**CS-4061 Ethical Hacking Concepts & Practices**

**Project 01: MAC Address Spoofer**

**Submission Deadline: 03 March 2024 11:59:59 PM**

**Objective:**

The objective of this project is to develop a **Python** tool that enables users to manipulate MAC addresses on both Windows and Linux operating systems. The tool will provide a graphical user interface (GUI) for ease of use, but all functions must also be accessible via the terminal (GUI or Terminal, any one).

**Project Requirements:**

**1. Display System Information:**

- Upon running the tool, it should display the following information:

- Developer Name

- Roll Number

- Section

- Degree

- Campus

- Course Subject

- Current Date and Time (System's Date and Time)

- This information will be followed by a brief description of the tool's purpose and options for further actions.

**2. Functionality:**

- Display current MAC address(es) of the system, including NIC name(s) and MAC address(es). If multiple network interface cards (NICs) are available, list all MAC addresses.

- Provide options to change the MAC address:

- **Random**: Change the MAC address randomly.

- **From a list of manufacturers**: Display a list of manufacturers and allow the user to select from them. Include at least 30 company options such as Dell, HP, Apple, Thinkpad, etc. The list of MAC addresses should be sourced from reputable internet resources. (Note: Include MAC addresses of laptops/PCs, Android, and iOS devices only).

- **From current network**: Scan the current network for other connected devices' MAC addresses (detecting whether Wi-Fi or LAN is connected), and list the MAC addresses of these devices. This simulates impersonation/masquerading.

- Provide an option to reset the MAC address to default if MAC spoofing or changes were previously done.

**3. Testing and Verification:**

- Test the code thoroughly and verify that MAC addresses are successfully updated by analyzing network traffic using Wireshark.

- Capture screenshots of Wireshark displaying each packet captured for MAC addresses of laptops, Android devices, and iOS devices. Ensure that testing covers all available options in the tool.

**Additional Resources for MAC Address Lists:**

* [List of laptop brands and manufacturers - Wikipedia](https://en.wikipedia.org/wiki/List_of_laptop_brands_and_manufacturers)
* [MAC Address Lookup - MAC/OUI Vendor Search (dnschecker.org)](https://dnschecker.org/mac-lookup.php)
* [MAC Address Vendor Lookup | MAC Address Lookup (maclookup.app)](https://maclookup.app/)
* [List of all mobile phone brands - GSMArena.com](https://www.gsmarena.com/makers.php3)

**Deliverables:**

- Python code for the MAC Address Spoofer tool.

- Detailed documentation explaining the code structure, functions, and usage instructions along with screenshots demonstrating the tool's functionality and Wireshark packet captures. (Must be a docx document only with naming convention as **RollNumber-FullName-P01.docx**. Failing to comply with this will result in zero mark in report.)

- Do Not Zip, submit both files (.py and .docx) separately.

- **Demonstrations will be taken for this project.**

**Teaming:**

This project is on an individual basis. All students (not participating in CTF) must work on this project individually.

**Generative AI and helping material:**

Students are allowed to use any available sources including but not limited to class fellows, seniors, juniors, industry experts, generative AI like ChatGPT, blogs, and community platforms. However, in report, you must cite each and every source you used for help.

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**Marking Criteria:**

**1. System Information Display (10 marks):**

- Correct display of developer information, including name, roll number, section, degree, campus, course subject, and current date and time.

- Clarity and formatting of displayed information.

**2. GUI Implementation (10 marks):**

- Implementation of a user-friendly graphical user interface (GUI).

- Smooth navigation and layout of GUI elements.

- GUI is recommended, however student can display user friendly options on terminal for easy navigation.

**3. Functionality (40 marks):**

- Displaying current MAC address(es) of the system (10 marks).

- Random MAC address generation functionality (10 marks).

- Implementation of MAC address selection from a list of manufacturers (15 marks).

- Network scanning and listing of connected devices' MAC addresses (25 marks).

**4. Reset Functionality (10 marks):**

- Implementation of a reset option to revert MAC address changes to default.

**5. Testing and Verification (20 marks):**

- Thorough testing of the tool's functionality.

- Successful verification of MAC address changes through network traffic sniffing using Wireshark.

- Clarity and completeness of Wireshark packet capture screenshots.

**6. Documentation (10 marks):**

- Detailed documentation explaining the code structure, functions, and usage instructions.

- Clear and concise explanations of how to use the tool and interpret the results.

**7. Extra Credit (10 marks):**

- Implementation of additional features beyond the basic requirements.

- Creativity and innovation in the approach to solving the problem.

**Total Marks** **= 100**

**ZERO marks will be awarded for whole project if student didn’t appear for demonstration.**