RIT | Golisano College of Computing and Information Sciences
School of Information

NSSA221 Systems Administration I

Scripting Assignment 01 – Ping Test

The Basics:

The end-user will run this script to test network connectivity. The intent is to make troubleshooting easier by having the end-user run the script and communicate to the system administrator if each test was successful or not. From the CentOS 8 virtual machine, the script will test connectivity to the gateway, a remote IP address, and a URL to validate that DNS resolution is working. Because the end-user is running the script, the output must be direct and unambiguous. You want to be confident that the end-user is giving you accurate information.

Script Requirements:

The script must be written in Python 3 and titled "*ping_test.py*." It will be run and tested on the CentOS 8 virtual machine in your infrastructure. The infrastructure is the enterprise environment you are working in; your supervisor does not care that it can run on your laptop. The instructor or teaching assistant will run it and award points based on the requirements and overall functionality. Points awarded will be based on the criteria in *"Table 1 – Script Grading Rubric."*

Additional Information:

The default gateway is the pfSense LAN interface. You may hardcode the address for five points, meaning that the highest grade you can receive for the assignment is 95. For ten points and a possible 100 points, find the gateway IP address using the system information. For the remote IP address, use RIT's DNS, which is 129.21.3.17. For the DNS test, use www.google.com.

Script Demo:

To see a demo of the script, download the zip file (script_demo_files) from myCourses to the CentOS 8 virtual machine. Extract the files to the /tmp directory. Run the following command in /tmp to see the script in action.

```
scriptreplay --timing=time.log ping_test.scr
```

Script Submission:

You must follow these instructions when submitting your script to receive full credit. Even though your script will be run and tested on the CentOS 8 virtual machine in the environment, you are still required to submit the script to the assigned drop box by the due date, for record keeping purposes. It is also vital to zip the script on the CentOS 8 virtual machine and not another system. The reason is that the

grader will unzip the file from the drop box and use the Linux `diff` command to compare it to the script in the virtual machine. There must not be any differences between the script submitted to the myCourses drop box and the script that resides on your CentOS 8 virtual machine. If there is a significant difference between the two, you may receive a zero for the assignment.

Zipping the Script:

Make sure you have zip installed on the virtual machine. You can install the application using the following command.

```
$ sudo dnf install zip
```

Using Script 1 as an example, to zip the script type the following command. The zipped file must be titled ***script01.zip***, for the second assignment it is titled ***script02.zip*** and so forth.

```
$ zip script01.zip ping_test.py
```

The zipped file script01.zip is what you submit to the drop box.

Script Location:

Make a directory titled ***"scripts"*** in ***/home/student***. In that directory, create four more directories titled *script01*, *script02*, *script03*, and *script04*. These are the respective locations of where each script you write will be saved. In other words, ***ping_test.py*** must be located in the ***/home/student/scripts/script01*** directory.

Again, it is vitally important to save the scripts in a location where the grader can find them. If the grader does not find the script in the expected location, it is assumed that you did not do the script, and you will receive a zero grade, regardless if it was submitted to the myCourses drop box.

Comparing the files using `diff`:

If you want to make sure your zipped script and the script on your system are exact copies, use the following procedure.

Make a copy of your script in another directory. Referring to Figure 1, the current directory where ***ping_test.py*** is located is ***/home/student/scripts/script01*** using the command, `cp ping_test.py ../../scripts`, copies the script to the scripts directory (Figure 2A).

