



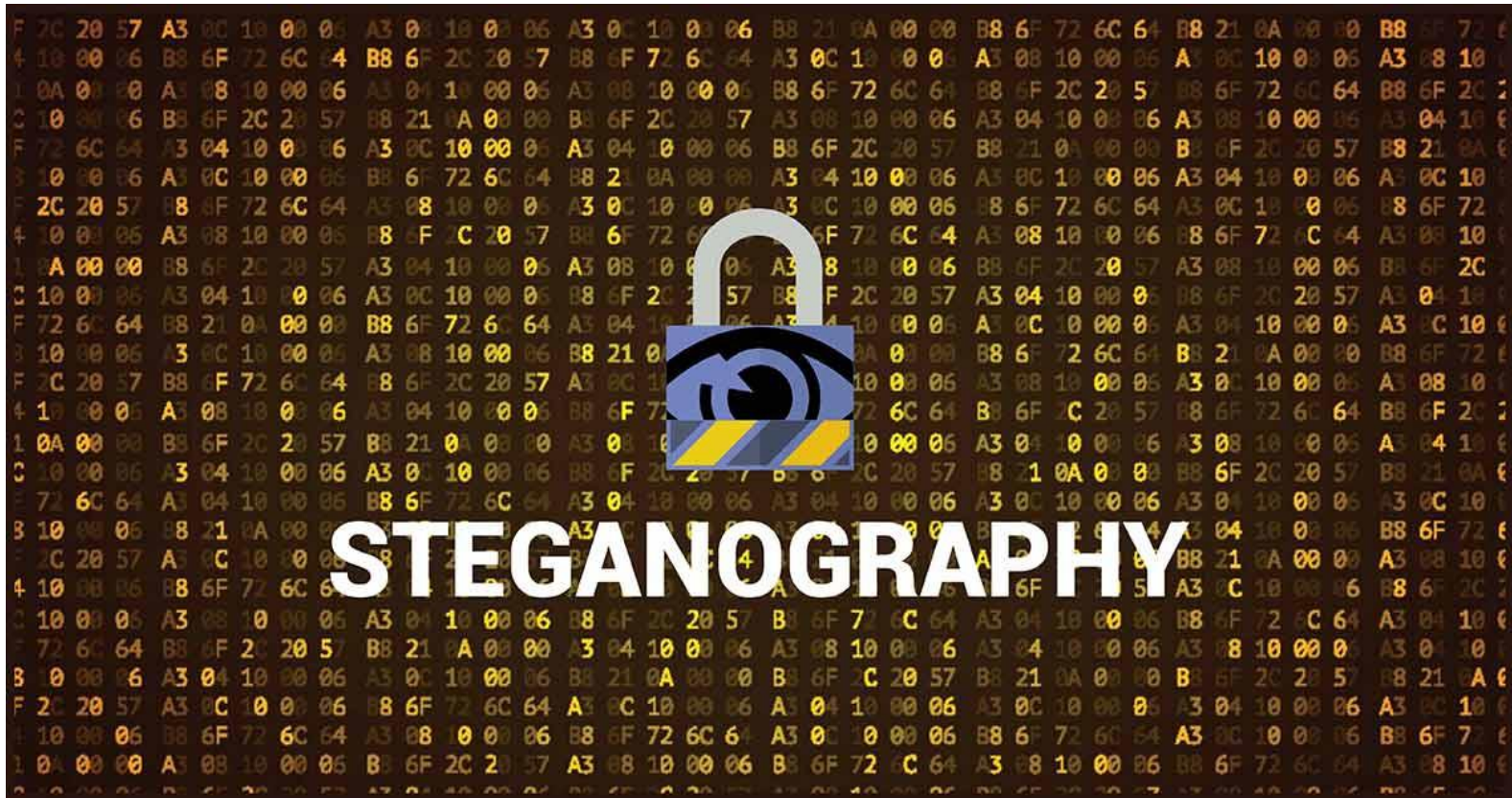
جامعة الحمدانية /كلية التربية قسم علوم الحاسوب Fourth Class



Data Security

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• Steganography



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Steganography

- *The word steganography is derived from the Greek words “stegos” meaning “cover” and “grafia” meaning “writing” defining it as “covered writing”. Steganography is one such pro-security innovation in which secret data is embedded in a cover.*



```
0101 0100 0110 1000
0110 1001 0111 0011
0010 0000 0110 1001
0111 0011 0010 0000
0110 0001 0010 0000
0101 0011 0100 0101
0100 0011 0101 0010
0100 0101 0101 0100
```

