ITCS461_Computer and Communication Security

Homework 3

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1. Search and conclude to answer the following questions

- ## What is NDID (National Digital ID)?

The National Digital ID (NDID) is a centralized system that makes it simple and secure for people to establish their identity in a variety of settings, including financial services, healthcare, and government services. The system consists of a database that contains digital identification information about users that authorized Identity Providers (IDPs) gather. While proving one's identity, they can utilize their NDID login, password, or biometric identification. The system then informs the service provider of their identity. NDID eliminates the need for numerous forms of identification, increases security, reduces fraud, and makes it easier to obtain services.

- ## Explain a use case for NDID.

  - **Financial Services**

An example of NDID financial services in use. NDID can be used to establish a secure and streamlined identity verification procedure for financial transactions such as establishing a bank account, requesting a loan, and making digital payments. Individuals can authenticate themselves with their NDID, eradicating the need to present tangible identification documents such as a passport or driver's license. This diminishes the likelihood of identity theft and fraud. The use of NDID in financial services can also enhance the consumer experience by streamlining the identity verification procedure, resulting in quicker service and shorter wait times.

For example, a customer could use their NDID to open a bank account online without needing to visit a bank branch or provide physical identification documents. The NDID system would accurately and securely verify the customer's identity, reducing the risk of identity theft and expediting the account opening procedure. A consumer could also use their NDID to authenticate themselves when making digital payments, providing a more convenient and secure alternative to traditional payment methods. NDID can also streamline the loan application process by providing a secure and dependable method for lenders to verify the identity and creditworthiness of a borrower. The use of NDID in financial services has the potential to increase security, efficiency, and convenience for consumers and financial institutions alike.

- **What are the main participants of NDID? Briefly explain each of them.**
    1. **Government:** The government is responsible for the overall administration and regulation of the NDID system. They set the policies, rules, and standards that govern the use of NDID.
    2. **Identity Providers (IDPs):** IDPs are entities that issue and manage digital identities for individuals. These can be government agencies, banks, or other trusted institutions that have been authorized to issue digital identities on behalf of NDID.
    3. **Service Providers (SPs):** SPs are organizations that provide services that require identity verification. Examples include banks, hospitals, and government agencies. SPs can use NDID to verify the identities of their customers, which helps to reduce fraud and improve the customer experience.
    4. **End Users:** End users are individuals who use NDID to verify their identities when accessing services. End users can manage their digital identities through the NDID system, which allows them to control how their identity information is shared with different service providers.

2. Search for Verifiable Credential (VC)

- **What is Verifiable Credential (VC)?**

A Verifiable Credential (VC) is a digital representation of a set of claims about a person, organization, or thing, that is cryptographically secured, privacy respecting, and decentralized. It is a way for individuals and organizations to manage and share their digital identities in a secure and privacy-preserving way. VCs are often based on open standards, such as the W3C's Verifiable Credentials Data Model, which provides a common format for VCs to be created, exchanged, and verified across different systems and applications.

- **Explain a use case of VC**

One use case of Verifiable Credentials (VCs) is for digital identity management.Individuals can use VCs to securely store and manage their identity information, such as their name, age, and address, and selectively share it with others, such as service providers or employers, as required. This can minimize the need for individuals to present multiple forms of identification when gaining access to various services, and can also improve the security and privacy of their personal data.

For example, a job seeker could use VCs to create a verifiable digital identity that includes their education and work history, skills and qualifications, and other relevant information. They could then share this digital identity with prospective employers to demonstrate their qualifications without revealing superfluous personal information. Similarly, a service provider such as a bank or insurance company could use VCs to verify the identity of a customer without requiring the consumer to provide sensitive personal information. VCs have the potential to provide a more secure, decentralized, and privacy-protecting method for managing and sharing digital identities in a variety of contexts.