

**EDONG, CLARK STEVEN T.**

**BSIT-3D**

**WEB SYSTEMS & TECHNOLOGIES 2**

**Assignment 1 - How the Web Works**

## **1. Web-based applications vs. traditional desktop applications**

Web-based applications offer the advantage of easy deployment, since they require no installation and can be accessed directly through a browser. Updates are handled centrally on the server, ensuring that all users receive the most recent version immediately. Their portability is another strength as long as a device has a compatible browser and internet connection, the application can be accessed. This accessibility makes them suitable for remote use and collaborative tasks. However, web applications face challenges with offline use, where functionality is limited, although Progressive Web Apps have begun to address this gap. In terms of performance, they can be slower because of dependence on browsers and network conditions, and they provide only limited access to hardware and operating system features. Furthermore, their exposure to the internet increases vulnerability to threats such as cross-site scripting and SQL injection [1].

By contrast, desktop applications must be installed on each device, but this allows them to take full advantage of system resources and provide higher performance. They support full offline functionality and integrate tightly with operating system features and hardware, making them suitable for resource-intensive tasks such as video editing or 3D rendering. On the other hand, maintenance is more demanding, since updates must be distributed and installed on every machine, and portability is reduced because separate builds are often required for different operating systems. While generally more isolated from online threats, desktop applications remain vulnerable to local security issues.

## 2. Internet Protocol (IP)

The Internet Protocol (IP) is the backbone of digital communication. It defines how data packets are addressed and routed across networks. Each packet contains source and destination IP addresses, allowing it to travel from one host to another, even across multiple networks [2][3].

For web developers, IP is significant because it underpins the communication between clients and servers. Understanding IP helps developers troubleshoot connectivity, configure servers, secure applications with IP-based rules, and ensure compatibility with IPv6 as the internet transitions away from IPv4.

## 3. Uniform Resource Locator (URL)

A Uniform Resource Locator (URL) is the string that specifies the location of a resource on the internet and the method for accessing it [4]. A typical URL includes the scheme (such as https), the authority (domain name or IP), the path to the resource, optional query parameters, and an optional fragment identifier.

`https://www.noname.com/articles/page.html?id=25#section2`

- scheme = https

- authority = www.noname.com

- path = /articles/page.html

- query = id=25

- fragment = section2

URLs are central to how the web functions. They direct browsers and APIs to the correct resources, influence site navigation, and play a role in usability and search engine optimization.

## REFERENCE;

[1] arXiv. 2023. Native vs. Web Apps: Energy and Performance. arXiv:2308.16734. Retrieved September 25, 2025 from <https://arxiv.org/abs/2308.16734>

[2] Cloudflare. 2023. What is the Internet Protocol (IP)? Cloudflare Learning Center. Retrieved September 25, 2025 from <https://www.cloudflare.com/learning/network-layer/internet-protocol/>

[3] Wikipedia. 2023. Internet Protocol. Retrieved September 25, 2025 from [https://en.wikipedia.org/wiki/Internet\\_Protocol](https://en.wikipedia.org/wiki/Internet_Protocol)

[4] Wikipedia. 2023. Uniform Resource Identifier. Retrieved September 25, 2025 from [https://en.wikipedia.org/wiki/Uniform\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Uniform_Resource_Identifier)