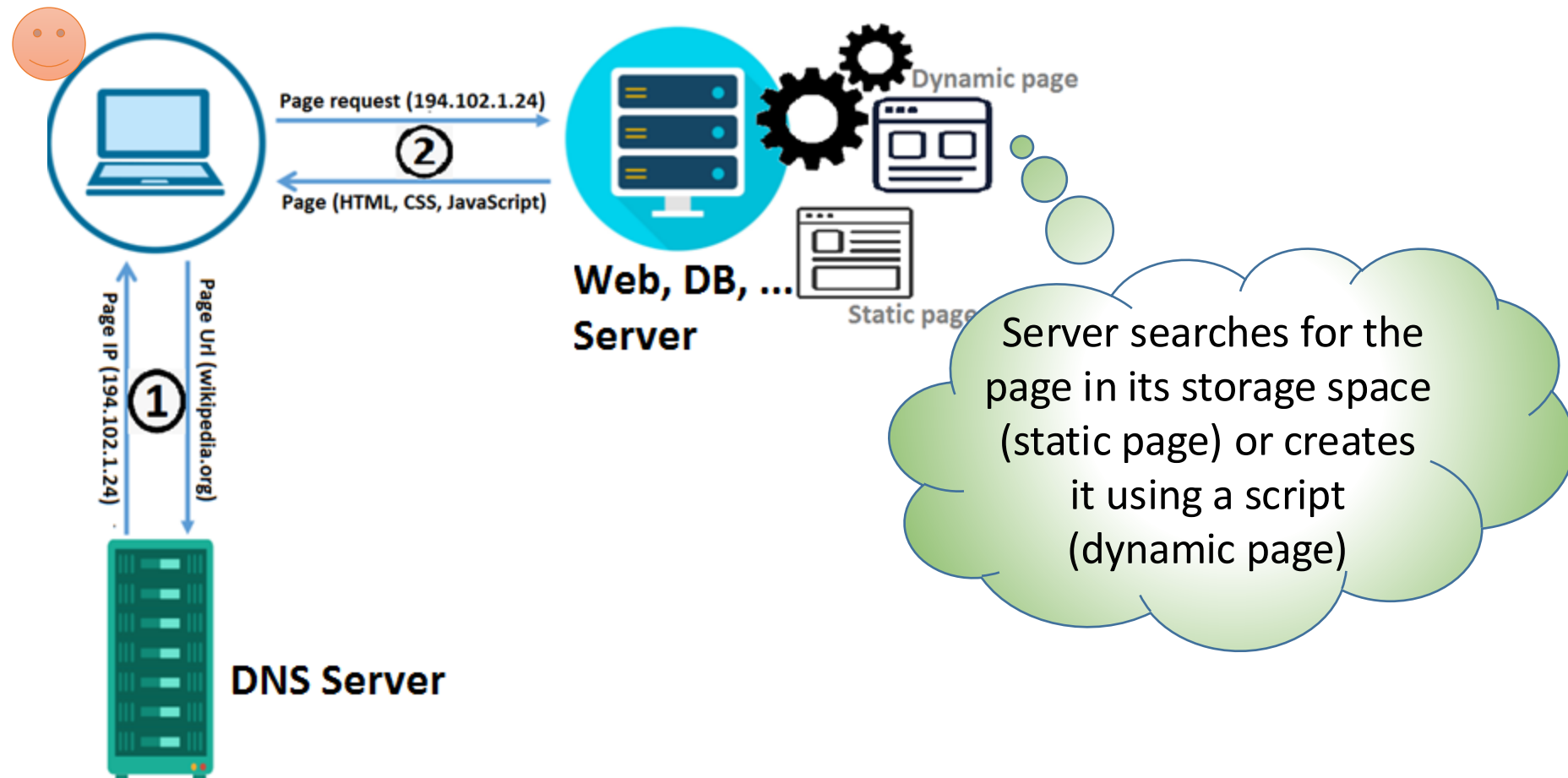
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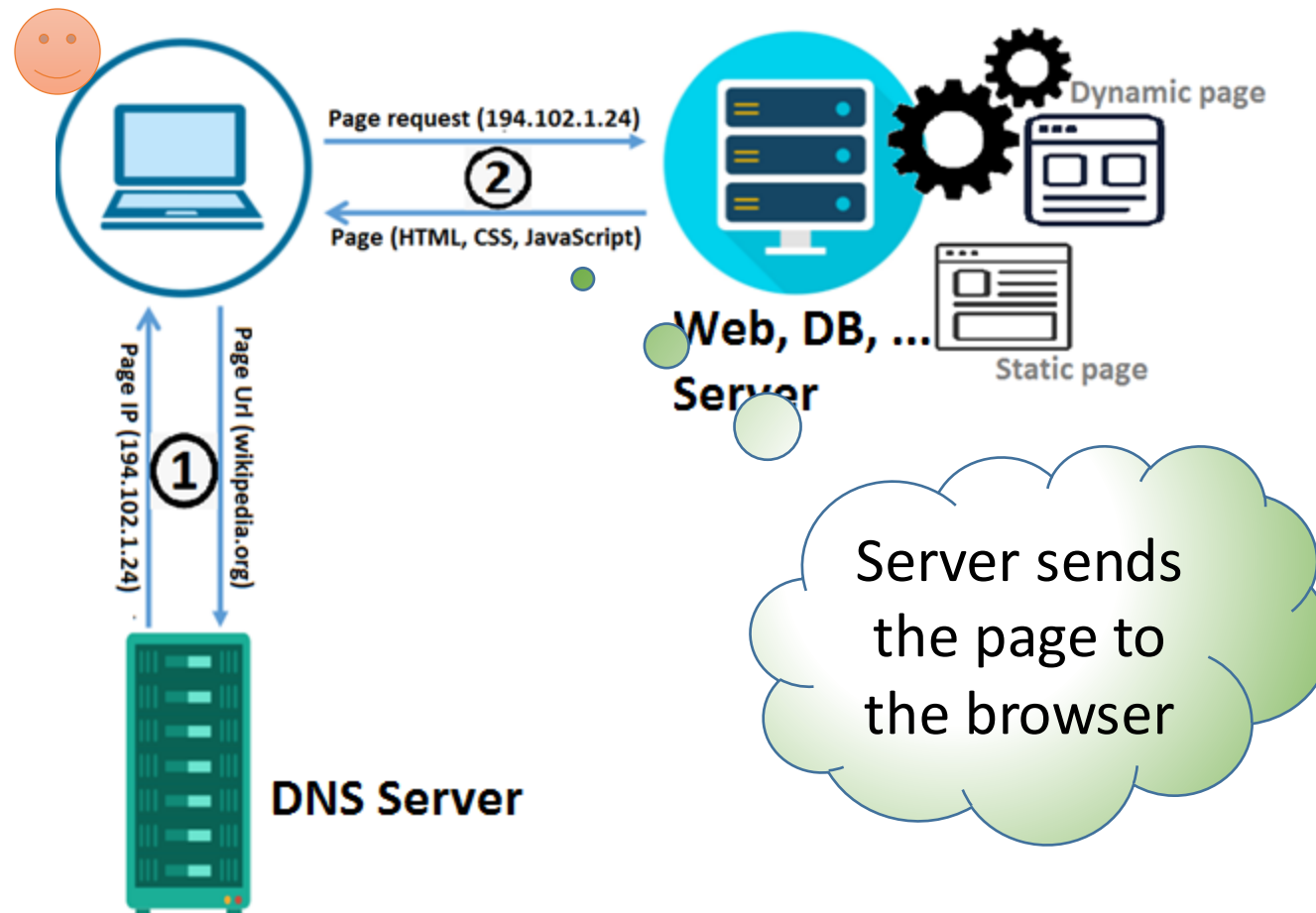
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