

Module 0.4

Getting started VirtualBox

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June 19, 2017

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Why Virtual Box?

Virtual Box installation is not required if you are able to install everything on your Linux, Mac or Windows machine. For some reasons if you are unable to install OpenCV + Dlib on your machine, using Virtual Box is a good option. It is also helpful for people who want to use Linux for development but have Windows or Mac.

1. Installing Virtual Box

1.1. Install VirtualBox and VirtualBox extension pack

Go to <https://www.virtualbox.org/wiki/Downloads> and download “VirtualBox platform packages” for your platform (Windows, Mac, Linux) and install it. This is also called VirtualBox manager.

The screenshot shows the 'Download VirtualBox' page on the official VirtualBox website. The page has a blue header with the 'VirtualBox' logo. On the left is a sidebar with navigation links: About, Screenshots, Downloads, Documentation, End-user docs, Technical docs, Contribute, and Community. The main content area is titled 'Download VirtualBox' and contains the following information:

- A note: 'Here, you will find links to VirtualBox binaries and its source code.'
- A section 'VirtualBox binaries' with a disclaimer: 'By downloading, you agree to the terms and conditions of the respective license.'
- A list of download links:
 - 'VirtualBox 5.1.22 platform packages' with links for Windows hosts, OS X hosts, Linux distributions, and Solaris hosts.
 - 'VirtualBox 5.1.22 Oracle VM VirtualBox Extension Pack' with a link for 'All supported platforms'. It includes details about USB 2.0/3.0 support, RDP, disk encryption, NVMe, and PXE boot, and mentions the VirtualBox Personal Use and Evaluation License (PUEL).
 - 'VirtualBox 5.1.22 Software Developer Kit (SDK)' with a link for 'All platforms'.
- A link to the 'changelog'.
- A note about verifying SHA256 or MD5 checksums.
- A 'Note' about upgrading guest additions.
- A 'User Manual' section with links for 'User Manual (HTML version)' and 'French User Manual'.
- A link to the 'frequently asked questions list'.



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Download VirtualBox

Here, you will find links to VirtualBox binaries and documentation.

VirtualBox binaries

By downloading, you agree to the terms and conditions of the license.

- VirtualBox 5.1.22 platform packages.** The platform packages are available for the following operating systems:
 - Windows hosts
 - OS X hosts
 - Linux distributions
 - Solaris hosts
- VirtualBox 5.1.22 Oracle VM VirtualBox Extension Pack.** Support for USB 2.0 and USB 3.0 devices, Virtual Machine Tools, and the Oracle VM VirtualBox Guest Additions. The Extension Pack binaries are released under the same license as the VirtualBox binaries. Please install the extension pack with the same installer as the VirtualBox binaries. If you are using **VirtualBox 5.0.40**, please download the **VirtualBox 5.0.40** Extension Pack.
- VirtualBox 5.1.22 Software Developer Kit (SDK).** The SDK is available for Windows and Linux. See the changelog for what has changed.

You might want to compare the **SHA256** checksums or the **MD5** checksums to verify the integrity of downloaded packages. *The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!*

Note: After upgrading VirtualBox it is recommended to upgrade the guest additions as well.

User Manual

The VirtualBox User Manual is included in the VirtualBox binaries above. If, however, you would like to take a look at it without having to install the whole thing, you also access it here:

- User Manual (HTML version)
- French User Manual

You may also like to take a look at our frequently asked questions list.




Welcome to the Oracle VM VirtualBox 5.1.22 Setup Wizard

The Setup Wizard will install Oracle VM VirtualBox 5.1.22 on your computer. Click Next to continue or Cancel to exit the Setup Wizard.

Version 5.1.22

[Next >](#) [Cancel](#)



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Custom Setup

Select the way you want features to be installed.

Click on the icons in the tree below to change the way features will be installed.

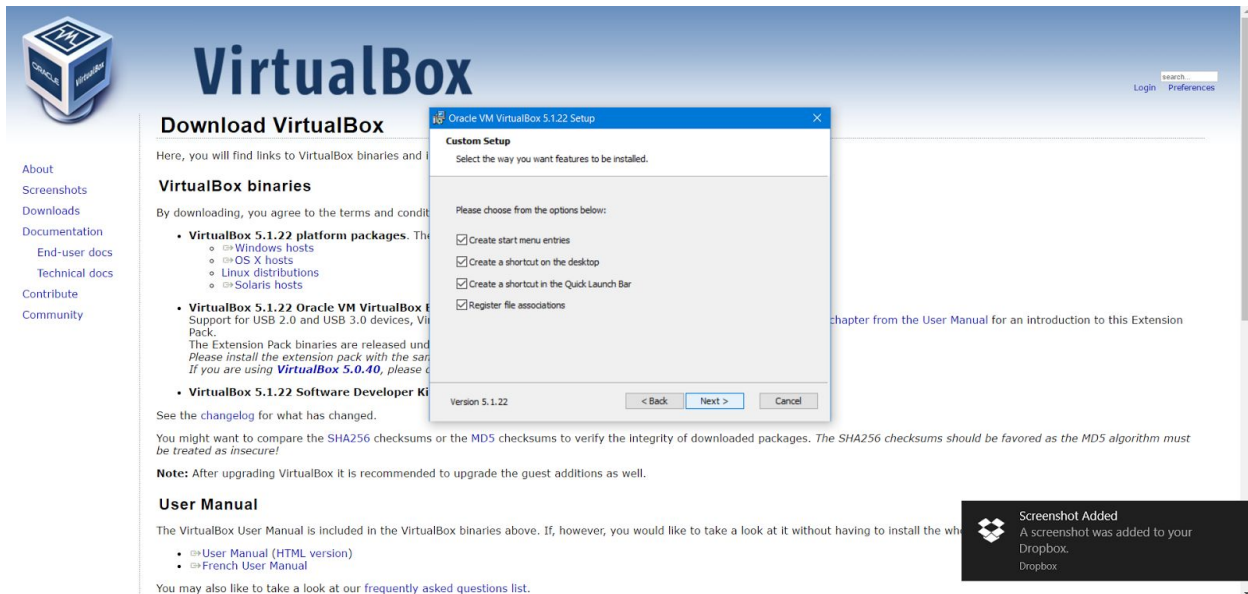
- VirtualBox Application
 - VirtualBox USB Support
 - VirtualBox Networking
 - VirtualBox Bridge
 - VirtualBox Host-C
 - VirtualBox Python 2.x Su


Oracle VM VirtualBox 5.1.22 application.

This feature requires 170MB on your hard drive. It has 3 of 3 subfeatures selected. The subfeatures require 719KB on yo...

Location: C:\Program Files\Oracle\VirtualBox\ [Browse](#)

Version 5.1.22 [Disk Usage](#) [< Back](#) [Next >](#) [Cancel](#)





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- VirtualBox 5.1.22 Software Developer Kit. For more information, see the developer kit page.

See the changelog for what has changed.

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Oracle VM VirtualBox 5.1.22 Setup

Ready to Install

The Setup Wizard is ready to begin the Custom installation.

Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.


Version 5.1.22

< Back Install Cancel

Screenshot Added

A screenshot was added to your Dropbox.

Dropbox



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Oracle VM VirtualBox 5.1.22 Setup

Oracle VM VirtualBox 5.1.22 installation is complete.

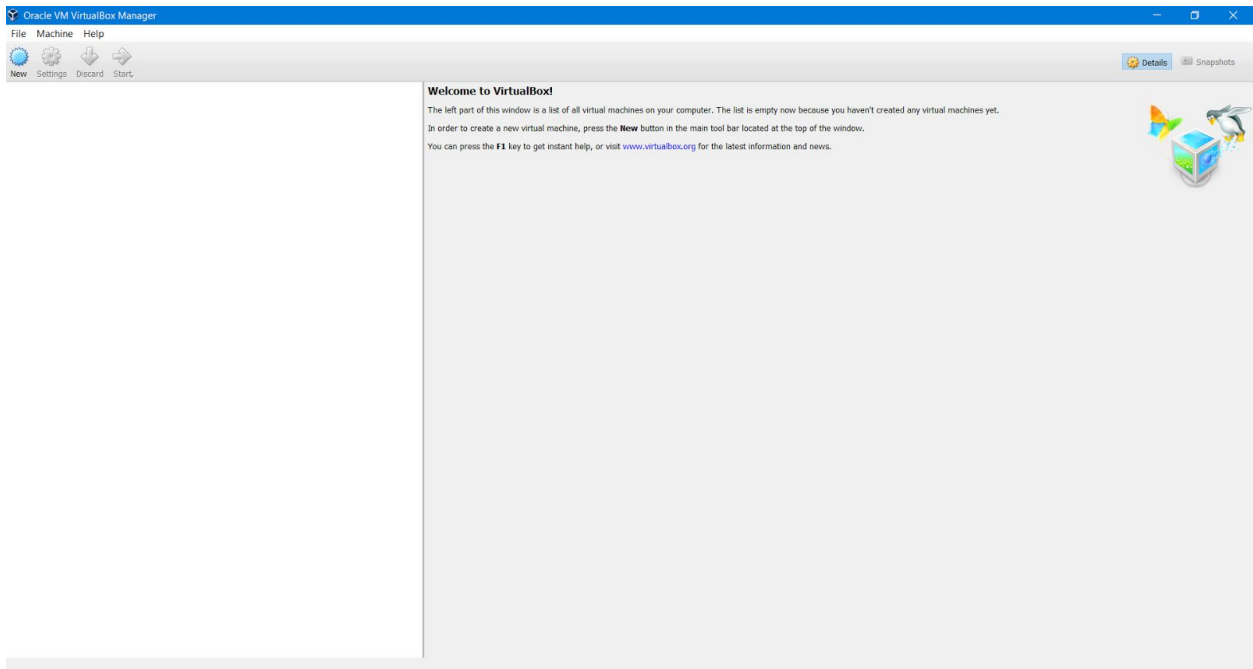
Click the Finish button to exit the Setup Wizard.

