Київський фаховий коледж зв’язку

**ЗВІТ ПО ВИКОНАННЮ**

**ЛАБОРАТОРНОЇ РОБОТИ №2**

з дисципліни: «Операційні системи»

**Тема:** **"Getting to know the interface and capabilities of the Linux OS"**

Виконали: студенти 3 курсу,

групи КСМ-13А

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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.

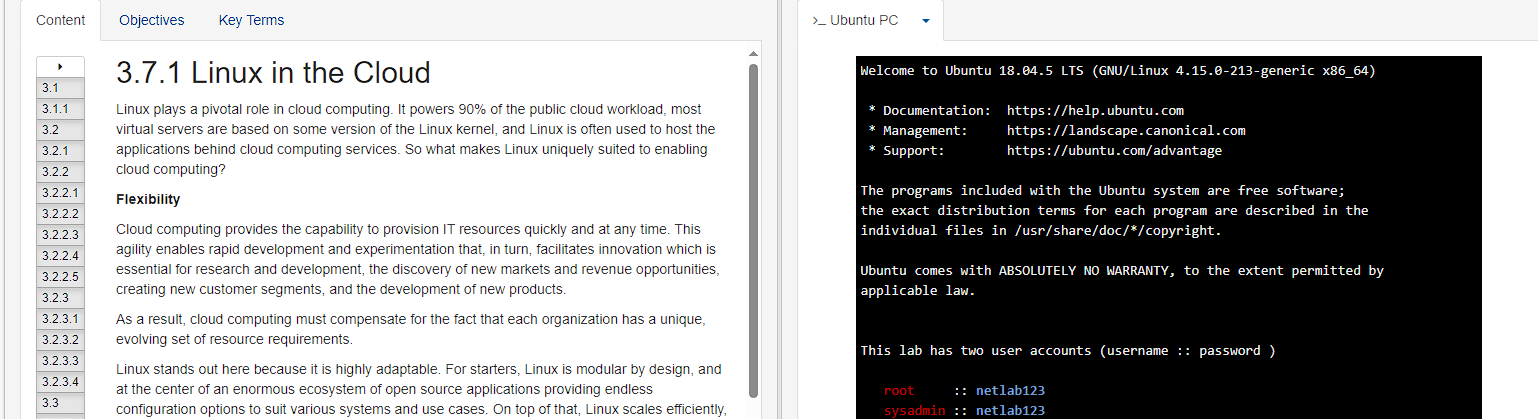
**Завдання для попередньої підготовки**

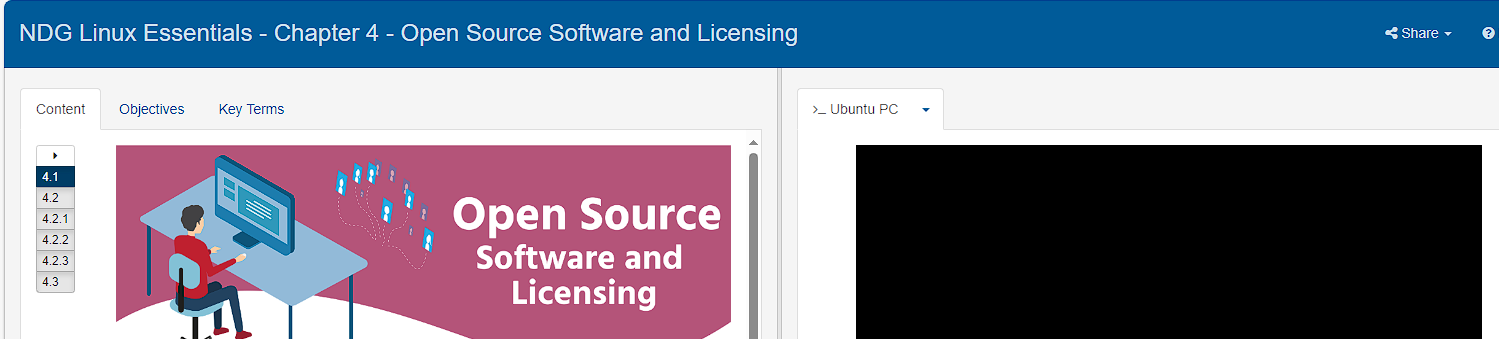
***Готував матеріал студент Zasenko***

Невеликий словник базових англійських термінів з питань призначення команд та їх параметрів.

