

III. ПРОБЛЕМИ МЕТОДИКИ НАВЧАННЯ ТЕХНОЛОГІЧНИХ ДИСЦИПЛІН

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THE ADVANTAGES OF USING LINUX IN THE SERVER WORLD

Linux and Windows are two operating systems that are constantly competing for control of the computer market. Both operating systems have shown considerable growth in the server world.

Microsoft released its first server operating system (OS) in 1993, just about the time when the Linux OS began surfacing on the Internet. These two operating systems have much in common, but still they are quite different.

Windows vs Linux

| Windows design | Linux design |
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| Windows has recently evolved from a single-user design to a multi-user model | Linux is based on a long history of well fleshed-out multi-user design |
| Windows is monolithic by design, not modular | Linux is modular by design, not monolithic |
| Windows depends heavily on the RPC model | Linux is not constrained by an RPC model. |
| Windows focuses on its familiar graphical desktop interface | Linux servers are ideal for headless non-local administration |

Linux is a Unix-like computer operating system assembled under the model of free and open-source software development and distribution. The defining component of Linux is the Linux kernel, first released by Linus Torvalds. He set out to write his core of an operating system that handles memory allocation, "talks" to hardware devices, and makes sure everything keeps running. Linus used the GNU programming tools developed by Richard Stallman's Free Software Foundation, an organization of volunteers dedicated to fulfilling Stallman's ideal of making good software that anyone could use without paying (1).

Linux was originally developed as a free operating system for personal computers based on the Intel architecture. Nowadays, because of the dominance of Android on smartphones, Linux has the largest installed base of all general-purpose operating systems. Linux, in its original form, is also the leading operating system on servers and other big iron systems such as mainframe computers and virtually all fastest supercomputers. Linux also runs on embedded

systems, which are devices whose operating system is typically built into the firmware and is highly tailored to the system; this includes smartphones and tablet computers running Android and other Linux derivatives, network routers, televisions, video game consoles.

By 2000, Windows and Linux each controlled roughly half of the overall server market. The Linux side contained such applications as Netware, BSD, and Debian-based Linux. By 2008, Windows controlled 38.8 % of the overall server market compared to Linux's 12.7% (4). As of 2012, five of the top ten most reliable servers ran Linux, three ran FreeBSD, and only two ran Windows. Some examples include Google, Yahoo, YouTube, and Facebook and key governmental institutions and agencies such as the US Army (6).

Linux is by far the choice of operating system for many major websites. In many people's minds Linux is the only option for quality web servers, but for others nothing is easier than the "point and click" allure of Windows. With almost 90% of the operating system market share, you can't miss Windows (8). It's in commercial buildings, industrial facilities, as well as home computers. Windows, having been introduced in 1985, is a very mature and complete piece of software. It has many advantages; it's easy in use. We know that almost every application, driver or game will work on Windows. But the Windows operating system, especially Vista and 7, requires a lot of computer resources such as memory, processor, disk space, and thus runs slower. And, of course, we may need to buy an antivirus program, although free ones exist.

Linux OS is GNU's answer to Windows. This means that Linux is free. By free, we can download, modify or redistribute it without spending a cent. Linux is a younger player in the OS world, having been written in 1991, and is optimized for modern use. Linux is not a full operating system. It's just a kernel. To use the kernel, additional software is needed. Hundreds of these distributions exist. The most popular include Ubuntu, Mint and Fedora (6). "The good thing is, with so many different flavours of Linux, there is always one to suit your needs (5)."

Linux has very few viruses. At the same time, Linux is rather complicated, although some distributions are quite easy to use, most of them require a good deal of computer knowledge in order to get them to work. Of course, Linux does not have as many programs and games as Windows. In other words, no operating system is really better. If you are a gamer, then you have no choice, go for Windows. Programmers might prefer Linux. The best thing to do is probably to try each OS and see which is best for you.

One of Linux's huge strengths is how seriously security is taken. If you install Linux, for example Ubuntu, on your computer, you'd access tons of software totally free of charge. It is impossible for you to do so without knowingly entering your password. What's even better is that when you install a Linux distribution, all the software you will need is inside servers that are maintained by the developers of the operating system itself. They go through each and every package and verify that it isn't malicious and even sign them. This removes the ability for malicious software to install itself (like on Windows).