Figure 1 – Copy Command

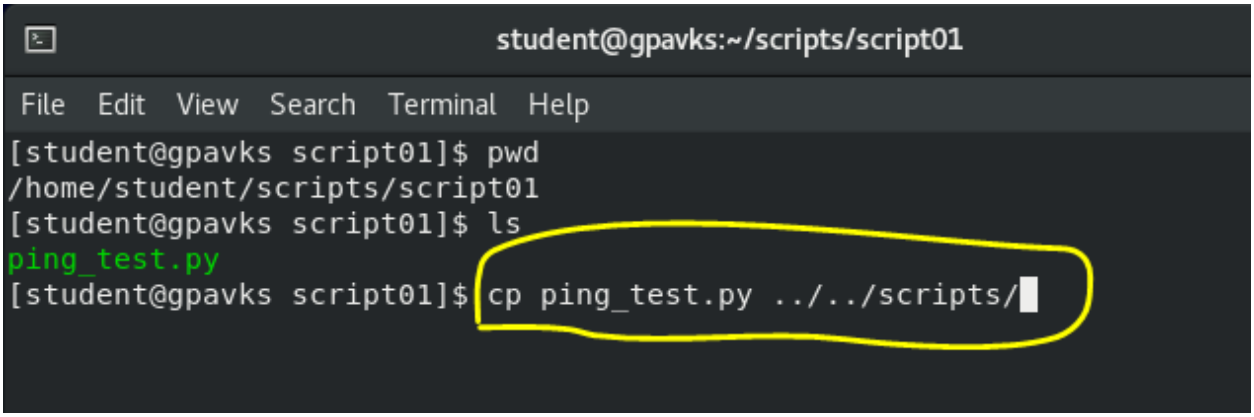
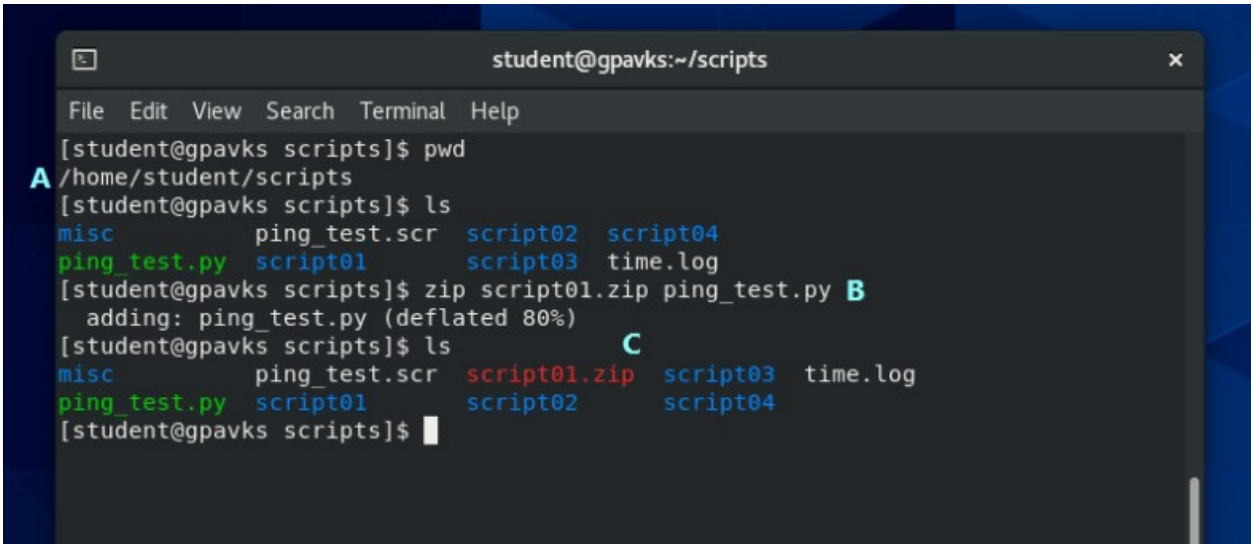


Figure 2 – File to ZIP



The script you just copied is the one you want to zip, using the zip command (Figure 2B).

Upload the script01.zip file to myCourses (Figure 2C) and then optionally you can delete the copy and the associated zip file.

Table 1 – Script Grading Rubric

Requirements	Points	Points Earned
Script contains the shebang!	2	
Script has executable permissions set.	2	
Script is commented with student's name, date.	2	
Script is titled "*ping_test.py*"	2	
Script clears the terminal when it runs.	2	
Default Gateway is hard coded (5 points) or Default Gateway is derived from the system (10 points).	5/10	
Script uses RIT's DNS and Google URL.	5	
Script contains a While Loop.	5	
Menu is designed for end user readability.	5	
subprocess is imported and implemented in script.	5	
os is imported and implemented in script.	5	
Tests for gateway works as expected.	5	
Test for remote IP address works as expected.	5	
Test for DNS resolution works as expected.	5	
Script tests if incorrect or invalid information is entered by the user.	5	
Script is sufficiently commented.	5	
Script is written in Pythonic style.	5	
Script runs with no errors.	10	
Script is fully functional and runs as expected.	15	
	Final Grade	