# Prepare the work environment

## Operating system

These tutorials will be done in a Linux environment primarily because all the necessary tools can be downloaded from the Internet for free and no piracy is required. The next reason is that Linux requires much less resources and demonstrates normal speed on computers where even Windows 10 is too slow.

Nowadays, there are an endless number of Linux distributions, and if you read the advertisement for any variant, you will understand that this particular variant is the best. I’d recommend choosing Ubuntu: the constructors of this distribution paid a lot of attention to simplifying the installation and support. Even novice users will easily install this system in the computer. Ubuntu desktop is built for individual users and the standard installation provides almost all the software needed for work.

## Installation

Taking an old, unused laptop and installing Linux on it is the easiest way to do these lessons. And do not be afraid that Windows 10 works too slowly there: I installed Xubuntu on an Acer TravelMate with just a 2.2GHz Intel processor.

Now that professional programmers are forced to switch on Windows 11, you can buy a good enough computer at an affordable price. When buying a used one, make sure that it has a DVD drive or the BIOS allows you to boot the system from a USB stick.

You can build a dual boot system if you have a good computer and plenty of space on a hard drive or SSD. Although Linux installations are well-tested and usually uneventful, make sure to create a Windows recovery disc and backup data before installing Linux next to Windows.

Installation is described on site [Install Ubuntu desktop | Ubuntu](https://ubuntu.com/tutorials/install-ubuntu-desktop" \l "1-overview). This link describes the installation in great detail, so there's no need to repeat it here: just follow the instructions and you'll have a working operating system after the process is complete. The site describes installation from USB stick, installation from DVD is almost the same: you will need to create bootable DVD instead of the stick. I'll just add a few comments:

* Drop the [Xubuntu](https://xubuntu.org/) ISO file instead of [Ubuntu](https://ubuntu.com/download). Xubuntu installs [xfce](https://xfce.org/) desktop environment and requires much less resources from the computer, the graphical interface is very simple and you will be able to master it in a few hours. When pressed, you can always expand the system by installing additional software from the Ubuntu archives. You can also reinstall Linux and switch to GNOME or KDE, as long as your computer is powerful enough.
* The system will ask for root username and password during installation. Write down these values somewhere, as you will need them when upgrading the system.
* Choose your native language during installation - this way you will avoid many misunderstandings.

## XFCE desktop environment

Xfce is a lightweight and configurable desktop environment for Unix-like operating systems. After booting XUbuntu, the screen will look something like this:

Fig. 1: Slightly adjusted XFCE screen. I added language switching and screenshot icons there.

At the site [XFCE desktop](https://docs.openeuler.org/en/docs/21.09/docs/desktop/Xfce-user-guide.html" \l "4-shortcut-operation-bar) you will find a brief description of what can be gutted in this environment. For a complete description of the environment, see the [XFCE home site](https://docs.xfce.org/).

Right click on free space in the task bar or desktop and follow popup menu for configuring the region.



Fig. 2: Expanded taskbar management menu.

Right-click on an icon and follow the context menu instructions for updating or removing it from the taskbar. Modifying the desktop icon is exactly the same.

There is a lot of material on YouTube about configuring XFCE. I recommend watching [How to Customize XFCE](https://www.youtube.com/watch?v=mgyTCqr51iI): the tricks shown there will really impress Windows users. Don't mess around with the configuration too long: there are many free XFCE themes in the [Xfce-look](https://www.xfce-look.org/browse?cat=138&ord=latest&ref=itsfoss.com) portal. Choose the right theme for you and install it according to the instructions in the [themes](https://itsfoss.com/install-themes-xfce-xubuntu/) site.

Add a keyboard switch button to the taskbar if you need to work with multiple languages. Also a very useful thing is the workspace switcher. Activate 2 workspaces to begin with, you can increase the number later when you see benefits of this feature.

## Package manager

A package manager or package-management system is a collection of software tools that automates the process of installing, upgrading, configuring, and removing computer programs for a computer in a consistent manner ([Wikipedia](https://en.wikipedia.org/wiki/Package_manager)). Ubuntu inherited Advanced Package Tool (or APT), the main command-line package manager from Debian. The apt system consists of three console applications: apt, apt-get, apt-cache. They require admin rights in most cases thus add magical word **sudo** in front of command.

A typical Ubuntu installation has a graphical tool ([Synaptic](https://www.ubuntugeek.com/synaptic-package-manager-beginners-guide-for-ubuntu-users.html)) for working with packages. Read this article and use its recommendations for managing your system. I provide **apt** management from the terminal, since theese commands may be used even on Linux having no Xwindow. Here is an abbreviated description of the **apt** command. You will receive complete and accurate information by typing

man 8 apt

in the terminal.

The **apt** commandline is designed as end user tool and you can use it instead of specializated tools **apt-get** or **apt-cache**. Type in terminal command

*apt help*

and you will get a list of commands. Here is short description some of them.

#### List

The command **apt list** types long list of packages thus paginate output with **less** command or filter it with **grep** command:

apt list | less

apt list | grep chess

The first commmand displays paginated list, second one displays packages containing phrase chess.

#### Search

The command outputs packages with phrase inside description. Once again, you can send an output to the less or grep commands:

apt search chess | less

apt search chess | grep gnu

#### Show

The command shows package details:

apt show gnuchess-book

#### Install, Reinstall, Remove, Purge

Performs the requested action on one or more packages. All of these commands require administrator privileges, so start the command with the word **sudo**. Packets are separated from each other by a space. The **remove** command leaves the configuration files behind, while **purge** discards everything. By the way, **purge** can also be used for packages that were discarded with **remove**.

The listed commands may be remitted via **apt** or via **apt-get:**

sudo apt-get install gnuchess

sudo apt-get purge gnuchess

The first command installs gnuchess, second one removes it with all dependencies and configuration files.