(TR-102) MASTERING THE SEMANTIC WEB –

Training Day 5 Report :

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Generations Of Web:

Web 1.0 (The Early Web)

Main Features:

- Static Pages: Websites were mostly made up of static pages that didn't change once loaded.
- Read-Only: Users could only read the information on these websites; there was no way to interact with it.
- Basic Design: The design was simple, with basic layouts and text-heavy content.
- Limited Interaction: Websites were like digital brochures or catalogs.
- Example: Early news websites where you could read articles but not comment or share them.

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Web 2.0 (The Interactive Web)

Main Features:

- Dynamic Content: Websites became interactive, allowing for real-time updates and user interaction.
- User Contribution: Users could create content, share it, and interact with each other (social media, blogs, forums).
- Rich Media: More use of videos, images, and multimedia elements.
- Improved User Experience: Enhanced interactivity with technologies like JavaScript and AJAX.
- Example: Social media platforms like Facebook and Twitter, where users can post updates, share photos, and interact with others.

Web 3.0 (The Intelligent Web)

Main Features:

- Semantic Web: Web 3.0 aims to make data more understandable to computers, enabling better search and data analysis.
- Personalization: Websites and services can tailor content and experiences to individual users through AI and machine learning.
- Decentralization: Use of technologies like blockchain to distribute data across many locations, reducing reliance on central servers.
- Interconnected Data: Information is connected across different sites and services, providing more seamless and integrated experiences.

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- Example: Virtual assistants like Siri or Google Assistant, which can understand your preferences and provide personalized recommendations.

Introduction to URL,URI and URN:

URL (Uniform Resource Locator)

- A URL is a specific type of URI that tells you how to access a resource on the internet. It includes the location (address) of the resource and the protocol to use.
- Example: https://www.example.com/page

URI (Uniform Resource Identifier)

- A URI is a broader term that can refer to either a URL or a URN. It's a way to identify a resource, but it doesn't necessarily tell how to access it.
- Example: https://www.example.com/page (this is a URI because it identifies a resource)

URN (Uniform Resource Name)

- A URN is a specific type of URI that names a resource but doesn't tell where it is or how to get it. It's like a unique identifier for a resource.
- Example: urn:isbn:978-3-16-148410-0

IETF(Internet Engineering Task Force):

- Organization: The Internet Engineering Task Force (IETF) is a global, open organization that develops internet standards.
- Mission: Improve the internet through high-quality technical documents.
- Structure: Composed of working groups focused on specific areas, overseen by Area Directors in the Internet Engineering Steering Group (IESG).
- Participation: Open to anyone, with no formal membership or fees; operates through a consensus-driven process.
- Process: Ideas are discussed in mailing lists, meetings, and collaborative tools, leading to Internet-Drafts and eventually Request for Comments (RFCs).
- Meetings: Holds three major meetings annually and conducts much work online.
- Output: Produces RFCs that standardize internet protocols, ensuring interoperability and reliability.
- Impact: Develops core internet technologies like TCP/IP and HTTP, contributing to a stable, scalable, and secure internet.

W3C(World Wide Web Consortium):

The World Wide Web Consortium (W3C) is an international community that develops open standards to ensure the long-term growth of the Web.

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Key Points :

- Purpose: Lead the Web to its full potential by developing protocols and guidelines for a growing, accessible, and usable web.
- Structure:
  - Led by Tim Berners-Lee, inventor of the World Wide Web.
  - Consists of member organizations, a full-time staff, and the public.
  - Organized into working groups focusing on different web technologies.
- Participation:
  - Open to organizations and individuals.
  - Uses a collaborative process with member submissions, working groups, and public reviews to create standards.
- Key Standards:
  - Develops standards like HTML, CSS, XML, SVG, and accessibility guidelines (WCAG).
  - Focuses on privacy, security, and internationalization.
- Meetings:
  - Holds annual conferences, workshops, and regular meetings.
  - Conducts much work through online discussions.
- Impact:
  - W3C standards are widely adopted by web browsers, developers, and organizations.
  - Ensures interoperability, usability, and a consistent web experience across platforms.

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HTTP VS HTTPS:

HTTP (HyperText Transfer Protocol):

- Definition: HTTP is a protocol used for transferring web pages on the internet.
- Function: It defines how messages are formatted and transmitted, and how web servers and browsers should respond to various commands.
- Port: Typically operates on port 80.
- Security: Data transferred over HTTP is not encrypted, making it vulnerable to interception and attacks.

