Assignment #1

NES 470, Spring 2023, Dr. Ahmad T. Al-Hammouri

Objectives:

To acquire a hands-on experience with the SMIv2 data modeling language to write a MIB module.

Problem Statement:

In this assignment, you are required to use the SNMP SMIv2 modeling language to write a SNMP MIB module that gives the ability of managing (querying and manipulating) the firewall table on a machine using SNMP.

The module requirements are as follows:

- The module name is `ID-xxxxxx`, where '`xxxxxx`' is your student ID.
- All the managed objects below descend (directly or indirectly) from node **`nes470(9000)`** under the `enterprises` node.
- Each entry in the firewall table defines a firewall rule and has the following information:
  - Source MAC address.
  - Destination MAC address.
  - Source IP address.
  - Destination IP address.
  - Source TCP/UDP port number.
  - Destination TCP/UDP port number.
  - Protocol type: one of TCP, UDP, or ICMP
  - Action: one of accept, drop, or reject
  - Number of packets that have matched this rule/entry.
- The SNMP manager can **retrieve** all the data in the firewall table.
- The SNMP manager can **modify** all the data in the firewall table **except the number of packets that have matched a given rule**.
- Each managed object must have the **appropriate** access permissions and the **appropriate** data type.
- The module must conform to the **SMIv2** RFC (RFC 2578).
- When validated by the `smilint` tool with **severity level 4**, i.e., via the options `smilint -l 4 -i group`, the module must produce **no** errors and **no** warnings.

Hints:

- You are highly encouraged to start with, and build upon the *skeletal MIB module* presented in Section 5.7 in the RFC 2578 document (`https://tools.ietf.org/html/rfc2578`).
- You are highly encouraged to look into, to investigate, and to mimic the IETF's `interfaces` MIB module or other actual standard MIB modules.