Cloud Computing Exercise #5

Process Monitoring and Management

A. Preparation

1. Sign in to your AWS account as the non-root admin user.
2. Go to the EC2 dashboard, and launch a new EC2 instance using the t2.micro instance type and the “Amazon Linux AMI” image from the AWS marketplace. Start PuTTY on your local machine and start an SSH session with your running EC2 instance.

B. Linux commands

1. Read the manual pages for the Linux command ‘top’. It is a lot of information, but try to read and understand at least section 2 (summary display), section 3 ( fields/columns display) and section 4 ( interactive commands).
2. Check the available disk space in your instance.
3. Install Python 3 on your instance (package name: python3)
4. Install the nano text editor on your instance (package name: nano)
5. Check the available disk space in your instance again. How it is different from the previous case? How much space do the two installed pieces of SW take up on disk? Is this consistent with the values provided by yum when the SW was installed?
6. Type in the below Python program using nano and save as test.py. This is an infinite loop that calculates the sum of the first one million non-negative numbers and prints the sum on the screen over and over again.

# simple Python program

while True:

sum = 0

for n in range(1000000):

sum += n

print("The sum is: {0}".format(sum))

1. Open a second SSH session to your instance.
2. In the 2nd SSH window, use the ‘top’ command to check the current overall CPU and memory utilization for the running processes and the process with the maximum CPU utilization.
3. In the 1st SSH window, start the python script (type: python3 test.py)
4. Check how CPU utilization has changed in the 2nd window. Which is the process (command) with the max CPU utilization? What is the value of the CPU utilization now? What is the process ID (PID) of the process? How much memory (in MB) does this process occupy?
5. In the 1st SSH window, stop the running Python program (press CTRL + ‘c’). In the 2nd SSH window, check the overall CPU utilization again. How did it change?
6. In the 1st SSH window, start the Python script again.
7. In the 2nd SSH window, note the PID., the priority and the nice value of the running python script process. Exit from top and increase the n ice value of the Python process to 19. Start top again, and check the new process priority and nice values for the process. Exit from top.
8. In the 2nd SSH window, terminate the python process using the kill command.
9. Go to the 1st SSH window and check if the process was terminated.
10. In the 2nd SSH window, run top again and verify that the python process with the noted PID has indeed disappeared from the list of running processes.
11. In the 1st SSH window, delete the Python script (the file test.py).
12. Exit from both SSH windows.

C. Clean up after yourself

1. Terminate the EC2 instance and verify that your instance has been terminated successfully.
2. Log out of AWS.