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Experiment No : 1	
Analyzing Linux based computer systems using a. top, b. ps, c. kill, d. cat /proc/cpuinfo, e. vmstat	
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Aim: To analyze Linux based computer systems using following commands: **a.** top , **b.**ps , **c.** kill, **d.** cat /proc/cpuinfo **e.**vmstat

Objective: To understand linux commands

Theory:

The following commands are used for:

a. top: The 'top' command is used to display real-time system statistics, such as CPU usage, memory usage, running processes, etc. It displays the most CPU-intensive tasks at the top of the list, which helps in identifying and troubleshooting performance issues. The 'top' command can also be used to kill processes that are causing problems.

b. ps: The 'ps' command displays a list of currently running processes on the system. It can be used to find out the process ID (PID), the amount of memory and CPU usage, and the user who initiated the process. The 'ps' command can also be used to terminate a process using the 'kill' command.

c. kill: The 'kill' command is used to terminate a running process. It sends a signal to the process to stop execution. The signal can be specified using different options, such as '-9' to forcefully terminate the process or '-15' to ask the process to terminate gracefully.

d. cat /proc/cpuinfo: The 'cat /proc/cpuinfo' command displays information about the CPU installed on the system, such as the model name, clock speed, cache size, etc. This information can be useful in determining the capabilities of the system and whether it meets the requirements for running certain applications.

e. vmstat: The 'vmstat' command is used to display information about the virtual memory system of the system. It provides information on the amount of free memory, the number of processes waiting for I/O, the amount of swap space used, etc. This information can be used to diagnose performance issues related to memory and disk usage.

 These commands can be used to gather information about the CPU, memory usage, running processes, and system performance. With these commands, system administrators can troubleshoot performance issues and optimize system resources for better efficiency. Familiarity with these commands is essential for anyone who manages Linux systems.

Command & Output:

A. top

top - 16:00:44 up 10 min, 2 users, load average: 0.05, 0.13, 0.09

Tasks: 23 total, 1 running, 22 sleeping, 0 stopped, 0 zombie

%Cpu(s): 0.5 us, 0.3 sy, 0.0 ni, 99.2 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st

MiB Mem :   7951.0 total,   6101.4 free,   459.2 used, 1390.4 buff/cache

MiB Swap: 0.0 total,   0.0 free,   0.0 used. 7231.5 avail Mem

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
237	root	20	0	1724448	41164	29868	S	0.3	0.5	0:00.28	containerd
740	10	-10		10020	3784	3296	R	0.3	0.0	0:00.04	top
1	root	20	0	3896	2884	2588	S	0.0	0.0	0:00.03	bash
9	root	20	0	220796	2836	1844	S	0.0	0.0	0:00.96	rsyslogd
25	root	20	0	31460	23256	8676	S	0.0	0.3	0:00.36	python
26	root	20	0	5796	1108	928	S	0.0	0.0	0:00.00	logger
61	root	10	-10	13376	4348	3408	S	0.0	0.1	0:00.00	sshd
192	root	20	0	1986016	82092	54188	S	0.0	1.0	0:00.25	dockerd
245	root	20	0	1231784	6660	5800	S	0.0	0.1	0:00.01	editor-proxy
246	root	20	0	11048	4896	4336	S	0.0	0.1	0:00.00	sudo
250	root	20	0	1226264	1864	1408	S	0.0	0.0	0:00.00	tmux-agent
362	root	20	0	2392	564	500	S	0.0	0.0	0:00.00	sleep
363	root	10	-10	14468	8908	7740	S	0.0	0.1	0:00.02	sshd
365	root	10	-10	14468	8980	7812	S	0.0	0.1	0:00.01	sshd
367	10	-10		14468	4724	3556	S	0.0	0.1	0:00.00	sshd
368	10	-10		6816	3248	3012	S	0.0	0.0	0:00.00	bash
371	10	-10		7160	3820	3396	S	0.0	0.0	0:00.00	bash
373	10	-10		14468	4792	3624	S	0.0	0.1	0:00.01	sshd
374	10	-10		6816	3176	2936	S	0.0	0.0	0:00.00	bash
375	10	-10		6816	3060	2808	S	0.0	0.0	0:00.00	start-shell.sh
376	10	-10		6744	3224	2992	S	0.0	0.0	0:00.00	tmux

```
378  10 -10   7012  2900  2460 S  0.0   0.0  0:00.04 tmux

379  10 -10   9112  6108  3552 S  0.0   0.1  0:00.03 bash
```

B. ps

user@cloudshell:~$ ps

PID TTY   TIME CMD

379 pts/2   00:00:00 bash

743 pts/2   00:00:00 ps

C. kill

1. Creating sample process

user@cloudshell:~$ sleep 360 &

[2] 752

user@cloudshell:~$ ps

   PID TTY   TIME CMD

   379 pts/2   00:00:00 bash

   752 pts/2   00:00:00 sleep

   755 pts/2   00:00:00 ps

2. Destroying the process

user@cloudshell:~$ kill 752

[2]+ Terminated   sleep 360

user@cloudshell:~$ ps

   PID TTY   TIME CMD

   379 pts/2   00:00:00 bash

   763 pts/2   00:00:00 ps

D. cat

user@cloudshell:~$ touch test.txt

user@cloudshell:~$ cat > test.txt

Hello this is a sample text

user@cloudshell:~$ cat test.txt

Hello this is a sample text

E. cpuinfo

dharmesh_201413101@cloudshell:~$ lscpu

Architecture: x86_64

CPU op-mode(s):   32-bit, 64-bit

Byte Order: Little Endian

Address sizes: 46 bits physical, 48 bits virtual

CPU(s):   2

On-line CPU(s) list: 0,1

Thread(s) per core: 2

Core(s) per socket: 1

Socket(s):   1

NUMA node(s):   1

Vendor ID: GenuineIntel

CPU family: 6

Model: 79

Model name: Intel(R) Xeon(R) CPU @ 2.20GHz

Stepping: 0

CPU MHz: 2200.162

BogoMIPS: 4400.32

Hypervisor vendor: KVM

Virtualization type:	full
L1d cache:	32 KiB
L1i cache:	32 KiB
L2 cache:	256 KiB
L3 cache:	55 MiB
NUMA node0 CPU(s):	0,1

F. vmstat

dharmesh_201413101@cloudshell:~$ vmstat

procs		memory				swap		io		-system		cpu				
r	b	swpd	free	buff	cache	si	so	bi	bo	in	cs	us	sy	id	wa	st
1	0	0	6224444	109184	1318496	0	0	338	156	382	785	2	1	97	0	0

Conclusion: In conclusion, Linux-based computer systems offer powerful tools for monitoring system performance and managing processes efficiently. The `top` command provides real-time insights into resource usage, allowing users to identify and address performance bottlenecks. Similarly, the `ps` command offers a comprehensive view of running processes, aiding in process management and troubleshooting. The `kill` command enables users to terminate processes gracefully or forcefully, providing control over system resources. Additionally, the `vmstat` command provides valuable statistics about virtual memory usage, aiding in system monitoring and optimization efforts. Together, these commands empower users to effectively monitor, manage, and optimize Linux-based computer systems for optimal performance and reliability.