|  |  |
| --- | --- |
| **Слова англійською** | **Слова Українською** |
| Command | Команда |
| Parameter | Параметр |
| Syntax | Синтаксис |
| Option | Опція |
| Flag | Прапорець |
| Argument | Аргумент |
| Execute | Виконувати |

**Вивчить матеріали онлайн-курсу академії Cisco “NDG Linux Essentials”:**



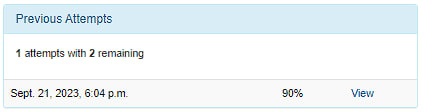


**Пройдіть тестування у курсі NDG Linux Essentials за такими темами:**

**- Chapter 03 Exam**



**- Chapter 04 Exam**



**Дайте визначення наступним поняттям:**

**CLI-режим**

CLI stands for "Command Line Interface." It is a text-based interface used for interacting with a computer or software by typing commands into a terminal or command prompt rather than using a graphical user interface (GUI).

**Термінал на основі графічного інтерфейсу користувача**

A "graphical user interface" (GUI) is a method of interacting with a computer or program in which the user uses graphical objects, such as windows, buttons, menus, and the mouse, to navigate and perform actions by clicking and dragging them, well from entering text commands through the command line interface (CLI).

**Віртуальний термінал**

A virtual terminal is a software environment that allows a user to interact with an operating system or other programs in a text mode similar to a traditional terminal or command line, but without the need for a physical input and output device such as a keyboard or monitor.

**Хід роботи**

***The material was prepared by a student Zasenko***

1. Brief description of actions for working in graphical mode in the Linux OS with Internet sources:

* Install a GUI such as GNOME or KDE.
* Install a web browser such as Firefox or Chrome.
* Use a web browser to view web pages and work with internet resources.
* For email, install a client such as Thunderbird.
* For social networks and messengers, use web versions or desktop clients.
* For office documents, use LibreOffice.
* For multimedia, install VLC Media Player or similar.
* Work with photos and graphics - use GIMP or Inkscape.
* For video calls and chat, use Skype or Zoom.
* Depending on the needs, install specialized programs such as graphics editors or CAD systems.

1.1.

***The material was prepared by a student Dzyubenko***

One of the main versions of Ubuntu that uses the lightweight desktop environment LXQt. The main component of Lubuntu is LXQt, a lightweight desktop environment that provides basic functions for working with the desktop, windows, files and menus.

