

CIS-481: Introduction to Information Security

InfoSec Chapter Exercise #9

Team: 3

Participants: Marvin Weaver, Sam Steele, Kitrina Justus, Aaron Gordon, Brandon Crosier

Logistics

- A. Get together with other students on your assigned team in person and virtually.
- B. Discuss and complete this assignment in a collaborative manner. Don't just assign different problems to each teammate as that defeats the purpose of team-based learning.
- C. Choose a scribe to prepare a final document to submit via Blackboard for grading, changing the file name provided to denote the number of your assigned **Team**.

Problem 1

Name and describe the four categories of locks based on triggering process (discussed in your text on pp. 508-509). In what situations is each type of lock preferred? *(8 points)*

The four types of locks are manual, programmable, electronic, and biometric. A manual lock is the standard lock for most companies. Examples are padlocks and combination locks. For these types of locks, if you have the key or combination, you can unlock it. The combination or key is usually preset by the manufacturer, meaning you cannot change the key or combination easily. This type of lock is preferred for somewhere that is already behind a separate lock, like inside a locked facility. This is preferred as this is one of the weakest forms of locks.

A programmable lock differs in that it can be changed by the customer after they are installed. This allows the customer to ensure higher security as they can change the combination as needed and to something relevant to the customer. This is preferred in much the same manner as manual locks, but for assets who need a little more protection. Whereas a manual lock may be used for a janitor's closet, a programmable lock would be used for documents or offices.

An electronic lock is a lock that can be activated by a switch, usually controlled by a guard or secretary. They can be easily integrated with sensors to create unique combinations for access. For example, a system could fashion an alarm on a lock that will notify a guard whenever unlocked. The lock will either use batteries to power it or be connected to a power grid directly. This are generally used to gain access to buildings, such as apartments. This ensures that someone must let you in if you don't have the proper authorization yourself, increasing security.

A biometric lock is a lock that reads a unique biological attribute such as a fingerprint, iris, retina, or palm and then uses that input as the key. They are the most advanced type of lock as it is very hard for someone unauthorized to gain access. This is preferred to secure items of high importance, like servers or other critical systems. This ensures that no one but the authorized individuals can access whatever is behind the lock.

Problem 2

Your text describes three elements that must be present for a fire to ignite and continue to burn. Newer research suggests a fourth element is required, too. See:

<https://www.firesafe.org.uk/information-about-the-fire-triangletetrahedron-and-combustion/>

Name and describe the four elements of the “fire tetrahedron”. How do fire suppression systems manipulate the four elements to quell fires? *(9 points)*

The four elements of the fire tetrahedron are oxygen, fuel, heat, and chemical chain reaction. The oxygen allows for a sustainable combustion, the heat increases the temperature of the material to its ignition point then the fuel or flammable object cause the chemical chain reaction. Fire extinguishers put out fires by removing one or more elements of the fire tetrahedron which causes the fire to be extinguished. Fire suppression systems quell fires by releasing a particular substance such as carbon dioxide, water or water mist, soda acid, or a gas-based substance.

Problem 3

Name and describe the five classes of fire described in the text. How does the class of a fire dictate how to control the fire? *(8 points)*

Class A: This type of fire involves the ordinary combustion fuels such as: wood, paper, cloth, trash, etc.

-With a Class A fire water and multipurpose dry chemical fire extinguishers are the preferred method to put out the fire.

Class B: These fires are started by a combustible liquid or gas such as: solvent, gas, paint, oil, etc.

-With a Class B fire you want to use carbon dioxide, multipurpose dry chemical, or a halon fire extinguisher to put out the fire.

Class C: These fires are caused by energized electrical equipment or appliances.

-To put out a Class C fire you must use a nonconducting agent. For example, carbon dioxide, multipurpose dry chemical, or a halon fire extinguisher. One must never use water to put out a Class C fire.

Class D: These fires are started by a combustible metal, such as magnesium, lithium or sodium.

-Class D fire requires a special extinguishing agent and a certain technique to put out the fire.

Class K: These fires are fueled by combustible cooking oils and fats in a commercial kitchen. Referred to as Class F fire in Europe and Australasian environments.

-These fires require a special water mist, dry powder, or CO2 agents to extinguish.

The class of fire dictates how the fire was started. No two fires start the same way and no two fires are put out the same way. The class dictates how the fire is controlled because the class tells you how the fire was started. For example, if you are at the scene of a fire and someone told you this is a Class C fire. You would immediately know that it is an electrical fire. If this information was not known someone could have thrown water onto the fire and only worsened the effects of the fire.