EPAM University Programs

DevOps external course

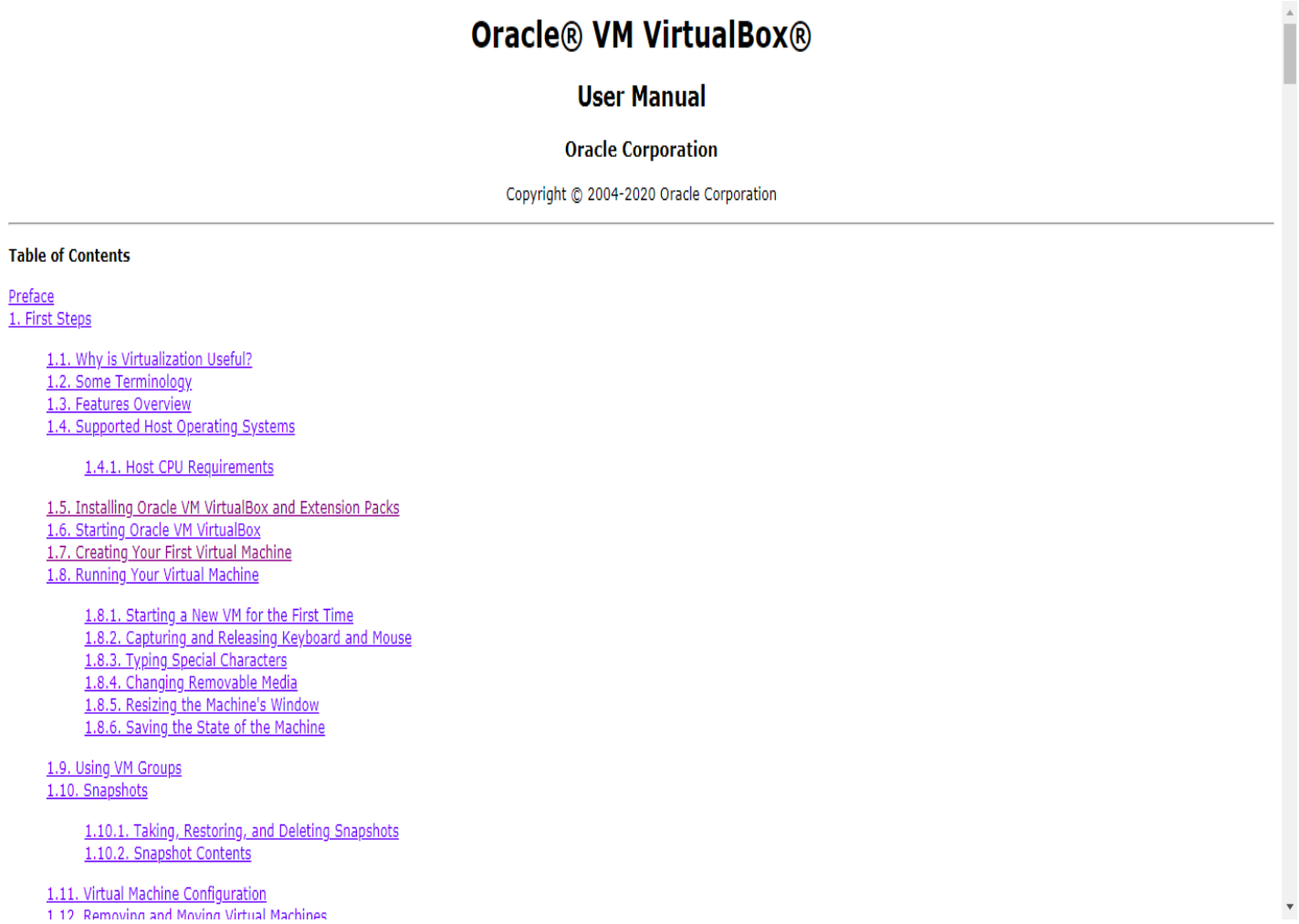
Module 2 Virtualization and Cloud Basic

TASK 2.2

PART 1. WORKING WITH VIRTUALBOX

1. The first launch of VirtualBox and Virtual Machine (VM).

1.1 Review the structure of the VirtualBox User Guide [1]



Oracle® VM VirtualBox®

User Manual

Oracle Corporation

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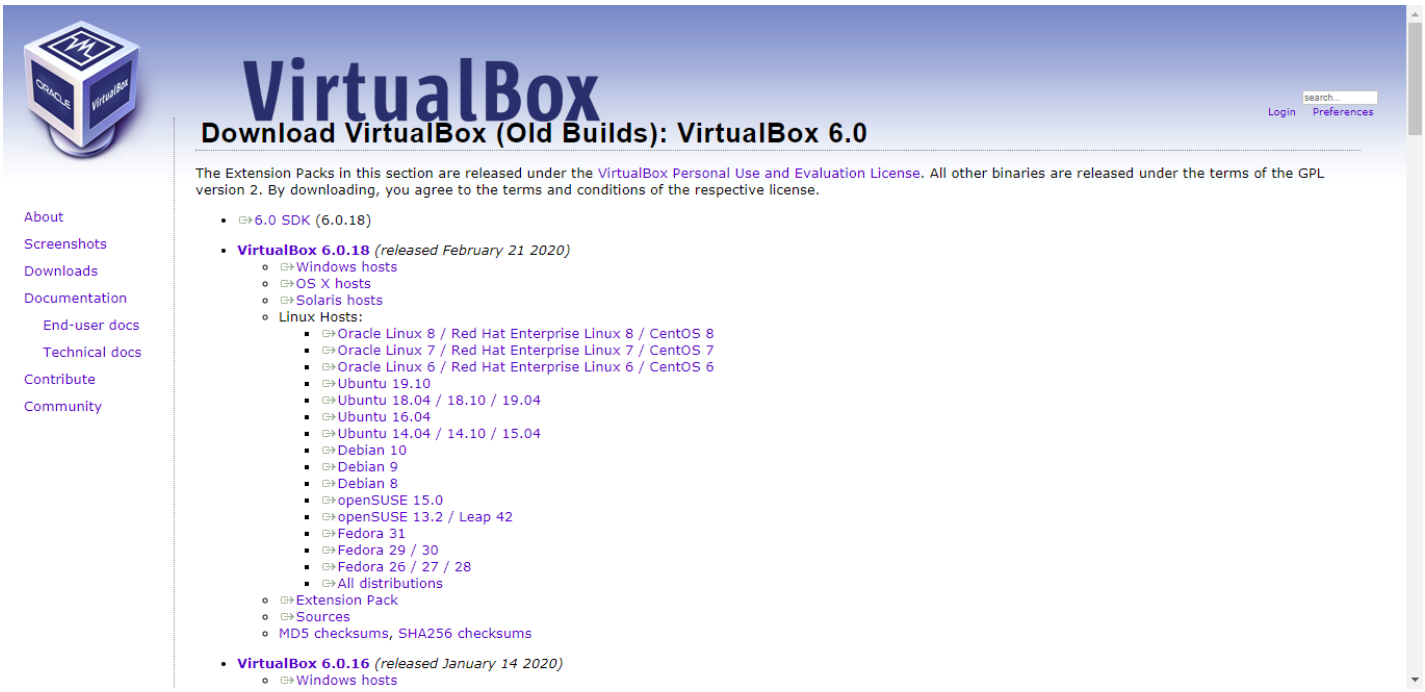
