Integrating Quantum Concepts into Cybersecurity

Activity 4: Tutorial

1. Using a shared sequence as in the above authentication protocol simulate a possible exchange between Alice and Bob

2. What would be the effect of a man in the middle attack on the authentication protocol?

3. Follow the link https://arxiv.org/abs/1002.3362 to the quantum tripwire paper and using a search engine as required explain the following:

   1. What is Interaction Free Measurement?

   2. What is a lossless Mach-Zehnder interferometer and a Dark Port?

   3. What is the quantum Zeno Effect?

   4. Explain in overview how an intruder is detected using this system without knowing

4. What is a Quantum Man on the side attack?

5. What other forms of Malware can you find? Include an explanation in overview of each attack.

6. At what stage has quantum cryptography and quantum integrity achieved?