☒ Start Oracle VM VirtualBox 5.1.22 after installation

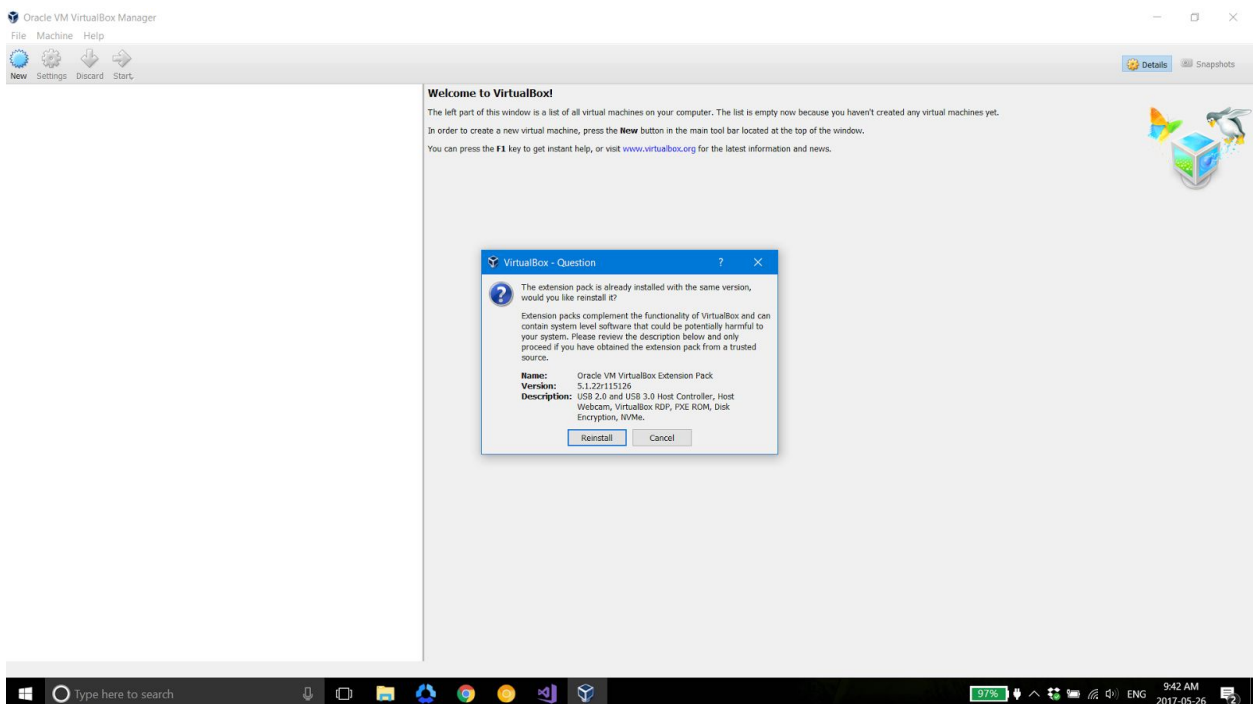
Version 5.1.22

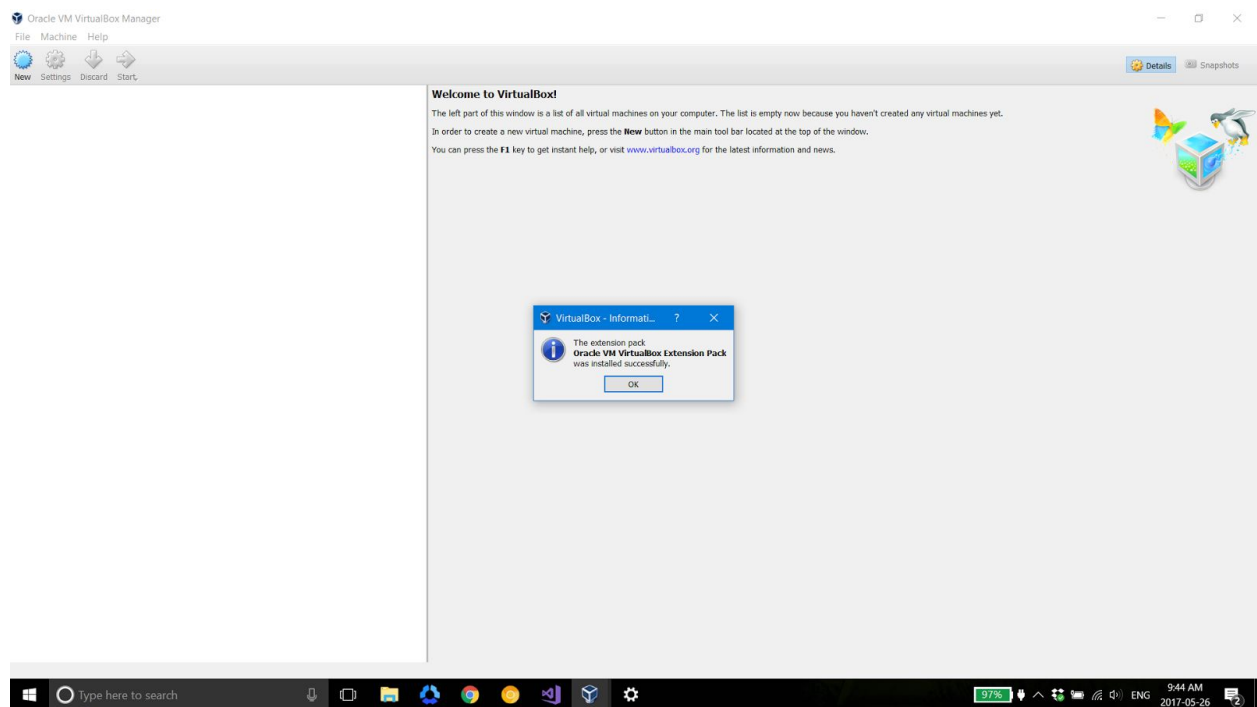
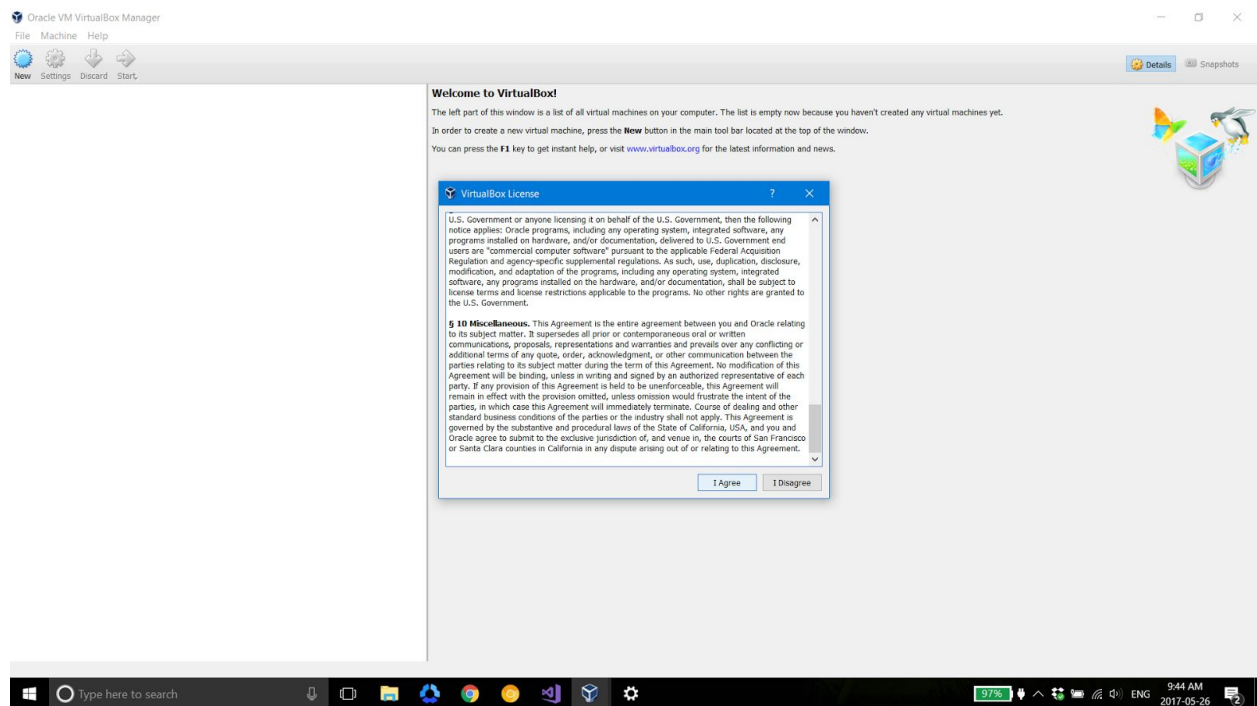
< Back Finish Cancel

