

CIS-481: Introduction to Information Security

InfoSec Chapter Exercise #9

Team: 5

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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?

Manual Locks- locks that require a key or combination to unlock. Useful in situations when the owner just wants a simple lock that uses one key or combination that only he or she knows.

Programmable- Can be changed after they are used, allowing for combination/key changes with no locksmith, while also allowing the owner to change another access method to better security. Programmable locks are popular in situations where they are used to secure computer rooms and wiring sets, because the code can be easily reset, and they don't need electricity to work.

Electronic- locks that can be integrated into alarm systems and combined with other building management systems. Electronic locks can also be integrated with sensors to produce various combinations of locking behavior.

A situation where an electronic lock is preferred is when they can be activated or deactivated by a switch controlled by a secretary, guard, etc.

Biometric- A sophisticated lock that uses the finger, palm, hand reading, iris/retina scanning, voice and signature readers.

Biometric locks are especially useful in situations when someone is transferred, hired, or fired, their physical or logical access controls will be easily and appropriately adjusted.

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-triangle-tetrahedron-and-combustion/>

Name and describe the four elements of the "fire tetrahedron". How do fire suppression systems manipulate the four elements to quell fires?

Heat- This element raises the material to its ignition point.

Oxygen- This element is what the fire uses sustain combustion.

Fuel- this element is used so that the fire can continue burning.

Chemical Chain Reaction- this is the exothermic reaction that is the “fire”.

Fire suppression systems manipulate the four elements to quell fires because all 4 of these elements are needed for a fire and a fire suppression system will eliminate one or more of these elements to stop/reduce the fire. For example, if carbon dioxide was used to suppress a fire it would do so by removing the oxygen which is one of the elements needed to keep a fire going.

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?

1. **Class A fires**- fires that involve ordinary combustible fuels such as wood, paper, textiles, rubber, cloth, and trash. Extinguished by agents that interrupt the ability of the fuel to be ignited. Water and multipurpose dry chemical fire extinguishers are ideal.
2. **Class B fires**- fires fueled by combustible liquids or gases. Extinguished by agents that remove oxygen from the fire. Carbon dioxide, multipurpose dry chemical, and halon fire extinguishers are ideal.
3. **Class C fires**- fires caused by energized electrical equipment or appliances. Extinguished with nonconducting agents only. Carbon dioxide, multipurpose dry chemical, and halon fire extinguishers are ideal. Never use water.
4. **Class D fires**- fires are fueled by combustible metals. Require special extinguishing agents and techniques.
5. **Class K fires**- fires are fueled by combustible cooking oil and fats in commercial kitchens. The fires require special water mist, dry powder, or CO2 agents to extinguish.

The class of a fire dictate how to control the fire because it lets us know what material fueled the fire and subsequently lets us know what is needed to safely put it out.