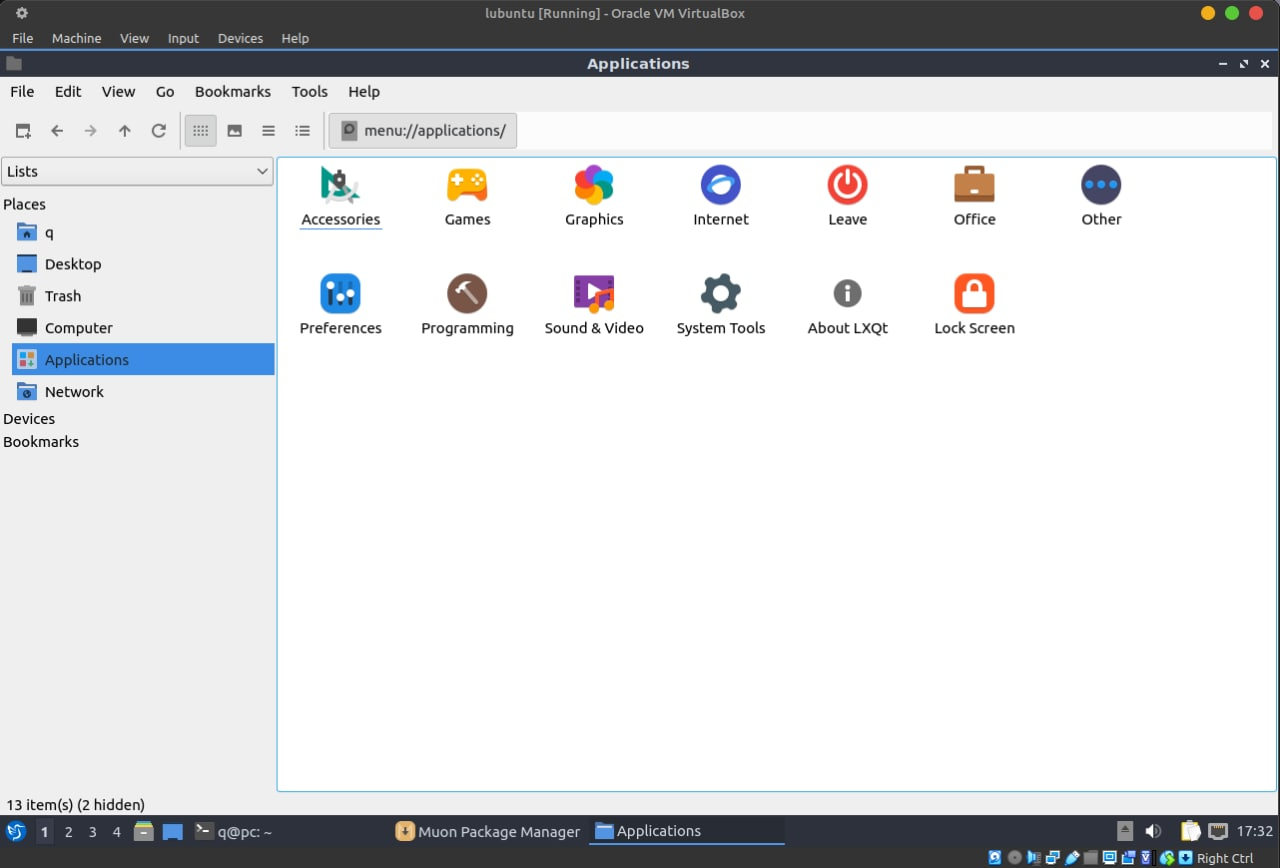


Fig 1. View of applications

Lubuntu also includes a set of default applications such as a browser, mail client, text editor, audio player, etc.