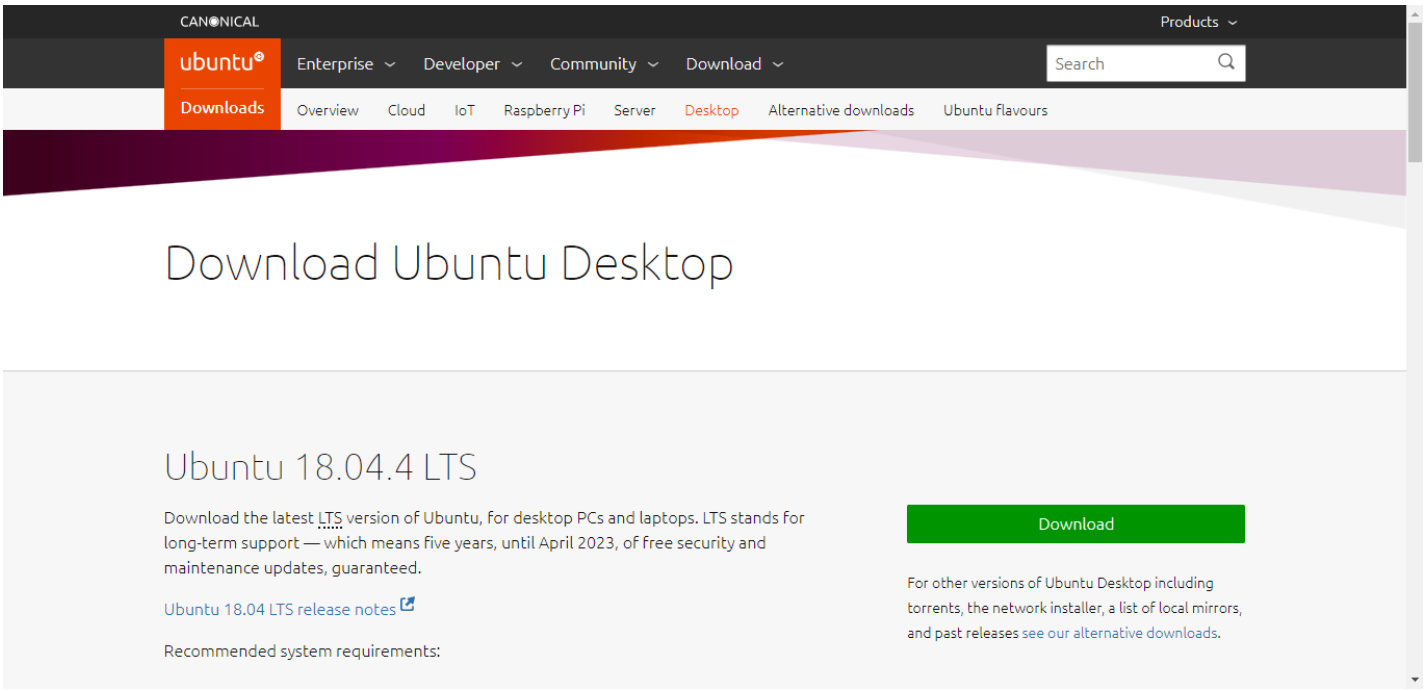
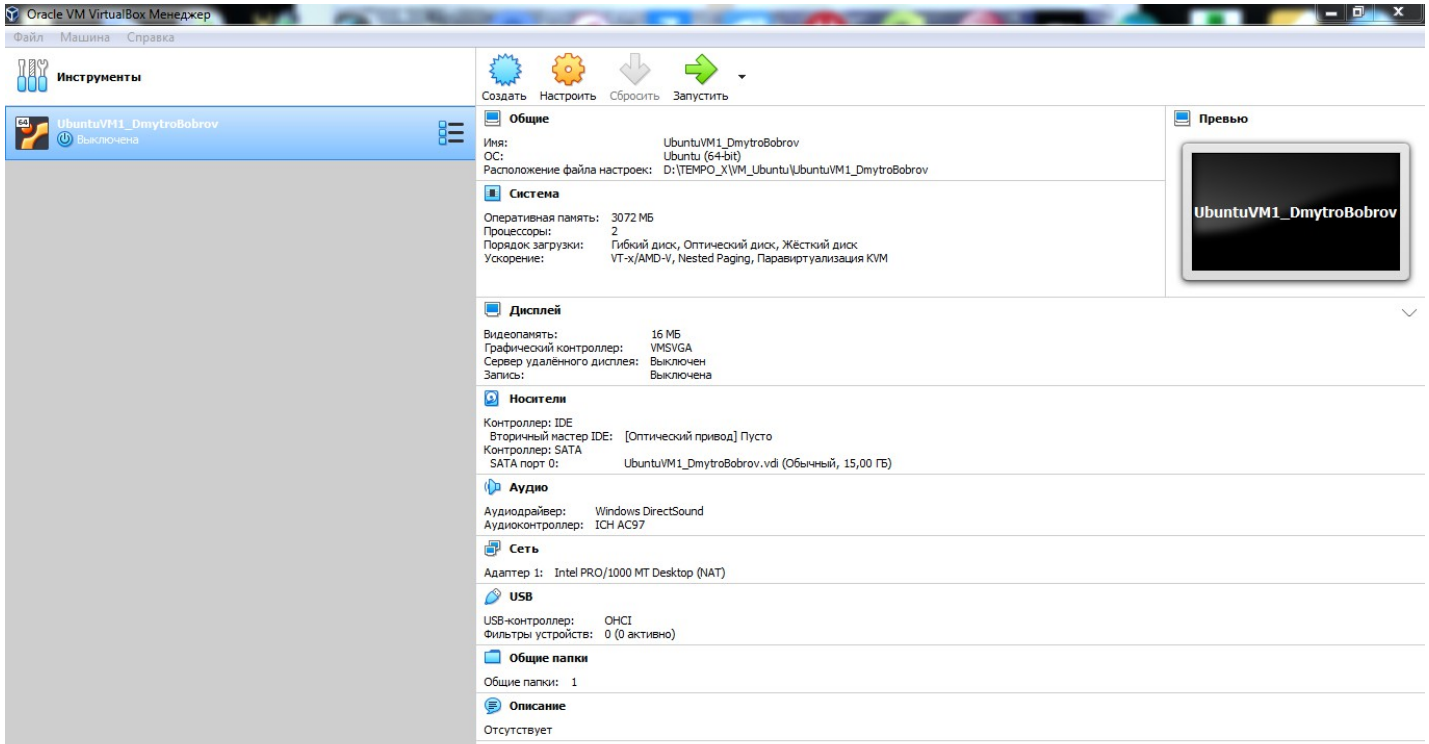
1.2 Download the latest stable version of VirtualBox from the official VirtualBox site [2] according to the host operating system (OS) installed on the student workplace. For Windows, the file may be named, for example, VirtualBox-6.0.12-133076-Win.exe. Perform a VirtualBox installation.

