Assignment #5

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

Due date: Sunday 31/12/2023 at 11:55pm.

Objectives:

To acquire a hands-on experience with the YANG data modeling language to write a YANG model.

Problem Statement:

This is a sequel assignment to Assignment #2. You are going to re-implement the model for the Webserver's **access log records** using the newer YANG modeling language instead of SMIv2.

The model requirements are as follows:

- The module name is `ID-xxxxxx`, where '`xxxxxx`' is your student ID.
- Each record in the access log file consists of the following fields:
  - The IP address of the client,
  - The timestamp of the request (represented in Epoch Unix time),
  - The HTTP method,
  - The resource/file requested,
  - The HTTP version,
  - The status code of the response,
  - The number of bytes transferred to the client, and
  - The client's user agent.

  The following lines give an example of the contents of the access log file

```
55.55.55.55 1692960911 GET /pics/5star2000.gif HTTP/1.1 304 0 "Mozilla/5.0 (Windows NT 10.0; Win64; x64)"
12.11.15.90 1692960914 GET /asctortf/ HTTP/1.1 200 942 "Mozilla/5.0 (Windows NT; Windows NT 10.0; en-US)"
55.55.55.55 1692960915 POST /search HTTP/1.1 400 612 "Mozilla/5.0 (Windows NT; Windows NT 10.0; en-US)"
73.35.93.19 1692960915 GET / HTTP/1.1 200 396 "Mozilla/5.0 (Windows NT 10.0; Win64; x64)"
81.73.14.23 1692960919 GET /pics/wpaper.gif HTTP/1.0 200 6248 "Mozilla/4.05 (Macintosh; I; PPC)"
28.56.28.75 1692960920 POST /search HTTP/1.0 200 1563  "Mozilla/4.05 (Macintosh; I; PPC)"
82.62.37.64 1692960922 POST /cgi-bin/newcount HTTP/1.0 201 100 "Mozilla/4.05 (Macintosh; I; PPC)"
```

- The RESTCONF client can **retrieve** any field of each record.
- All the management information (i.e., the data nodes) are **mandatory**.
- Each data node must have the appropriate data type and the appropriate classification of being configuration or state data.
- The model must conform to **YANG 1.1** RFC.
- When validated by the `pyang` tool, the model must produce **no** errors and **no** warnings.

Hints:

- As discussed in class, a **table** can be constructed with a YANG **`list`** data node.
- You are highly encouraged to start with, and build upon the simple `example-system` YANG module discussed in class.

- You are highly encouraged to look into, to investigate, and to mimic the IETF's or the OpenConfig's `interfaces` YANG modules, or other real and standard YANG modules.
- Run `pyang --tree-help` to obtain a full explanation of the symbols used in the tree output of `pyang`.
- Edit the file inside the "`~/yang/standard/ietf/RFC`" directory.

Grading Policy:

- You must turn in only **working code**. If your code gives run-time errors, you will receive **zero** credit.
- Partial credit is given only for working code that does not implement all the requirements above.

Deliverables:

- Name the model as follows `ID-xxxxxx.yang`, where '`xxxxxx`' is your students ID.
- Submit **ONLY** the YANG model to the `elearning` via the provided link. Do **NOT** send it via e-mail or a message from within the `elearning` even before the deadline because it will be deleted tacitly.
- ONLY one student from each group must submit the file.