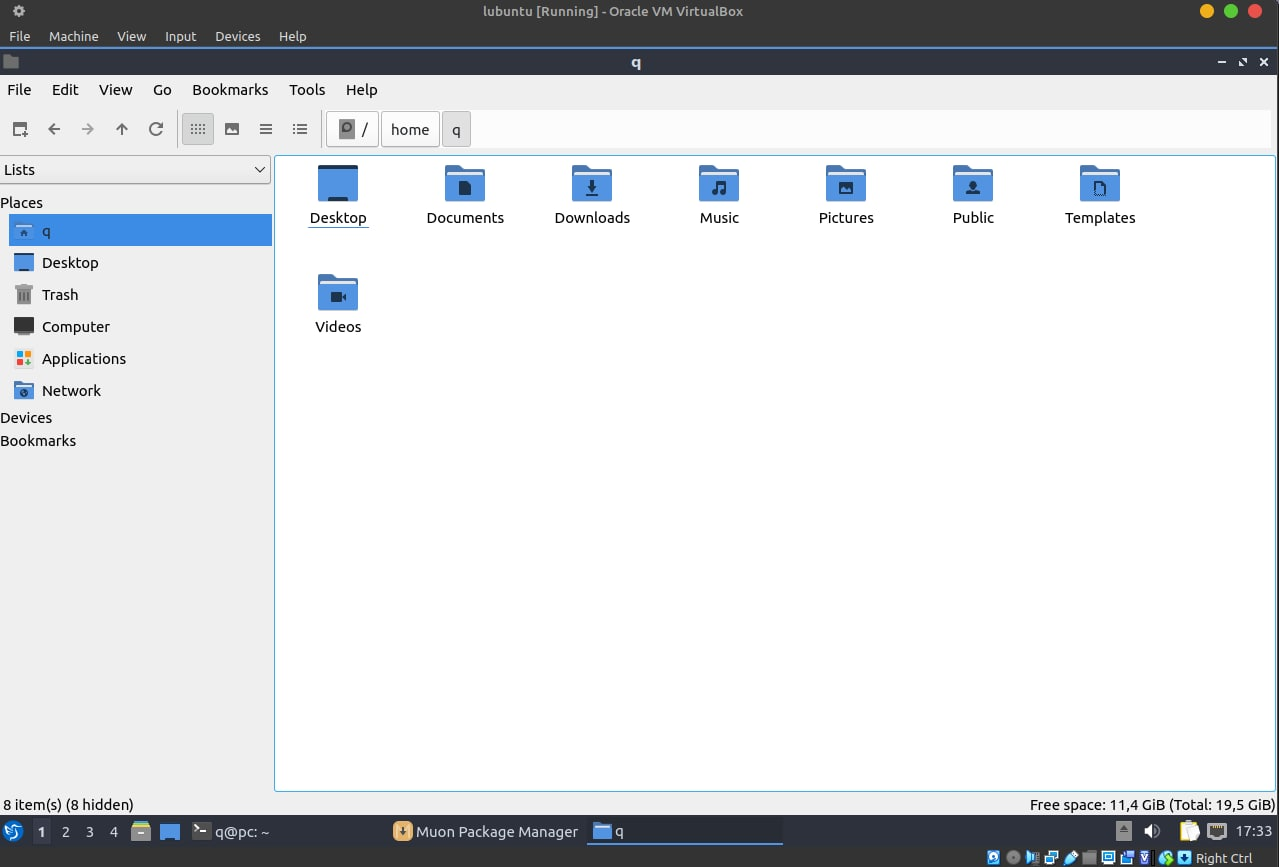


Fig 2. Viewing system files

This is the file manager used in LXQt. It allows users to interact with files and folders on their computer.