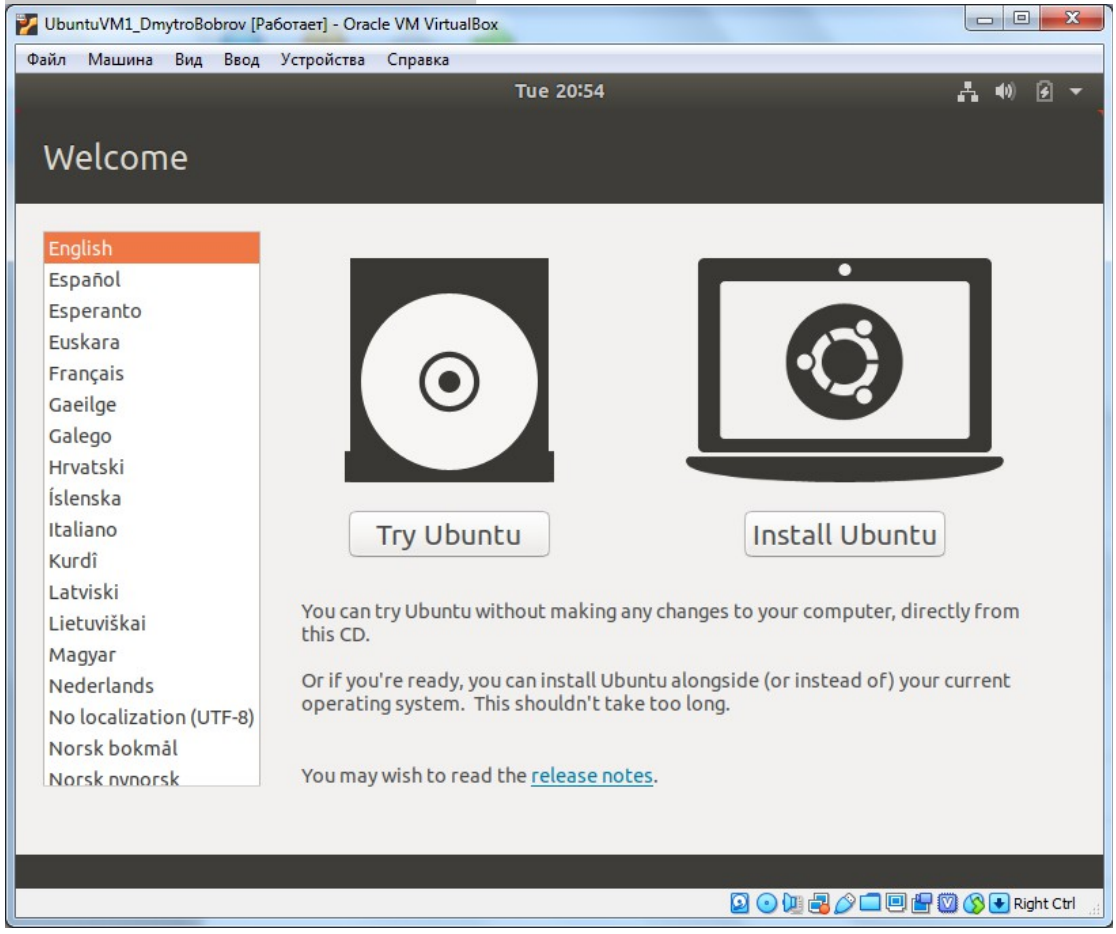


1.2 Download the latest stable version of Ubuntu Desktop or Ubuntu Server image from the official site [3].



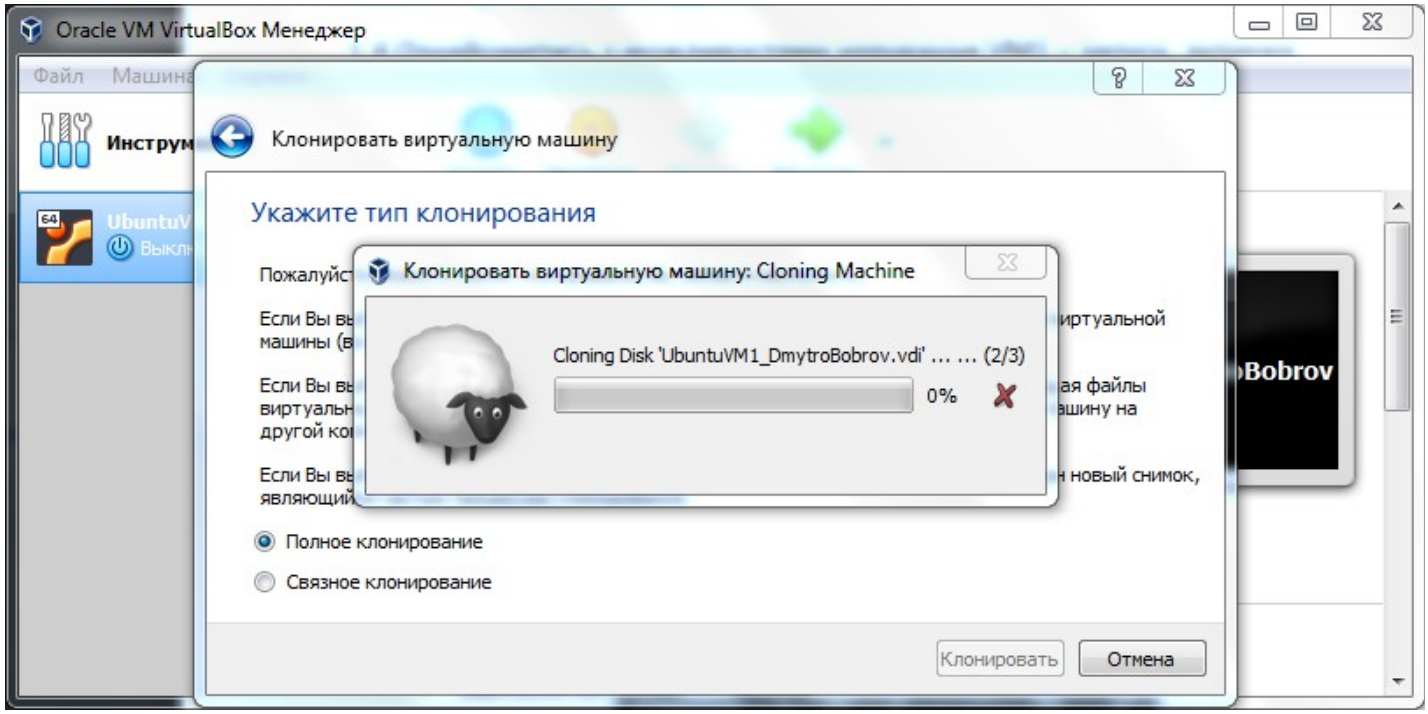
1.3 Create VM1 and install Ubuntu using the instructions [1, 1.7]. Set machine name as "hostname" _ "student name"





