

## Navigating Linux Task

1. **Task Automation:** The script created, "automation.sh" takes path to a folder as user input and when executed arranges all the files inside the source folder into subsequent subdirectories based on the respective file extensions. The screenshots of the script execution can be seen below;

```
root@ip-172-31-32-160:~/assign1# ./automation.sh
Enter the folder path: testdir
Organizing files in testdir...
Moved: testdir/final.txt to testdir/txt/
Skipped: testdir/py/8.py (Already in testdir/py/)
Skipped: testdir/py/2.py (Already in testdir/py/)
Skipped: testdir/txt/4.txt (Already in testdir/txt/)
Skipped: testdir/txt/5.txt (Already in testdir/txt/)
Skipped: testdir/txt/1.txt (Already in testdir/txt/)
Skipped: testdir/js/2.js (Already in testdir/js/)
Skipped: testdir/js/7.js (Already in testdir/js/)
Skipped: testdir/js/3.js (Already in testdir/js/)
Moved: testdir/prod.js to testdir/js/
Moved: testdir/test.py to testdir/py/
Files organized successfully based on their extensions.
root@ip-172-31-32-160:~/assign1#
```

2. **System Status:** The script “systemStatus.sh” when executed gives crucial information about the OS which include CPU and memory utilization, disk performance, network interface information and also provides the console output in a concise way so that the data can be easy to interpret.

```
root@ip-172-31-32-160:~/assign1# ./systemStatus.sh
System Information Script
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Date and Time
Tue Jan 23 21:50:51 UTC 2024

Hostname and Uptime
Static hostname: ip-172-31-32-160
Icon name: computer-vm
Chassis: vm
Machine ID: c8505618885847d8890f227cb31f0f93
Boot ID: 8c7174e11f494f3eb0f3ef110c3f4b3f
Virtualization: xen
Operating System: Ubuntu 22.04.3 LTS
Kernel: Linux 6.2.0-1017-aws
Architecture: x86-64
Hardware Vendor: Xen
Hardware Model: HVM domU
21:50:51 up 1:34, 4 users, load average: 0.00, 0.00, 0.00

CPU Information
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 46 bits physical, 48 bits virtual
Byte Order: Little Endian
CPU(s): 1
On-line CPU(s) list: 0
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) CPU E5-2676 v3 @ 2.40GHz
CPU family: 6
Model: 63
Thread(s) per core: 1
Core(s) per socket: 1

CPU Usage
%Cpu(s): 0.0 us, 6.2 sy, 0.0 ni, 93.8 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

Memory Information
          total        used         free      shared  buff/cache   available
Mem:      949          207          141           0         600         577
Swap:      0              0              0

Disk Space Information
Filesystem      Size  Used Avail Use% Mounted on
/dev/root        7.6G  1.8G  5.8G  24% /
tmpfs            475M   0  475M   0% /dev/shm
tmpfs            190M  876K  190M   1% /run
tmpfs             5.0M   0   5.0M   0% /run/lock
/dev/xvda15      105M   6.1M   99M   6% /boot/efi
tmpfs             95M   4.0K   95M   1% /run/user/1000

Network Information
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 172.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc fq_codel state UP group default qlen 1000
    link/ether 02:a4:f4:5b:b6:75 brd ff:ff:ff:ff:ff:ff
    inet 172.31.32.160/20 metric 100 brd 172.31.47.255 scope global dynamic eth0
        valid_lft 3362sec preferred_lft 3362sec
    inet6 fe80::a4:f4:ff:fe5b:b675/64 scope link
        valid_lft forever preferred_lft forever

Script execution completed.
root@ip-172-31-32-160:~/assign1#
```

3. **Software Installer:** The script, "installer.sh" when executed requests for the name of a software package to check for its presence in the OS. If not, it automatically installs the same. Proper validation is also implemented in the script to check for any installation failures and OS incompatibility issues. The screenshots displaying the functionality of the script have been attached,

```
Setting up nginx-core (1.18.0-6ubuntu14.4) ...
* Upgrading binary nginx
Setting up nginx (1.18.0-6ubuntu14.4) ...
Processing triggers for ufw (0.36.1-4ubuntu0.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.4) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.

nginx has been successfully installed.
```

```
root@ip-172-31-32-160:~/assign1# ./installer.sh

Welcome to the Interactive Installation Script
Enter the name of the software package to install: vim

vim is already installed. Exiting.

root@ip-172-31-32-160:~/assign1#
```