“Київський фаховий коледж зв’язку”

Циклова комісія Комп’ютерної та програмної інженерії

**ЗВІТ ПО ВИКОНАННЮ**

**ЛАБОРАТОРНОЇ РОБОТИ №2**

з дисципліни: «Операційні системи»

**Тема: “Знайомство з інтерфейсом та можливостями ОС Linux”**

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Перевірив викладач

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**Мета роботи:**

1. Знайомство з інтерфейсами ОС Linux.

2. Отримання практичних навиків роботи в середовищах ОС Linux та мобільної ОС – їх графічною

оболонкою, входом і виходом з системи, ознайомлення зі структурою робочого столу, вивчення

основних дій та налаштувань при роботі в системі

**Матеріальне забезпечення занять**

1. ЕОМ типу IBM PC.

2. ОС сімейства Windows (Windows 7).

3. Віртуальна машина – Virtual Box (Oracle).

4. Операційна система GNU/Linux – CentOS.

5. Сайт мережевої академії Cisco netacad.com та його онлайн курси по Linux

**Завдання для попередньої підготовки**

***Готував матеріал студент Притула Владислав***

1. Прочитайте короткі теоретичні відомості до лабораторної роботи та зробіть невеличкий словник базових англійських термінів з питань класифікації ОС.

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| --- | --- |
| **Термін англійською** | Термін українською |
| **Operating System** | Операційна система |
| **Server Applications** | Серверні програми |
| **The command line interface** | Інтерфейс командного рядка |
| **Traffic** | трафік |
| **Central processing unit (CPU)** | Центральний процессор |
| **Hardware** | обладнання |
| **The kernel** | Ядро |
| **Implementation** | Забезпечення, впровадження |

**4.** Define the following concepts:

- CLI mode

- Terminal based on graphical user interface

Command line interface (CLI) is a type of text interface between a person and a computer, in which instructions to the computer are given mainly by entering text strings (commands) from the keyboard, in UNIX systems it is possible to use a mouse.

Terminal based on graphical user interface is embodied by multi-window mode, changes in color, size, visibility (transparency, semi-transparency, invisibility) of windows, their location, sorting of window elements, flexible settings of both the windows themselves and their individual elements (files, folders, shortcuts, fonts, etc.), the availability of multi-user settings.

**Хід роботи**

***Готував матеріал студентка Трегуб Ольга***

**1.** Working in graphical mode in the Linux family OS (working with Internet sources):

**1.1.** The means of displaying information in the graphic interface is an object - a window. The window consists of the following main elements:

- window header

- menu bar

- window workspace.

The window can contain different clipboards and a status bar. In the title bar of the window, from left to right, there are the system button, the name of the object, and the buttons for controlling the state of the window. There are horizontal and vertical scroll bars with runners.

The following types of windows can be distinguished in the operating system:

folder windows - contain icons of objects located in this folder; application windows - contain application control elements and document windows; dialog boxes - contain only control elements; document windows - contain the documents themselves; information windows - contain only messages.

Certain actions are defined on the objects or graphic elements of the window, which can be performed in different ways using:

- main menu

- toolbars

- context menu

You can close the window in several ways:

- by clicking on the close button

- double-clicking on the system button

- by pressing the key combination Alt + F4

- by executing the Exit command in the main menu

To configure the desktop, execute the command System>Options>Appearance from the main panel. On the screen there is a window for setting parameters for the appearance of windows (theme) and for changing the background.

**1.2.** Program start. Increase the possibility of launching add-ons in different ways:

Gnome has its own "registry" where numerous settings are stored, including settings for global keyboard shortcuts. The Gnome configuration editor is designed to change these settings.

In order to add the Gnome Config Editor to the Applications menu, in the System section, go to the top bar menu by pressing Alt+F1. Then you should call the context menu using the Application (Context) key and select the "Change menu" item in the menu that appears.

In the new window, the focus will immediately be in the "Applications" branch of the tree. Use the arrow keys to scroll down to the "System" branch and navigate to the list of items using the Tab key. In the list you need to find the "Configuration Editor" and press the Space key to put a mark (check box). To close the window, just press the Enter key (or use the Tab key to move to the "Close" button and press the Spacebar).

After that, it may turn out that the menu does not open by pressing Alt + F1. To fix the situation, you can use the combination Ctrl + Alt (left) + Tab to go to the top panel and press the down arrow key. The menu will open and can be closed by pressing Escape. After that, the menu will respond to Alt+F1 as usual.

**1.3.** Logging out and shutting down in Linux. How to perform the following actions in the graphical interface

**-** The first step to enable Root login via SSH is to activate the Root account. For many Linux distributions (Ubuntu and others) Root is disabled for security reasons. Instead, users do everything through sudo privileges. For the most part, not using the Root account is fine, and sudo can do the job. However, with SSH, users must know the Root password.

First, login to your remote server/PC that you want to enable Root remotely via SSH:

ssh [email protected]

If you have configured your Linux distribution and have not configured the Root user, you will need to follow the steps below to configure Root. Be aware that this process will not work without a user who has the ability to use sudo. To get started, open a terminal. In the terminal, run:

sudo -s

Using sudo with -s will give the user the Root shell, just like logging in with su. From here you can call the "new password" command for the Root user.

passwd

Running passwd will prompt the user for a "new UNIX password". Enter a new password for the Root account on your PC. For security reasons, do not use the same password for Root as your regular user account. Be sure to create a strong but memorable password for your account.