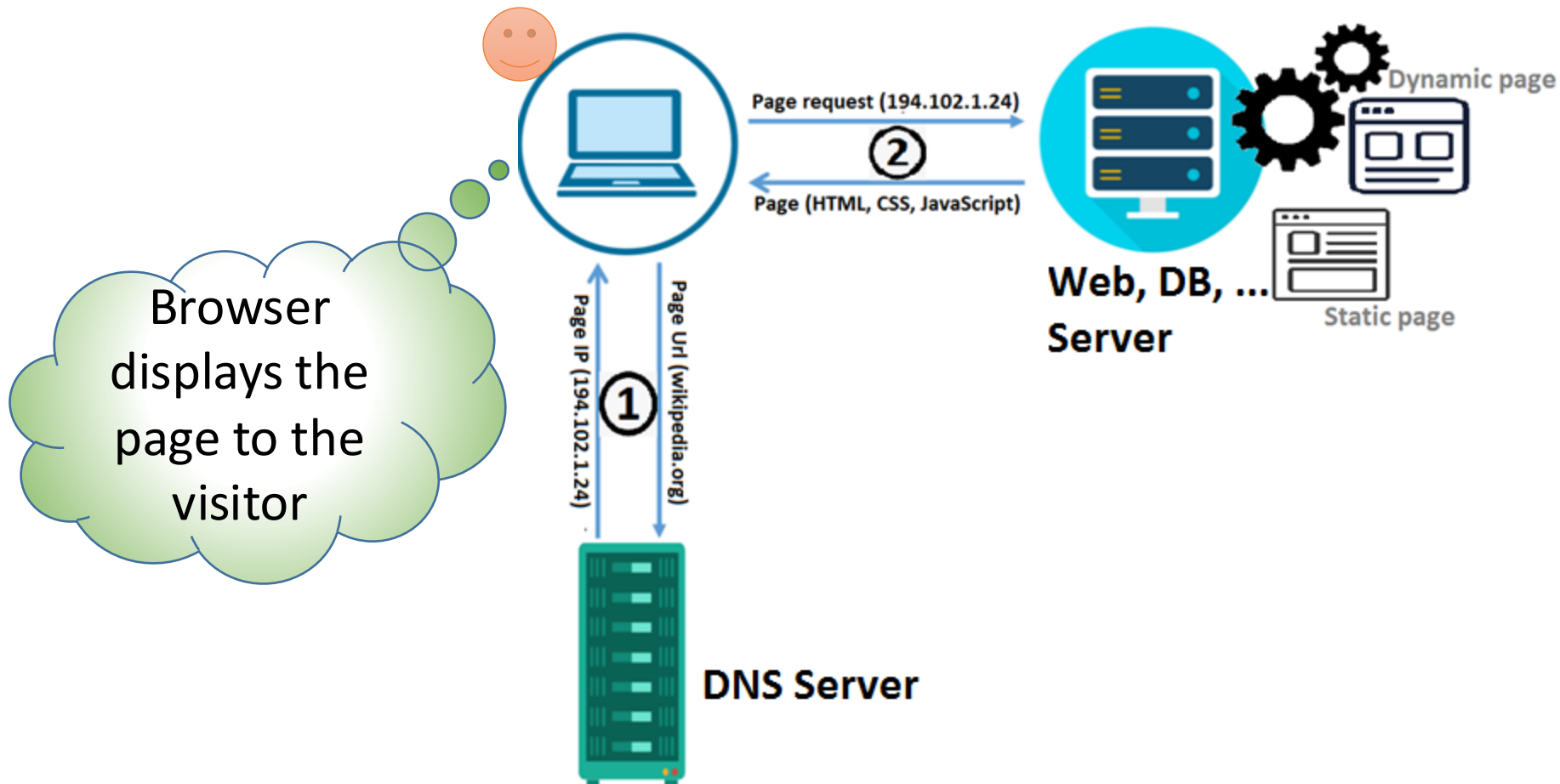
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qui l'affiche sur l'écran du visiteur.