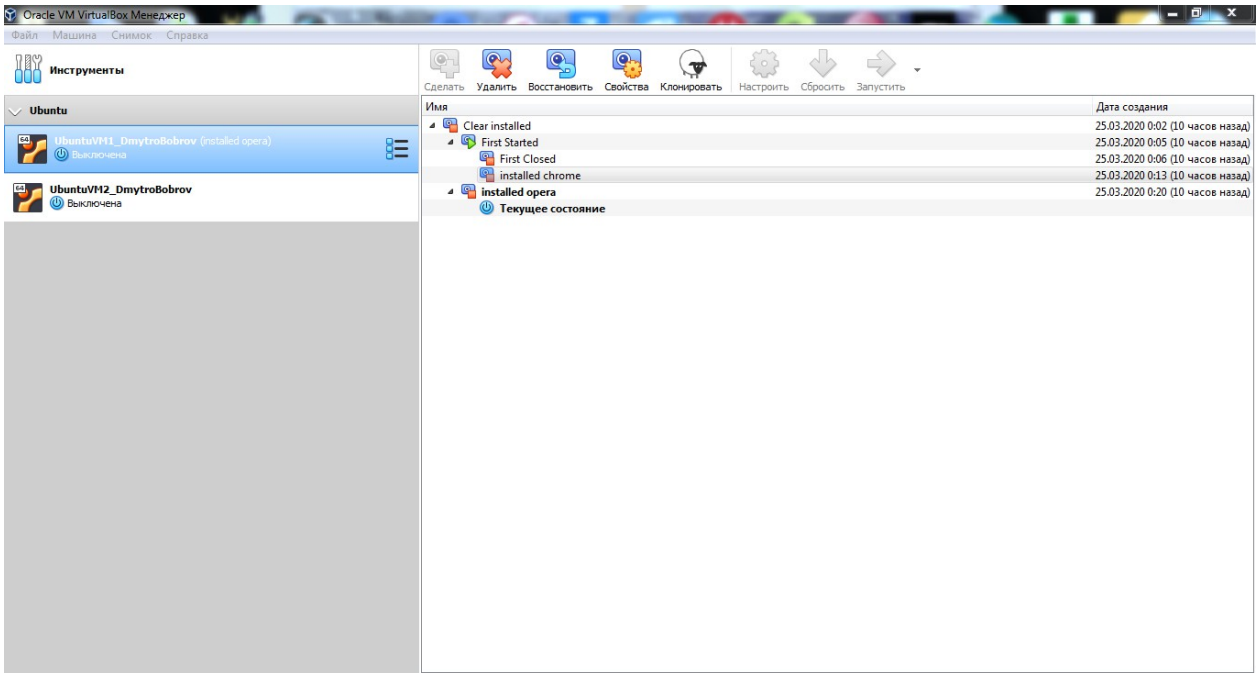
1.4 Learn about VM1 management capabilities - start, stop, reboot, save status, use Host key and keyboard shortcuts, mouse capture, and more. [1, item 1.8].

1.5 Clone an existing VM1 by creating VM2 [1, p.1.13].



1.6 To create a group of two VMs: VM1, VM2 and to study functions related to groups [1, item 1.9].

1.7 For VM1 changing its state, take several different pictures, forming a branched tree of pictures [1, item 1.10].

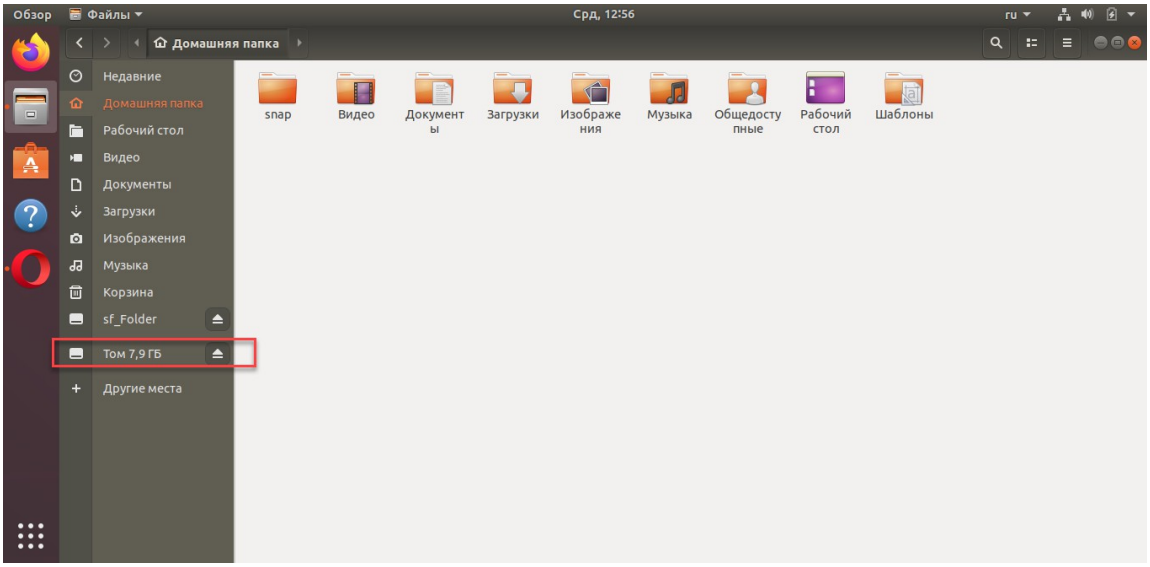


1.8 Export VM1 to save * .ova file on a shared network drive. On the same drive, select the * .ova file created by another student and import it [1, para.1.14].