5



Now download “VirtualBox Oracle VM VirtualBox Extension Pack” and double click it. This extension pack will be opened in VirtualBox app that we have just installed. Install this extension pack.





2. Importing Face Course's virtual box image

2.1. Download Face Course's VirtualBox image from

There are two ways you can download this image.

1. Download complete copy (6 GB)-
https://drive.google.com/open?id=0B3wncKrtnPc_R0w2UkNvdEc4YVE
2. Download image split into smaller chunks. Use any unarchiving tool (which supports 7z compression) to extract these files -
https://drive.google.com/open?id=0B3wncKrtnPc_OFYzdW82NEhKYkk

2.2. Match checksum of downloaded image (OPTIONAL)

After downloading the .ova file, match any of the checksums below to ensure that the file you have downloaded is not corrupt.

File: FaceCourse-Ubuntu16.04.ova

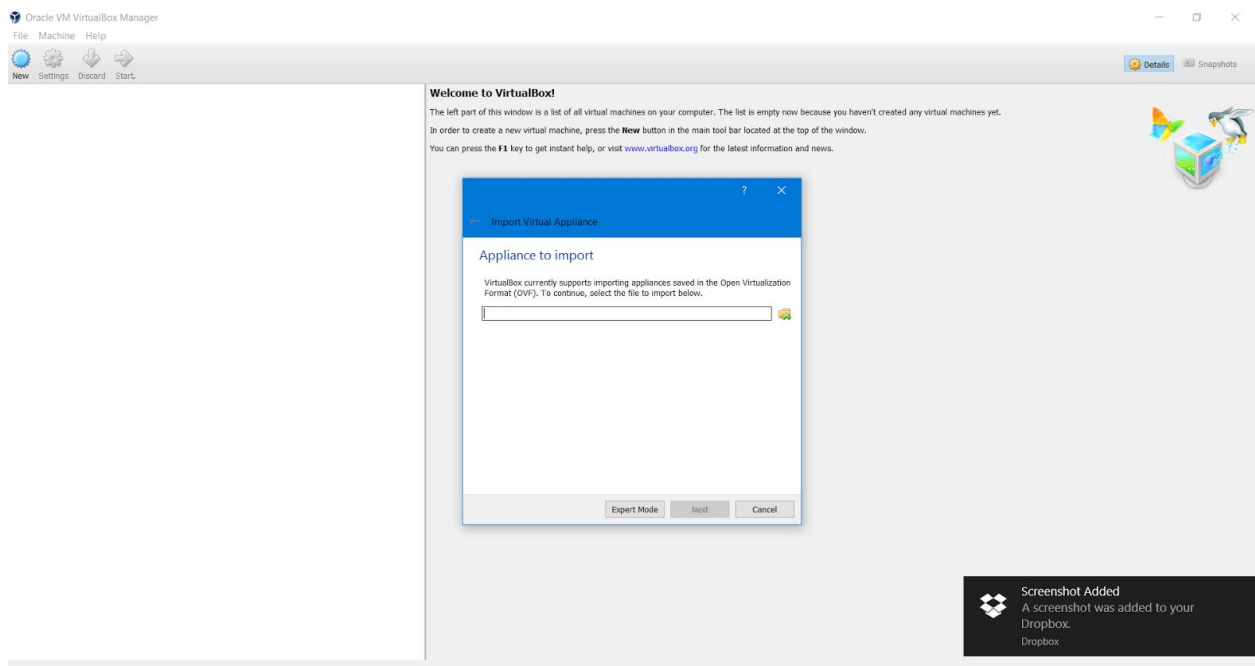
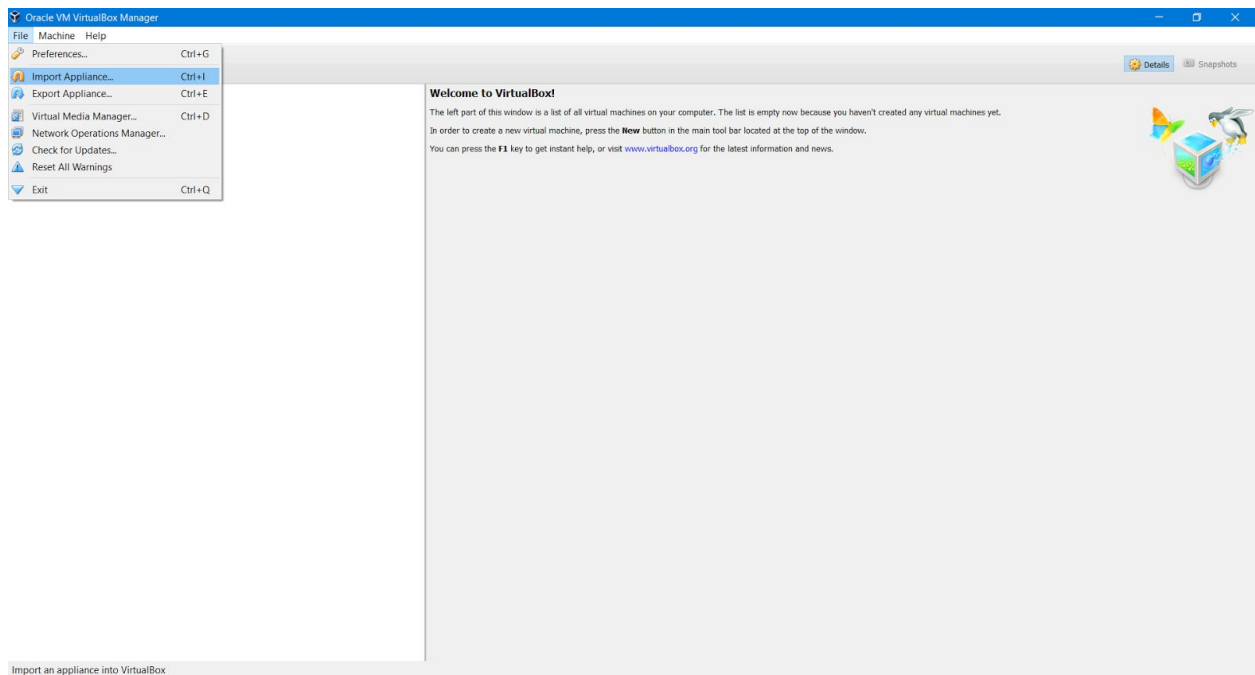
1. MD4: 52ddde692e35a9f32da852efa969dceb
2. MD5: 6f93a9743f48115cb1573b85b2552329
3. SHA-1: 87a071635b241c2a5c941b3f7799a6a2c51cddce

