ABSTRACT

Network penetration testing or often referred to as pentesting is the process of evaluating computer network security by simulating attacks from unauthorized parties. The purpose of network penetration testing is to identify vulnerabilities or security holes that can be exploited by real attackers. This process involves various techniques and tools to try to penetrate the defenses of the network and connected systems.

In this study, a network security system was created that can observe wireless network systems that have wireless network access. This tool has a feature that detects Dos (Deauthentication Of Service) attacks. In addition to detecting deauth attacks, this system is also designed to log suspicious network activity and provide periodic reports to network administrators. By using hardware such as esp32 integrated with a Wi-Fi module and specially developed software, this system is able to monitor continuously with low power consumption, making it suitable for use in environments prone to cyber attacks.

This research involves several main stages, including system design, hardware and software implementation, and performance testing and evaluation. In the testing phase, the system was tested in real conditions in the Faculty of Applied Sciences Building environment to assess its effectiveness in detecting attacks and its ability to provide timely warnings. The test results showed that the values received by the detector ranged from 113 to 138. The relatively small fluctuation in value indicates that the detector responds consistently to the attacks carried out. That this system is able to detect deauth attacks with a high level of accuracy and provide a fast response, so it can be relied on as a wireless network security solution. This research also contributes to the development of more sophisticated and efficient network security technology, and opens up opportunities for the application of similar systems in other environments with similar security needs.

Keywords: *Network Penetration Testin, Wirelless Network Security, Deauthentication Attack Detection, Realtime Monitoring, IDS (Intrusion Detection System)*