**"Kyiv Vocational College of Communication"**

**Cyclic Commission of Computer Engineering**

**EXECUTION REPORT**

**LABORATORY WORK No. 8**

from the discipline: "Operating systems"

**Title: “System Service Data and Network Configuration Storage”**

**Performed by students of the group:**

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**Checked by the teacher**

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**Work of group students КСМ-13Б Team:** **PMC wolf group**

**The goal of the work:**

1. Getting practical skills for working with the Bash command shell.

2. Familiarity with basic file system navigation commands.

3. Familiarity with basic commands for managing files and directories.

**Material provision of classes**

1. IBM PC type computer.

2. OS family Windows (Windows 7).

3. Virtual machine - Virtual Box (Oracle).

4. GNU/Linux operating system - CentOS.

5. Cisco network academy site netacad.com and its online Linux courses

**Tasks for preliminary preparation:**

**Ilya Pogrebnyak was looking for material**4.1. A pseudo-filesystem is a special type of filesystem that does not contain actual files or directories. Instead, it contains information in memory. Pseudo-filesystems are used to provide information about the state of the system or to provide additional features to users.

\* Pseudo-filesystems are needed by the system for the following purposes:

- To provide information about the state of the system. Pseudo-filesystems can contain information about processes, memory, network, disks, and other system components. This allows users and programmers to obtain information about the state of the system without having to access the kernel or other system components.

- To provide additional features to users. Pseudo-filesystems can provide users with additional features, such as the ability to postpone the execution of tasks or to run programs in the background.

4.2. Users do not often access the /proc directory directly because it contains a lot of information that can be complex to understand. In addition, the /proc directory is constantly changing as the kernel updates the information that is stored in it.

\* To obtain information from the /proc directory, users can use special commands, such as cat, grep, and awk. For example, the command cat /proc/cpuinfo displays information about the system's processors.

4.3. The files /proc/cmdline, /proc/meminfo, and /proc/modules have the following purposes:

/proc/cmdline contains the parameters that were passed to the kernel at boot time.

/proc/meminfo contains information about the system's memory, including the size of physical memory, the size of virtual memory, and the use of memory.

/proc/modules contains a list of modules that are loaded into the kernel.

4.4. The command free displays information about the use of memory by the system. It shows how much memory is used, how much memory is free, and how much memory is in the cache.

4.5. Log files are text files that contain records of events that occur in the system. Log files are used to track the operation of the system, and to diagnose and troubleshoot problems.

\* Examples of the use of log files include:

- To track the operation of the system. Log files can be used to track the performance of the system, to identify errors, and to monitor the use of resources.

- To diagnose and troubleshoot problems. Log files can be used to identify the source of problems, and to track the progress of troubleshooting efforts.

4.6. The file /var/log/dmesg contains records of the boot process. These records contain information about how the kernel loaded the hardware and loaded the drivers.

4.7. FHS (Filesystem Hierarchy Standard) is a standard that defines the structure of the filesystem in Linux. FHS helps to ensure consistency of the filesystem structure across different Linux distributions.

\* FHS was developed for the following purposes:

- To ensure consistency of the filesystem structure. FHS helps to ensure that the filesystem structure is the same across different Linux distributions. This makes it easier for users to move files and applications between different distributions.

- To improve the maintainability of the filesystem. FHS helps to improve the maintainability of the filesystem by organizing files and directories into logical groups.

4.8. The following are some of the basic commands in Linux for viewing and configuring the network:

ip - This command is used to display and manage network interfaces.

ifconfig - This command is a legacy command that is used to display and manage network interfaces.

route - This command is used to display and manage the routing table.

ping - This command is used to send ICMP echo requests to a host.

traceroute - This command is used to trace the path of ICMP echo requests to a host.  
  
**Progress  
  
1)** **The table was made by Barabash Matviy**

|  |  |  |
| --- | --- | --- |
| df -h | | Lists all file systems on the system, including their size, free space, and usage. |
| du -sh | | Returns the size of files or directories using gigabytes (GB). |
| lsblk | | Displays a list of all block devices on the system. |
| cat /etc/fstab | | Lists all file systems that are available when the system is booted. |
| mount | | Mounts the file system. |
| umount | | Unmounts the file system. |
| ip a | | Displays a list of all network interfaces on the system. |
| ifconfig | | Outputs similar data as ip a. |
| route -n | Displays the routing table. | |
| ping [адреса або ім'я хоста] | Sends ICMP packets to the host and displays response times. | |
| traceroute [адреса або ім'я хоста] | Traces the path of ICMP packets to a host address. | |

**Control questions:**

**The answers to the control questions were given by Stanislav Tseluiko**

1) Connection of cat and tac commands:

- cat (concatenate) outputs the contents of files to standard output.

- tac (cat backwards) does the same, but outputs the strings in reverse order.

2) Team ss:

- The ss command displays information about sockets, that is, network connections on the system.

3) Difference between ps --forest and pstree:

- ps --forest displays information about processes in a hierarchical (tree-like) form, where parent and child processes are displayed structurally.

- pstree also outputs a tree structure of processes, but it does so directly, without the need for the ps command.

4) Directories with system settings:

- System settings are usually stored in /etc directories.

5) Catalogs with programs for the user:

- Programs available to the user are usually located in /bin, /usr/bin, /sbin, /usr/sbin directories.

6) Catalogs with system and administrative programs:

- System and administrative programs can be found in the /sbin and /usr/sbin directories.

7) Purpose of the ping, ifconfig, traceroute commands:

- ping: used to check the availability of a network device or host on the network.

- ifconfig: displays information about network interfaces and allows them to be configured.

- traceroute: determines a route to a specific host by tracing intermediate nodes.

8) Name of network interfaces in Linux:

- Network interfaces in Linux are usually named according to their characteristics, for example, eth0 for an Ethernet interface.

9) Display the parameters of one network interface using ifconfig:

- To display the parameters of one network interface (for example, eth1), use the command: ifconfig eth1.

**Conclusion:**

During the execution of the LB, I learned about new commands and what they mean, but unfortunately it did not work out in practice, because of problems with the terminal