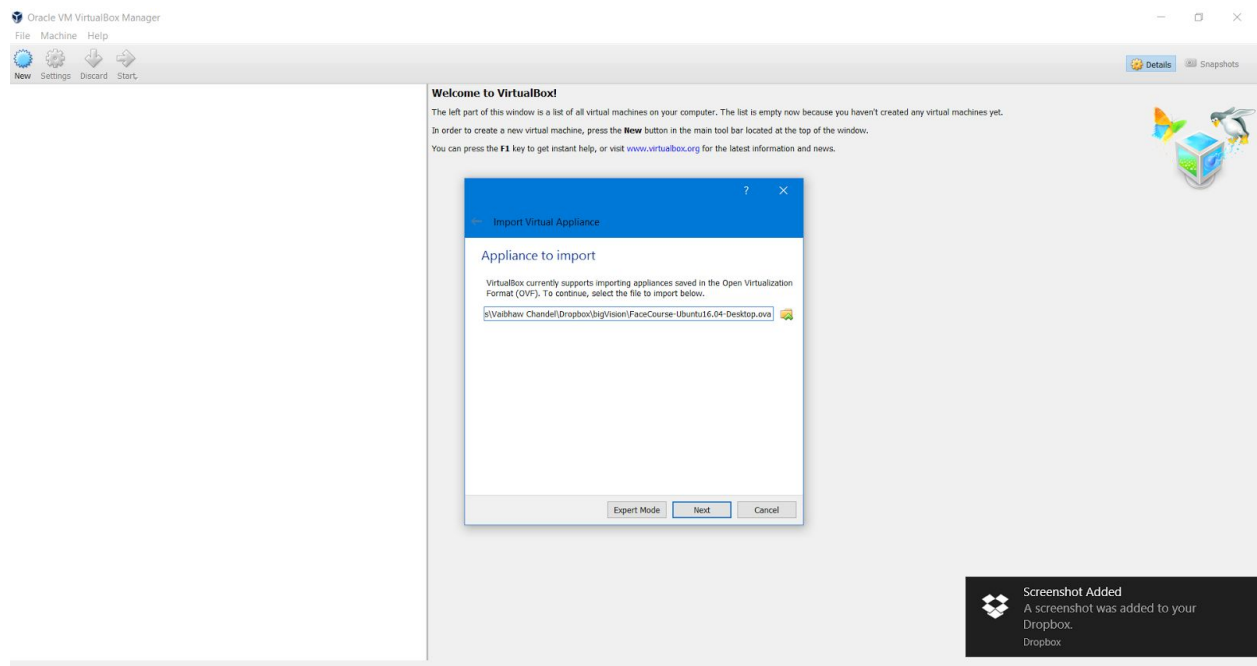
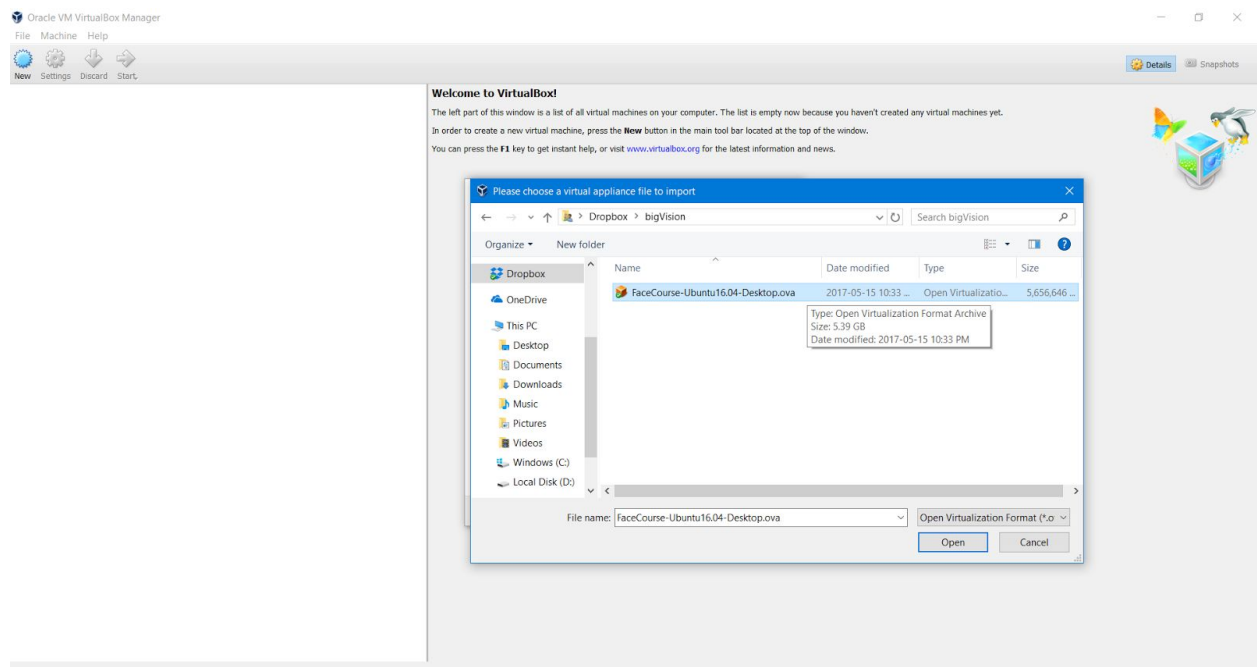
Windows: <https://www.lifewire.com/how-to-verify-file-integrity-in-windows-with-fciv-2625186>

OS X: <https://www.cnet.com/news/how-to-quickly-check-a-files-checksum-in-os-x/>

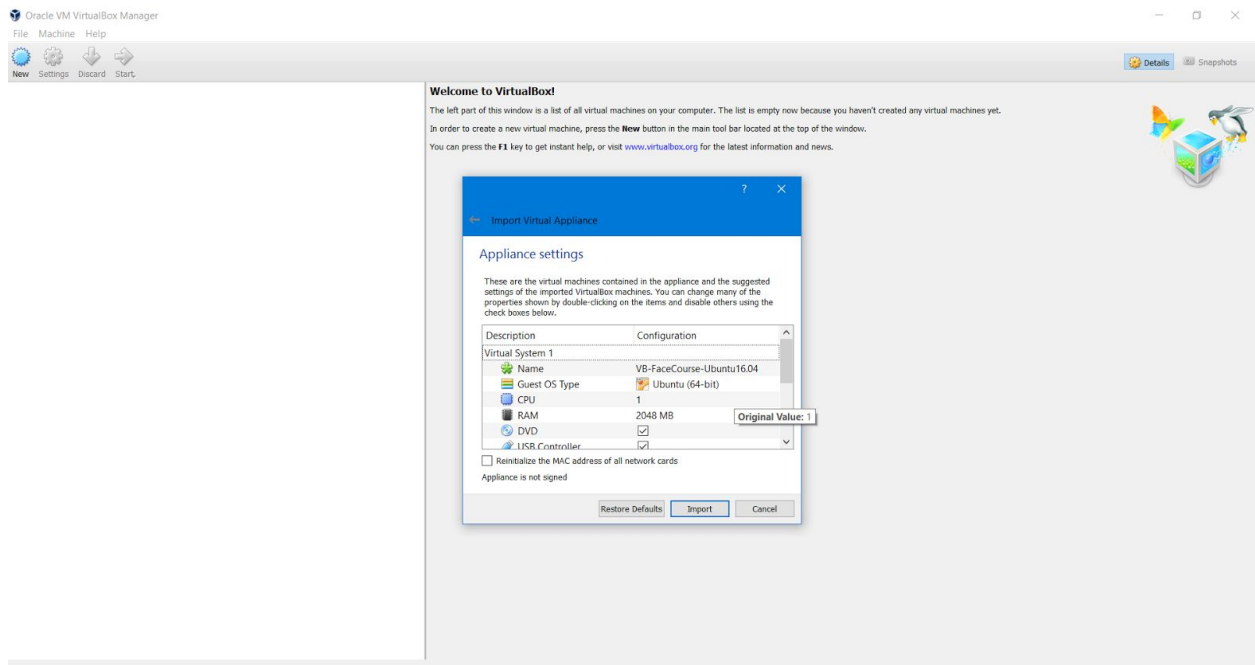
2.3. Import Face Course's image

Open VirtualBox app that you installed. In menu click "Import Alliance" under File. Give path to face course's image under click "Next"