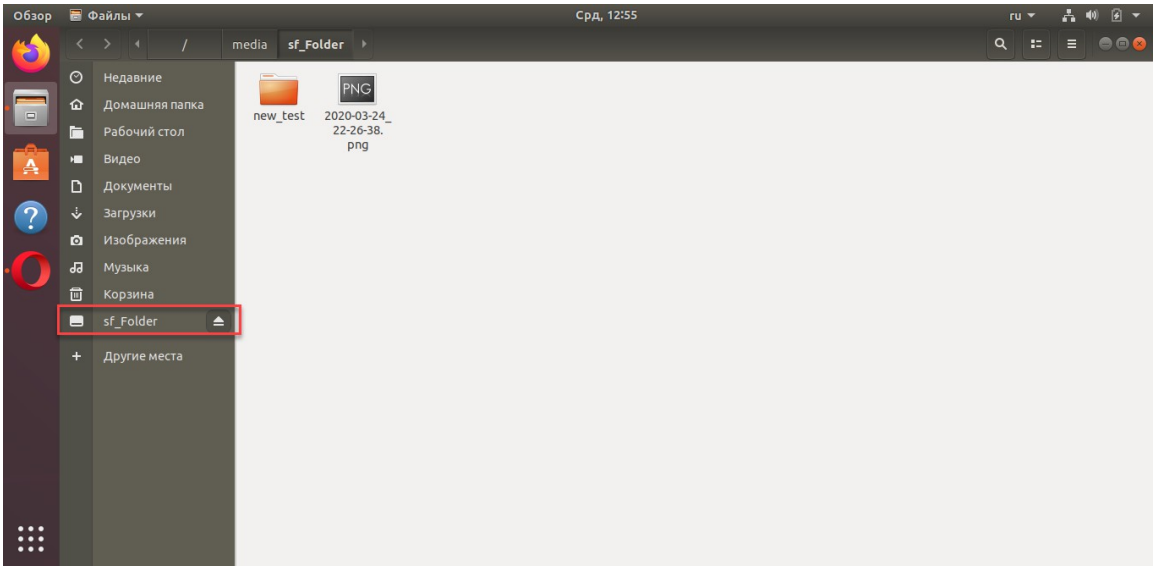
2. Configuration of virtual machines

2.1 Explore VM configuration options (general settings, system settings, display, storage, audio, networks, etc.).

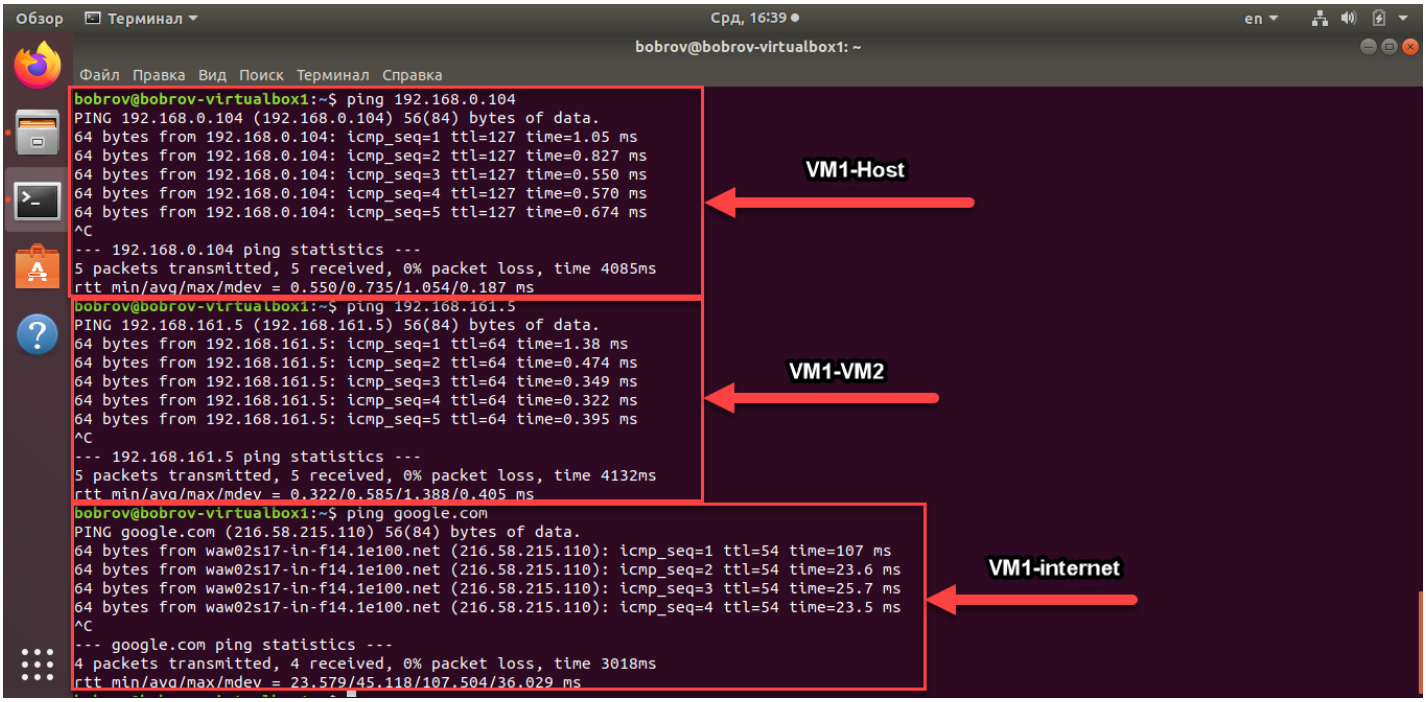
2.2 Conduct USB settings to connect the USB ports of the host machine to the VM [1, Section 3.11].



2.3 To configure a shared folder for communication between the virtual machine and the host [1, clause 4.3].



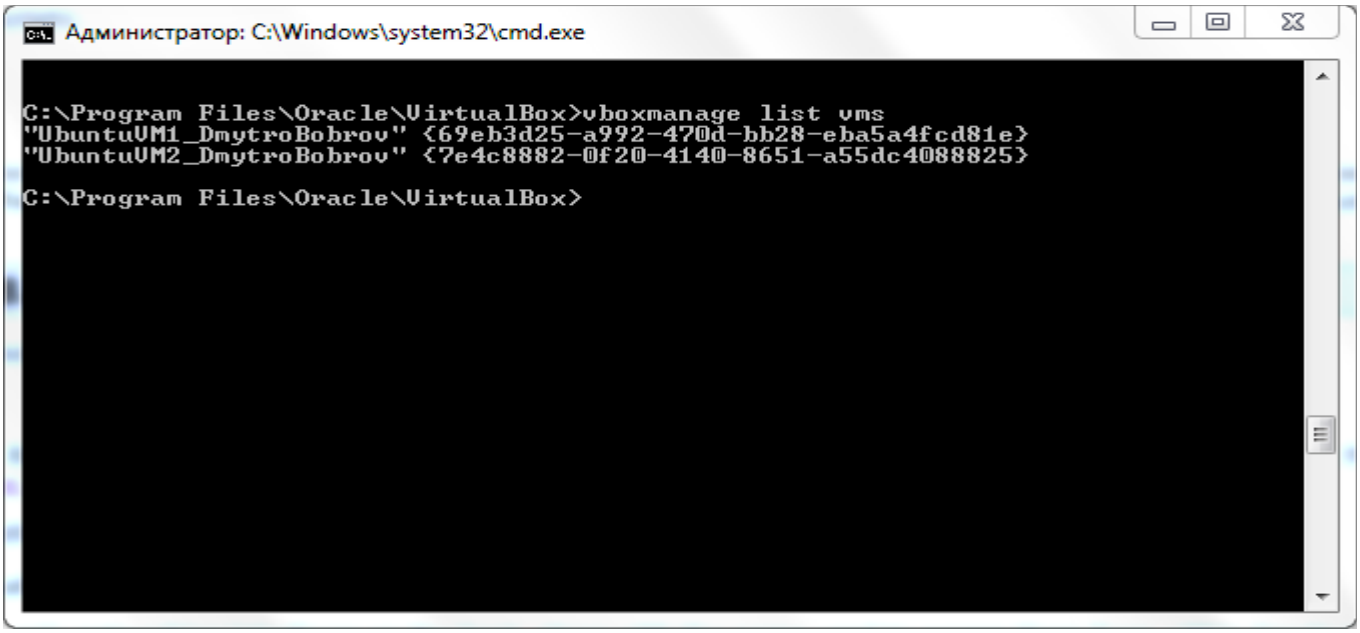
2.4 Configure different network modes for VM1, VM2. Check for connection between VM1, VM2, Host, Internet for different network modes. You can use the ping command to do this. Make an appropriate table of possible connections.



