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ЗВІТ ПО ВИКОНАННЮ ЛАБОРАТОРНОЇ РОБОТИ №2

з дисципліни: «Операційні системи»

Тема: «Знайомство з інтерфейсом та можливостями ОС Linux»

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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 Фещенко Эвгеній.

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

Термін англійською	Термін українською
Operating System	Операційна система
Implementation	Забезпечення
Server Applications	Серверні програми

2. Дайте визначення наступним поняттям:
   - CLI mode is a way of interacting with a computer when a user enters commands at the command line (via a terminal or console) instead of using a graphical user interface (GUI).
   - A GUI-based terminal is a program that provides users with the ability to interact with an operating system using a graphical user interface rather than a command line. Such a terminal typically has a window where you can enter commands, as well as other controls such as buttons, menus, toolbars, and so on.
   - A virtual terminal is a software interface that allows users to interact with an operating system through a text-based interface using the command line.

Хід роботи

Готував матеріал студент Кошіль Владислав

Робота в графічному режимі в ОС сімейства Linux:

1. Розгляньте структуру робочого простору користувача CentOS, та опишіть основні його компоненти:
   - The Applications tab is usually found in the top-left pane of the screen, and it contains a list of all the programs and tools that are available in CentOS.

- The Places tab is usually also located in the top-left pane of the screen, and provides quick access to various file system partitions, such as the home folder, download folder, trash, etc.
- The System menu is usually located in the top-left panel of the screen and contains various system settings and tools for managing your computer, such as network settings, system preferences, etc.
- The "Activities overview" navigation space can usually be opened by pressing the "Super" key (usually with the GNOME window manager logo) on your keyboard or by clicking on the "Activities" item in the bar at the top left of the screen.

Готував матеріал студент Кошіль Владислав

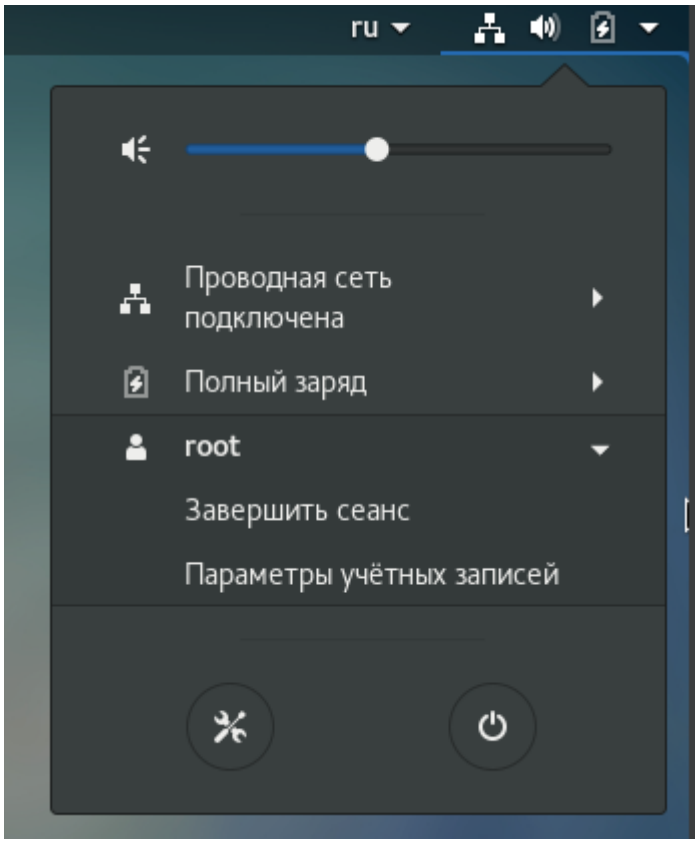
2. Запуск програм. Дослідіть можливості запуску додатків різними способами.

- Launching programs from the Quick Launcher: to launch programs from the Quick Launcher, click on the corresponding program icon on the panel.
- Launching programs through menu search: to launch programs through menu search, open the menu (click on the icon with the GNOME window manager logo at the top left of the screen) and enter the program name in the search field.
- Launching programs through the launcher: to launch programs through the launcher, open the launcher, which is usually located in the panel at the top left of the screen, and enter the program name in the search field.
- Launching programs from the global menu: to launch programs from the global menu, click on the icon with the GNOME window manager logo in the upper left of the screen, and then select the "Applications" menu item.

