Faculty of engineering - Shoubra
Benha University

Research Article / Research Project / Literature Review

In fulfillment of the requirements of

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Division	**……..**
Academic Year	**2019-2020 praparatory**
Course name	**Computer**
Course code	**ECE001**

Title:

Cryptography

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Topic: Cryptography

Github link : https://github.com/AhmedGamal0/ECE001

Github page : https://ahmedgamal0.github.io/ECE001/index.html

Abstract

With the Internet attaining a level that merges with our lives, explosively increasing over the past several decades, data security has become a major concern for anyone connected to the web.

Data security ensures that only the intended recipient accesses our data and prevents any modification or alteration of the data.

Various algorithms and methods have been developed to achieve that level of security.

Cryptography can be described as techniques that encrypt data, based on different algorithms to render the data unreadable to the human eye until decrypted by the sender's predefined algorithms.

Application brief

- Cryptography is a technique to achieve confidentiality of messages.
- In Greek, the word has a particular meaning: “secret writing”.
- Today, however, high-level authentication ensures the anonymity of individuals and organizations, meaning that the information transmitted is protected and that the designated receiver may access this information.

- Cryptography can be considered, with historical roots, an old technique that is still being developed.
    - Examples go back to 2000 B.C., when the ancient Egyptians used "secret" hieroglyphics, as well as other evidence in the form of secret writings in ancient Greece or the famous Caesar cypher from ancient Rome.

- Millions of people across the globe use cryptography on a regular basis to encrypt data and knowledge, even if most don't realize they use it.
- In addition to being extremely useful, cryptographic systems can be compromised due to a single programming or specification error.

Screeshots :