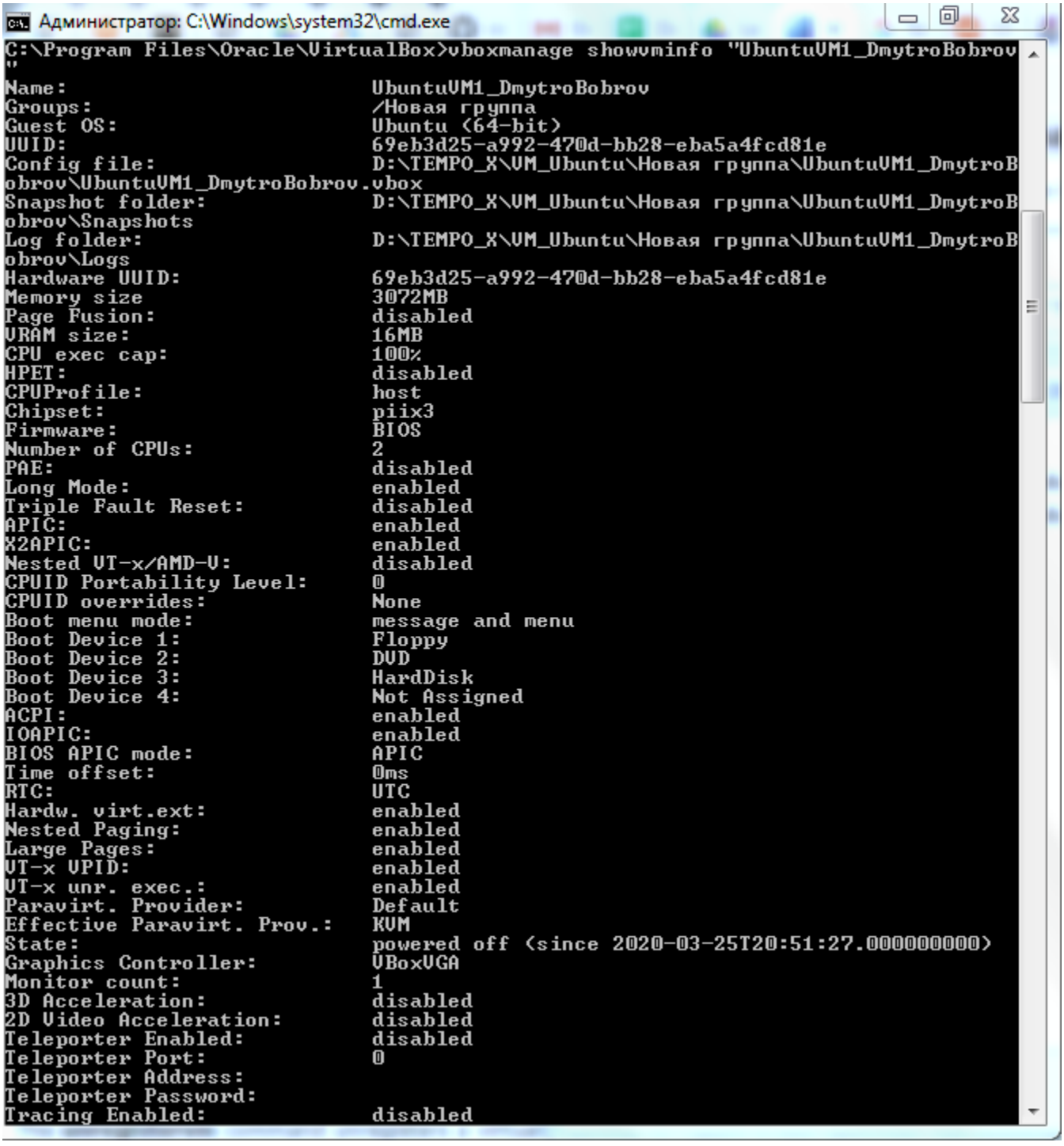
	VM ↔ Host	VM1 ↔ VM2	VM → Internet	VM ← Internet
Host-only	+	+	–	–
Internal	–	+	–	–
Bridged	+	+	+	+
NAT	–	–	+	Port forwarding
NAT Network	–	+	+	Port forwarding

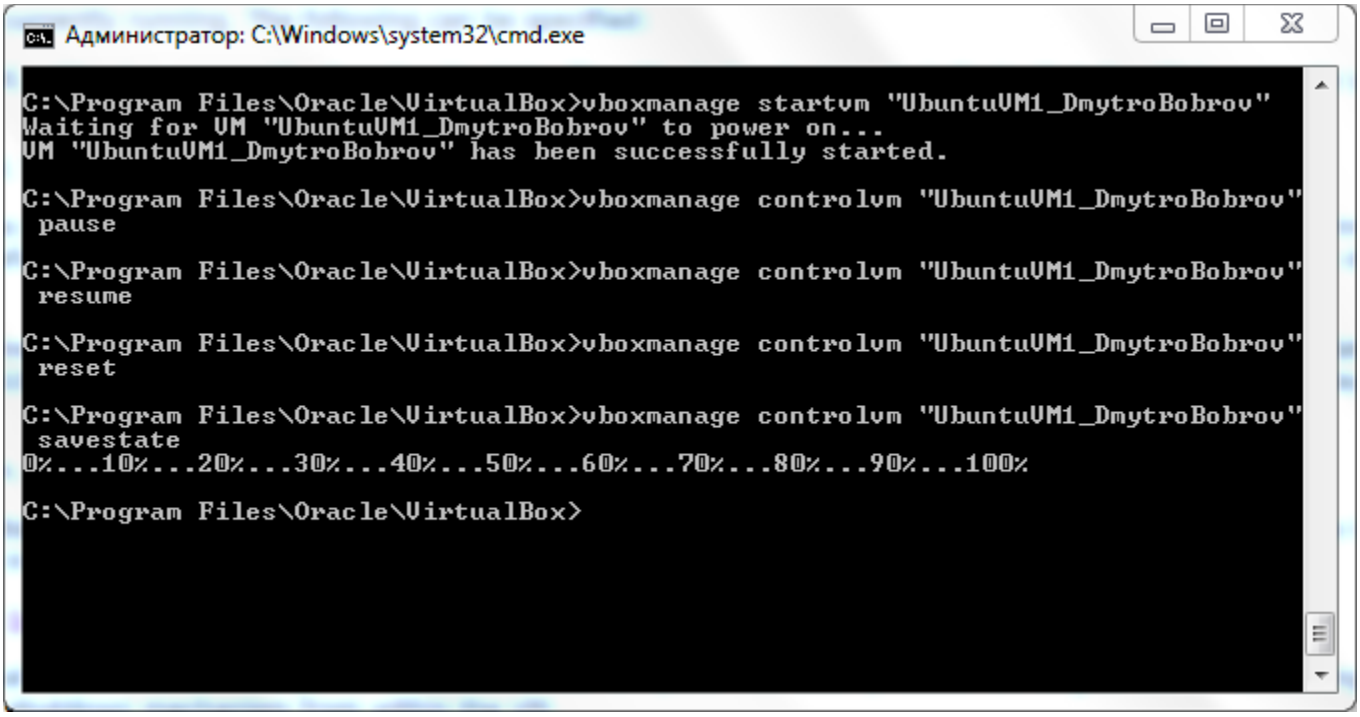
3. Working with CLI via VBoxManage.

3.1 Run cmd.exe command line.



3.2 Examine the purpose and execute the basic commands of VBoxManage list, showvminfo, createvm, startvm, modifyvm, clonevm, snapshot, controlvm [1, 8].

