# UNIX and LINUX
# in INFOCOMMUNICATION

O. Sadov

and

V. Titov

## ITMO University

10.10.2020

# About the course

The course provides basic concepts that are used to build UNIX/Linux systems. command-line skills are worked out, and basic understanding of the administration of such systems and programming in them is given.

In the course the specifics of using Linux systems on a personal computer, server, cloud services, and embedded systems are discussed.

In the course of training, students are integrated into the international environment of IT specialists.

The course is held online in English.

# Purpose of the course

This is an advanced course on UNIX/Linux systems, but the main content is the ability to work in the command line.

The contradiction here is only apparent: in the last two lessons, students will create a graphical network application «Calculator» using only the command line.

# Course

- Video fragments
- Texts of lectures
- Questions, Tests
- Lab (home) work

To access the first three elements, you need to access the course on OpenEdu.

**How to access the course**
Instructions on how to register on OpenEdu and get access to the course will be sent to you via the ITMO ISU next week.

After registering on OpenEdu, you provide your ID and you will be granted access to perform tasks (labs) on the virtual verification machine.

# Course features

- The course is given in English
- With russian subtitles
- Tests are perfomed on OpenEdu
- The labs should be done using itmo_lab command

# Preparation

The course materials can be found at `http://sdn.ifmo.ru/education/courses/free-libre-and-open-source-software`

To work home, quickly get information about commands, and perform the tasks, you need to have the appropriate software at hand.

If you do not have Linux installed on your computer, then you can download the installation images of the NauLinux7 operating system from the page above and install this system on your computer, allocating disk space (≈40Gb), you can install this system on a virtual machine, or just download a virtual machine image from there and use it for work.

NauLinux7 and the itmo_lab-client package for executing itmo_lab tasks are already installed on this VM.

# Preparation

If You want to start the virtual machine, then you need

1. Install VirtualBox or QEMU on your computer. These products are freely available and can be easily found on the Internet, for example, on the website https://www.virtualbox.org/wiki/Downloads. The VirtualBox appears to be prefarable for Windows.

2. Download a virtual machine image (VirtualBox image or KVM image) from the page specified on previous slide.

3. Import the downloaded image, for example, in VirtualBox "File->Import Appliance..."select the file you downloaded.

4. Start the created VM: «Start»

5. After the launch is complete, you can run on Linux.

6. For an user 'user', the password announced in lesson 10.10 is defined.

# Course

The course consists of 10 lessons, one lesson per week. Each lesson includes several video clips ($\approx$ 5–10 minutes each).

After each fragment, you should

1. work through the received material, mainly using the command line,
2. pass the suggested tests

These two points occur in the OpenEdu environment, and in the 5th and 10th weeks, 20 tests from the total pool of all previous questions are allocated to tasks with proctoring.

3. and complete the suggested tasks.

This last point is executed on the virtual verification machine using the itmo_lab command.

# Performing tasks (itmo_lab command)

Tasks (or labs) are performed on the virtual verification machine if you run
itmo_lab in the command line or select 'Main menu->Education->ITMO
lab runner':
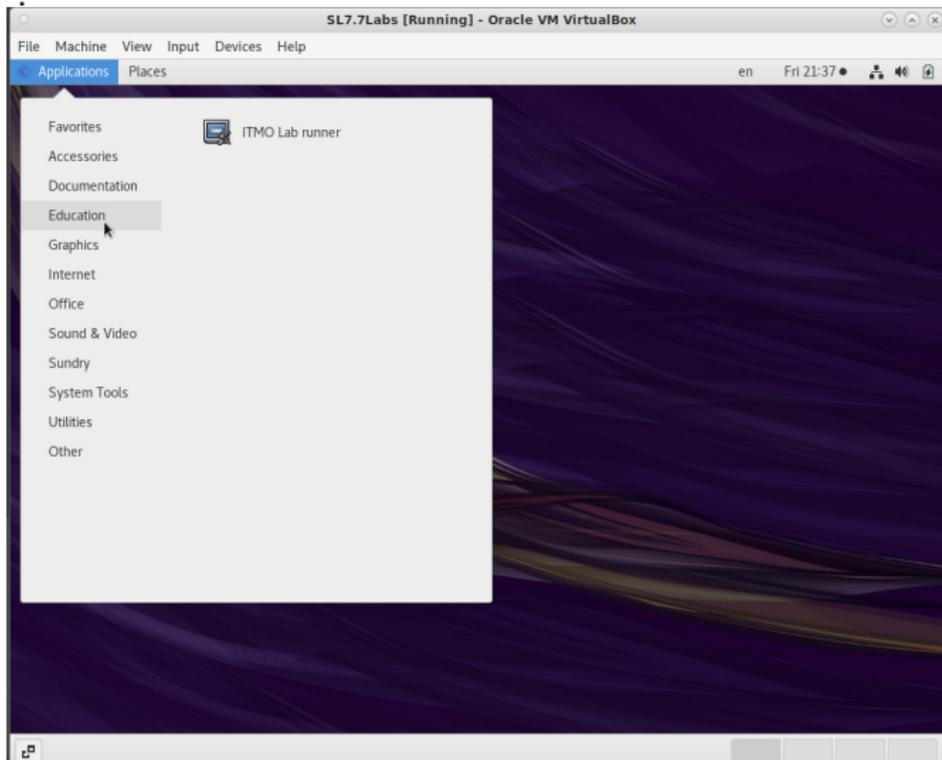
# Performing tasks (itmo_lab command)

