



جامعة الحمدانية / كلية التربية
قسم علوم الحاسوب
Fourth Class

Data Security



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Lecture 5

Type of Attacks in computer system

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□ **Type of Attacks**

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□ **Modification Attacks**

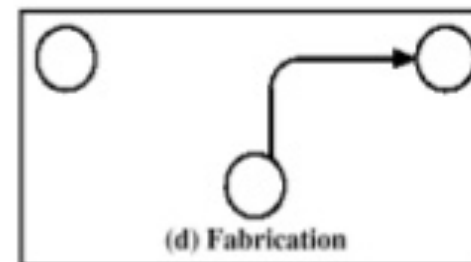
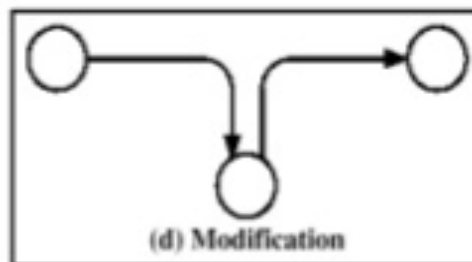
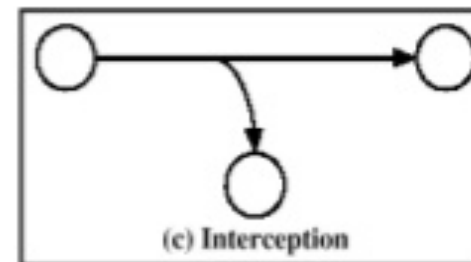
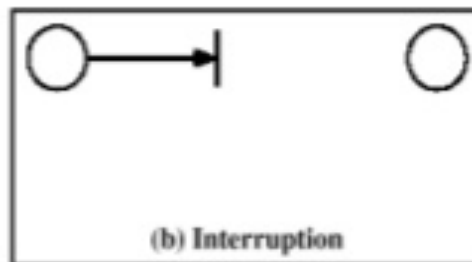
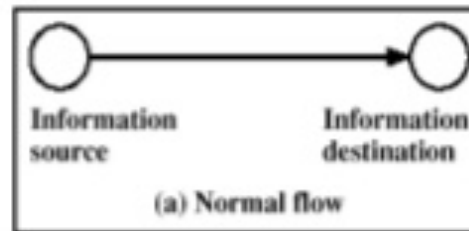
□ **Fabrication Attacks**

□ **Homework**

□ *In computer networks and systems, **security attacks** are generally classified into two groups, namely **active attacks** and **passive attacks**. **Passive attacks** are used to obtain information from targeted computer networks and systems without affecting the systems.*

