Protecting yourself in the internet

Objectives

- To learn about security, and it's main objectives
- To learn about authentication vs authorisation
- To learn about cryptography
- Learn about tokens

Lessons

To learn about security, and how security is applied onto the system

> 💡 https://youtu.be/x8H6FDL0R0o Watch this before teaching about security

Why should we be conscious about security?

- Personal information

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Your consumer data is valuable to businesses. They would love to discover where you shop o
nline, what Facebook pages you like, and how much you spend on your home. That's why data
 brokers are in business.

Data brokers are companies that collect information about you and then sell that data to o
thers, usually companies or individuals. The information that data brokers collect can be
 extensive, everything from your birthdate and addresses to your job title, number of chil
dren, and even your outside interests.

In many cases, you might not be aware that these data brokers are nabbing your personal in
formation.
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- The deep web and what they do

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The term underground ecosystem is usually used to refer a collection of forums, websites a
nd chat rooms that are designed with the specific intent to advantage, streamline and indu
strialize criminal activities. The underground ecosystem represents a portion of cyberspac
e that is considered vital for criminal communities, where criminals can acquire and sell
 tools, services and data for various kinds of illegal activities.
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What is the difference between authentication and authorisation

- What is authentication?

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An act, process, or method of showing something (such as an identity, a piece of art, or a
financial transaction) to be real, true, or genuine : the act or process of authenticating
something, through OTP, biometric validation, tokens.
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- What is authorisation?

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Authorization is a security mechanism to determine access levels or user/client privileges
related to system resources including files, services, computer programs, data and applica
tion features. This is the process of granting or denying access to a network resource whi
ch allows the user access to various resources based on the user's identity, through using
permissions and priveleges.
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- How effective are those two concepts

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This is perhaps the most important reason why permissions are necessary. For example, a cu
stomer can log in to their bank account via the bank's website or mobile application. Alth
ough the bank has allowed the user to enter the system, the bank also needs to authorize t
he user's permissions. Otherwise, the user would have access not only to their own account
but also to every other account in the system. Permissions ensure users can access only th
e information they need to.

Permission levels restrict free users of a Software-as-a-Service (SaaS) site, such as a ne
wspaper with gated content or an online collaboration platform, from gaining access to pre
mium features. Permissions need to be implemented so that users only have access to the fe
atures they paid for. Without restrictions in place, there would be revenue loss for the o
rganization.

Permissions also separate internal from external users. While both employees and customers
can be allowed to use a company's website, employees should have access to data and system
s that customers should not have. In the same vein, certain employees should not have acce
ss to important client information. As such, the organization must create different levels
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of authorizations for each employee.

Setting the right permission levels is as equally important as selecting the right combina
tion of authentication factors. In fact, proper authorization can reduce the negative effe
cts of a data breach. For example, if a hacker successfully gains access to an employee's
 account, and if that employee is not authorized to access customers' banking or credit ca
rd information, then the ill effects of the breach could be lessened.

Further, authorizations make employees more productive. If they have the correct level of
 access to the files and programs they need to carry out their work, they do not have to c
onstantly ask their managers or IT for access. They will also not be distracted or overwhe
lmed by files and programs they do not need.
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What is cryptography?

- Define cryptography in a simple manner?

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The art and science of secrets. Cryptography is the use of coding to secure computer netwo
rks, online systems, and digital data. It is a concept whose endgame is to keep vital info
rmation that is subject to potential data breaches safe and confidential. While the term t
ends to be associated with the modern digital era, the concept has played a significant ro
le for centuries in military and government operations. For example, the Navajo code talke
rs from World War II, who communicated in their native tongue, deployed cryptography tacti
cs to convey crucial data.
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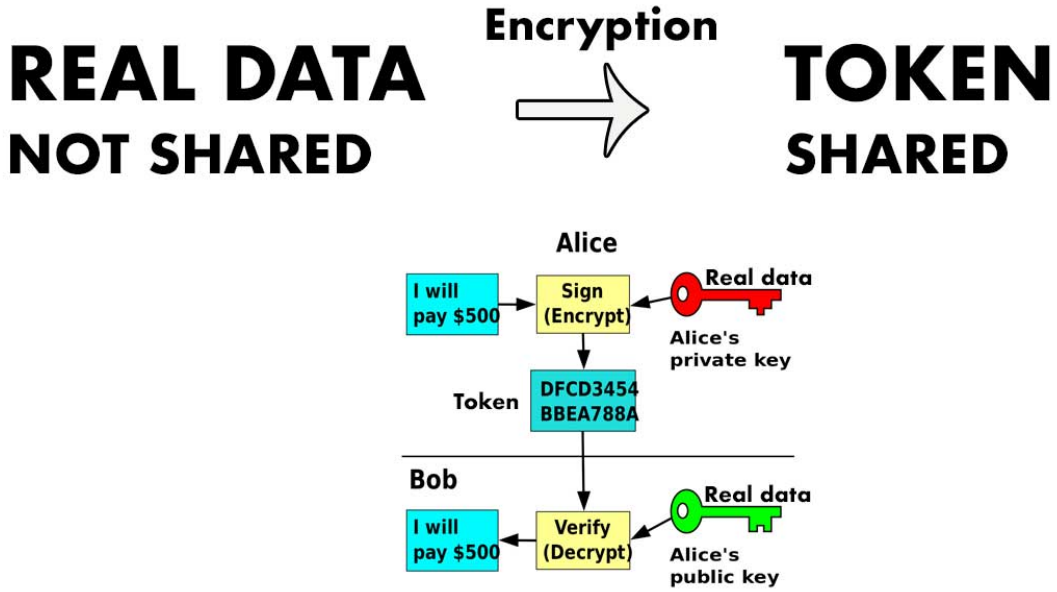
- Where is it used?
  - Authentication
  - Time stamping
  - Electronic money
  - Securing messages

💡 https://www.cryptoclub.org/#vAllTools

What are tokens?



A security token is a physical or digital device that provides two-factor authentication (2FA) for a user to prove their identity in a login process. It is typically used as a form of identification for physical access or as a method of computer system access. The token can be an item or a card that displays or contains security information about a user and can be verified by the system.

- Where are they used?
  - Cryptocurrency
  - Login functionality
- What does a token consist of?
  - Timestamp
  - User Information
  - Keys
  - Message

Challenges

Aa Name	Tags

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Cryptography	Give 3 different types of cryptography methods, that are used online, and where they are used. Include all of the hashing algorythms
Authentication	Give 3 tools that provide authentication and what methods does it use to provide protection.
Authorization	Give 3 places where authorization is used, and what method is used to provide authorisations. Include permissions
Security companies	Give 3 companies that provide security services to the users, and how do they manage to make the internet a safer place. Provide the type of services that they provide