Some Linux projects specifically focus on old hardware. For example, Ubuntu can run on every little RAM and yet allow its users to enjoy a modern, clean operating system. In addition, when you use a Linux distribution as your main operating system, you're not expected to have a Microsoft account, a copy of Office 365, a Skype account and a OneDrive account. You're not forced to participate in an ecosystem that you may not agree with, and Linux isn't filled to the brim with one company's vision.

Ever since 1993, Linux and Windows have both attempted to gain control of the server market. Let's compare the strengths of these major operating systems in the field of computer programming:

| Windows hosting | Linux hosting |
|--|---|
| <p>Windows makes it possible to execute conception frameworks, .NET Framework or SharePoint. In this case, Windows has a big advantage when you want to add special Windows applications to your website.</p> | <p>Linux is often thought as the best operating system for web servers. With its characteristic reliability, stability and efficiency Linux proved itself in complex web and mailserver environments. If you want to use PHP, Python or MySQL, Linux is the operating system of choice. Linux hosting is well-suited for blogs, content management systems, online stores and forums. Also, Linux implements portions of .NET Framework via Mono project.</p> |
| <p>Windows tracks just about everything you do on your computer. It can keep track of what apps you've installed, how long you've used them, which websites you've visited, recordings of your voice, and probably much more.</p> <p>With Windows, Microsoft is pushing hard its other products and services into the operating system, like Cortana, OneDrive, MS Office. This is fine if you enjoy Microsoft's ecosystem, but statistics show that there's a relatively small number of people who do.</p> | <p>With Linux you won't have to worry about your computer spying on you at any operating system level. While it's true that Ubuntu has an Amazon tie-in, you can easily disable this with just one setting and can also completely remove the package that provides it.</p> |
| <p>Windows has one style for its user interface. You can't go into many specifics. What's more, Microsoft can push updates to your computer at will and you can't stop it.</p> | <p>Linux has many different desktop environments available that can give you various user experiences. You get plenty of choices to make them a perfect fit for you (Gnome, KDE, Xfce, etc.).</p> |
| <p>Windows has a lot of features running in the background that take up system resources. Without any modification, the operating system will load Cortana, OneDrive, Windows Defender and a whole lot more.</p> | <p>On Linux, you can always look through the package lists to know exactly what is installed on your computer. You're free to add or remove any package that you'd like, and you can also control package updates. Linux is generally much leaner thanks to its highly-modular nature, one that allows you to pick and choose what you want to run on your system.</p> |

Many Windows users want to switch to Linux, BSD or OS/X, but the problem is that they don't use Linux at work. Very few organizations use Linux on the desktop. That's too big a change, they say. Because they have to support not only the desktop, but also the integration with all their servers and programs running there and management tools like Active Directory.

Linux is a perfectly acceptable replacement for Windows and is pretty much free. The two issues preventing its greater adoption are that "a) you have to install it to get it and b) it is different, so there is a learning curve" (2).

"The issue with Linux in the early days was that it was very "geeky". For example, you wanted to install a software package, but first you needed to explore what dependencies it required and install them also. That's all gone now, the various package managers and repositories will resolve all these issues for you in most cases; it's just a mouse click and you're done (4)."

Conclusions

1. Linux is a free and open-source platform which many operating systems are built upon. All Linux-based operating systems are completely free. Linux is a stable operating system and less vulnerable to computer malware.

2. In the server world, there are a great many Linux installations, the majority of web servers run under Linux. But there are not many Linux desktop users as Windows users. The point is that most PCs come with Windows installed. A few manufacturers offer Linux boxes but you won't find them in your local electronics store.

3. The computing environment is constantly changing and demonstrating a need for a continuous review of our strategies and more importantly a need for a strong ethical framework in our computer, information and engineering science education. Computer scientists are sure that every year the reasons to switch to Linux increase. And young programmers are interested in creating something that everyone can enjoy.

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