CIS-481: Introduction to Information Security

InfoSec Chapter Exercise #9

Team: Project Team 11
Participants: Sohal Patel, Erika Maglasang, Nathan Moran, Gabriel Rolink, and Tyler Samuelson

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)*

There are actually four locks based on the triggering process:

- Manual Locks
- Programmable Locks
- Electronic Locks
- Biometric Locks

Manual Locks: A good example of a manual lock would be a padlock or a combination lock: these locks are opened using keys. If you have the key or know the combination the lock will always open. These locks are easy to open, but they are not easy to remove. If you wish to remove these locks, a lock-specialist is required. This sort of lock is preferred when you want to keep your physical belongings safe. Manual locks are useful, because the average person can't open the lock without a key. If the key gets stolen or lost personal belongings will be jeopardized. This is the disadvantage of using manual locks, and the reason why it's not preferred when sensitive information is a stake.

Programmable Locks: These locks are more advanced than manual locks, because when you want to change the combination the tedious process of hiring a locksmith is not required. The owner of the lock can change the combination and the key by themselves. These sort of locks can be used to secure sensitive information like computer rooms. The code can be reset if it is forgotten, and it doesn't require electricity to stay locked.

Electronic Locks: Electronic or Electromagnetic locks are locks that can be hooked up to an alarm system. These sort of locks can be hooked up to multiple alarms available in the system. Electronic locks have endless combinations, this allows for customized security. If a person is unauthorized an alarm will be rung. These locks are used for apartment buildings that require individuals to be "buzzed" in before entering the building. These locks are used to keep apartment complexes safe.

Biometric Locks: These locks are very sophisticated as they scan fingers, palms, hands, iris, retina, voices, and faces. These are used as the key for the mechanism. Fingerprints are impossible to replicate, so the content behind the lock will be kept safe. Biometric locks are used for high level security. An army base or the white house would be some places that require these locks.

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 Key elements of the fire tetrahedron:

- Oxygen (O2),
- Fuel (petrol, gasoline, diesel)
- Heat

If these elements are manipulated a chemical reaction (the fourth element) will happen and a fire will start. A fire is caused by the reactions between Oxygen, Fuel and Heat. This chemical reaction can be more accurately specified as combustion, it is a renewable reaction. When a fire occurs, there is a possibility of serious damage of physical objects. Fire suppression systems remove at least one component of the fire tetrahedron to prevent the fire from happening. Heat can be controlled by avoiding using flammable material in server rooms. Metal should be used, and paper documents should be kept away from hot areas. Water and mist systems can suppress the fuel source of the fire. Finally, carbon dioxide (CO2) systems will remove oxygen from the room and the fire will dissipate.

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)*

There are the five classes:

- **Class A:** Fires that are fueled by natural solids like paper and wood.
  - Water or fire extinguishers are used to put out Class A fires.
- **Class B:** Fires that are fueled by combustible liquids.
  - Extinguish this fire by removing oxygen from the area.
- **Class C:** Fires that are caused by electronic equipment or appliances.
  - Extinguish this fire by removing oxygen from the area. Never use water for an electric fire, if water is used the fire will get worse.
- **Class D:** Fires that are fueled by combustible metals.
  - These fires require special methods to extinguish them.
- **Class K:** Fire fueled by combustible cooking oil in a kitchen.
  - These fires require special water mist or CO2 agents to extinguish safely. This fire can result in an explosion if not handled correctly.