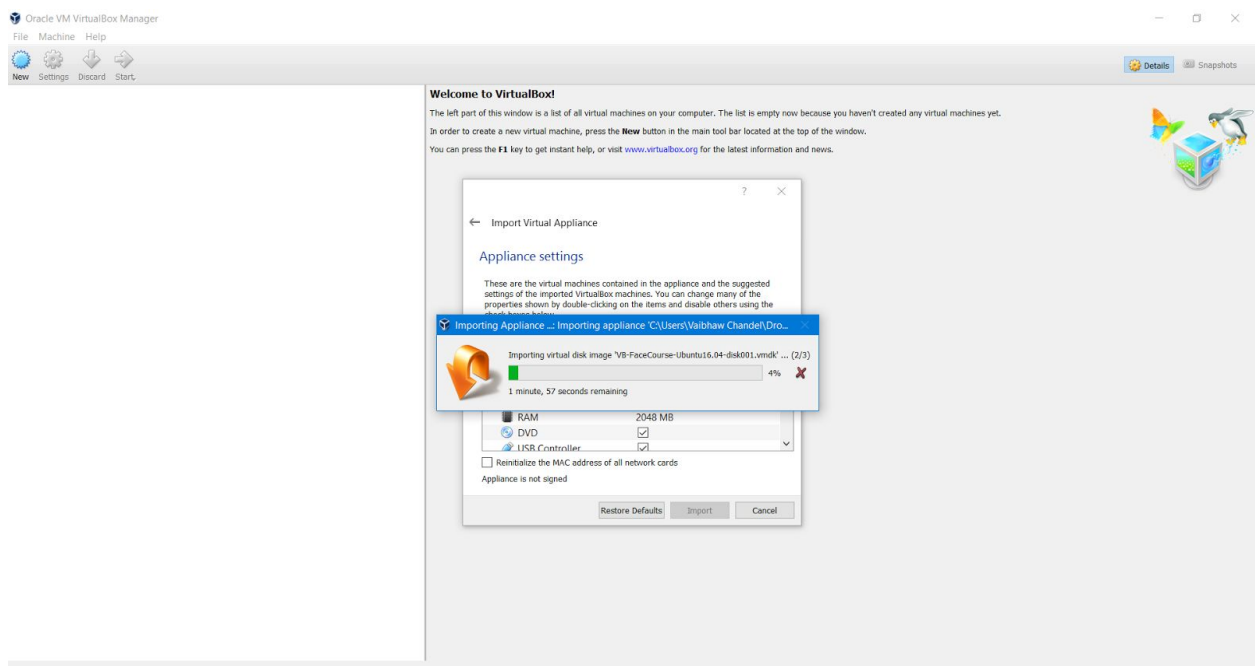


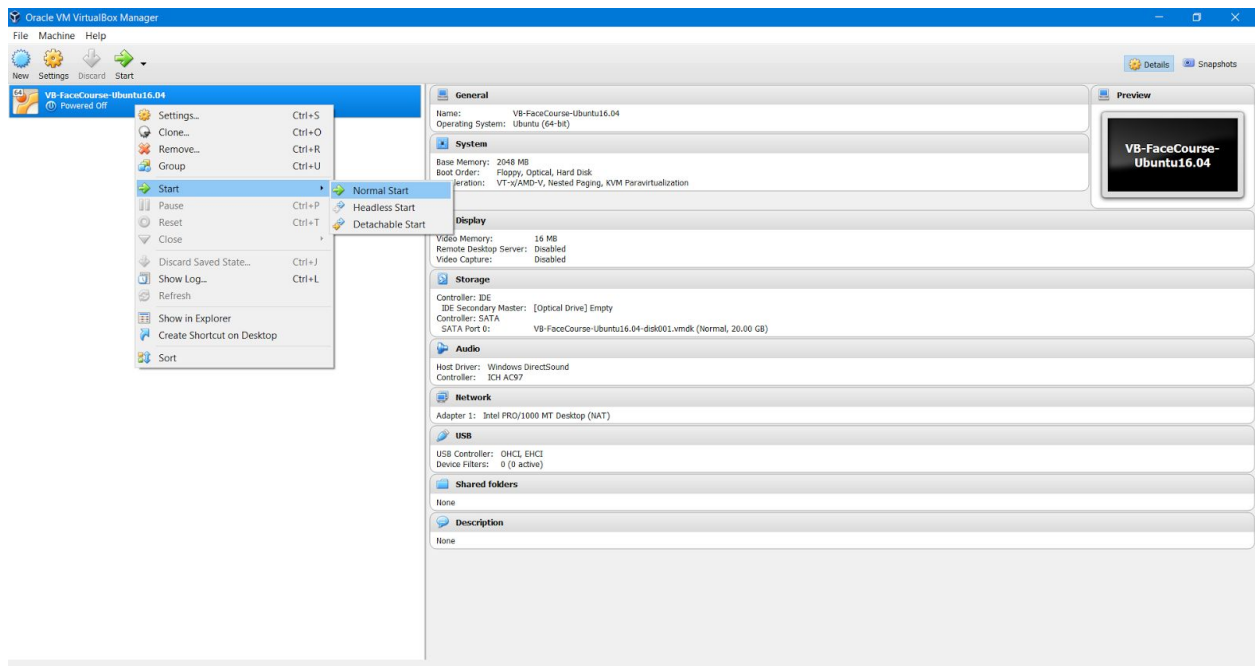
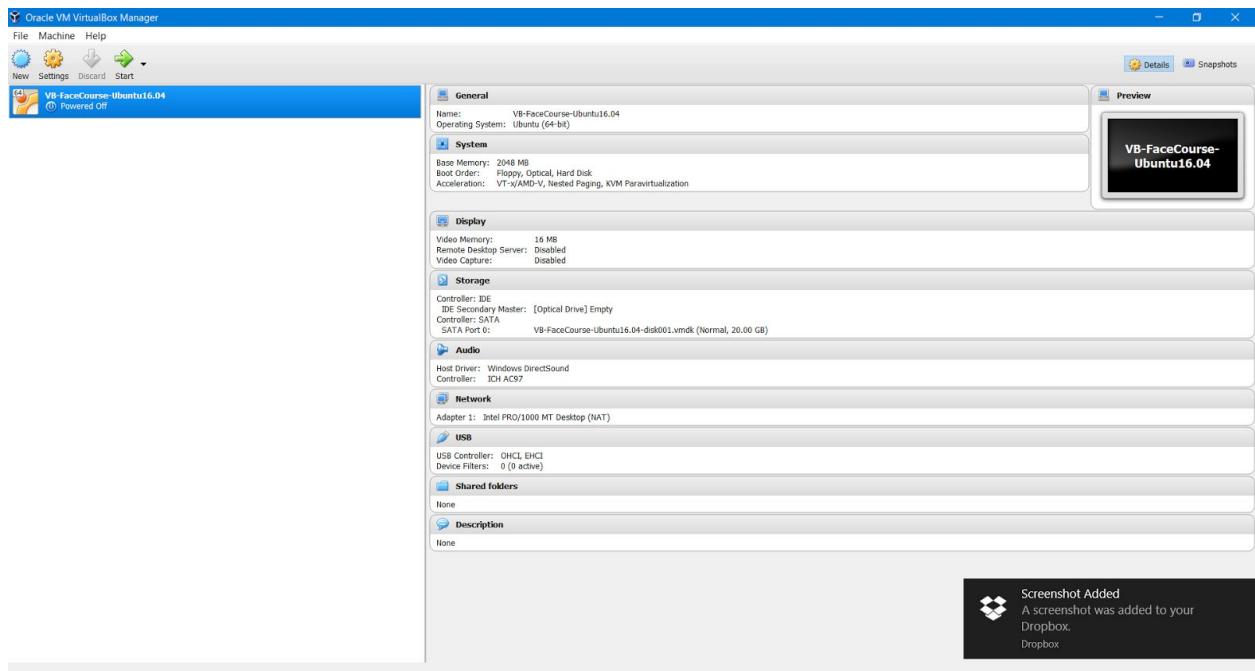


You can change CPU and RAM used by the Virtual Machine you are going to create.
Recommended CPU is 1 and RAM is 2GB.



Now click “Import”. A new virtual machine based on FaceCourse’s image we provided is ready.



