(TR-102) MASTERING THE SEMANTIC WEB –

Training Day 15 Report :

3 July 2024

TOTP (Time-based One-Time Password) Apps:

TOTP stands for Time-based One-Time Password. It's a form of two-factor authentication (2FA) that generates a temporary, one-time password using the current time as a factor. This method is widely used for securing access to online services.

How TOTP Works:

- Secret Key: When you set up TOTP, a secret key is shared between the authentication server and your device.
- Current Time: The TOTP algorithm combines the secret key with the current time, typically in 30-second intervals.
- Hash Function: This combination is hashed to generate a unique code.

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- Temporary Password: The resulting hash is then truncated and converted into a 6-8 digit numeric code, which is valid for a short time (usually 30 seconds).

Common TOTP Apps:

- Google Authenticator: A widely used TOTP app that supports multiple accounts and is available for both Android and iOS.
- Authy: Offers TOTP along with additional features like cloud backup and multi-device synchronization.
- Microsoft Authenticator: Integrates with Microsoft services and offers TOTP for a range of other accounts.
- FreeOTP: An open-source TOTP app available on both Android and iOS.

Setting Up TOTP:

- Registering the App: When setting up TOTP with a service, you'll scan a QR code or manually enter the secret key into your TOTP app.
- Generating Codes: The app will start generating time-based one-time passwords that you use to log in, alongside your regular password.

Security:

- TOTP is considered secure because it requires both something you know (your password) and something you have (your device generating the one-time password).
- Even if your password is compromised, an attacker would still need access to your TOTP app to gain entry.

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Exploring the Depths of SPARQL Queries:

The following resources were used to explore SPARQL Queries.

1. [Cambridge Semantics](): SPARQL Queries

This covers some basic queries and some advanced features.

- Basic Queries:
    - SELECT queries to retrieve data.
    - Constructing queries to filter and sort results.
- Advanced Features:
    - Use of CONSTRUCT to create new RDF graphs.
    - ASK queries to return Boolean results.
    - DESCRIBE queries to return RDF data about resources.
- Functions and Expressions:
    - String manipulation and mathematical operations functions.
    - Aggregation functions like COUNT, SUM, AVG, MIN, MAX.
- Modifying Data:
    - INSERT DATA, DELETE DATA, MODIFY statements to alter RDF datasets.

2. [Medium:]() Constructing SPARQL Queries

- This covers some advanced complex queries.
- Nested queries and subqueries.
- OPTIONAL and UNION clauses to handle optional data and multiple patterns.

3. [Apache Jena]() :SPARQL Tutorial

- This can be used for referring to the correct syntax.

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4. [W3C SPARQL Documentation](#)

- For more depth of SPARQL Queries can be used.

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