CIS-481: Introduction to Information Security

InfoSec Chapter Exercise #9

Team:1

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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 *(8 points)*

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?

The four categories of locks based on the triggering process are manual, programmable, electronic, and biometric.

A manual lock would be best represented by the average door lock. They are often installed indoors and have a key that needs to be inserted and turned to unlock. If the key needs to be changed, it can only be done by a professional locksmith. These are good for places with lower security needs, as they can be bypassed or picked by one with decent training. The only authentication they require is the physical key.

A programmable lock is one in which the key can be changed after it is put in service. An example of this would be a mechanical push-button lock. These are commonly seen in places where a code may be constantly changed for security purposes. It adds an extra level of security to the lock.

The next lock is an electronic lock. Electronic locks are often tied to alarms/sensors, RFID cards, or employee tags. These locks unlock after electronic verification. In the case of an RFID card, the lock would open if an employee scans their card at a lock that they have access to. This type of lock gives added authentication and tracking to exactly who is entering or leaving an area. Rather than an "anonymous" key, electronic lock access is often tied to an individual.

The last type of lock is a biometric lock. Biometric locks open when successful verification of biometric features occurs. The most common biometric locks use fingerprints, iris scanners, and voice scanners. These are typically considered the most secure and are desirable in places that have a small list of people

who need access to something. In theory, only that person would be able to access the lock, so a case of a stolen key, password, or RFID tag is null.

Problem 2 *(9 points)*

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?

The 3 original elements that are required for a fire to start are oxygen, fuel, and heat. The newest addition to the fire tetrahedron is a chemical reaction. Oxygen is what a fire needs for it to sustain combustion, Fuel is what the fire uses to continue to burn for example paper or wood, heat is required for the ignition point to be reached (the point where a material ignites). The chemical chain reaction is talking about the heat needed to maintain the fire and was added because halon systems disrupt fire chemical reactions. Portable fire suppression systems are put into different classes so that they can effectively put out their intended fire types. A class A fire extinguisher will stop fuel from being ignited to stop the fire. Sprinkler systems are designed to spray water on the fire which will reduce the heat of the fire and stop the fire. Gaseous systems are designed to fill the room with gas to stop fires. Carbon dioxide systems interrupt the fire's source of oxygen which will stop the fire. Halon systems will interrupt the fire's chemical reaction which will stop the fire

Problem 3 *(8 points)*

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?

Five Classes of Fire:

Class A: Class A fires are fires when things like wood and paper combust into flames. For example, a desk that is made out of wood.

Control Class A: The best way to control a Class A fire is to put water on the flame to extinguish it. Water helps eliminate any fire caused by something made of wood.

Class B: Class B fires are when combustible liquids and flammable gases like gasoline catch on fire from a flame.

Control Class B: Anything liquid that catches on fire needs something to something dry to extinguish. Water would not be ideal because you add a liquid to another liquid and since gas is an oil, then two won't mix together. You want to use something that is solid and dry.

Class C: Class C fires when something electrical creates a fire when you try to plug it in. For example, an electrical wire can shortage out if a wire is bad and cause it catch on fire.

Control Class C: The way to control a Class C fire is only using either Carbon dioxide or Halon fire extinguishers. One thing you should never use is water to extinguish a Class C because if you throw water on, then you shorten your electrical appliances, so you only can use things that are dry.

Class D: Class D fires when certain metals cause a fire to combust into flames. Examples of these metals are things you can find on the Periodic Table like Magnesium.

Control Class D: Class D fires can spread rapidly and certain metals when caught on fire can cause a chemical problem in the area. What you would need to do to control these fires is find something that can eliminate the fire quickly, but also eliminate the toxic smells in the area.

Class K: Class K fires are caused when an accident happens in the kitchen that causes a flame to happen. For example, say you accidentally pour some olive oil on a flame, then the flame would combust.

Control Class K: The best way to control a Class K is using something that has a water mist like a wet cloth or something with a dry powder like a fire extinguisher.