**-** The reboot command

Even the most novice users of Linux operating systems have probably heard about the reboot command. Its whole point is to send the current session to reboot, and no additional arguments are specified.

1) Open the applications menu and launch "Terminal" from there. For this, you can use another convenient option, for example, the standard hotkey Ctrl + Alt + T.

2) The action of rebooting through reboot must be performed on behalf of the superuser, because the entered line looks like this: sudo reboot.

3) Accordingly, you need to confirm the account by writing the password from it. Note that the password characters you enter are never displayed in the console. Accordingly, you need to confirm the account by typing its password. Note that the password characters you enter are never displayed in the console.

The computer will immediately complete its work, and after a few seconds a new session will start in normal mode. A virtual console with a graphical shell will automatically turn on, even if you previously used another terminal.

**-** shutdown command

1) launch "Terminal" in a convenient way for you, for example, through the appropriate icon in the "Applications" section or by pressing the hotkey Ctrl + Alt + T.

2) At the prompt, type sudo shutdown -h now to turn off the computer immediately.

3) This action is performed on behalf of the superuser, so you will have to confirm it by entering a password. After that, the PC will be immediately disconnected.

4) If you want to delay the shutdown, for example, by five minutes, you will have to change the line to sudo shutdown -h +5, where +5 is the specified time after which the operating system will complete its work.

5) Entering the command sudo shutdown -c will cancel the scheduled shutdown.

6) use sudo shutdown -h 21:00 to set the exact shutdown time, changing the time to the required time.

**2.** Work in a mobile OS environment.

**2.1.** Describe the main menu of your mobile OS, what GUI does it use?

true-graphic, two-dimensional: non-standard interface elements and original metaphors implemented by the program's own tools or a third-party library;

**2.2.** Describe the mobile phone component settings menu.

The accessibility menu is a large on-screen menu for controlling your Android device. You can control gestures, hardware buttons, navigation, and more. In this menu you can: take screenshots; lock screen; launch Google Assistant; open the menu of quick settings and notifications; increase or decrease the volume; adjust the brightness.

**2.3.** Using keyboard shortcuts to perform special actions.

You can use keyboard shortcuts in TalkBack to use features such as speaking text, navigating the screen, and managing settings.

**Відповіді на контрольні запитання**

***Готував матеріал студентка Гоголь Анастасія***

1. Наведіть приклади серверних додатків Linux для сервера баз даних, серверів розсилки повідомлень та файлообмінників.

Database servers:Oracle, MySQL, Firebird.

Messaging servers and file sharers:Postfix, Sendmail, Dovecot, Netatalk, **Internet Software Consortium.**

2. Порівняйте оболонки Bourne, C, Bourne Again (Bash), the tcsh, Korn shell (Ksh) та zsh.

The Bourne shell and the C shell are foremost shells in Linux, and the Bourne Again Shell (Bash) and the tcsh more modern shells. Bash is the default shell on most systems, though tcsh is also typically available. The Korn shell (ksh) and the Z shell (zsh) were made based on the best features of the Bash and tcsh shells.

3. Для чого потрібен менеджер пакетів. Які менеджери пакетів ви знаєте у Linux?

A package manager is needed to automate the processes of installing, configuring, uninstalling, and updating individual programs or the all system. Some examples of manager packages: APT, DPKG (Debian Package), RPM.

4. Які засоби безпеки використовуються в Linux?

There are many security features in Linux. Here are some of them:

* Protection against cookies(Limitation of tracking pixels).
* Password manager (includes two-factor authentication (2FA)).
* Protection from accepting incoming connections. For this purpose, there is a firewall, a device that filters network traffic. In Linux it is built-in.
* Encryption. For example, encryption can be done using Hypertext Transfer Protocol (HTTPS), also VPN can be used.

5. Чому використання віртуалізації зараз стало таким актуальним?

Virtualization affects the user's consciousness, gives an opportunity to feel close to real sensations. Now it is the most relevant development of technologies.

6. Як ви розумієте поняття контейнеризації?

Containerization is a type of virtualization where applications are isolated in their own "container" and can be run in isolated user space on the same shared operating system.

7. Які переваги/недоліки використання програмного забезпечення з відкритим кодом?

Advantages of open source software: OSS is offered free of charge. It is reliable and flexible software.

Disadvantages of open source software: The software is easier for hackers to crack and can be inconvenient for the user (the software interface can perform worse).

8. \*\*\*Скільки активних віртуальних консолей (терміналів) може бути у процесі роботи Linux по замовчуванню. Як їх викликати та між ними перемикатися? Наведіть приклади?

There are typically seven virtual consoles you can use. When you change virtual consoles, they are identified by a TTY number from one to seven, such as "tty1" for the first virtual console. To switch among the virtual consoles, you can use the **Alt + Function Key** system( **Alt + F1** or **Ctrl + Alt + F1).**

9. \*\*\*Яка віртуальна консоль (термінал) виконує функцію графічної оболонки?

Bash is a terminal and shell.

10. \*\*\*Чи можлива реєстрація в системі Linux декілька разів під одним і тим же системним ім’ям? Які переваги це може надати?

in Linux, it is possible to register several times under the same system name. The advantage of this is the possibility of centralized access control.

**Висновки**

В ході виконання лабораторної роботи мною було досліджено операційну систему Linux та її можливості , більш детально теоретично досліджено питання щодо linux Та як ним користуватись. Отримано практичні навики роботи з командами операційної системи Linux, налаштування системи, тощо.