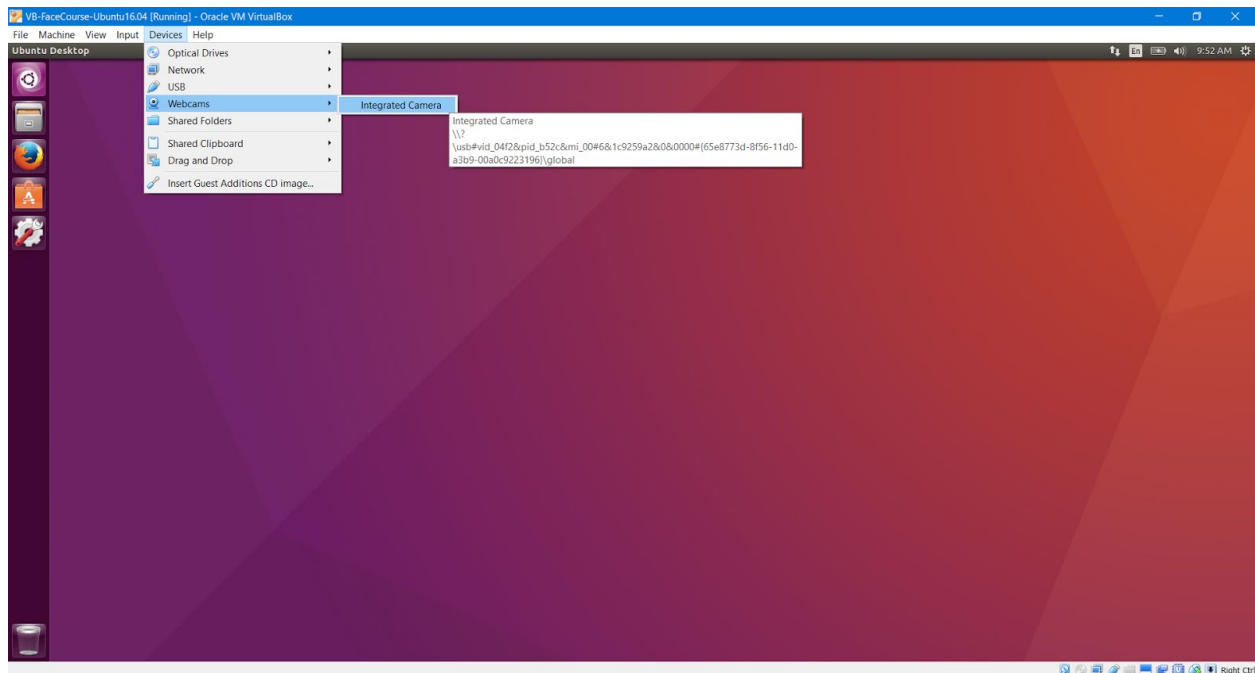


To login, use

username: ubuntu	password: facecourse
------------------	----------------------

2.4. Enable webcam

In the top menu bar, click Devices -> Webcams -> Integrated Camera.

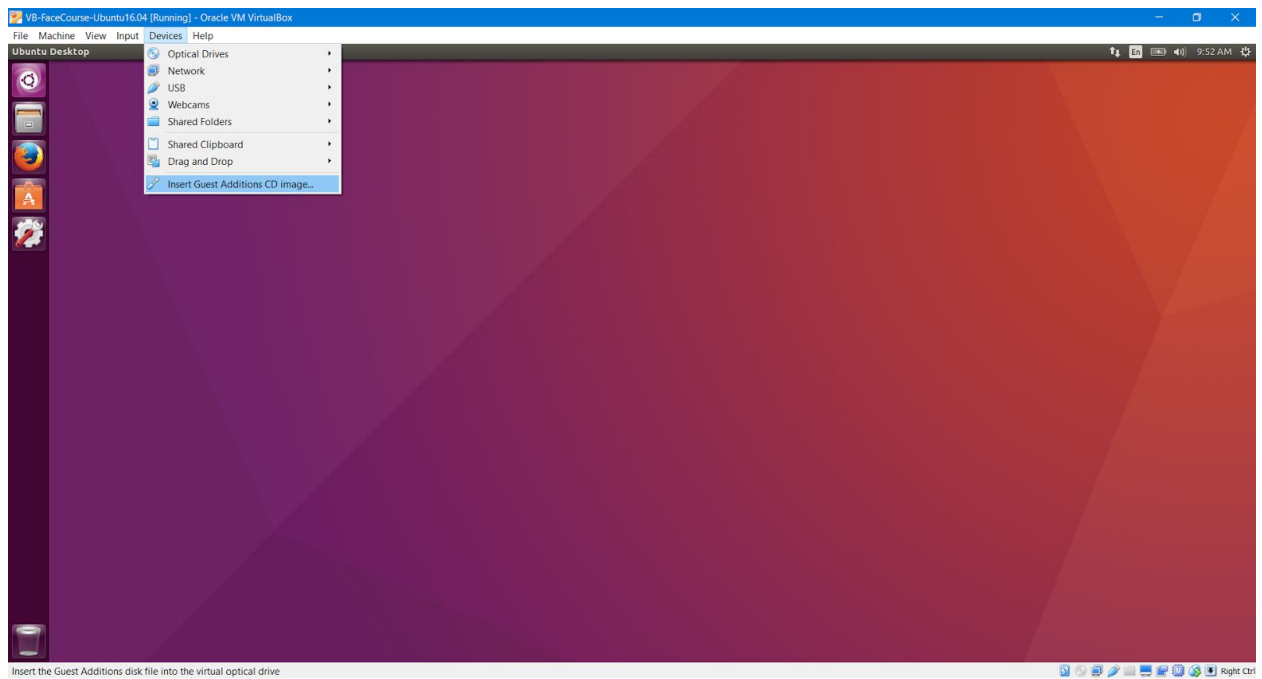


Depending on your OS, it could be Integrated Camera or something else. Now your webcam is enabled. As a quick check, you can run a webcam application installed in Ubuntu called “Cheese Webcam Booth”.

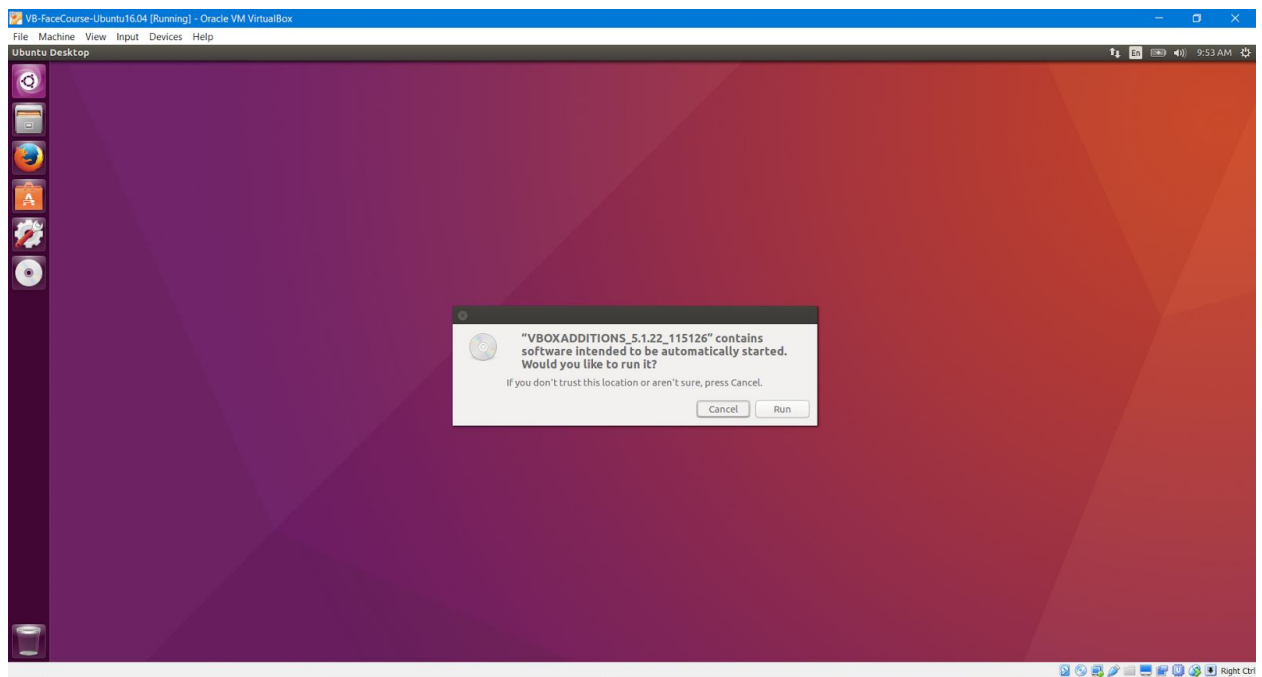
2.5. Enable copy-paste between host and virtual machine (Optional)

