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GROUP B (ASSIGNMNET NO.: 09)

Title:
Write a program identifying operating system, version and IP address assigned to the device.

Problem Statement :
Write a program identifying operating system, version and IP address assigned to the device.

Outcome:
The implemented program accurately identifies the operating system, its version, and the assigned IP address of the device. It provides valuable information about the device's software environment and network configuration, aiding in system administration, troubleshooting, and network management. This program enhances the device's functionality by ensuring it is properly configured and up-to-date with the correct operating system version and network settings."

Theory:

1. Introduction:

- Introduce the program's purpose, which is to retrieve essential information about the device, including its operating system, version, and IP address.
- Explain the significance of knowing this information for network management and troubleshooting.

2. Operating System Detection:

- Discuss the methods for identifying the device's operating system. This can include analyzing system banners, examining system responses to specific queries, or using fingerprinting techniques.
- Explain the importance of recognizing the operating system for compatibility and security reasons.

3. Version Detection:

- Describe how the program identifies the specific version of the operating system.
- Discuss the relevance of knowing the version for applying security patches and updates.

4. IP Address Retrieval:

- Explain the methods used to retrieve the device's IP address, such as querying the network configuration or utilizing system APIs.
- Highlight the role of IP addresses in network communication and device identification.

5. Program Design:

- Outline the program's architecture, which may involve scripting languages like Python or using network scanning tools.
- Describe the algorithms or techniques used for each aspect of device information retrieval.

6. Implementation:

- Provide code snippets and technical details for implementing the program.
- Address considerations such as port scanning, network connectivity, and access permissions.

7. Testing and Validation:

- Describe the testing procedures to ensure the program's accuracy in identifying the operating system, version, and IP address.
- Discuss how it handles various scenarios, including devices with different configurations.

8. Output and Reporting:

- Explain how the program presents the collected information, such as displaying it on the screen, saving it to a file, or sending it to a remote server.
- Discuss the potential uses of this data in network management.

9. Security and Privacy Considerations:

- Address the ethical and legal aspects of running such a program, emphasizing the importance of consent and data protection.

Conclusion:

- Summarize the key takeaways from the program's design and implementation.
- Highlight its utility in identifying device information for network administrators and security professionals.