HTTPS (HyperText Transfer Protocol Secure):

- Definition: HTTPS is an extension of HTTP, used for secure communication over a computer network.
- Function: It uses encryption to secure data between the user's browser and the web server.
- Port: Typically operates on port 443.
- Security: Uses SSL/TLS (Secure Sockets Layer/Transport Layer Security) to encrypt data, providing confidentiality, integrity, and authentication.

SSL VS TLS:

SSL (Secure Sockets Layer):

- Definition: SSL is a protocol developed by Netscape for securing data transmission over the internet.
- Function: It establishes an encrypted link between a web server and a browser, ensuring that all data passed between them remains private and secure.

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- Versions: SSL has gone through several versions, with SSL 3.0 being the last major release.
- Security: SSL is now considered obsolete due to several vulnerabilities and has been replaced by TLS.

TLS (Transport Layer Security):

- Definition: TLS is a protocol that evolved from SSL and is designed to provide secure communication over a computer network.
- Function: Like SSL, TLS encrypts data to ensure privacy and security between a web server and a browser.
- Versions: TLS has undergone several updates, with TLS 1.2 and TLS 1.3 being the most widely used versions.
- Security: TLS is more secure than SSL, with improved encryption algorithms and better security practices.

Internet VS WWW:

Internet:

- Definition: The internet is a vast global network of interconnected computers and other devices that communicate using standardized protocols.
- Function: It provides the infrastructure for various services, including email, file transfer, online gaming, and the World Wide Web.
- Components: Includes hardware (servers, routers, switches, etc.), software, protocols (like TCP/IP), and interconnections between networks.
- Services: Supports many services such as email (SMTP), file transfer (FTP), remote access (SSH), and streaming media.

- Scope: Encompasses all types of networked communication, not limited to the web.

World Wide Web (WWW):

- Definition: The World Wide Web is a system of interlinked hypertext documents and multimedia content accessible via the internet.
- Function: It enables users to access and navigate web pages through web browsers using the HTTP/HTTPS protocols.
- Components: Consists of websites and web pages, which include text, images, videos, and hyperlinks.
- Services: Primarily involves the delivery of web content and web-based applications.
- Scope: A subset of the internet focused on web content; it relies on the internet for connectivity.

Various Chrome Extensions:

Chrome extensions are small software programs that users can install into their Chrome web browser to add functionality and customize their browsing experience.

Adblock Plus:

- Function: Adblock Plus is a popular ad-blocking extension that blocks intrusive advertisements on websites, helping users to browse faster and with fewer distractions.
- Features: It allows users to whitelist specific sites, customize filters, and block tracking scripts, improving privacy and security.

- Use: Users install Adblock Plus to enhance their browsing experience by reducing the number of ads they see while surfing the web.

LastPass:

- Function: LastPass is a password manager extension that securely stores and manages passwords for various websites.
- Features: It generates strong passwords, autofills login credentials, and synchronizes data across devices.
- Use: Users rely on LastPass to securely manage their passwords and simplify the login process across different websites.

ColorZilla:

- Function: ColorZilla is a color picker and eyedropper extension used for identifying and copying colors from any part of a web page.
- Features: It provides various color-related tools, including a color history, gradient generator, and palette viewer.
- Use: Web designers and developers use ColorZilla to quickly capture colors, inspect gradients, and create color schemes for their projects.

WhatFont:

- Function: WhatFont is a tool that identifies the fonts used on a web page.
- Features: It allows users to hover over text on a webpage to instantly identify the font name, size, line height, and color.

- Use: Designers and developers use WhatFont to easily identify and analyze typography choices on websites, aiding in their own design and development work.

RDF Serialization:

RDF (Resource Description Framework) serialization refers to the various ways RDF data can be represented and stored in a file. RDF is a framework for describing resources on the web, and serialization formats are methods of encoding this data so it can be exchanged and understood by different systems.

Main RDF serialization formats:

1. RDF/XML

An XML-based format for representing RDF data. It uses XML tags to structure the data.

2. Turtle (Terse RDF Triple Language)

A more human-readable format for writing RDF data. It's concise and easier to read than RDF/XML.

3. N-Triples

A simple, line-based format for encoding RDF triples. Each line contains one RDF triple.

4. JSON-LD (JSON for Linking Data)

A JSON-based format for representing RDF data. It's designed to be easy for web developers to use.

5. RDFa (RDF in Attributes)

A way to embed RDF data directly in HTML or XML documents using attributes.