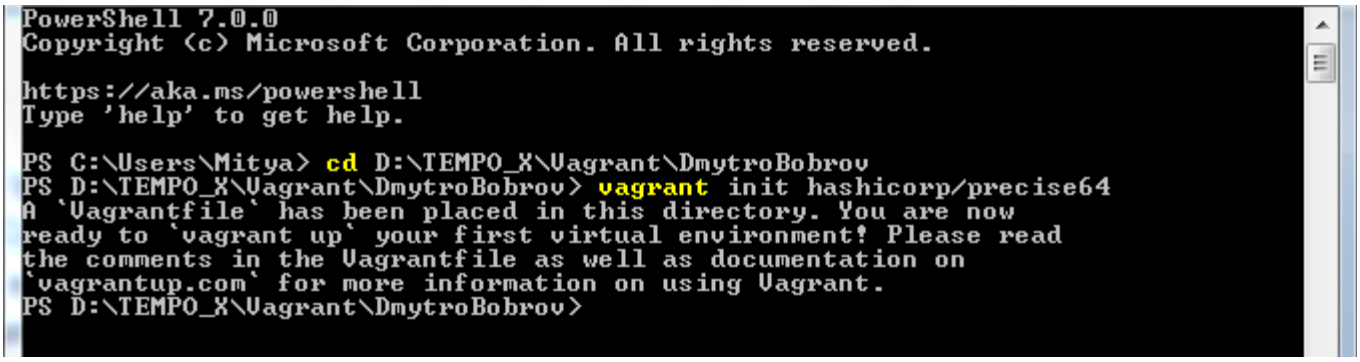




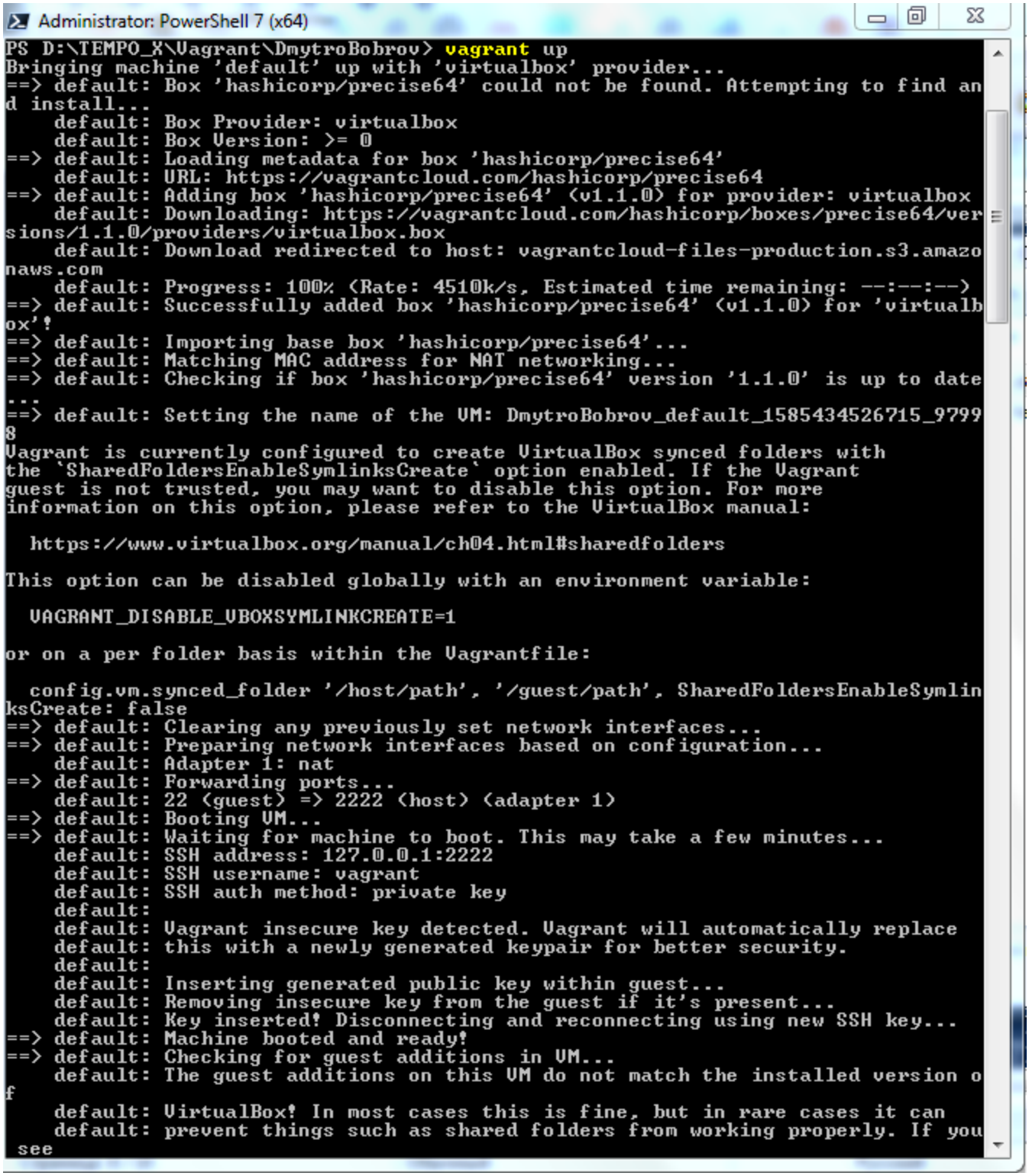
PART 2. WORKING WITH VAGRANT

1. Download the required version of Vagrant according to the instructions [5] and according to the host operating system (OS) installed in the workplace of the student. For Windows, the file may be named, for example, vagrant_2.2.0_x86_64.msi. Perform a Vagrant installation. Check for a path to the Vagrant bin in the Path variable (My computer -> Properties -> Advanced system settings-> Advanced -> Environment Variables).

2. Run powershell. Create the Student Last Name folder (in English). In this example, we create the vagrant_test folder. Next we go to the folder.
3. Let's initialize the environment with the default Vagrant box indication: init hashicorp / precise64