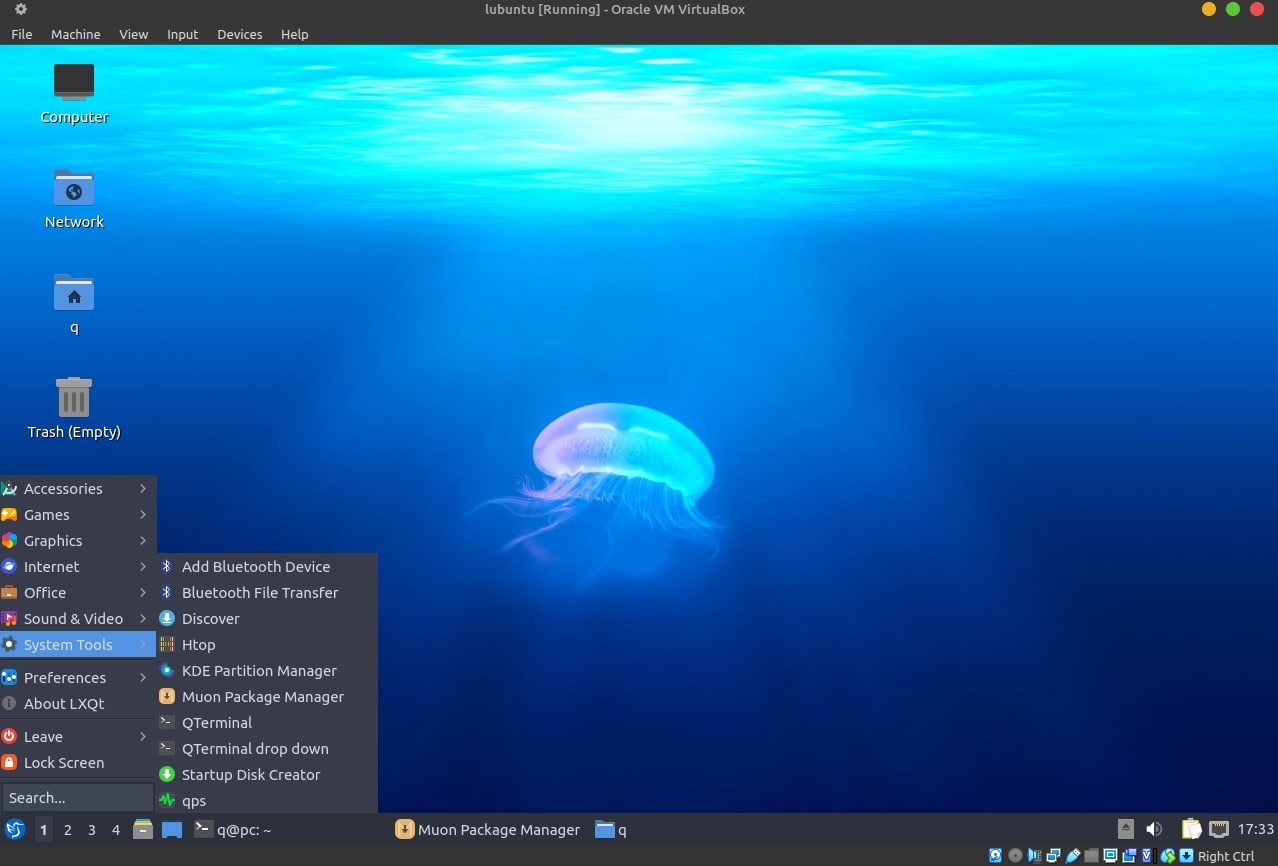


Fig 3. Quick access to system tools

1.2.

***The material was prepared by a student Zasenko***

There are several ways to run programs in a Linux Mint virtual machine. Here are some ways:

1. Using the Start Menu (Cinnamon Desktop):

* Click on the Menu icon in the lower left corner of the screen (usually the Mint icon or the Mint logo icon).
* Then type the name of the program you want to run in the search field.
* Click on the found program to run.

2. Using the terminal:

* Open Terminal by pressing Ctrl + Alt + T or by searching for Terminal in the Start Menu.
* Enter the command to run the program. For example, firefox to run the Mozilla Firefox web browser.

3. Using a graphical file manager:

* Open a file manager (usually Nemo in Linux Mint).
* Go to the directory where the program is located.
* Find the application startup file (it can be a file with the extension .desktop) and double-click on it.

4. Use of shortcuts:

* You can create shortcuts for programs and place them on the desktop or in other directories for quick access. For this:
* Open the file manager.
* Find the program, right-click on it and select "Create Shortcut".
* Drag the created shortcut to the desktop or to the folder where you want to save it.

