Creating Functions

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

Create a Function Using Global Variables

Create functions without parameters: use a global `devices` list for the purposes of this lab.

Step 1

Create a function that will read device information from the devices file located in the PRNE/section11 folder. Store the device information in a Python list.

Answer

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

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

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

    file.close() # Close the file since we are done with it
```

Step 2

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

Answer

```
#---- Function to go through devices printing them to table -----------
def print_device_info():

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

    # Go through the list of devices, printing out 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])

    print ''
```

Step 3

Your 'main' code should simply call your 'read device info' function, then call your 'print device info' function.

Answer

```
#---- Main: read device info, then print ------------------------------

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

read_device_info()
print_device_info()
```

```
cisco@ubuntu:~/Desktop/PRNE/section11$ cat func.py
def read_info():

        file = open('devices','r')
        for line in file:

                dev_info = line.split(',')
                dev_list.append(dev_info)

        file.close()

def print_info():

        print ''
        print ' Name         OS-Type       IP Address          Version'
        print '--------    -----------    --------------    -------------'

        for device in dev_list:

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

        print ''

dev_list = []

read_info()
print_info()
```

Create a Function Using Parameters

The purpose of this exercise is to exercise passing of a parameter to a function. You will create an application that includes functions for reading a file and printing the data in a table. In this exercise, your application should allow the user to input the name of the file to be read.

Step 4

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

Answer

```
#---- 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:

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

    file.close() # Close the file since we are done with it
```

Step 5

Create a function that will print device information from a Python list. The list will be passed as a parameter to your printing function. The information in the list will be the same as what is in the 'devices' file.

Answer

```
#---- Function to go through devices printing them to table -----------
def print_device_info(list_of_devices):

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

    # Go through the list of devices, printing out 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])

    print ''
```

Step 6

Your main code should create the empty_devices list, then prompt the user to enter the name of the file containing the device information.

Answer

```
#---- Main: read device info, then print ------------------------------

devices_list = [] # Create empty list of devices

print ''
devices_file = raw_input('Enter devices filename:')
```

Step 7

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 print the device information.

Answer

```
read_device_info(devices_file)
print_device_info(devices_list)
```

```
cisco@ubuntu:~/Desktop/PRNE/section11$ cat reader-in.py
#-- Note the "dev_file" being specified in the function - this is what the user will input

def reader_in(dev_file):

        f = open(dev_file,'r')

        for i in f:

                dev_info = i.strip().split(',')
                dev_list.append(dev_info)

        f.close()

def print_info(list_o_dev):

        print ''
        print ' Name       OS-Type          IP Address        Version'
        print '--------  ------------      ------------      ---------'
        print ''

        for d in list_o_dev:

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

        print ''

dev_list = [] # empty list for first function
print ''
dev_file = raw_input('Enter filename:')
reader_in(dev_file)
print_info(dev_list)
```

```
cisco@ubuntu:~/Desktop/PRNE/section11$ python reader-in.py

Enter filename:devices

 Name       OS-Type          IP Address        Version
--------  ------------      ------------      ---------

d01-is   ios      Mgmt:10.3.21.5       Version 5.3.1
d02-is   ios      Mgmt:10.3.21.6       Version 4.22.18
d03-nx   nx-os    Mgmt:10.3.21.7       Version 5.3.1
d04-nx   nx-os    Mgmt:10.3.21.8       Version 5.3.1
d05-xr   ios-xr   Mgmt:10.3.21.8       Version 4.16.9
d06-xr   ios-xr   Mgmt:10.3.21.10      Version 5.3.0
d07-xe   ios-xe   Mgmt:10.3.21.19      Version 4.16.0
d08-xe   ios-xe   Mgmt:10.3.21.22      Version 5.3.0
```