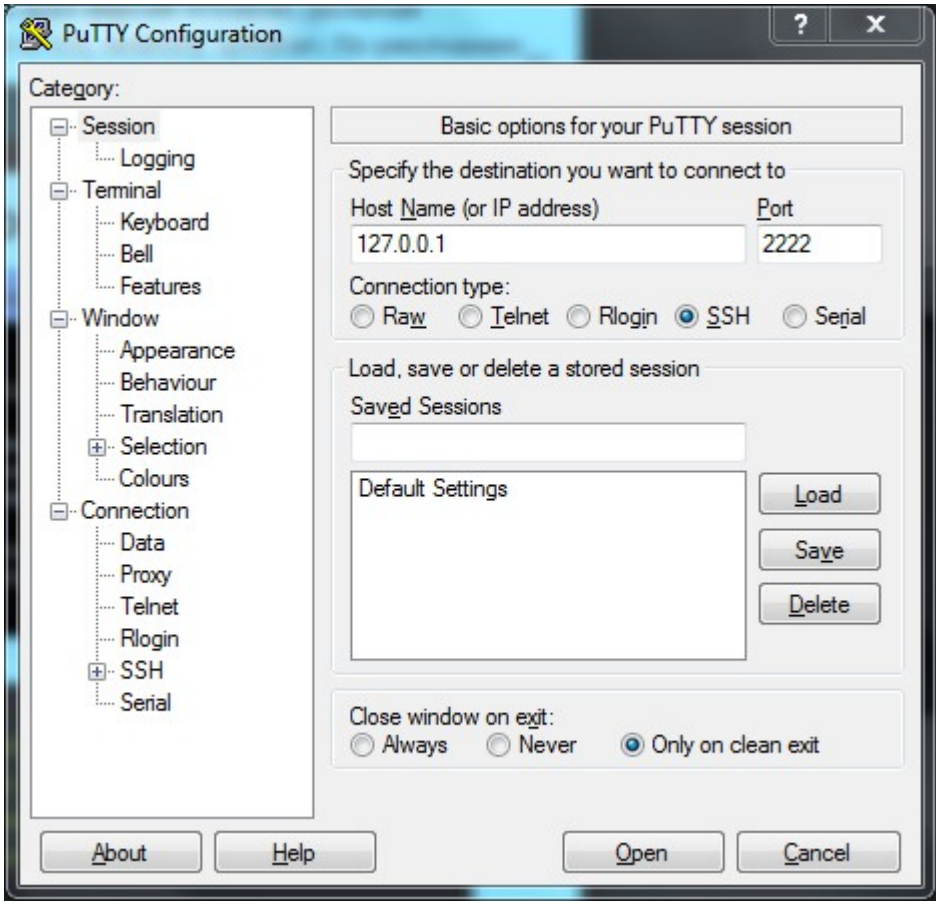


4. We run vagrant up and watch for messages when loading and running a VM.

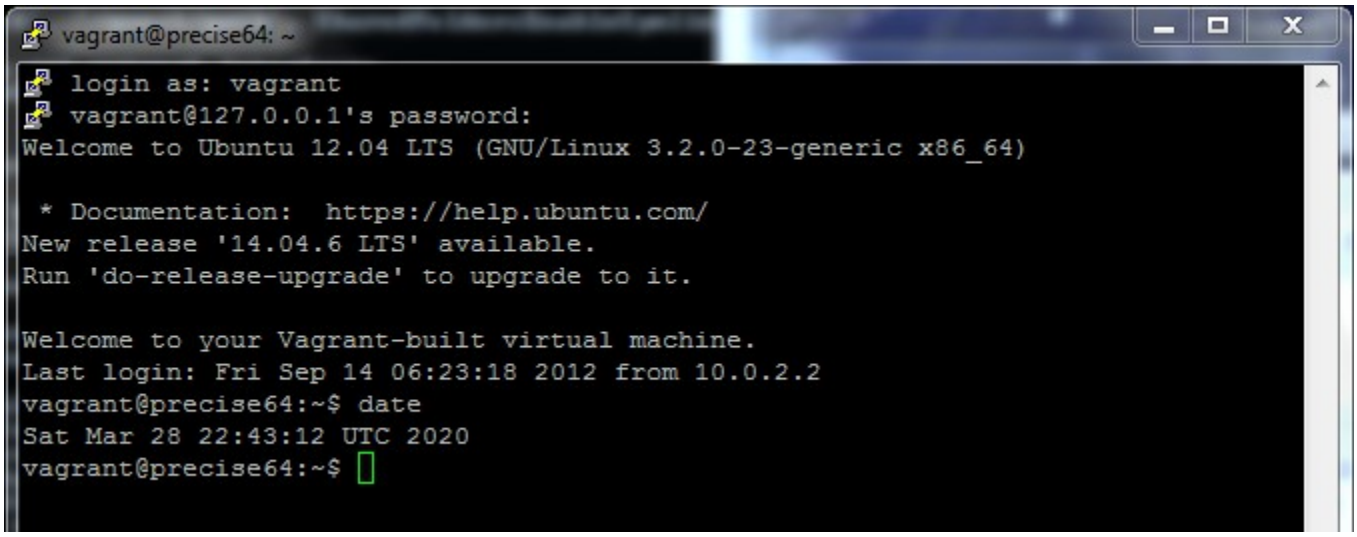


```
    default: shared folder errors, please make sure the guest additions within t
he
    default: virtual machine match the version of VirtualBox you have installed
on
    default: your host and reload your VM.
    default:
    default: Guest Additions Version: 4.2.0
    default: VirtualBox Version: 6.0
==> default: Mounting shared folders...
    default: /vagrant => D:/TEMPO_X/Vagrant/DmytroBobrov
PS D:\TEMPO_X\Vagrant\DmytroBobrov>
```

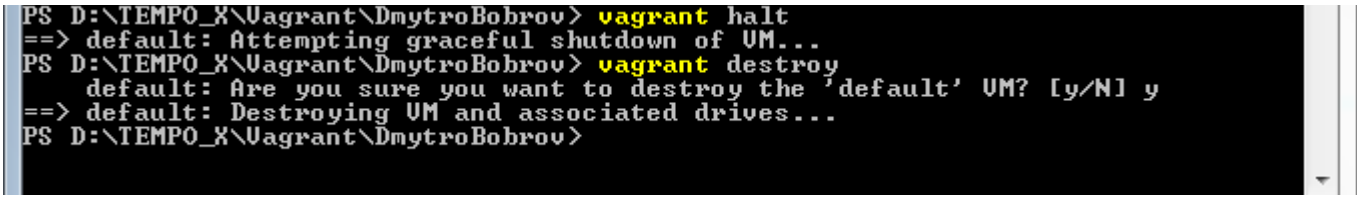
5. We connect to the VM using PuTTY (downloadable from [6]) using the SSH, IP address and port mentioned above (127.0.0.1:2222). By default, login - vagrant and password are also vagrant.



6. Fix the date and time by running the date command



7. Stop and delete the created VM.



8. Створити тестову середу з двох серверів, використовуючи інструкції [7]. Параметри серверів задаються викладачем або обираються самостійно студентом.

9. Create your own Vagrant box using instructions [8] and requirements that are determined by the teacher or student.

```
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Users\Mitya> cd D:\TEMPO_X\Vagrant\DmytroBobrov
PS D:\TEMPO_X\Vagrant\DmytroBobrov> vagrant box add ubuntu1804_template --name 'ubuntu1804_v2'
==> box: Box file was not detected as metadata. Adding it directly...
==> box: Adding box 'ubuntu1804_v2' (v0) for provider:
    box: Unpacking necessary files from: file://D:/TEMPO_X/Vagrant/DmytroBobrov/ubuntu1804_template
    box: Progress: 100% (Rate: 753M/s, Estimated time remaining: --:--:--)
==> box: Successfully added box 'ubuntu1804_v2' (v0) for 'virtualbox'!
PS D:\TEMPO_X\Vagrant\DmytroBobrov> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'ubuntu1804_v2'...
==> default: Matching MAC address for NAT networking...
==> default: Setting the name of the VM: DmytroBobrov_default_1585523395791_75431
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
==> default: Mounting shared folders...
    default: /vagrant => D:/TEMPO_X/Vagrant/DmytroBobrov
The following SSH command responded with a non-zero exit status.
Vagrant assumes that this means the command failed!

mkdir -p /vagrant

Stdout from the command:



Stderr from the command:

PS D:\TEMPO_X\Vagrant\DmytroBobrov>
```

ПЕРЕЛІК ПОСИЛАНЬ

1. Oracle VM VirtualBox.User Manual https://www.virtualbox.org/manual/
2. Офіційна сторінка VirtualBox https://www.virtualbox.org/
3. Сторінка завантаження Ubuntu https://ubuntu.com/download
4. Сторінка документації Vagrant https://www.vagrantup.com/docs/index.html
5. Сторінка з інструкціями щодо інсталяції Vagrant https://www.vagrantup.com/docs/installation/index.html
6. Сторінка завантаження PuTTY https://www.putty.org/
7. Робота з vagrantfile http://sysadm.pp.ua/linux/sistemyvirtualizacii/vagrantfile.html
8. Створення власного Vagrant box http://sysadm.pp.ua/linux/sistemyvirtualizacii/vagrant-box-creation.html