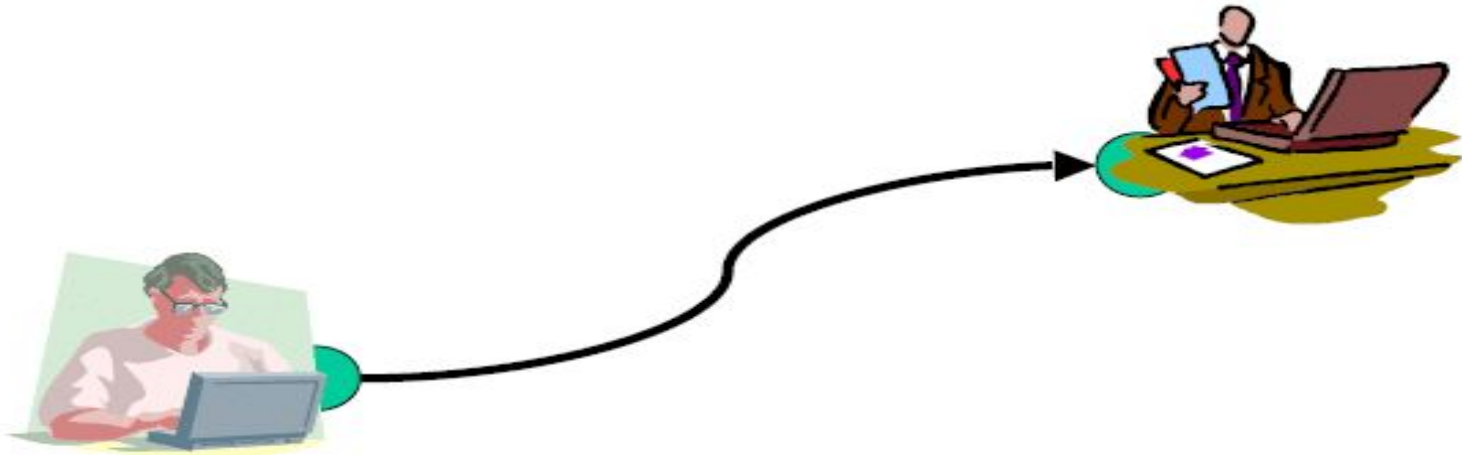
□ **Security Attacks**

Type of Attacks in Computer Systems



Normal Flow Information

Information Transferring



Interception Attacks

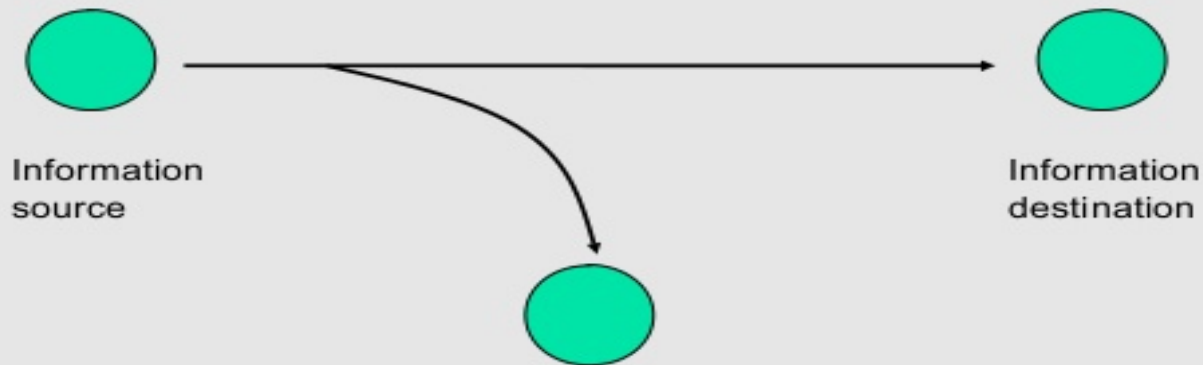


□ The attack affects the confidentiality

□ The data or message which is sent by the sender is intercepted by an unauthorized individual where the message will be changed to the different form or it will be used by the individual for his malicious process.

Interception Attacks

Security Attacks



Information source

Information destination

Interception

• Attack on **confidentiality**

Examples

- *Include wiretapping to capture data in a network, and the illicit copying of files or program.*

Security Attacks...

Interception



Alice



Bob



Intruder

📄 Intruder intercept in the middle view of message

📌 This is an attack on confidentiality

📌 A passive intruder

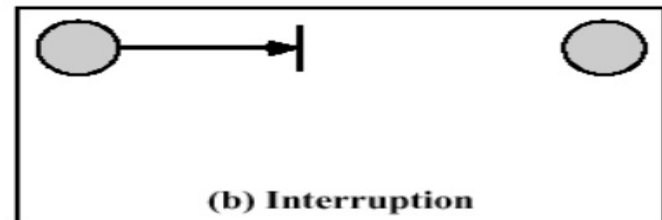
Interruption Attacks

- *The attack affects the Availability.*
- *In an interruption attack, a network service is made degraded or unavailable for legitimate use.*

Attack: Interruption



Interruption



Examples

- ❖ *destruction of a piece of hardware, such as
a hard disk*
- ❖ *the cutting of a communication*
- ❖ *the disabling of the file management system.*

Security Attacks

Interruption



Alice



Bob



Intruder

❏ Intruder intercept in the middle and stop communication

◆ This is an attack on availability

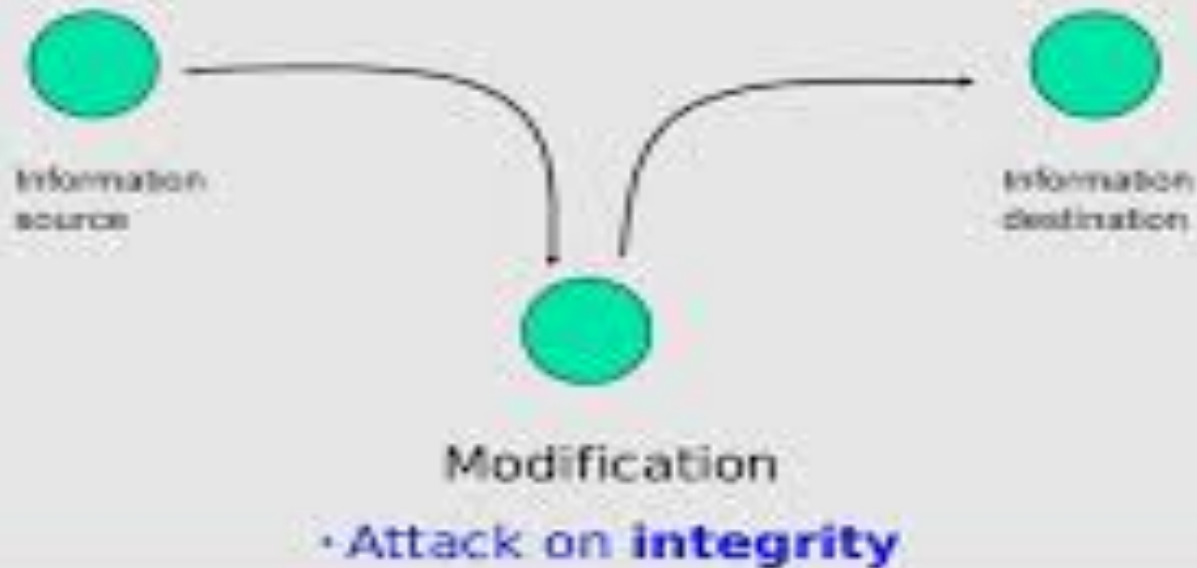
◆ An active intruder

Modification Attacks

- *The attack affects the Integrity.*
- *Modification attacks involve tampering with our information. Such attacks might primarily be considered an integrity attack but could also represent an availability attack. If we access a file in an unauthorized manner and alter the data it contains, we have affected the integrity of the data contained in the file.*

