

Troubleshooting Cheat Sheet

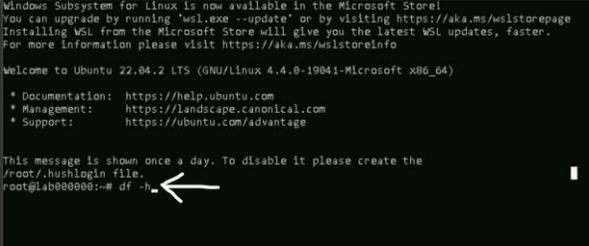
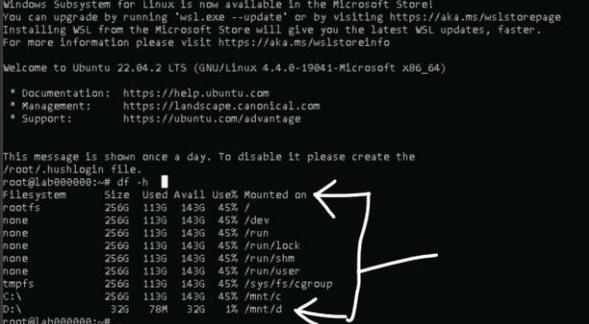
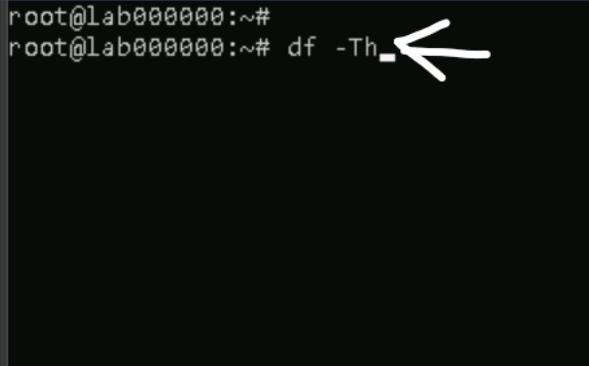
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ITT 221: Linux System Administration and Maintenance

Professor: Aaron Jackson

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Disk Space	
Tool/Command	df
Purpose	The purpose of the “df” is to check how much storage is used and available storage in on the systems drives (GeeksforGeeks, 2018). System administrators also use this tool to ensure that there is enough space for proper application usage, login, and system stability.
Syntax	df -(options) letter(file)
Common Switches	df -h (this display the disk usage in KBs, MBs, and Gbs (GeeksforGeeks, 2018)
	df -T (This shows file type (GeeksforGeeks, 2018)
	df -a (Includes sudo, duplicate, and inaccessible file systems (GeeksforGeeks, 2018)
	df -i (Displays Inode usage instead of block usage (GeeksforGeeks, 2018)
	df -total (Produces a grand total of disk usage (GeeksforGeeks, 2018)
Example Commands	df -h
	df -Th
Screenshot 1 (Command)	 <pre> Windows Subsystem for Linux is now available in the Microsoft Store! You can upgrade by running 'wsl.exe --update' or by visiting https://aka.ms/wslstorepage Installing WSL from the Microsoft Store will give you the latest WSL updates, faster. For more information please visit https://aka.ms/wslstoreinfo Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 4.4.0-19041-Microsoft x86_64) * Documentation: https://help.ubuntu.com * Management: https://landscape.canonical.com * Support: https://ubuntu.com/advantage This message is shown once a day. To disable it please create the /root/.hushlogin file. root@lab000000:~# df -h </pre>
Screenshot 1 (Output)	 <pre> Windows Subsystem for Linux is now available in the Microsoft Store! You can upgrade by running 'wsl.exe --update' or by visiting https://aka.ms/wslstorepage Installing WSL from the Microsoft Store will give you the latest WSL updates, faster. For more information please visit https://aka.ms/wslstoreinfo Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 4.4.0-19041-Microsoft x86_64) * Documentation: https://help.ubuntu.com * Management: https://landscape.canonical.com * Support: https://ubuntu.com/advantage This message is shown once a day. To disable it please create the /root/.hushlogin file. root@lab000000:~# df -h Filesystem Size Used Avail Use% Mounted on rootfs 256G 113G 143G 45% / none 256G 113G 143G 45% /run none 256G 113G 143G 45% /run/lock none 256G 113G 143G 45% /run/shm none 256G 113G 143G 45% /run/user tmpfs 256G 256G 113G 45% /sys/fs/cgroup C:\ 256G 113G 143G 45% /mnt/c D:\ 32G 78M 32G 1% /mnt/d root@lab000000:~# </pre>
Screenshot 2 (Command)	 <pre> root@lab00000000:~# root@lab00000000:~# df -Th </pre>

