**"Kyiv Vocational College of Communication"**

**Cyclic Commission of Computer Engineering**

**EXECUTION REPORT**

**LABORATORY WORK No. 1**

from the discipline: "Operating systems"

**Topic: "Getting to know the working environment virtual machines and operating systems of different families"**

**Performed by students of the group:  
Греков Данііл  
Богдан Раєв**

**Checked by the teacher**

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**Work of group students КСМ-13Б Team:** **bed0lagi**

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**The goal of the work:**

1. Acquiring practical knowledge for using virtual machine environments and operating systems of different kinds and families, including their graphics shell, methods for entering and leaving the system, knowledge of the desktop's layout, and basic actions and settings to study when using the system.

**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.

**Tasks for preliminary preparation**

The student prepared the material: Богдан Раєв

1. Read the short theoretical information for the laboratory work and do it a small dictionary of basic English terms on OS classification issues.

|  |  |
| --- | --- |
| **Термін англійською** | **Термін українською** |
| type 1 hypervisor | гіпервізор типу 1 |
| shared hosting | спільний хостинг |
| JVM (Java Virtual Machine) | JVM (Java Virtual Machine) |
| host operating system | операційна система хоста |
| type 2 hypervisors | гіпервізори 2 типу |
| binary translation | хоста двійковий переклад |
| guest operating system | гостьова операційна система |
| The Java Virtual Machine | Віртуальна машина Java |
| machine simulators | машинні тренажери |
|  |  |

2. After reading the material from short theoretical information, give the answers to the following questions

**The material was prepared by student Богдан Раєв**  
**There are two main types of hypervisors:**

**1. Hypervisor of the 1st level (Type 1):**

- Also known as "native" or "direct" hypervisor.

- Runs directly on the server's physical hardware.

- Runs more slowly than the host operating system and has direct access to hardware resources. .

- Typically used for server virtualization in large data centers.

**2. Hypervisor of the 2nd level (Type 2):**

- Also referred to as "software layer hypervisor" or "operating system layer hypervisor".

- Installs an operating system on a physical server that is already in use..

- Virtual machines are created and run in the context of the host operating system.

- Usually applied to desktop computers or for use in development and testing.

**Progress**

The material was prepared by student Греков Данііл

1. Work in graphical mode in the OS of the Linux family.

1.1. Start the **VirtualBox** virtual machine, familiarize yourself with its main features capabilities, read the help for working with it.

Powerful x86 and AMD64/Intel64 virtualization software for business and home use is called VirtualBox. In addition to being the only business-oriented solution that is freely accessible as Open Source Software under the terms of the GNU General Public License (GPL) version 3, VirtualBox is also a very feature-rich, high-performance product. For an introduction, see "About VirtualBox".

Currently, VirtualBox supports a wide range of guest operating systems, including but not limited to Windows (NT 4.0, 2000, XP, Server 2003, Vista, Windows 7, Windows 8, and Windows 10), DOS/Windows 3.x, Linux (2.4, 2.6, 3.x, and 4.x), Solaris and OpenSolaris, Solaris and OpenSolaris, OS/2, and OpenBSD. VirtualBox runs on Windows, Linux, macOS, and Solaris hosts.

VirtualBox is being actively developed with frequent releases and has an ever growing list of features, supported guest operating systems and platforms it runs on. VirtualBox is a community effort backed by a dedicated company: everyone is encouraged to contribute while Oracle ensures the product always meets professional quality criteria.

You can build and control virtual machines on your computer using VirtualBox, a free hypervisor. The primary functions of VirtualBox are as follows:

1. Support for a variety of operating systems: Windows, Linux, macOS, and other operating systems can be installed in virtual machines.

2. Resource sharing can be set up to share files and folders between virtual machines and the host operating system.   
3. Network configurations: With VirtualBox, you can use virtual networks, Internet connections, network filters, and routing rules.

4. Your computer can be used to create and store virtual machine images.   
5. Snapshots: You can take snapshots of your virtual machines using VirtualBox, which enables you to save the state of the system at a specific time and restore it later.

6. The ability to manage resources (processors, memory, and video cards) for each virtual machine is finally available.  
**Answers to control questions**

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- The basic principles and concepts of the GNU GPL include the following:

1. Software use rights: Users have the unrestricted freedom to use the software for any purpose.

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3. Freedom to distribute the program: The GPL's central tenet is that anyone who distributes software (or a modified version) must also make the source code of that software available to users under the same license.

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**The student prepared the material: Богдан Раєв   
2. The following control questions and their answers**

**1.** What is open source software?