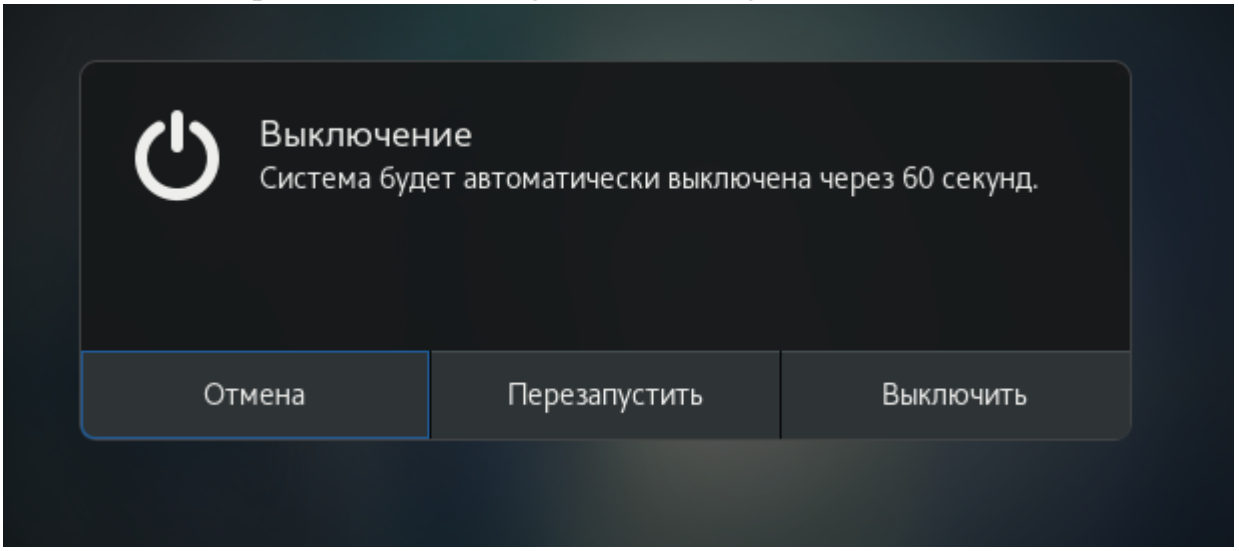
Готував матеріал студент Кошіль Владислав

3. Вихід з системи та завершення роботи в Linux. Як виконати в графічному інтерфейсі наступні дії.

- Зміна користувача на root
  I'm already logged in as a ROOT user so you can create an account



- Перезавантаження системи та Вимкнення системи
  One button is responsible for exiting and rebooting



Готував матеріал студент Фещенко Эвгеній.

4. Робота в середовищі мобільної ОС.

1. **Опишіть головне меню вашої мобільної ОС, який графічний інтерфейс вона використовує?**
   The iPhone 8+ uses the iOS operating system, which features a grid of icons as the main menu. The icons are arranged in rows and columns, and users can swipe left or right to access additional pages of icons. The graphical interface is known for its simple and elegant design, with clean lines and subtle animations. It also uses a "flat" design language, which means that icons and graphics are typically two-dimensional and lack any visual embellishments like shadows or gradients.

2. **Опишіть меню налаштувань компонентів мобільного телефону.**
   - General Settings: This menu includes options to customize the phone's appearance, accessibility features, and language settings.
   - Display & Brightness: This menu allows users to adjust the brightness of the screen, choose a wallpaper, and enable/disable features such as True Tone and Night Shift.
   - Sounds & Haptics: This menu lets users customize the sound and vibration settings for incoming calls, notifications, and alerts.
   - Battery: This menu shows the battery percentage and provides information about battery health.
   - Privacy: This menu lets users manage their privacy settings, including location services, app permissions, and advertising settings.
   - Cellular: This menu allows users to manage cellular data usage, view network information, and configure data roaming settings.
   - Wi-Fi: This menu lets users view and connect to available Wi-Fi networks, as well as configure advanced Wi-Fi settings.
   - Bluetooth: This menu allows users to pair and connect Bluetooth devices, such as headphones or speakers.
   - Siri & Search: This menu lets users customize the settings for Siri, Apple's digital assistant, and configure search settings.
   - iCloud: This menu allows users to manage their iCloud account and settings, including storage, backups, and syncing with other Apple devices.

3. **Використання комбінацій клавіш для виконання спеціальних дій.**
   - Typing shortcuts: Users can create shortcuts for frequently used phrases or sentences.
   - Accessibility shortcuts: Users can set up custom actions to perform when they triple-click the home button, such as zooming in on the screen or activating voiceover.
   - App-specific shortcuts: Some apps allow users to customize keyboard shortcuts for certain functions. For example, in the Notes app, users can create a new note by pressing the Command + N keys.
   - To set up keyboard shortcuts on an iPhone 8+, users can go to Settings > General > Keyboard > Text Replacement. From there, they can add new shortcuts and customize existing ones.

4. **Вхід у систему та завершення роботи пристрою. Особливості налаштувань живлення батареї.**

   To log in to an iPhone 8+, users can press the home button or power button to wake the device up. They will then need to enter their passcode, use Touch ID, or Face ID (if available) to unlock the device and access the home screen.

   To shut down the device, users can press and hold the side button (located on the right side of the device) and either of the volume buttons until the "slide to power off" option appears. They can then swipe to power off the device.

Відповіді на контрольні запитання

Готував матеріал студент Фещенко Эвгеній та Кошіль Владислав

1. **Provide examples of Linux server applications for a database server, mailing servers, and file sharing servers.**

There are many Linux server applications for different purposes. Here are some examples for a database server, mailing servers, and file sharing servers:

Database server:

- MySQL: an open relational database that provides speed and reliability.
- PostgreSQL: an object-relational database with strict standards for data normalization and transactional integrity.