Steganography

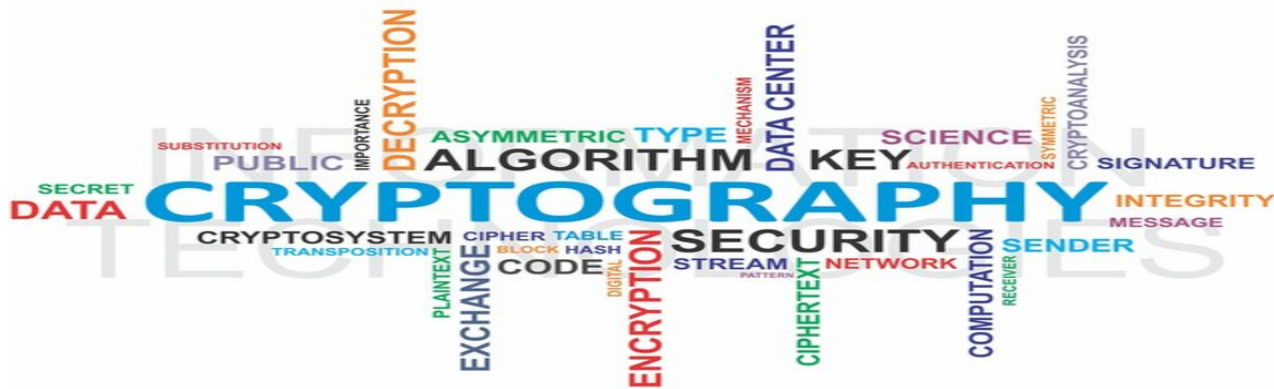
- Deals with composing hidden messages so that only the sender and the receiver know that the message even exists.
- Since nobody except the sender and the receiver knows the existence of the message, it does not attract unwanted attention.

Cryptography & Steganography

- *The study of hiding information is called **Cryptography**. When communicating over an untrusted medium such as internet, it is very important to protect information and Cryptography plays an important role in this.*
- *Today, Cryptography uses principles from several disciplines such as mathematics, computer science, etc.*

Cryptography & Steganography

- **Steganography** deals with composing hidden messages so that only the sender and the receiver know that the message even exists.



- **Steganography and Cryptography** are closely related. Cryptography scrambles messages so they cannot be understood.

Cryptography & Steganography

- ❑ **Steganography** on the other hand, will hide the message so there is no knowledge of the existence of the message in the first place. In some situations, sending an encrypted message will arouse suspicion while an "invisible" message will not do so.
- ❑ **Both sciences** can be combined to produce better protection of the message. In this case, when the Steganography fails and the message can be detected, it is still of no use as it is encrypted using Cryptography techniques.

Types of materials in steganography

- There exist two types of materials in steganography:

- **Message**



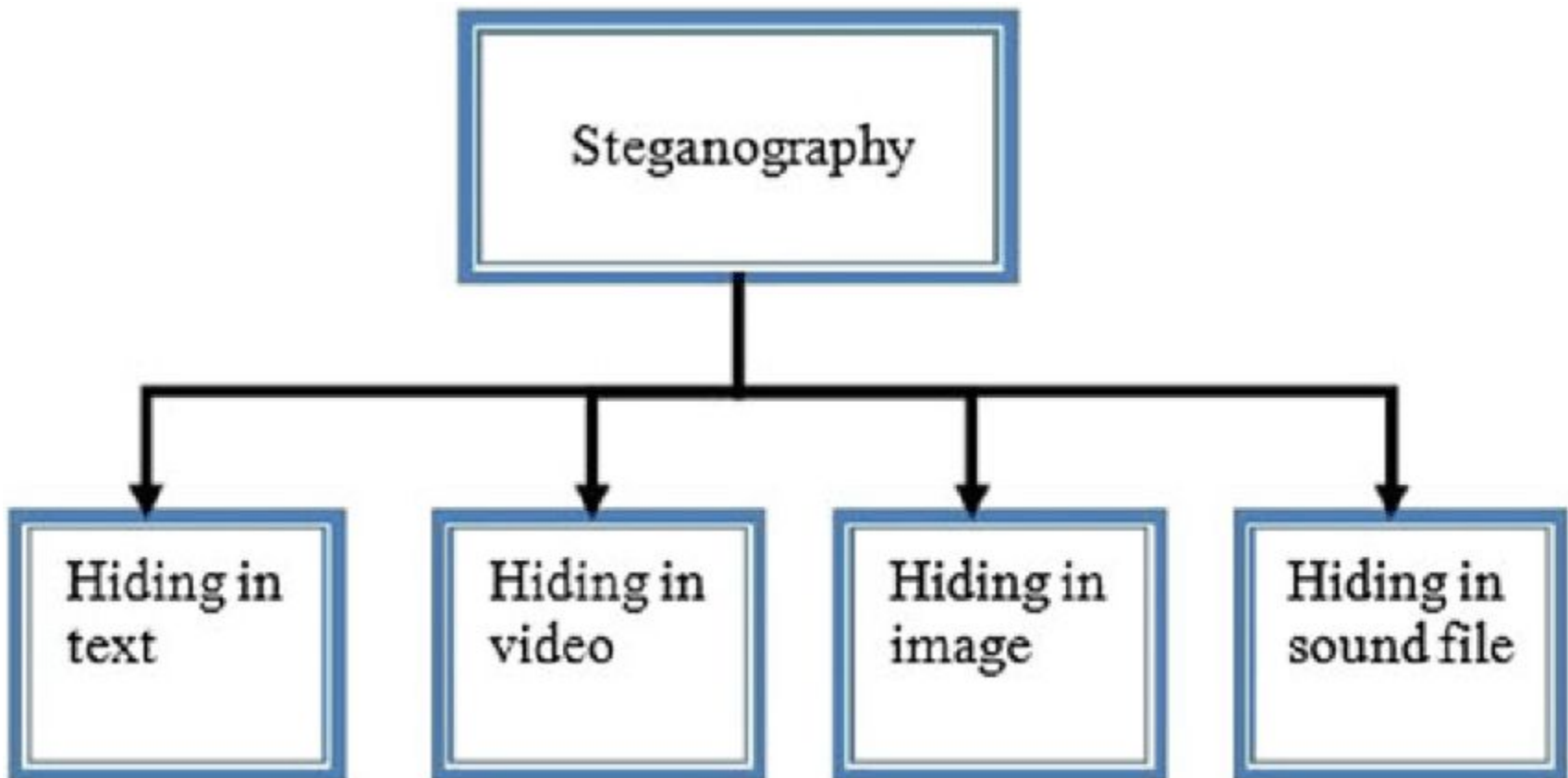
- **Carrier**

- **Message** is the secret data that should be hidden.

- **Carrier** is the material that takes the message in it.

Categories of file formats

- The different categories of file formats that can be used for steganography techniques.

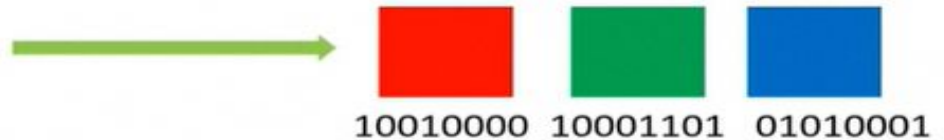


Types of Steganography

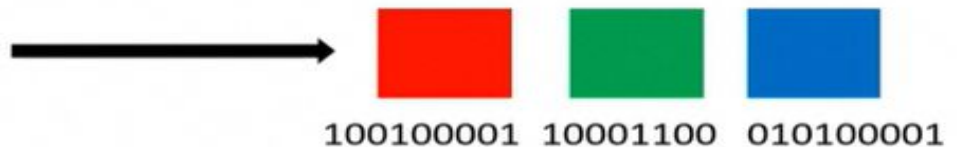
- Hiding a message inside text.
- Hiding a message inside images.
- Hiding a message inside audio or video files.