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

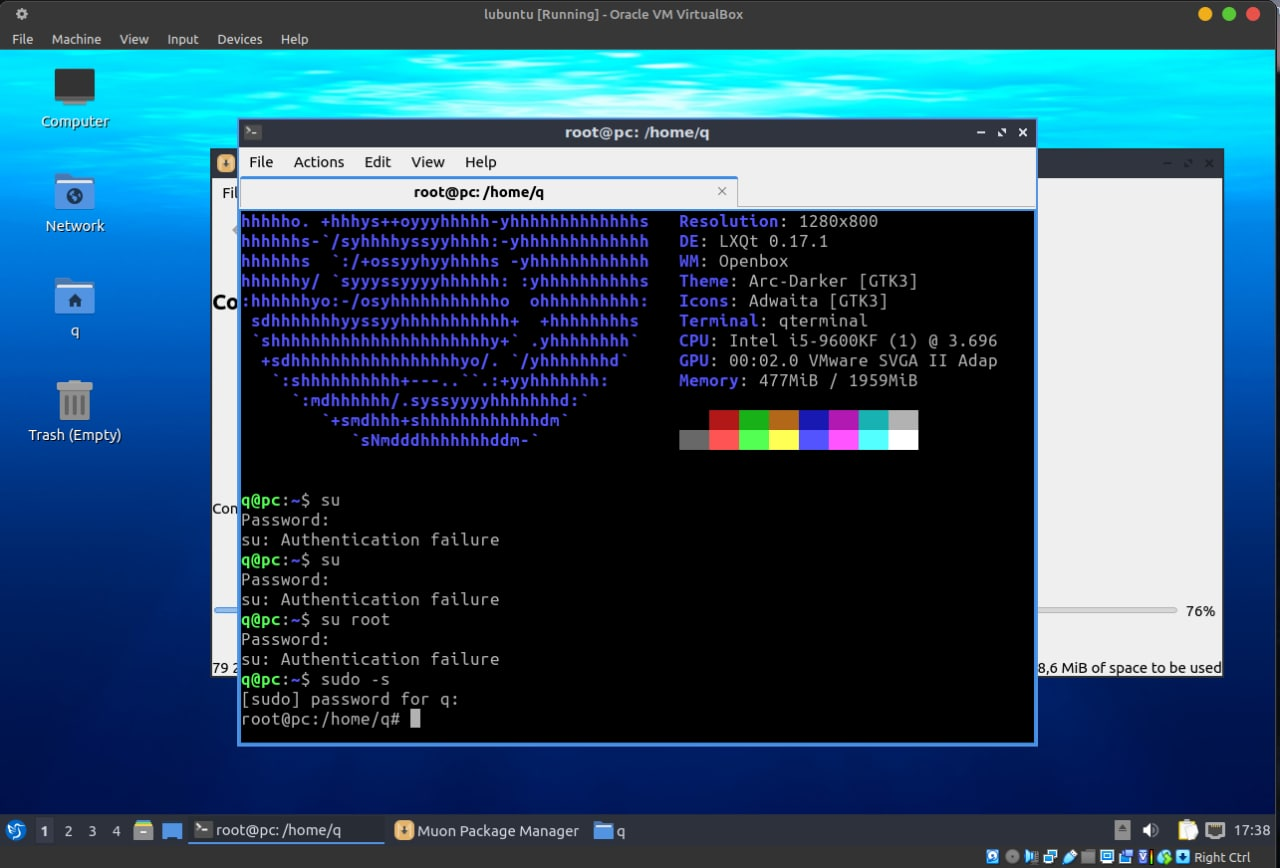


Fig 4. Change account

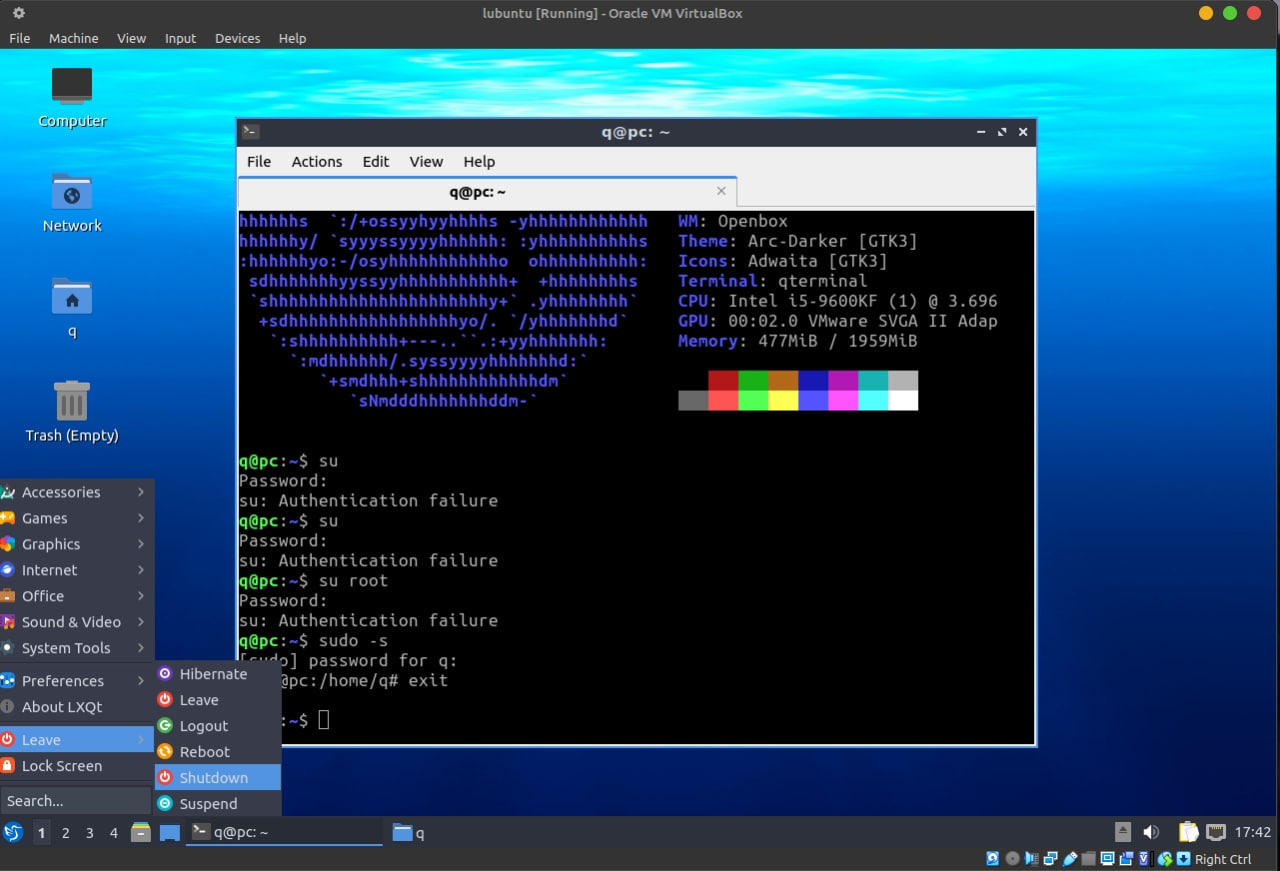


Fig 5. Log out and restart

***The material was prepared by a student Storozhuk***

2. Work in a mobile OS environment.

2.1. The MIUI main menu consists of three buttons: reboot wipe data connect with mi assistant. It has a simple interface, you can switch between buttons using the volume keys, and you can select an action using the power button.

2.2. Опишіть меню налаштувань компонентів мобільного телефону.

1. Connectivity and network:

* Wi-Fi: Set up and connect to wireless networks.
* Bluetooth: Manage Bluetooth connections.
* Mobile data: Manage mobile network data and SIM cards.
* VPN: Set up a virtual private network.

1. Sound and notifications:

* Volume: Control the volume of calls, media, and notifications.
* Sounds: Customize various sounds and alerts.
* Notifications and lock screen: Customize the notifications and information on the lock screen.

1. Display and brightness:

* Brightness: Adjust the brightness of the screen.
* Auto brightness: Turns automatic brightness adjustment on or off.
* Backlight: Controls the timer for the screen's background light.

1. Advanced settings:

* Language and input: Select a language and configure input methods.
* Date and time: Set the date, time, and region.
* Security and privacy: Set up screen lock, data security, and app permissions.
* Backup and restore: Manage your data backups.

1. Apps:

* All apps: List of installed applications and their settings.
* App permissions: Configure how apps can access various phone features.
* Accounts and synchronization:
* Add accounts: Add Google, Microsoft, email, and other accounts.

1. Synchronization: Set up data synchronization with your accounts.

* Battery:
* Battery usage: Monitor battery usage and optimize battery life.
* Power saving: Enable battery saving modes.

1. Storage:

* Storage: Information about the internal memory and SD card (if available).
* Transfer data to the memory card: Settings for transferring data to the SD card.

1. System:

* Software updates: Check for and install OS updates.
* Advanced settings: Various system settings and other options.

2.3. Використання комбінацій клавіш для виконання спеціальних дій.

When you hold down the Volume Up and Power buttons while the phone is turned off, you can access the MIUI main menu.

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

To complete the operation, hold down the power button and select the button to turn off the phone on the screen.

There are four battery modes: productive, balanced, economical, and ultra-efficient. You can switch between them manually or set the power saving mode to automatically turn on if the battery charge drops below a certain percentage.

