Cool Careers for Girls in CyberSecurity
Systems Engineering

Duration: Each student session last for 20 minutes. Students will have 5 minutes to travel to their next session.

Session Overview:

Students will connect the analysis required for systems engineering to evidence collection for crime investigation.

Objectives:

Review evidence list

Use systems engineering analysis skills to determine what further evidence/ investigation would be needed to solve the crime.

Materials/Supplies (include AV needs):

Evidence List

Systems Engineering Handouts

Introduction:

Ask the students to think about their latest "crush." Ask if they observe this person. Do they know his homeroom or where he sits during lunch? Do they know who he hangs out with? Or which after school events they attend? Do they know which subjects he likes? Which type of music he likes? Do they notice the type of clothes he wears? Do they notice the way he treats other people?

Explain that observing and paying attention to behaviors (gathering data) is nothing more than analysis. A systems engineering professional watches the behavior of the network or of certain viruses in cyber. Same basic principle.

Lesson:

Students will review the list of evidence with an system's perspective to analyze what other evidence would be needed to identify the criminal. This connects with the analysis role of the systems engineer.

Final Thoughts:

Part of the job of a systems engineers (SE) involves developing requirements. A SE must understand purpose/intention for the system. So, they collect information from multiple sources and then take action based upon the analysis. This is just like the real life example of the "crush" example — If you want this person to notice you, you need to be where they are in order to strike up a conversation. If you want to avoid being noticed, you would have to ensure they don't know you are there.

In the cyber world, the requirement is to come up with ways that defeat viruses and intrusions; but, you have to understand the virus behaviors in order to block them. You may also want to put the virus in a place where it can't do harm but allows you to study it at a deeper level. The only difference is the scale. While the example of the crush involves a few connections, the crime with the three suspects involves many more a network has millions and millions of connections. This is why we need lots of people to protect and defend them.

Evidence List

- Miss Florida's lock shows evidence of tampering
- A model of an advanced radar system has been stolen
- Intelligence indicates that sale of the advanced radar system will occur after the top 10 contestants have been selected
- Intelligence intercepted a message that a large amount of cash has been deposited into a bank account of several of the judges for the pageant.
- The rooms to the contestants costumes are locked with an electronic key
- The contestants ship their costumes using a delivery service to the pageant location

Have all the connections been explored? What else would you want to know before using your analysis skills to identify a criminal?

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