LECTURE NOTES ON COMPUTER AND DATA SECURITY

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Basic Concepts

Computer

an electronic device which is capable of receiving information (data) in a particular form and of performing a sequence of operations in accordance with a predetermined but variable set of procedural instructions (program) to produce a result in the form of information or signals.

Computer is derived from the word compute which means compute or calculating in right manner. it can acess, store, and retrived the large amount of data without intervention of human.

Data

- Collection of data objects and their attributes
- An attribute is a property or characteristic of an object

  Examples: eye color of a person, temperature, etc.
- A collection of attributes describe an object.

  Object is also known as record, point, case, sample, entity, or instance

Information

Collection of organization data or preparing data to take the decision , where

Data + Processing = Information

Example: book is data while my book is information.

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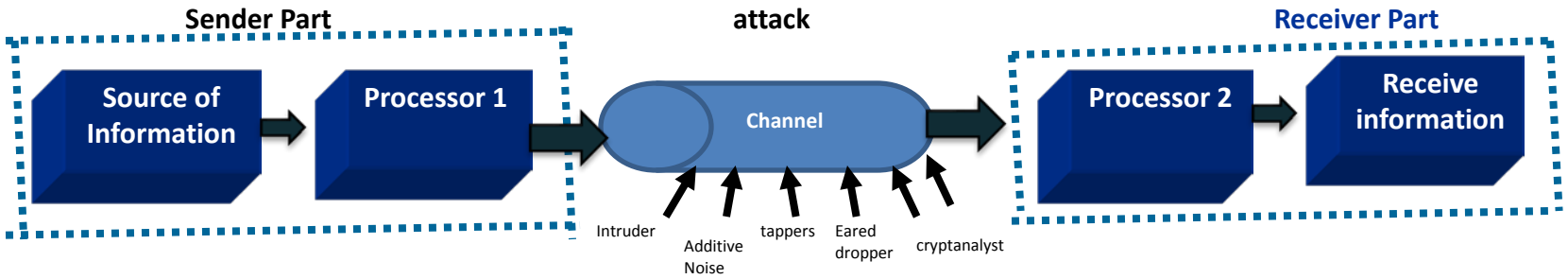
Security

Refer to the communication (information) security



Source of information

	sender part		receiver part
1.	Person (text, speech)	======➔	Person
2.	Video	======➔	TV
3.	Sensor	======➔	Controller
4.	Image	======➔	Computer storage of image

Processor 1

adaption of the source information into the communication channel by one of the three methods “modulation, coding, ciphering “

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Processor 2

receive the information from the communication channel and treatment by one of the three methods “demodulation, decoding, deciphering “

In general:

Processor1		**processor2**
1. Modulation	======➔	Demodulation
2. coding	======➔	Decoding
3. Ciphering	======➔	Deciphering

Computer Security

Refer to the security of computers against intruders (e.g., hackers) and malicious software(e.g., viruses). Typically, the computer to be secured is attached to a network and the bulk of the threats arise from the network.

Data Security

Refer to the term **Cryptography** is one of the mathematical application that is useful in transforming that data through an insecure communication network, which is the worst case.

As a result: security have two parts:

1. Cryptography
2. Physical pretiction

Basic Concepts

cryptography

is the study of secret (crypto-) writing (-graphy)

cryptography

the art or science encompassing the principles and methods of transforming an intelligible message into one that is unintelligible, and then retransforming that message back to its original form

plaintext

the original intelligible message

ciphertext

the transformed message

cipher

an algorithm for transforming an intelligible message into one that is unintelligible by transposition and/or substitution methods

key

some critical information used by the cipher, known only to the sender & receiver

encipher

the process of converting plaintext to ciphertext using a cipher and a key

decipher

the process of converting ciphertext back into plaintext using a cipher and a key

cryptanalysis

the study of principles and methods of transforming an unintelligible message back into an intelligible message *without* knowledge of the key.

cryptology

both cryptography and cryptanalysis