“Kyiv Professional College of Communications”

Computer Engineering Cycle Commission

**PERFORMANCE REPORT**

**LABORATORY WORK №4**

in the discipline: "Operating Systems"

**Topic: "Linux commands for process management"**

Performed by students

RPZ-93B group

Team:

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The teacher checked:

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**The goal of the work:**

1. Gaining practical skills in working with the Bash command shell.

2. Familiarity with basic commands for process management.

**Material support of classes**

1. Computer type IBM PC.

2. Windows family of operating systems (Windows 7).

3. Virtual machine - Virtual Box (Oracle).

4. GNU / Linux operating system - CentOS.

5. Cisco Network Academy website netacad.com and its online Linux courses

**Tasks for preliminary preparation.**

***Готувала матеріал студентка Білобровенко Олександра***

1. Read brief theoretical information for laboratory work and make a small dictionary of basic English terms on the purpose of commands and their parameters.
2. On the basis of the considered material give answers to the following questions:

1.1 What commands do you know to monitor the status of processes? How to view their possible parameters?

1.2 Can the ps command monitor the status of processes in real time?

1.3 By what parameters is it possible to sort processes in the top command? How to switch between them?

1.4 What commands do you know to complete the processes?

2. Learn Cisco Academy Online Course Materials:

-NDG Linux Unhatched (Chapter 14 - 18 all Topics)

3. Answer the following questions (based on the course studied):

3.1. What filter commands do you know?

3.2. What are regular expressions and base patterns, what are they used for?

3.3. What basic network configuration commands do you know?

3.4. What package management systems do you know why you need them?

4. Prepare the initial version of the report in electronic form:

- Title page, topic and purpose of the work

- Glossary of terms

- Answers to clauses 2.1-2.4 and clause 3.1-c of tasks for preliminary preparation.

Progress.

***Готував матеріал студент Скворцов Дмитро***

1. Initial work in CLI mode in Linux Linux family:

1.1 Start the VirtualBox virtual machine, select CentOS, and start it. Log in under the user: CentOS, login password: reverse (if you are performing LR in room 401) and lower the terminal.

1.2 Start the Ubuntu\_PC virtual machine (if you are performing LR tasks through the netacad academy)

1.3 Start your Linux operating system (if you are running your own PC and have it installed) and start the terminal.

1. Start the terminal, and on the command line, follow these steps to familiarize yourself with working with directories:

* display the contents of the directory / proc. Where is it located and what is it for? Describe the information about its content.
* display current user sessions. What team can do this?
* display information about all running processes. What parameters should be used?
* display information about the processes of one user. What parameters should be used?
* display information only about system processes. What parameters should be used?
* display information about the processes according to your chosen criteria (5 examples). What parameters are used?

1. When working with processes, it is often necessary to start and work with background processes. Answer the following questions:

* What is the difference between the background process and the usual. Where are they used?
* Describe the following commands and explain what they do - the jobs, bg, fg command.
* Which command can you use to view information about background processes and tasks running on your system?
* How to pause the background process, then resume it and restart if necessary?

Test questions

***Готувала матеріал студентка Бушовська Ольга***

1. What is the purpose of the / proc directory on Linux systems? What information does it store?

Its main task is to obtain the state of the system and partially perform control actions. Process information is stored in the /proc/N directories, where N is the numeric process ID. This directory contains various pseudo-files that contain information about the process itself and its associated environment:

/proc/N/cmdline - The contents of the command line that started the process.

/proc/N/environ - Description of the environment in which the process is running. It can be useful for viewing the contents of the environment, if you need to, for example, see if an environment variable has been set before running the program.

/proc/N/exe - A symbolic link to the executable file of the running program.

/proc/N/limits - Limits on the use of system resources, relevant for the running process.

/proc/N/mounts - List of mounted resources that are available to the process

/proc/N/status - The status of the running program. It includes information such as the ID of the parent process, the status of the process itself, its name, ID, user ID, group ID, groups that the process owner belongs to, how many threads the process is using, how much memory it is using, and so on.

1. How do you dynamically determine which of the three processes currently uses the most memory? What percentage of memory does it consume?

The command is best for gathering information about the processes that are collected in the system in real time (running this command can be a dynamic control, which with the team currently uses the most memory).

■ VIRT: The total amount of virtual memory that the process uses

■ RES: the amount of physical memory that the process uses

■% MEM: The portion of available physical memory that the process

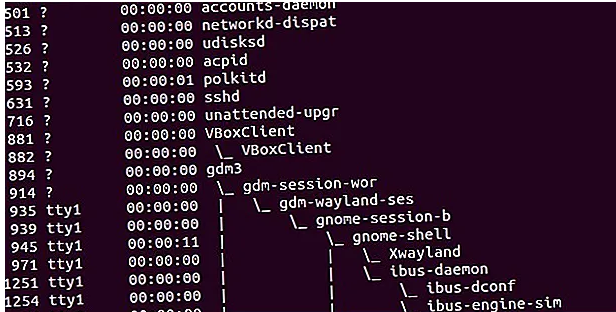
1. How to get a hierarchy of parent processes in Linux systems? Give its structure and describe.

ps -eH | Less

Indentation indicates which processes are the parents of which other processes.

To add a little more clarity, we can ask ps to add ASCII strings and draw the hierarchy as a tree. Ability to do this - forest option.

ps -eH --forest | Less

this makes it easier to keep track of which processes are the parents of other processes.

1. How is the top command different from ps?

Top

This utility notifies the user of all running processes on the Linux machine.

PS

This command means "Status Process". This is similar to Task Manager, which pops up in a Windows machine when we use Cntrl + Alt + Del. This command is similar to the "top" command, but the information displayed is different.

1. What additional features does htop implement compared to top?

Unlike top, htop shows all the processes in the system. Also shows uptime, CPU and memory usage.

htop is often used in cases where the information provided by the top utility is insufficient, such as finding memory leaks in processes.

1. Describe the components of your mobile OS that allow you to monitor the processes running in the system?

For Android - Activity Monitor Touch

1. Does your mobile system support terminal process control? If so, describe exactly how.

Don’t support.

1. Is it possible to install third-party software that will allow you to organize the management and monitoring of processes in your mobile phone. Briefly describe them.

At the top of the Activity Monitor window, the power consumption of individual programs and their processes is displayed.

Energy load. The relative value of the current energy consumption of the program (the lower the value, the better).

Consumption in 12 hours The average power load of the program for the last 12 hours or since the computer started (the less, the better). This column only appears on Mac laptops.

App Nap. App Nap activity indicator of this application.

Graphic map. Information about whether the program uses high-performance graphics mode. This column only appears on Mac laptops with one or more graphics cards.

Prohibition of sleep mode. This setting determines whether the program will prevent Mac from going to sleep.

User. The name of the user performing the process.

**Conclusion:** I gained practical skills in working with the Bash command shell. I got acquainted with the basic commands for process management.