Training TR-102 Report <u>Day 16</u>

3rd July, 2024

On the sixteenth day of the training, participants were introduced to TOTP (Time-based One-Time Password) apps. They downloaded a TOTP app and set up two-factor authentication on their GitHub accounts. Additionally, the day included further study and detailed exploration of SPARQL queries.

TOTP (Time-based One-Time Password) Apps and Two-Factor Authentication (2FA)

- The session included an introduction to Time-based One-Time Password (TOTP) apps.
- The training included a detailed explanation of TOTP and its importance in enhancing security through two-factor authentication.
- Participants downloaded a TOTP app and used it to set up two-factor authentication on their GitHub accounts.
- Each participant successfully implemented 2FA on their GitHub account, ensuring an additional layer of security.

SPARQL Queries

The session included an in-depth study and practice of SPARQL queries using the following resources:

Submitted By: Gurupdesh Singh URN: 2303083 Page No.: 1

1. Cambridge Semantics: SPARQL Queries

• Basic Queries:

- o SELECT queries to retrieve data.
- Constructing queries to filter and sort results.

• Advanced Features:

- Use of CONSTRUCT to create new RDF graphs.
- o ASK queries to return boolean results.
- o DESCRIBE queries to return RDF data about resources.

• Functions and Expressions:

- o String manipulation, mathematical operations, and date functions.
- o Aggregation functions like COUNT, SUM, AVG, MIN, MAX.

• Modifying Data:

o INSERT DATA, DELETE DATA, MODIFY statements to alter RDF datasets.

2. Medium: Constructing SPARQL Queries

• Best Practices:

- Structuring queries for readability and efficiency.
- o Use of comments and proper indentation.

Complex Queries:

- Nested queries and subqueries.
- o OPTIONAL and UNION clauses to handle optional data and multiple patterns.

• Example Queries:

- Practical examples demonstrating real-world use cases.
- o Step-by-step breakdown of constructing complex queries.

Submitted By: Gurupdesh Singh URN: 2303083 Page No.: 2

Implementation

• Participants practiced writing and executing various SPARQL queries based on the examples

and guidelines provided by the resources.

• Queries included retrieving specific data, constructing new RDF triples, and manipulating

datasets.

• Emphasis was placed on understanding query optimization and the efficient use of SPARQL

features.

Conclusion

Day 16 of the training was successful in providing participants with practical knowledge and

hands-on experience with TOTP apps for 2FA and advanced SPARQL queries. The

comprehensive study of SPARQL from the provided resources enabled participants to enhance

their query-writing skills and better understand the intricacies of RDF data manipulation.

Submitted By: Gurupdesh Singh URN: 2303083 Page No.: 3