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Introduction to Linux & Linux Administration

Fall 2025

**Assignment #4: System Configuration and Hardware Information**

**Assigned: Tuesday, September 16, 2025**

**Due: Sunday, September 21, 2025 (NLT 23:59)**

**Instructions:**

1. Insert your answers into this document (*text and screenshots*)
2. Highlight your answers in green (*text only*)
3. When finished, rename the document (*please use the naming convention below*)
4. Upload the renamed document to the Moodle assignment

**A4 - Last Name** (e.g., **A4 - Nonnweiler**)

**Part I. Identifying Hardware Information**

Log into your root directory and display the CPU information using the following command:

**lscpu**

1.1. Provide a screenshot

**Screenshot:**

A screenshot of a computer program

AI-generated content may be incorrect.

1.2. Identify the following:

* Architecture
* Vendor ID
* Model number and model name
* Cache size

**Answer:**

Architecture: x86\_64

Vendor ID: AuthenticAMD

Model number: 97

Model name: AMD Ryzen 5 7600X 6-Core Processor

Cache size: L1d: 128 KiB (4 instances), L1i: 128 KiB (4 instances), L2: 4 MiB (4 instances), L3: 128 MiB (4 instances)

On Linux based system most of the hardware information can be extracted from the **/proc** file system, for example, to display CPU and memory hardware information, enter the following cat commands:

**cat /proc/meminfo**

**cat /proc/cpuinfo**

**less /proc/cpuinfo**

1.3. Identify the following:

* CPU MHz
* CPU Family

**Answer:**

CPU MHz: 4699.896

CPU Family: 25

**Part II. Identifying Free & Used Memory**

Linux uses the **free** command to identify free & used memory in the system

**free**

**free -m**

**free -mt**

**free -gt**

2.1. What does each of these four commands provide (i.e., How are they different from each other?)?

**Answer:**

free: displays the amount of free and used memory in a system in kibibytes without a line showing the column totals

free -m: displays the amount of memory in mebibytes without a line showing the column totals

free -mt: displays the amount of memory in mebibytes and a line showing the column totals

free -gt: displays the amount of memory in gibibytes and a line showing the column totals

**Part III. Identifying the Linux Kernel**

3.1. Type the following command to determine the current Linux kernel version.

**cat /proc/version**

**Screenshot:**

A screenshot of a computer

AI-generated content may be incorrect.

3.2. What do the following commands show you?

**uname -mrs**

**uname -a**

**Answer:**

uname -mrs: prints system information with machine hardware name, kernel release, and kernel name

uname -a: prints all system information (kernel name, network node hostname, kernel release, kernel version, machine hardware name, processor type if known, hardware platform if known, and operating system)

Use the **free** command and specific info found in the **/proc** directory to determine very specific information, such as memory, cache and swap.

Notice I used **egrep** to search the log file.

* First, try **cat /proc/meminfo**
* Then try **egrep –color ‘Mem|Cache|Swap’ /proc/meminfo**

A screenshot of a computer

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The command option displays the following:

1. **total**: Total installed memory (MemTotal and SwapTotal in /proc/meminfo)

2. **used**: Used memory (calculated as total – free – buffers – cache)

3. **free**: Unused memory (MemFree and SwapFree in /proc/meminfo)

4. **shared**: Memory used (mostly) by tmpfs (Shmem in /proc/meminfo, available on

kernels 2.6.32, displayed as zero if not available)

5. **buffers**: Memory used by kernel buffers (Buffers in /proc/meminfo)

6. **cache**: Memory used by the page cache and slabs (Cached and Slab in

/proc/meminfo)

7. **buff/cache**: Sum of buffers and cache

8. **available**: Estimation of how much memory is available for starting new applications,

without swapping. Unlike the data provided by the cache or free fields, this field considers page cache and also that not all reclaimable memory slabs will be reclaimed due to items being in use (MemAvailable in /proc/meminfo, available on kernels 3.14, emulated on kernels 2.6.27+, otherwise the same as free)

3.3. Take a screenshot that shows your free and **egrep** commands (as above)

**Screenshot:**

A screenshot of a computer

AI-generated content may be incorrect.