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- **Web page ?** Electronic document composed potentially of text, **hyperlinks**, images, tables, forms, etc., viewable with a web browser, originally written in **HTML** but also with other **web languages**.
 - Static page: content remains unchanged regardless of the requester.
 - Dynamic page: generated on demand and varies depending on the requester.



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- **Hypertext link ?** Clickable reference (text, image, button, etc.) allowing navigation from one place on a web page to another place (same page, same site, or another site).
- **Web languages?** Languages used to build websites :
 - Client side: HTML, CSS, JavaScript
 - Server side: PHP, Python, Java, Ruby, ...
- **Web frameworks?** software tool that provides a structured way to develop web sites.
 - It includes pre-built components like libraries, templates, making development faster and more efficient.



Generalities

- **Front-end ?** Focuses on the visible elements (on the screen) and with which users can interact. In addition to design tasks, several tools are used in front-end development:
 - **HTML, CSS, JavaScript**
 - Framework/Library: Bootstrap(CSS), W3.CSS, JQuery(JS), React(JS), Vue.js, AngularJS, ...
- **Back-end ?** Focuses on the hidden elements of websites. Hosting and server configuration, database creation and management, writing scripts for dynamic parts of the site are the basic functions of the Back-end. Among the tools used:
 - **PHP**, Java, Python, Node.js, Ruby, ...
 - SQL
 - Frameworks: Django(Python), Express.js(JS), Lavarel(PHP), Ruby on rails(Ruby), ...

Generalities

