

Lab Assignment: Chapter 3 – Advanced Cryptography Concepts

Instructions:

Complete the tasks below and compile your findings into a report of 600–800 words. Use diagrams, charts, or figures where appropriate. Cite at least three academic or industry sources in APA format.

Lab Tasks:

1. Real-World Cryptography Case Study

Research a real incident where encryption or lack of encryption played a significant role (e.g., ransomware attack, data breach, whistleblower case). Explain what cryptographic practices were involved, how they failed or succeeded, and what could have been done differently.

2. Cryptographic Technology Deep Dive

Choose one cryptographic technology (e.g., AES, RSA, ECC, Blockchain) and provide a detailed overview of how it works, where it is used, and its strengths and weaknesses.

3. Post-Quantum Cryptography

Research how quantum computing threatens modern encryption algorithms. Describe what post-quantum cryptography is and identify at least one example of a post-quantum algorithm currently under development.

4. Encryption in Practice

Evaluate and compare two encryption tools (e.g., BitLocker, VeraCrypt, TDE, GnuPG). Describe how they work and when each would be appropriate to use in an enterprise environment.