Modification Attacks

Security Attacks

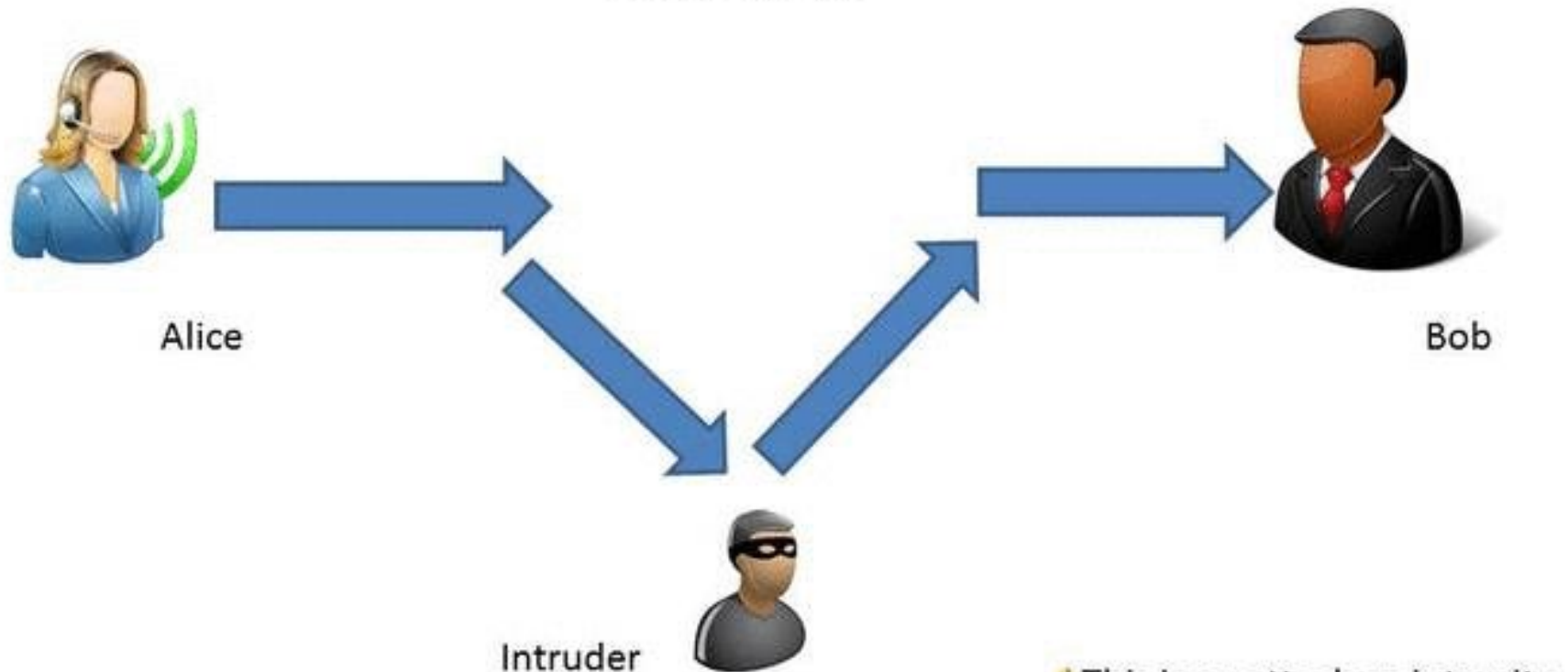


Examples

- *Include changing values in a data file, altering a program so that it performs differently , and modifying the content of messages being transmitted in a network.*

Security Attacks....

Modification



☒ Intruder intercept in the middle & modify the message

⚡ This is an attack on integrity

⚡ An active intruder

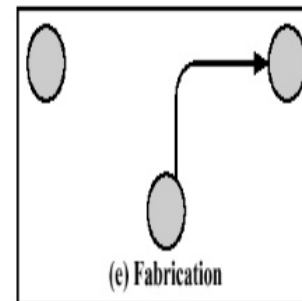
Fabrication Attacks

- *The attack affects the Authentication.*
- *Fabrication: In this type of attack a fake message is inserted into the network by an unauthorized user as if it is a valid user. This results in the loss of confidentiality, authenticity and integrity of the message.*

Attack: Fabrication



Fabrication



Examples

- *Include the insertion of spurious messages in a network or the addition of records to a file.*

Security Attacks...

Fabrication



Alice



Bob

Fabricated
message



Intruder



■ This is an attack on authenticity

■ An active intruder

■ Intruder fabricate a message and send impersonating the sender

Next lecture

Networking Simple Principle

شكرا

الحمد