A server for sending messages:

- Postfix: A free email server that allows you to send and receive emails.
- Sendmail: An email server that runs on the Unix platform and is one of the oldest and most widely used.

File sharing services:

- vsftpd: a fast and secure FTP server that works with many operating systems.
- Samba: a file server that allows you to interact between Linux and Windows by providing access to a shared folder.

2. **Compare the Bourne, C, Bourne Again (Bash), the tcsh, Korn shell (Ksh), and zsh shells.**

In the mid-1970s, when the Unix operating system was being developed, a command-line shell known as the Bourne shell was created. Subsequently, other shells were created on the basis of Bourne, such as C, Bourne Again (Bash), the tcsh, Korn shell (Ksh), and zsh.

The main differences between these shells are as follows:

Bourne shell: The Bourne shell (sh) was the first shell in Unix. It is a simple and efficient shell that has limited extensibility. Bourne has limited features such as no built-in functions and no bulk processing capabilities.

C shell: The C shell (csh) is designed to provide a simple and user-friendly user interface. C shell has added new features to the Bourne shell, such as command history, the ability to use the TAB key to auto-complete commands, and variables.

Bourne Again shell: The Bash shell is an advanced version of the Bourne shell that has more features such as built-in functions, scripting support, advanced command syntax, and much more. Bash is the standard shell in most Linux distributions.

tcsh: The tcsh shell is an extended version of the C shell with advanced features. It has autocomplete support and the ability to extend commands.

Korn shell: The Korn shell (ksh) is an extended version of the Bourne shell with additional features such as the ability to use the TAB key to auto-complete commands and variables.

Z shell: The zsh shell is an extended version of the Bourne shell with rich features. Z shell has extended support for directories

3. **What is a package manager for? What package managers do you know in Linux?**
A package manager is software that helps you manage the installation, updating, and uninstallation of software on your computer. Using a package manager allows you to ensure easy and secure installation of programs, and resolves dependencies between different software components. It also allows you to easily manage updates and changes to installed programs.

There are several package managers in Linux, including:

- Advanced Package Tool (APT) - used in Debian, Ubuntu and other Debian-based distributions.
- Yellowdog Updater Modified (YUM) - used in Fedora, CentOS and other Red Hat-based distributions.
- Pacman - used in Arch Linux and other distributions based on Arch Linux.
- Zypper - used in openSUSE.
- Portage - used in Gentoo Linux.
- emerge - used in Sabayon Linux.

4. **What security features are used in Linux?**
Linux is known for its high level of security, and this is due to the use of various security features. The main security features in Linux include the following:

- Access rights: Linux uses access rights to control access to files and directories and to restrict user actions.
- Firewall: The built-in firewall (iptables or nftables) allows you to filter network traffic and deny unwanted connections.
- SELinux and AppArmor: Both provide an additional layer of security by restricting the actions of programs that have access to sensitive data.
- Encryption: Linux supports a variety of data encryption methods, including disk encryption and the SSH network protocol.
- Security updates: The security update system allows you to identify and fix potential security issues that may arise in the operating system.
- Auditing: Linux has the ability to audit user actions and system processes, which allows you to identify potential security threats and identify their sources.
- Version control system: The use of version control systems (for example, Git) allows you to store the history of changes and control access to the code.

5. **Why has the use of virtualization become so relevant now?**

My understanding is that virtualization has become increasingly relevant in recent years due to the growth of cloud computing and the need for greater agility and flexibility in IT infrastructure.

Virtualization technology allows multiple operating systems and applications to run on a single physical machine, which maximizes resource utilization and improves efficiency. This

has become particularly important in cloud computing, where the use of virtual machines enables businesses to scale up or down quickly to meet changing demands.

6. How do you understand the concept of containerization?

Containerization is a way of packaging software applications with all their dependencies into a single, isolated unit called a container. This allows the application to be run consistently and reliably across different computing environments without conflicts or compatibility issues.

7. What are the pros&cons of using open source software?

Open source software is like a double-edged sword, with its own set of pros and cons.

On the one hand, open source software is often available for free, allowing users to save money on licensing fees. It's also customizable, meaning that users can modify the source code to suit their specific needs. This can be particularly useful for businesses with unique requirements or workflows. Furthermore, open source software often has an active community of developers, users, and contributors who provide support, troubleshooting, and updates.

On the other hand, open source software can sometimes be complex and difficult to use, especially for users who are not technically proficient. There may also be compatibility issues with other software or hardware components. Additionally, open source software can be less secure than proprietary software, as the transparency of the source code can make it easier for attackers to identify and exploit vulnerabilities.

Висновки

In the course of the laboratory work, we studied the Linux operating system, and more specifically its specific distribution - CentOS, and theoretically investigated in more detail the issue of system management through the graphical user interface. We gained practical skills in working with commands in the terminal, setting up a mobile OS, and CentOS