Training TR-102 Day 6 Report

19th June, 2024

The sixth day of the TR-102 training focused on creating RDF graphs from Turtle files, understanding Non-Functional Requirements (NFRs) for Web 3.0, and utilizing tools for web performance optimization. Key activities included practical exercises in RDF graph creation, web content optimization, and deployment of web pages on various platforms.

Creating RDF Graphs from Turtle Files

Participants created and validated RDF graphs from Turtle (.ttl) files using appropriate tools and syntax, which are crucial for representing structured data and enabling interoperability across different web applications.

Non-Functional Requirements (NFRs) in Web 3.0

The session emphasized the importance of NFRs such as:

- **Performance:** Ensuring fast load times and efficient resource usage.
- **Reliability:** Providing consistent and dependable web experiences.
- **Usability:** Enhancing user experience through intuitive interfaces.
- **Scalability:** Designing systems that can grow and handle increased load.
- **Security:** Protecting data and ensuring secure interactions.

Tools for Enhancing Web Performance

- Participants explored various tools to measure and improve web performance:
    - **Google PageSpeed Insights:** Analyzes the content of a web page and provides suggestions to make it faster.
    - **Lighthouse:** An open-source tool for improving the quality of web pages, providing audits for performance, accessibility, progressive web apps, SEO, and more.
- Tasks done:
    - Used Google PageSpeed Insights and Lighthouse to audit web pages.
    - Applied recommendations to improve performance scores..

Optimization Techniques

- **Testing for Mobile and Desktop:** Tested web pages on both mobile and desktop to ensure web pages are optimized and perform well on both mobile and desktop devices.
- **Using .webp format:** Converted existing images to .webp format and replaced .jpg, .png, and .gif formats to enhance performance. Using .webp images over traditional formats like .jpg, .png, or .gif provides better compression and faster load times.
- **PageSpeed Insights:** Detailed analysis and reports on web page performance.
- **Minification:** The process of minimizing CSS and JS files by removing unnecessary characters without changing their functionality, improving load times by reducing file sizes.

Deployment and Performance Checking

- Uploaded web pages to Netlify, Vercel, and GitHub Pages.
- Analyzed and verified the performance of deployed web pages using the tools mentioned.

Key Takeaways

- **RDF Graph Creation:** Mastered creating RDF graphs from Turtle files, facilitating structured data representation and interoperability.
- **NFRs for Web 3.0:** Gained a deep understanding of the critical non-functional requirements for modern web applications.
- **Performance Tools:** Learned to use Google PageSpeed Insights, Lighthouse, and GTmetrix for web performance analysis.
- **Optimization Techniques:** Understood the importance of image optimization, minification, and responsive testing for web performance.
- **Deployment:** Acquired skills to deploy web pages on modern platforms and assess their performance effectively.

Conclusion

Day 6 of the TR-102 training equipped participants with essential skills in RDF graph creation, web performance optimization, and deployment. By focusing on critical NFRs and utilizing powerful tools, attendees are now capable of building and maintaining high-performance, scalable, and user-friendly web applications. This session highlighted the importance of

continuous optimization and testing, ensuring that web applications meet the evolving demands of users and technologies in the Web 3.0 era.