Screenshot 2 (Output)	<pre> root@lab000000:~# root@lab000000:~# df -Th Filesystem Type Size Used Avail Use% Mounted on rootfs wslfs 256G 113G 143G 45% / none tmpfs 256G 113G 143G 45% /dev none tmpfs 256G 113G 143G 45% /run none tmpfs 256G 113G 143G 45% /run/lock none tmpfs 256G 113G 143G 45% /run/shm none tmpfs 256G 113G 143G 45% /run/user tmpfs tmpfs 256G 113G 143G 45% /sys/fs/cgroup C:\ drvfs 256G 113G 143G 45% /mnt/c D:\ drvfs 32G 78M 32G 1% /mnt/d root@lab000000:~# </pre>
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Memory Usage	
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Tool/Command	free
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Purpose	The purpose of the free command is to display the system’s memory usage, including total, used, free, and shared, buffer/cache, and available memory (Amoany, 2020). System administrators use this tool during troubleshooting to determine if the system is experiencing memory pressure or RAM shortages that can impact performance
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Syntax	free -(options)
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Common Switches	free -h (Displays memory values in MBs and Gbs (Amoany, 2020)
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	free -m (Shows outputs in megabytes (Amoany, 2020)
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	free -g (Shows output in gigabytes (Amoany, 2020)
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	free -t (Displays a total line combining RAM and swap (Amoany, 2020)
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	free -s (Continuously updates memory usage at specified times (Amoany, 2020)
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Example Commands	free -h
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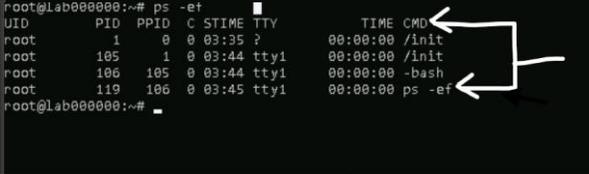
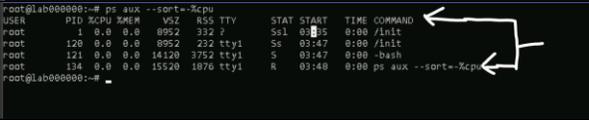
	free -ht
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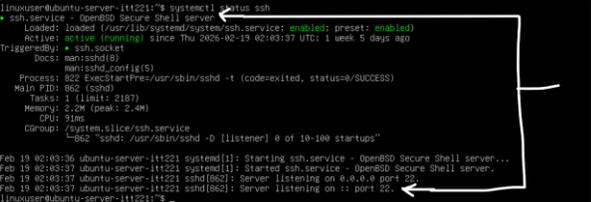
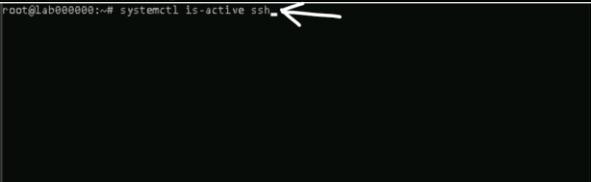
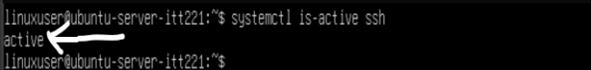
Screenshot 1 (Command)	<pre> root@lab000000:~# free -h </pre>
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Screenshot 1 (Output)	<pre> root@lab000000:~# free -h total used free shared buff/cache available Mem: 15Gi 1.9Gi 13Gi 17Mi 223Mi 13Gi Swap: 31Gi 0B 31Gi root@lab000000:~# </pre>
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Screenshot 2 (Command)	<pre> root@lab000000:~# free -ht </pre>
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Screenshot 2 (Output)	<pre> root@lab000000:~# free -ht total used free shared buff/cache available Mem: 15Gi 1.9Gi 13Gi 17Mi 223Mi 13Gi Swap: 31Gi 0B 31Gi Total: 47Gi 1.9Gi 45Gi root@lab000000:~# </pre>
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Running Processes	
Tool/Command	ps
Purpose	The purpose of the ps command is to display information about processes running on the Linux system (<i>How to Use the Linux Ps Command, 2023</i>). System administrators use this tool to monitor active processes, identify resource-intensive programs, and troubleshooting performance issues or unresponsive applications
Syntax	ps (options)
Common Switches	ps -e (Displays information about all running processes on the system (<i>How to Use the Linux Ps Command, 2023</i>))
	ps -f (Shows full-format listing, including parent process ID and start time (<i>How to Use the Linux Ps Command, 2023</i>))
	ps -u (Displays processes for specific user (<i>How to Use the Linux Ps Command, 2023</i>))
	ps -aux (Shows detailed information for all processes in BSD format (<i>How to Use the Linux Ps Command, 2023</i>))
	ps --sort=-%cpu (Sorts processes by highest CPU usage (<i>How to Use the Linux Ps Command, 2023</i>))
Example Commands	ps -ef
	ps aux --sort =-%cpu
Screenshot 1 (Command)	
Screenshot 1 (Output)	
Screenshot 2 (Command)	
Screenshot 2 (Output)	
On-or-Off Services	
tool/Command	systemctl
Purpose	The purpose of the systemctl command is to manage and check the status of system, services in the Linux operating system that use systemd (Garn, 2022). System administrators use this tool to

	determine whether services are running or stopped, start or stop services, enable and disable services at boot. This is an essential step in the troubleshooting process for checking service availability and system startup behavior
Syntax	systemctl (command) (service_name (Garn, 2022)
Common Switches	systemctl status (Starts a stopped service (Garn, 2022)
	systemctl stop (Stops a running service (Garn, 2022)
	systemctl restart (Restarts a service (Garn, 2022)
	systemctl enable (Configures a service to start automatically (Garn, 2022)
	systemctl disable (Prevents a service from starting at boot (Garn, 2022)
	systemctl is-active (Quickly checks if a service is running (Garn, 2022)
Example Commands	systemctl status ssh
	systemctl is-active ssh
Screenshot 1 (Command)	
Screenshot 1 (Output)	
Screenshot 2 (Command)	
Screenshot 2 (Output)	

References:

Amoany, E. (2020). *Dissecting the free command: What the Linux sysadmin needs to know*. Redhat.com.

<https://www.redhat.com/en/blog/dissecting-free-command>

GeeksforGeeks. (2018, February 21). *df command in Linux with Examples*.

GeeksforGeeks.

<https://www.geeksforgeeks.org/linux-unix/df-command-linux-examples/>

Garn, D. (2022). *How to use systemctl to manage Linux services*. Redhat.com.

<https://www.redhat.com/en/blog/linux-systemctl-manage-services>

How to use the Linux ps command. (2023, August 11). IONOS Digital Guide.

<https://www.ionos.com/digitalguide/server/configuration/linux-ps-command/>