PROJECT REPORT **NETWORK PROGRAMMING (NW411)**

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Title of Report	: **WIFI SCANNER**

ABSTRACT

The proposed project Wi-Fi Scanner detects Wi-Fi signals in the immediate surrounding and displays necessary information about them such as Network Name, MAC Address, Maximum Speed, etc.

Using Scan Method, will scan the wireless networks available nearby and display some features including its mac address, security, channel, signal strength, encryption type, radio type, basic rates, network type related to each available network. The idea behind the proposed project Wi-Fi Scanner is to provide ease to Wi-Fi users. Though the Wi-Fi Scanner is helpful for normal access clients who need to discover the signal quality distribution for their wireless or remote network at home or select a position for their access point for ideal sign quality.

Utilizing Wi-Fi Scanner, you can assess the distribution of wireless networks by channel and select the least congested bandwidth for their access point, allowing them to increase their connection speed significantly.

BACKGROUND

There's no denying it - networking has all the while gotten both more perplexing and more basic to business tasks and regular working. Early networks comprised of devices associated with a single switch sharing a broadcast area. Presently, networks arrive in different variety of forms—Local Area Network (LAN); Wide Area Network (WAN), like the internet; and virtual LAN (VLAN), which can logically partition a larger infrastructure comprised of multiple broadcast domains, cloud-based networks, and more.

Wireless, remote, and mobile connections have additionally widened the scope of devices accessing the web and partaking in networks.

While smart innovative technologies prepared to impart and impart valuable information in order to communicate and share useful data with one another simplify many processes and frequently better our everyday lives, they additionally increment the volume of networking devices and complicate network infrastructure. This, thus, can prompt a higher potential for network failure. Should a business' Wi-Fi go down, weak signal quality, or experience frequent lags, network devices can't access the information, applications, and services they may need at speed —burdens that can acquire exponential expenses as lost efficiency and, more worst, lost clients.

Thus, network performance observing is essential and maybe the crucial duty of the IT department. The implementation of a Wi-Fi scanning solution is vital for many basic reasons.

Wi-Fi Scanner let’s you to easily discover visible wireless networks and its related information. The tool obtains the network name (SSID), signal strength (RSSI) and quality, MAC address (BSSID), channel, maximum and achievable data rate, security, and much more.

DESCRIPTION OF THE PROJECT WORK

i. Introduction

Wi-Fi scanning is one of the fundamental elements in a wireless or remote network. It is the instrument by which a user device (for example Personal Computer (PC) or an application finds the wireless or remote networks that are in the scope of the Wi-Fi connector. As a component of this cycle, a scanning device or application collects info about the sign quality, channel, security configuration, and capabilities of close by networks. User devices utilize this data to figure out which networks they can join or connect to.

The Wi-Fi Scanner allows the user to find wireless networks wherever they are by displaying information about network ranges, signal strengths, and security levels.

SSID

SSID stands for Service Set Identifier and is the name that is assigned to any given wireless network. Each wireless network has a semi-unique (unique to the area) SSID that allows the user to distinguish between various networks.

Signal Strength

The signal strength of a network refers to the network's bandwidth allocation and availability to a given location. The further a user is away from a network's router, the lower the signal strength will be and the more the user will experience downtime and slow Internet connection.

Security Type

The Wi-Fi Scanner can also help the user find security risks within their network by showing the user where their network extends beyond their firewalls.

So, the benefit of using Wi-Fi Scanner is to give the users details about their and nearby Wi-Fi networks like the configuration, security type, and signal strength etc.

ii. Aim & Objective

The basic aim and objective of this project is to provide information to user of the following:

- **MAC Address**: It is a media access control address that is a unique identifier assigned to a network interface controller for use as a network address in communications within a network segment.

- **Channel**: A band of frequencies used in computer networking.

- **Basic Rates**: The Basic Rate setting is not actually one rate of transmission but a series of rates at which the Router can transmit. The Router will advertise its Basic Rate to the other wireless devices in your network, so they know which rates will be used.

- **Network Type**: when to use an infrastructure network and to easily add more access point to boost the range.

- **Encryption level**: It is a standard encryption protocol that we can use with security type so that data with would be confidential, authentication would be accurate and to protect the access control.

iii. Techniques/databases used

- Visual Studio
- Language: C#

iv. Results

The proposed project of Wi-Fi Scanner, however, is easy to use and allows the user to detect networks that are further away while increasing signal strength for those networks. User will be able to view the SSID, MAC Address, Channel, Signal, Security Type, Basic Rates, Encryption, and Radio Type.

v. Conclusion

The Wi-Fi Scanner's main feature is the ability to find usable networks within a geographical area. The Wi-Fi Scanner picks up networks at a further distance and at a better signal strength than other wireless antennas and adapters, making the device an excellent method of tracking down the nearby networks.