Original Image: 10100



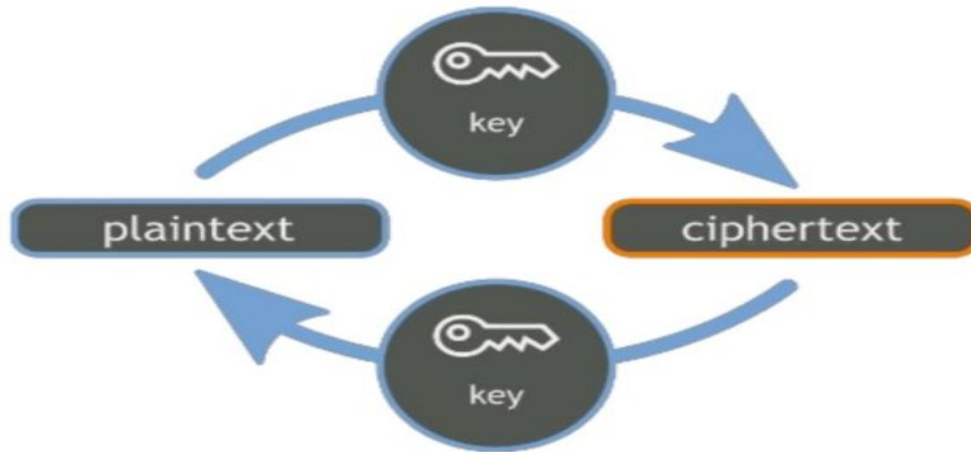
Hidden Message: 101001





Differences between Steganography and Cryptography

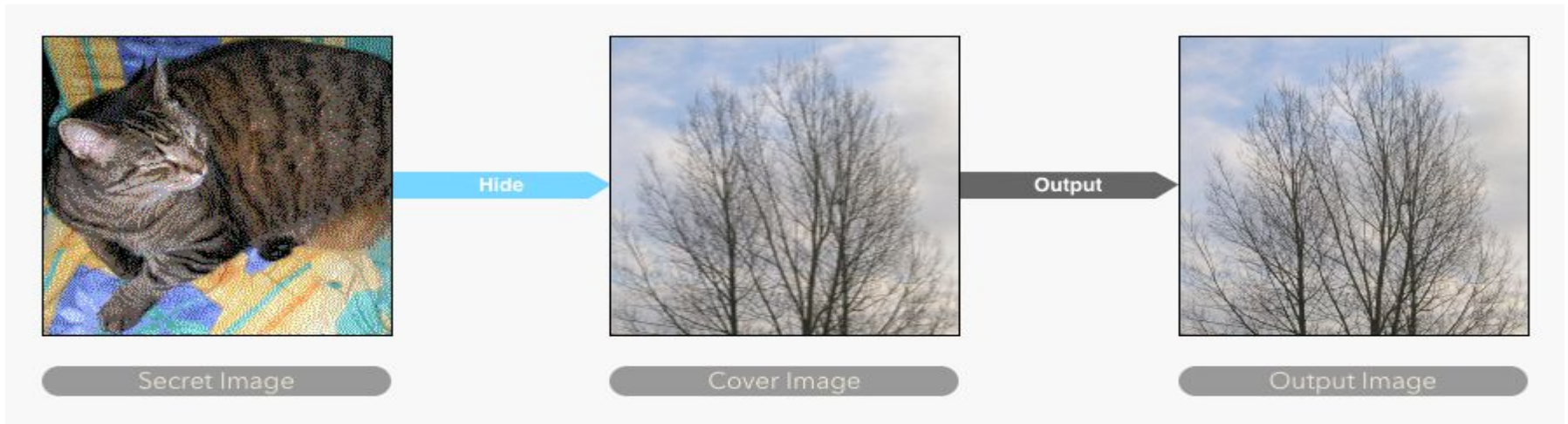
- **Cryptography** is the study of hiding information, while **Steganography** deals with composing hidden messages so that only the sender and the receiver know that the message even exists.



- In **Steganography**, only the sender and the receiver know the existence of the message, whereas in cryptography the existence of the encrypted message is visible to the world. Due to this, **Steganography** removes the unwanted attention coming to the hidden message.

Differences between Steganography and Cryptography

- **Steganography** hides a message within another message normally called as a cover and looks like a normal graphic, video, or sound file. In cryptography, encrypted message looks like meaningless jumble of characters.



- **Cryptographic** methods try to protect the content of a message, while Steganography uses methods that would hide both the message as well as the content.

Differences between Steganography and Cryptography

- ***Steganography** requires caution when reusing pictures or sound files.*
- *In **cryptography** caution is required when reusing keys.*
- *By **combining** Steganography and Cryptography one can achieve better security.*

Thank

you