Insert Guest Additions CD Image

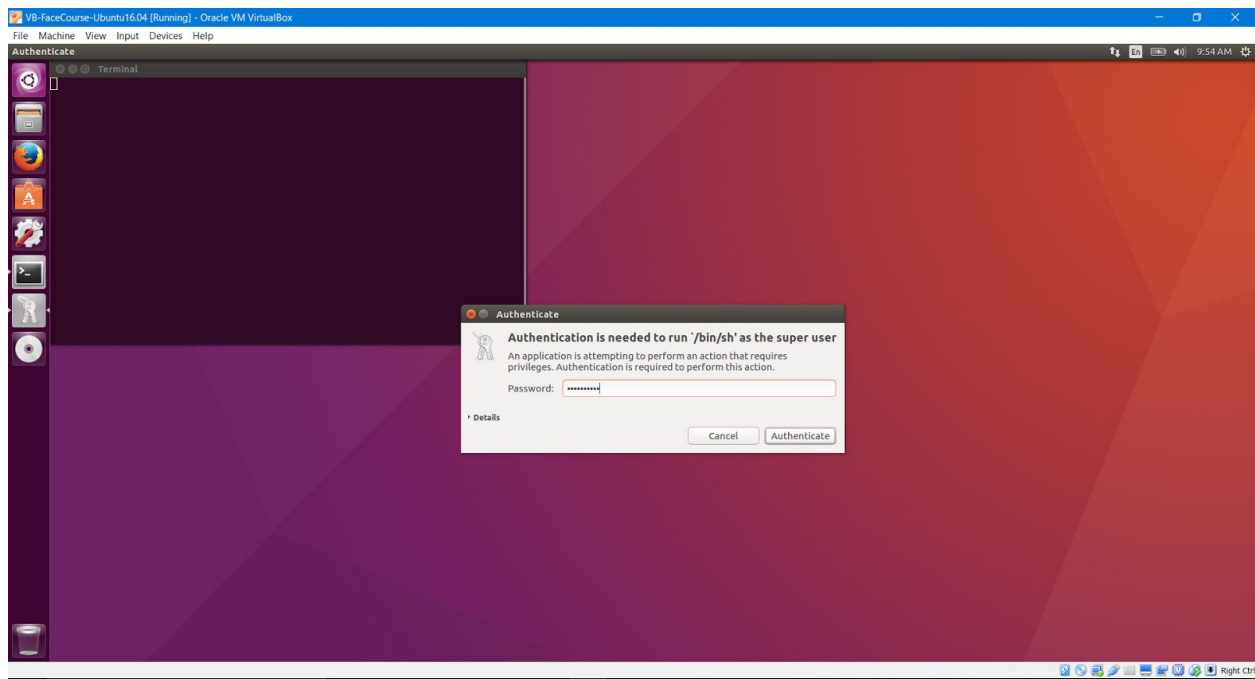
Again in top menu bar, click Devices -> Insert Guest Additions CD Image



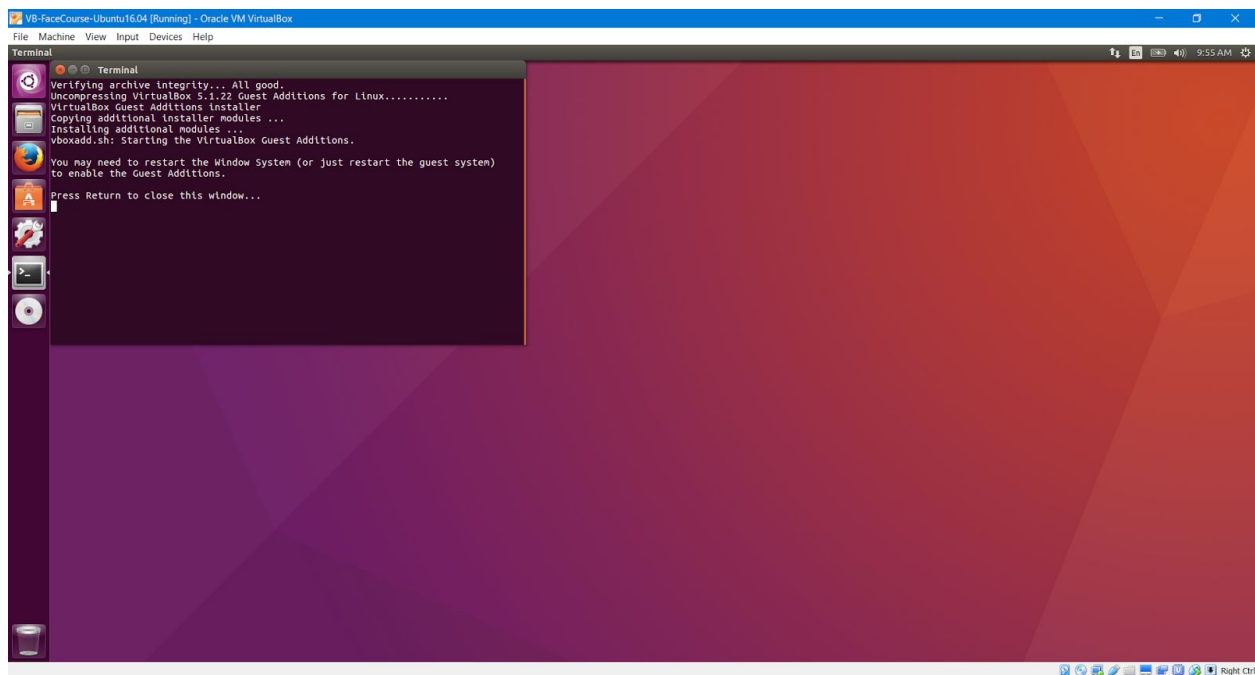
Click Run.



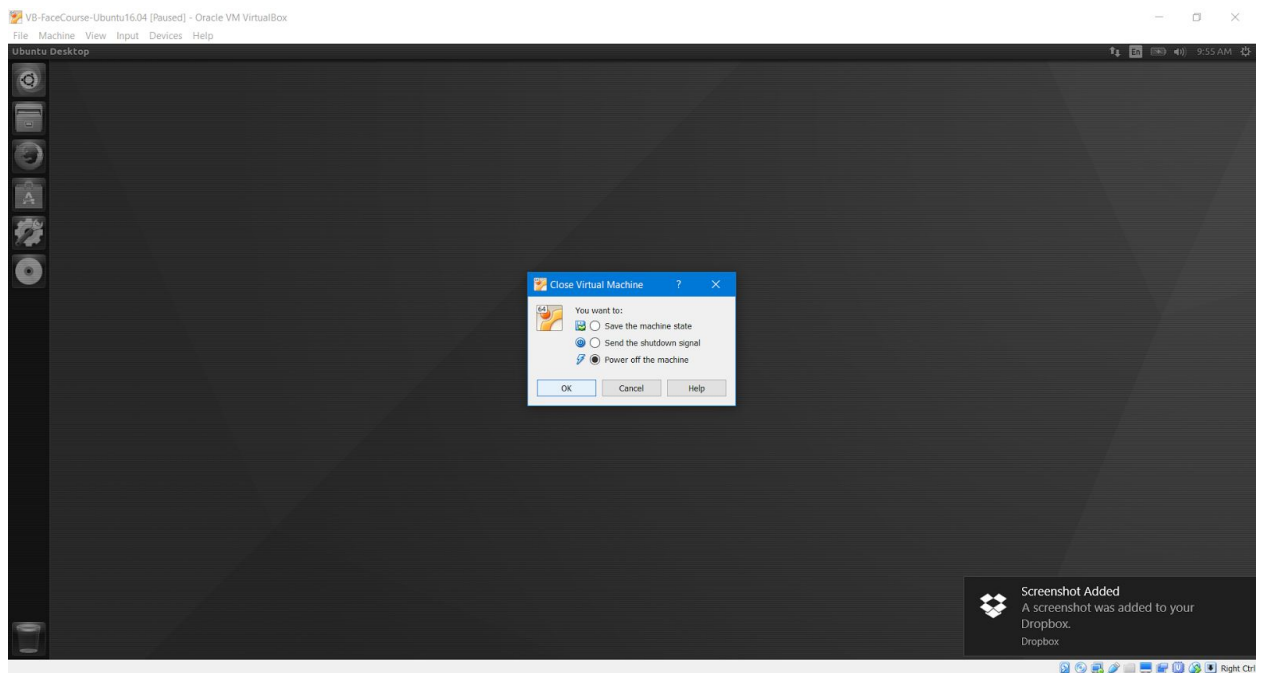
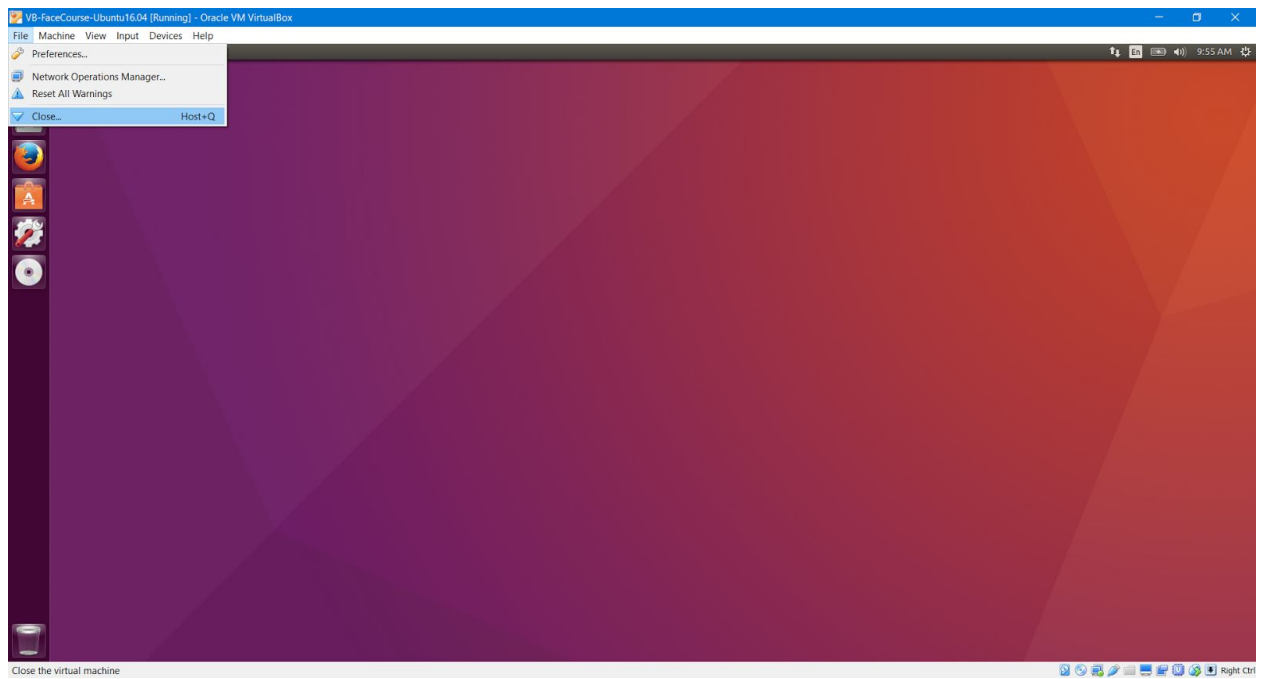
When it asks for a password, give facecourse. It is the same password which we used earlier to log into this machine.



