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Assignment 1

1. Computer security is defined as a way to make sure that the data in our computer is secured and that it can not be ready by anyone else. There are numerous ways to ensure that the computer is secure like making it password protected, encrypting it etc. Confidentiality, privacy, and integrity are the three main objectives of computer security.
2. An active threat is a threat that usually changes the system and the way it operates whereas a passive threat is a threat that is in the background and doesn’t really affect the functionality of a system. Active threats can cause damage to the system whereas passive threat does not damage the system in any way. Active threat also threatens the integrity and availability whereas passive threat only harms the confidentiality.
3. Attack surface are the points that can be accessed by the hacker. It lets the hacker scan the system and attack the user. Network, software and physical are three forms of attack surface. On the other hand, attack tree is a way we can find the threats in our system. They are branching, hierarchical data structures that use several nodes to find the treat in the system. Attack tree seems to be a subbranch of the attack surface.
4. Confidentiality is when a user puts their money in a bank and then are asked to put their card an information in a machine that shows how much money they have without knowing if their information is being stored somewhere or is accessible by anyone. Pin is a way of protecting that information which is not known by anyone else.

Integrity is when the ATM doesn’t store one’s information and is not accessed by anyone else. The information that a person enters is also send to the other side of the server and is protected is a part of integrity.

Availability is having a ATM machine and having a good connection which is secure and verifies the information a person enters in a split of a second. There has to be money in an ATM and it has to be secure to server millions of users.

1. I feel like the main thing with telephone is making sure that no two calls cross each other. For example, in old times calls were connected where accidently one call was connected to the wrong person at times and there were wait times to talk because all lines were busy. This is where confidentiality comes in place so that no third person can join a call that is between two people. Integrity is when the phone companies says the calls are encrypted and are not being recorded on their server. For example, WhatsApp provides calls that are encrypted and claim to be private. Availability is when the user does not have any permanent damage if they switch from one company to another other than asking for the user to pay their bills. For example, these days some companies even offer to pay their customers contract break fees to give them the freedom to switch from one company to other.
2. Separation of privilege: limited for objects

Least privilege: This is used at each stage of the program. It is the guidelines for finishing a project.

Fail safe defaults: This restricts the others from accessing the information which is confidential.

Economy of mechanism: It makes the design easier for the user.

Complete mediation: It verifies and gives access to only those who had the permission to enter.

Open Design: This is so the security mechanism is open to all.

Psychological acceptability: This is so that the security mechanism does not interfere with the users and also makes it protected and accessible to only those who are allowed.

1. A. Publication that have information like the account number, account information, SSN etc are supposed to be confidential.

B. Data integrity is most important when it comes to documents that have to be signed to be received like credit cards, documents etc.

C. A good example of system availability is when one person send money and for some reason the transaction does not go through. Person one loses their money whereas person two does not receive it. It is very important to have good connection at times.

1. A. Confidentiality because this information is accessible to public and if the information gets lost, it will have very little impact.

B. A law enforcement organization would have high impact on confidentiality and integrity because if there is any breach of data it would damage the organization and low impact on availability because it does not damage the organization in any way.

C. A financial organization shows moderate impact on confidentiality because it is not related to privacy and it shows low impact on availability and integrity because if the data goes missing, it does not affect the company in any way.

D. An information system would have low impact on confidentially and availability because if the information is lost, it has minimum affect and would have moderate impact on integrity because if the data is lost it is not that big problem.

E. It would have low impact on confidentiality, integrity and availability because the loss of data is not a big problem.

1. Diagram, letter

   Description automatically generated
2. A.IsAccessAllowed returns the errors. It allows the user to access the information even if it not given permission to access it.

B. DWORD dwRet = IsAccessAllowed(…);

If(dwRet ==NO.ERROR)

{

//security check passed

// Access allowed

}

Else

{

//security check failed

//Inform user that access is denied

}