LAB – CREATING FUNCTIONS

OBJECTIVE

In this lab, you will create functions to read device information from a file, and to display device information in a formatted table.

PART 1

Open a terminal and switch to the lab directory

STEP 1: OPEN A TERMINAL WINDOW

Double-click the Terminal icon on the desktop to open the terminal window for use in this lab.

STEP 2: CHANGE DIRECTORY

Change to the directory **labs/prne/** in the user home directory, which holds the files for the course labs.

```
~$ cd labs/prne/
```

PART 2

Open **Visual Studio Code**, create a new file and save it with a filename of **creating-functions-part-2.py**, ensuring to save the file in the **~/labs/prne/** directory. This python application will read device information from the **devices-08.txt** file using a function without any parameters on a global devices list.

STEP 1: CREATE FUNCTION TO READ INFORMATION

Create a function that will read device information from the **devices-08.txt** and store the device information in a list.

```
# Function to read device information from file
def read_device_info():

    # Read in the devices from the file
    file = open('devices-08.txt', 'r')
    for line in file:

        # Get device info into list
        device_info_list = line.strip().split(',')
        devices_list.append(device_info_list)

    # Close the file
    file.close()
```

STEP 2: CREATE FUNCTION TO DISPLAY

Create a function that will take the device information from your list, and print it out in a nicely formatted table.

```
# Function to go through devices displaying them in table
def print_device_info():

    print('')
    print('Name     OS-type  IP address           Software         ')
    print('-------- -------- -------------------- --------------------')

    # Go through the list of devices, displaying values in nice format
    for device in devices_list:

        print('{0:8} {1:8} {2:20} {3:20}'.format(device[0], device[1],
                                                 device[2], device[3]))

    # Display a blank line to make easier to read
    print('')
```

STEP 3: CREATE MAIN CODE

Your **main** code should simply call your **read device info** function and then call your **print device info** function.

```
# Main:
# Create the outer list for all devices
devices_list = []

# Read device info
read_device_info()

# Display information
print_device_info()
```

STEP 4: SAVE, RUN AND VERIFY APPLICATION

Save you application and then run it from the terminal rather than from within visual studio code.

```
~/labs/prne$ python3 creating-functions-part-2.py
```

The output from your application will be displayed in your terminal window, verify that it is comparable to below.

```
devasc@labvm:~/labs/prne$ python3 creating-functions-part-2.py

Name     OS-type  IP address           Software
-------- -------- -------------------- --------------------
d01-is   ios      192.168.122.1        Version 5.3.1
d02-is   ios      192.168.122.2        Version 4.22.18
d03-nx   nx-os    192.168.122.3        Version 5.3.1
d04-nx   nx-os    192.168.122.4        Version 5.3.1
d05-xr   ios-xr   192.168.122.5        Version 4.16.9
d06-xr   ios-xr   192.168.122.6        Version 5.3.0
d07-xe   ios-xe   192.168.122.7        Version 4.16.0
d08-xe   ios-xe   192.168.122.8        Version 5.3.0
```

PART 3

Open **Visual Studio Code**, create a new file and save it with a filename of **creating-functions-part-3.py**, ensuring to save the file in the **~/labs/prne/** directory. This python application passes a parameter to a function, reads a file and displays the data in a table. The application should allow the user to input the name of the file to read in.

STEP 1: CREATE FUNCTION TO READ INFORMATION

Create a function that will read input from a file and take the name of the file as a parameter, passed by the caller. The function will put the device information into the global **devices_list**.

```
# Function to read device information from file
def read_device_info(devices_file):

    # Read in the devices from the file
    file = open(devices_file, 'r')
    for line in file:

        # Get device info into list
        device_info_list = line.strip().split(',')
        devices_list.append(device_info_list)

    # Close the file
    file.close()
```

STEP 2: CREATE A FUNCTION TO DISPLAY

Create a function that will display device information from a list passed as a parameter to your printing function. The information in the list will be the same as what is in the **devices-08.txt** file.

```
# Function to go through devices displaying them in table
def print_device_info(list_of_devices):

    print('')
    print('Name     OS-type  IP address           Software         ')
    print('------   -------  ------------------   ------------------')

    # Go through the list of devices, displaying values in nice format
    for device in list_of_devices:

        print('{0:8} {1:8} {2:20} {3:20}'.format(device[0], device[1],
                                                 device[2], device[3]))

    # Display a blank line to make easier to read
    print('')
```

STEP 3: CREATE MAIN CODE

Your main code should create the empty **devices_list** and then prompt the user to enter the name of the file containing the device information.

```
# Main:
# Create the outer list for all devices
devices_list = []

# Display a blank line to make easier to read
print('')

# Prompt user to enter the name of the file
# containing the device information
devices_file = input('Enter devices filename: ')
```

STEP 4: OPEN FILE FOR READING

Once the user has entered the name of the file, your application should call your function to read device info, passing the name of the file as an argument and then call the function to display the device information.

```
# Read device info
read_device_info(devices_file)

# Display information
print_device_info(devices_list)
```

STEP 5: SAVE, RUN AND VERIFY APPLICATION

Save you application and then run it from the terminal rather than from within visual studio code.

```
~/labs/prne$ python3 creating-functions-part-3.py
```

Using the file **devices-08.txt**, the output from your application will be displayed in your terminal window, verify that it is comparable to below.

```
devasc@labvm:~/labs/prne$ python3 creating-functions-part-3.py

Enter devices filename: devices-08.txt

Name     OS-type  IP address          Software
------   -------  ------------------  ------------------
d01-is   ios      192.168.122.1       Version 5.3.1
d02-is   ios      192.168.122.2       Version 4.22.18
d03-nx   nx-os    192.168.122.3       Version 5.3.1
d04-nx   nx-os    192.168.122.4       Version 5.3.1
d05-xr   ios-xr   192.168.122.5       Version 4.16.9
d06-xr   ios-xr   192.168.122.6       Version 5.3.0
d07-xe   ios-xe   192.168.122.7       Version 4.16.0
d08-xe   ios-xe   192.168.122.8       Version 5.3.0
```

PART 4 (OPTIONAL BUT HIGHLY RECOMMENDED)

As this lab is completed in NETLAB+ and your code files will be erased when the reservation ends, it is advisable to save your files in GitHub under your repository for this course.