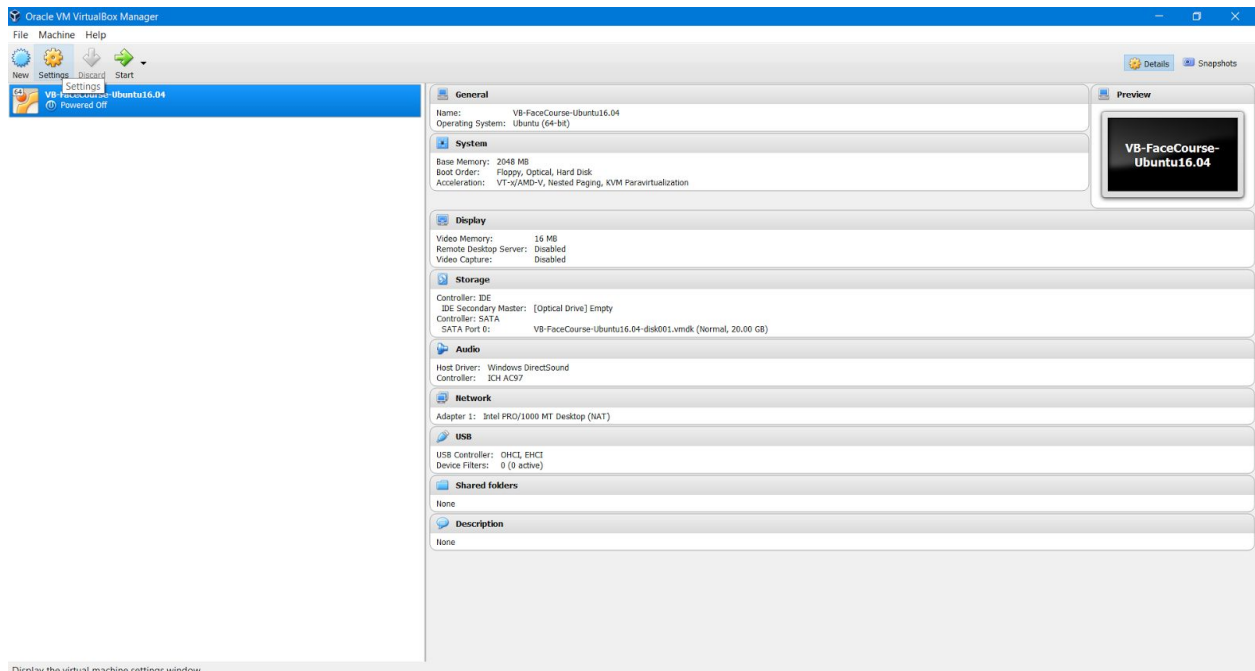
Press Enter.



Now we will shutdown or reboot the virtual machine.

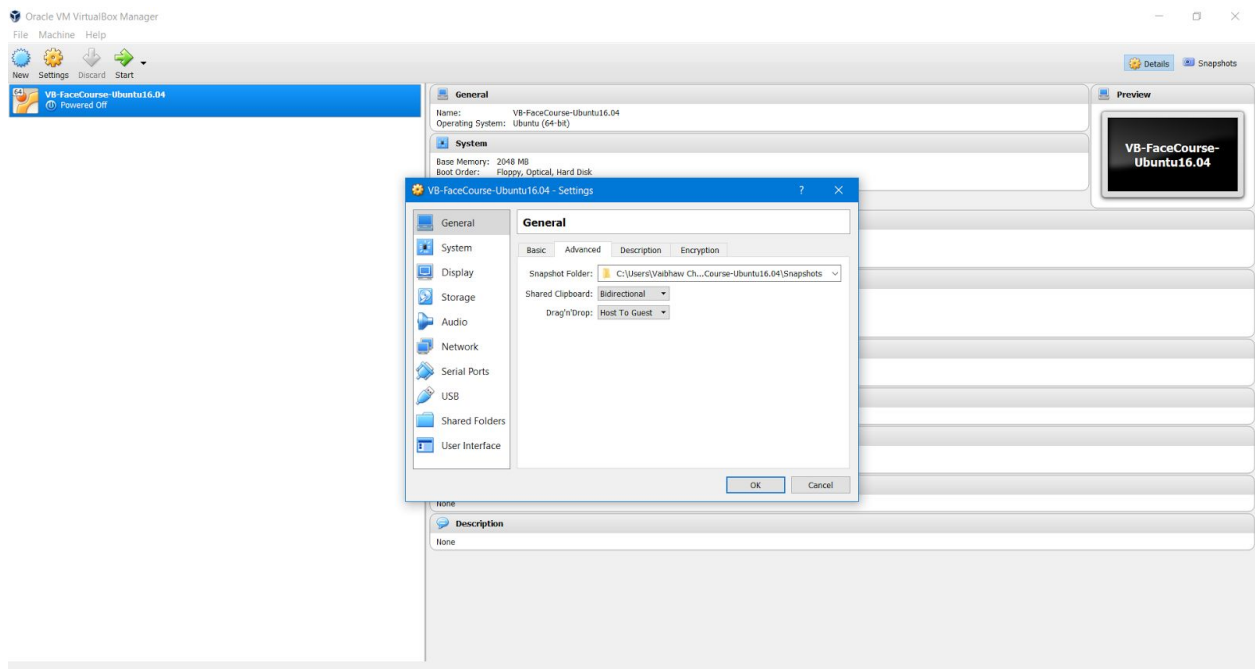


Click on Settings.



In next window that appears, go to General -> Advanced tab.

In share clipboard option, select “bidirectional” .



Host machine is your laptop/desktop, guest machine is this Virtual Machine running in VirtualBox application. You can also select any other value in options “**Shared Clipboard**” and “**Drag’n’Drop**”. We have only tested shared clipboard with value bidirectional. Click “OK” .

Now when you will start the machine, copy-paste will work between your laptop/desktop and this virtual machine.

Note: If you are using MacOS, use CTRL C/V for copy paste.

3. Running Tests

3.1. Test OpenCV

We will run RedEyeRemover demo written using OpenCV.

3.1.1. C++

```
cd ~/code/RedEyeRemover
# compile
g++ -std=c++11 removeRedEyes.cpp `pkg-config --libs --cflags opencv` -o removeRedEyes
# run
./removeRedEyes
```

3.1.2. Python

```
# activate Python 2 virtual env
workon facecourse-py2

##### OR #####

# activate Python 3 virtual env
workon facecourse-py3

cd ~/code/RedEyeRemover
python removeRedEyes.py

# deactivate virtual env
deactivate
```



3.2. Test Dlib

We will test Dlib's Facial Landmark Detection example.

3.2.1. C++

```
cd ~/dlib-19.4/examples/build
./face_landmark_detection_ex ../../shape_predictor_68_face_landmarks.dat
../faces/2008_001009.jpg
```

3.2.2. Python

```
# activate Python 2 virtual env
workon facecourse-py2

##### OR #####

# activate Python 3 virtual env
workon facecourse-py3

cd ~/dlib-19.4/python_examples
python face_landmark_detection.py ../shape_predictor_68_face_landmarks.dat
../examples/faces

# deactivate virtual env
deactivate
```