***The material was prepared by a student Storozhuk***

**Контрольні запитання**

1. Linux server applications:

* A database server: For example, MySQL, PostgreSQL, MongoDB. These applications are used to store and manage data.
* Messaging servers: For example, Postfix, Sendmail, Exim. They are used to send and receive emails.
* File sharing services: For example, vsftpd (FTP server), Samba (for Windows-like file sharing), ProFTPD.

1. Unix/Linux shells:

* Bourne Shell (sh): A classic shell that has a basic set of functions.
* C Shell (csh): Has a similar syntax to C programming and supports command history.
* Bourne Again Shell (Bash): An improved version of Bourne Shell with many advanced features such as command history, auto-complete, and scripting.
* tcsh: An enhanced version of C Shell with additional features such as command history and autocomplete.
* Korn shell (Ksh): Has advanced functionality similar to Bash and is the standard shell on some UNIX-like operating systems.
* zsh: The gold standard for interactive use and scripting, with many extensions and customizations.

1. A package manager is used to manage the installation, updating, and removal of software on a system. Some of the package managers for Linux include:

* APT (Advanced Package Tool): Used in Debian and Ubuntu.
* YUM (Yellowdog Updater Modified): Used in Red Hat, CentOS, and Fedora.
* DNF (Dandified YUM): A newer package manager for Fedora and CentOS.
* Pacman: Used in Arch Linux.
* Zypper: Used in openSUSE.

1. Security tools in Linux include:

* Firewall (iptables): Controls network access.
* SELinux and AppArmor: Prevent unauthorized access to resources.
* SSH (Secure Shell): Encrypted access to servers.
* Antivirus: Some Linux distributions use antivirus software to detect malware.
* Regular updates: An important means of eliminating vulnerabilities.

1. Virtualization has become relevant due to the following factors:

* Efficient use of hardware equipment.
* Isolation of different working environments.
* Ensuring fast deployment, copying, and scaling of systems.

1. Containerization is a virtualization methodology in which an application and all its dependencies are packed into a container that is separate from other containers and the system. It allows you to deploy applications efficiently and quickly in homogeneous environments.
2. Advantages of using open source software:

* Openness and transparency: The ability to check and modify the source code of the program.
* Cost: Free or available at a low price.
* Community and support: Has an active community of users and developers that provides support and updates.
* Adaptability: Easy ability to adapt the program to your own needs.

Disadvantages:

* Lack of official support: Some companies may be hesitant to use open source software due to the lack of official support.
* Limited functionality or integration: Some open source programs may have limited functionality or may be more difficult to integrate with other solutions.

1. Most Linux systems can have 6 active virtual consoles (terminals) by default. You can call them up by pressing Ctrl + Alt + F1 to F6, where F1 corresponds to the first virtual console, F2 to the second, and so on. To switch between them, you can also use the keyboard shortcut Ctrl + Alt + F1 to F6. For example, if you are on the graphical desktop and want to switch to the first virtual console, press Ctrl + Alt + F1. To return to the graphical desktop, use Ctrl + Alt + F7 or Ctrl + Alt + F8, depending on the distribution.
2. The seventh virtual console (terminal), i.e. Ctrl + Alt + F7, is used for the graphical desktop in most Linux distributions if they have a graphical interface. However, this can vary depending on the specific system configuration and distribution.
3. For example, on a Linux system, it is possible to have multiple login sessions under the same system name, and this is called "multisessionality". Each session gets its own virtual console or terminal, and you can perform different tasks in each of them. This is useful, for example, for debugging or working on different tasks simultaneously without having to create multiple users or sessions.

**Висновки**

***The material was prepared by a student Storozhuk***

In this work, we have familiarized ourselves with a large number of Linux operating systems and their graphical interfaces. In particular, we studied the structure and main components of Gnome, launching applications in different ways, and exiting and shutting down the Linux operating system. Difficulties arose only with the eighth task from the control questions, namely the inaccuracy of information on various web resources about the exact number of virtual consoles.