**Ethical Hacking Development Lab**

**Research Assignment 1**

# Title:

# Designing a Wireless Network

# Overview:

# You have been asked to design a wireless network for the 12th floor of the university building.

# Explain (in 500 words the tools and resources you will need to complete the design.

# In another 500 words, explain the difficulties you foresee in designing an effective wireless network for the floor that is also secure.

# Purpose:

The purpose of this research assignment is to familiarize students with designing a wireless network that creates a reliable, efficient, and secure wireless infrastructure and identify any potential difficulties.

**Objective:**

The objectives of this research assignment include:

1. APA6 style writing familiarity and practice.
2. Planning a wireless design that promotes optimal performance, coverage, and security.
3. Researching various wireless technologies to make the most informed decision about connectivity, performance, coverage, range, security, products, management and monitoring, and cost-effectiveness.
4. Research on strategic and tactical approaches to cybersecurity of wireless networks.

**Tools Required:**

N/A

**Steps:**

N/A

**Assessment:**

Students can be assessed on their ability to:

1. See Research Assignment Rubrics.
2. Research Network Requirements: Students should demonstrate a clear understanding of the organization's needs and requirements for the wireless network. This includes identifying the coverage area, number of users and devices, expected data transfer rates, and any specific performance or security requirements.
3. Research and Design Network Topology: Students should discuss design of an appropriate network topology that reflects the organization's needs. This involves determining the placement of access points, routers, switches, and other network components to optimize coverage, performance, and scalability.
4. Discuss Coverage and Signal Strength: Students should assess the physical environment and design a wireless network that provides adequate coverage and signal strength throughout the desired area. This may involve discussing conducting site surveys, analyzing potential sources of interference, and strategically placing access points or antennas.
5. Research and Discuss Network Security: Students should consider and incorporate appropriate security measures to protect the wireless network from unauthorized access and data breaches. This includes implementing encryption protocols, authentication mechanisms, access controls, and other security features.
6. Problem-solving and Critical Thinking: Students can be assessed on their ability to identify and address potential challenges or limitations in their design. They should demonstrate problem-solving skills, critical thinking, and the ability to propose alternative solutions when faced with constraints or trade-offs.

**\*This is not a format for your paper, these are just some ideas to consider when writing your paper. Be creative.**