Definition of Cryptography

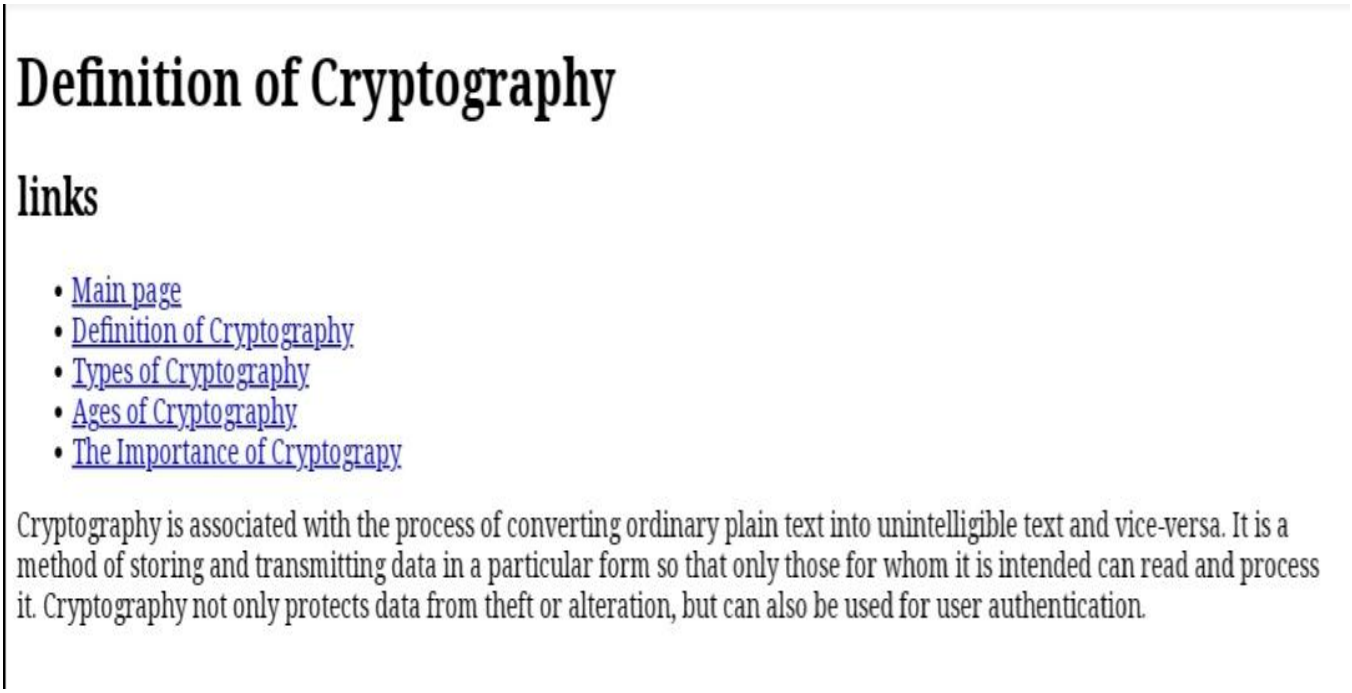


Figure 1

Types of Cryptography

Types of Cryptography

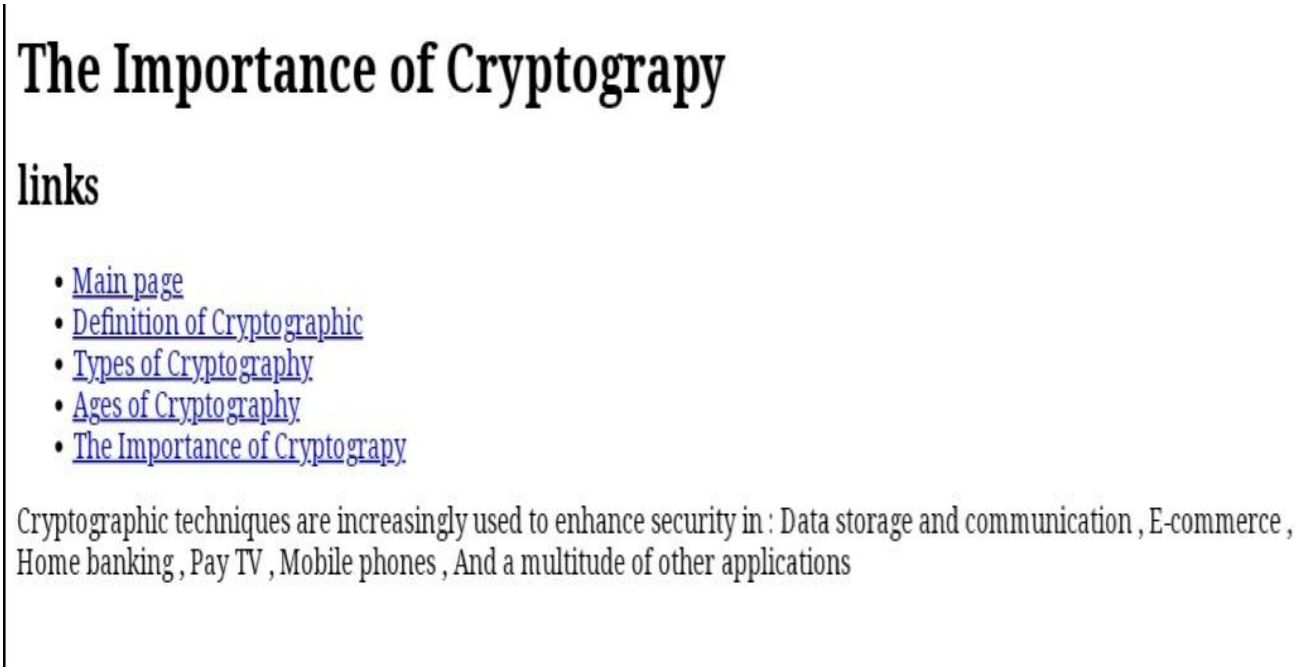
links

- Main page
- Definition of Cryptography
- Types of Cryptography
- Ages of Cryptography
- The Importance of Cryptograpy

Symmetric Key Cryptography	Hash Functions	Asymmetric Key Cryptography
SKC	CHF	AKC
It is an encryption system where the sender and receiver of message use a single common key to encrypt and decrypt messages. Symmetric Key Systems are faster and simpler but the problem is that sender and receiver have to somehow exchange key in a secure manner. The most popular symmetric key cryptography system is Data Encryption System(DES).	There is no usage of any key in this algorithm. A hash value with fixed length is calculated as per the plain text which makes it impossible for contents of plain text to be recovered. Many operating systems use hash functions to encrypt passwords.	Under this system a pair of keys is used to encrypt and decrypt information. A public key is used for encryption and a private key is used for decryption. Public key and Private Key are different. Even if the public key is known by everyone the intended receiver can only decode it because he alone knows the private key.

