Cool Careers for Girls in CyberSecurity
Networking

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

Session Overview:

Students will perform the role of network routers to understand how digital information is sent across the internet. They will also observe packet sniffer to explore how passwords can be sent in clear text.

Objectives:

Perform the role of a router
Observe packet sniffing software
Make conclusions about the vulnerability of usernames and passwords sent in clear text

Materials/Supplies (include AV needs):

- String—cut in various lengths (some will be too short to reach across the circle)
- Large cardboard with "Hi!" (these are messages)
- Signs on strings to hang around "routers'" necks with city names on them
- Egg timer
- tape
- A couple

Introduction:

Networking is all about sending messages—get students to verbally list several types of messages they send each day (phone calls, pictures, etc)
Display router(s) and explain that this is an example of a networking device that accepts and passes on messages all the time.
Explain, "We are now going to see what routers have to deal with. Each of you will take the place of a router in a city. You will be faced with some of the same decisions routers have to make."

Lesson:

1. Seat "cities" in circle; stack several "messages" in front of each

2. Join each city to cities on either side by taping strings to tables

3. Send a single message from one city to another across from it on the circle (they have to hand it one to another)—it has to get there before the egg timer times out. Ask, "How would it be easier and faster?" Answer: hand it directly across. "What would you have to know?" Answer: where the other city is.

4. Send a single message, tell them they can hand it however they want, and take down the string before it gets there—they have to figure out where to hand it so it gets there before egg timer times out—some strings won't span the gap and they have to rethink it

5. Do variations on this a couple of times

6. Discuss: what could cause a "city" to go "offline" (lose its connection)? (hurricane, etc). Tell them that routers are intelligent enough to figure out how to get the message where it needs to go via alternate routes—and that networkers are the people who set them up to do this!

7. Optional, if time: Stage a "collision": send a bunch of messages around the circle so that somebody ends up with two, handing off in both directions at the same time, and/or with a stack of messages to deal with

8. Discuss: routers also have to deal with large amounts of information—how do you think they handle this??

Final Thoughts:

a. smart devices make sure all our messages get where they are supposed to go
b. smart as these devices are, the people who program and manage them are smarter! A career in networking gives you the opportunity to design ways to send and receive messages