When you run itmo_lab first time, you will need to enter the ID obtained in OpenEdu, and then you will be given a list of available tasks.
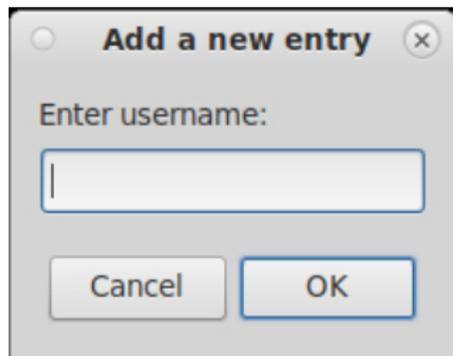


The `itmo_lab-client` package have be installed on your computer.

# Performing tasks (itmo_lab command)

You need to add the user name once only. next time, your configuration parameters will be saved in `~/.itmo_lab.conf`.

If your name is already included in the list of students, you will be offered a list of labs that you can complete:
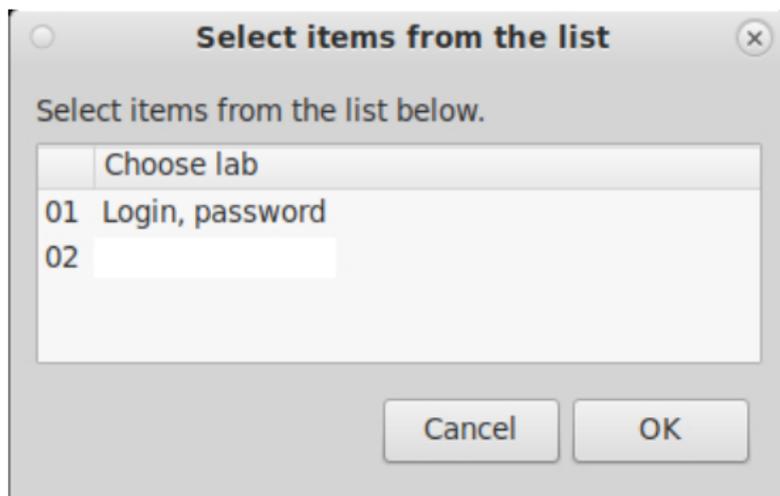
# Performing tasks (itmo_lab command)

After selecting the desired labs and clicking `OK`, you will get a terminal window where you will perform the selected labs and a window that requires confirmation (No/Yes) of completion of work on the labs.

After completing the labs and clicking «Yes» the results will be evaluated and displayed on the window:



или
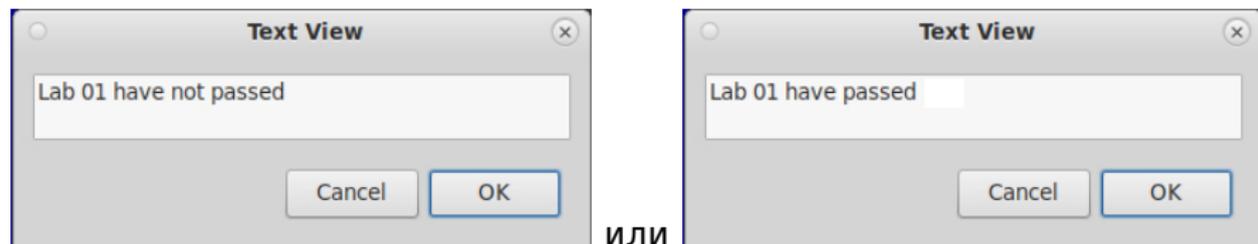
Deadlines for completing labs will be indicated in the labs text.

# Course program, 1 week

1. Introduction
2. History
3. Open and free software
4. Main concepts
5. Components

# Course program, 2 week

6. Your system
7. Comand interpreter
8. Environment variables
9. System variables
10. Special symbols of Shell

# Course program, 3 week

11. Input/Output Redirection
12. Shell Settings
13. Keystrokes
14. Utilities
15. System manuals

# Course program, 4 week

16. Some utils
17. Processes
18. Files
19. File commands
20. Text viewers

# Course program, 5 week

21. Text editors
22. Advanced text utilities
23. Networking history
24. Traditional network utilities
25. Internet tools

# Course program, 6 week

26 X-Window concepts

27 X-server

28 Программирование в оболочке

29 Shell programming

30 Function

# Course program, 7 week

31. UNIX/Linux administration
32. Users and groups
33. Partitions
34. File systems
35. Disk space

# Course program, 8 week

- 36 Archiving and backups
- 37 Software installation
- 38 Booting and services starting/stopping
- 39 Network configuration
- 40 Introduction to development

# Course program, 9 week

④① Calculator

④② Calculator, error correction

④③ Calculator, text-based interfaceтекстовый интерфейс

④④ Calculator, GUI

④⑤ Network calculator

# Course program, 10 week

- **46** Calculator, network interface
- **47** Calculator, localization
- **48** Calculator in russian (or other language)

# Спасибо за внимание!

www.ifmo.ru