Figure 2

The Importance of Cryptography



The Importance of Cryptograpy

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Cryptographic techniques are increasingly used to enhance security in : Data storage and communication , E-commerce , Home banking , Pay TV , Mobile phones , And a multitude of other applications

Figure 3

Ages of Cryptography

Ages Of Cryptography

links

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- Definition of Cryptography
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- The Importance of Cryptograpy

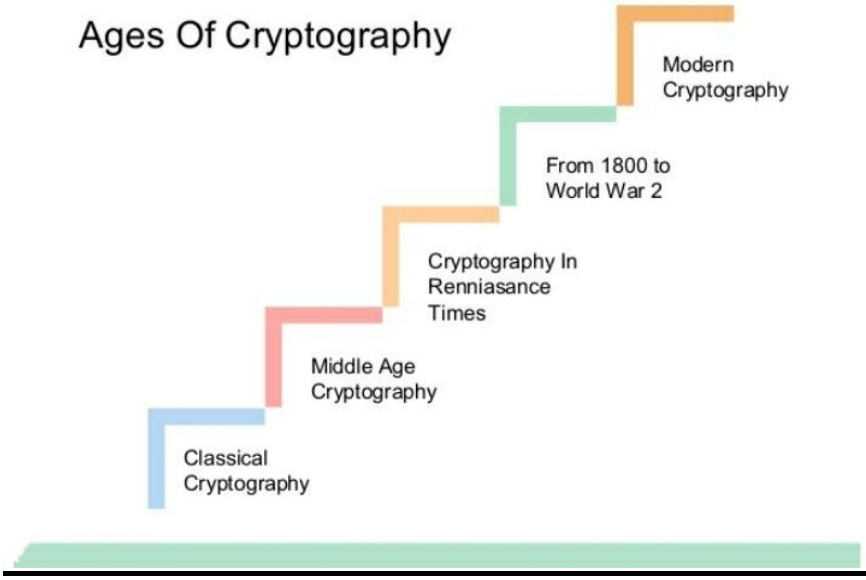

Figure 4

Source code

```
<!DOCTYPE html>
<html>
<head>
  <title>Definition of Cryptography
</title>
</head>
<body>
  <h1>Definition of Cryptography
</h1>
  <h2>links</h2>
  <ul>
  <li><a href="index.html">Main page</a></li>
  <li><a href="p1.html">Definition of
    Cryptography</a></li>
  <li><a href="p2.html">Types of Cryptography</a
    ></li>
   <li><a href="p3.html">Ages of Cryptography</a
    ></li>
<li><a href="p4.html">The Importance of
  Cryptograpy</a></li>
</ul>
Cryptography is associated with the process of
  converting ordinary plain text into
  unintelligible text and vice-versa. It is a
  method of storing and transmitting data in a
  particular form so that only those for whom it
  is intended can read and process it.
  Cryptography not only protects data from theft
  or alteration, but can also be used for user
  authentication.

</body>
</html>
```

Conclusions

Cryptography plays a crucial and essential function in achieving the primary objectives of security targets, such as

- Authentication
- Integrity
- Confidentiality
- No-repudiation.

To achieve those goals, cryptographic algorithms are developed.

The important purpose of cryptography is to provide reliable, strong, and robust network and data security.

With IT and business plans, cryptography will continue to emerge in terms of protecting personal , financial, medical, and ecommerce data and providing a respectable level of privacy.

References

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- J. Katz and Y. Lindell, lntroduct:ion t:o Modern Cryptography, London: Taylor & Francis Group, LLC , 2008