

BRNO UNIVERSITY OF TECHNOLOGY

Faculty of Electrical Engineering  
and Communication

BACHELOR'S THESIS

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# BRNO UNIVERSITY OF TECHNOLOGY

VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ

## FACULTY OF ELECTRICAL ENGINEERING AND COMMUNICATION

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## DEPARTMENT OF FOREIGN LANGUAGES

ÚSTAV JAZYKŮ

## REASONS FOR LOW LINUX ADOPTION ON DESKTOP PCS

DŮVODY NÍZKÉ ADOPCE OPERAČNÍCH SYSTÉMŮ LINUX NA STOLNÍCH  
PC

### BACHELOR'S THESIS

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# Bakalářská práce

bakalářský studijní obor **Angličtina v elektrotechnice a informatice**

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## NÁZEV TÉMATU:

### Důvody nízké adopce operačních systémů Linux na stolních PC

Proveďte rešerši dostupné literatury a porovnejte Linux a MS Windows na stolních počítačích, jejich silné a slabé stránky od bezpečnosti po uživatelskou přívětivost a prezentujte svá zjištění. Identifikujte hlavní důvody nízkého rozšíření Linuxových distribucí na (kancelářských) PC a zhodnotte je.

## DOPORUČENÁ LITERATURA:

Ford J. P., 2018, Goodbye Windows - Hello Linux: How to switch from Windows to Linux with no regrets Kindle Edition, Amazon Media EU S.à r.l., ASIN: B07D9QS2WG

Ward B., 2014, How Linux Works: What Every Superuser Should Know, No Starch Press; 2 edition, 392 str., ISBN-13: 978-1593275679

Smith R.W., 2005, Linux in a Windows world, O'Reilly Media, 495 str., ISBN-13: 978-0596007584

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## **ABSTRAKT**

Cílem této bakalářské práce je seznámit jejího čtenáře s operačními systémy Windows a Linux, jejich prostředím, programy, kterými disponují, jejich silnými a slabými stránkami a určit, proč je operační systém Linux málo adoptovaný mezi uživateli stolních počítačů. Tato semestrální práce by měla poskytnout jejímu čtenáři dostatek informací potřebných k určení, který z těchto operačních systémů bude více splňovat jejich potřeby. Rozhodnutí napsat semestrální práci na toto téma jsem udělal na základě vlastní zkušenosti, kdy jsem se jako uživatel potýkal s nedostatkem informačních materiálů na toto téma.

## **KLÍČOVÁ SLOVA**

Operační systém, Linux, Windows, distribuce, programy.

## **ABSTRACT**

The goal of this bachelor thesis is to acquaint the reader with Windows and Linux operating system, their environment, programs they dispose of, their strong and weak points and determine why is Linux operating system not popular choice for adoption among desktop computer users. This bachelor thesis should provide reader with enough information to make them acquaint enough to determine, which operating system would fit their needs the most. I have decided to create this bachelor thesis due to the fact that I once faced the lack of information materials about this topic.

## **KEYWORDS**

Operating system, Linux, Windows, distributions, programs.

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# PROHLÁŠENÍ

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V Brně dne .....

.....

(podpis autora)

# PODĚKOVÁNÍ

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# 1 INTRODUCTION

The topic of my bachelor thesis is Reasons for low Linux adoption on desktop PCs. I decided to choose this topic because I believe that Linux is a huge opportunity that many people miss due to misinformation or lack of information.

The bachelor thesis is divided into theoretical and practical part. Theoretical part focuses on comparison of Windows operating system and Linux operating system. Firstly, I compare those two operating systems based on their recent history. Secondly, I compare the most recent Windows operating system Windows 10 with the most favourite Linux distributions. Thirdly, I compare their quality and quantity of applications and programs they provide. Furthermore, I compare how suitable they are for playing computer games. Following, the operating systems are compared on the base of their security and stability. Subsequently, I compare the differences of their user interface. Additionally, I compare the process of installation of Windows 10 and Linux Mint from my own experience. Finally, I discuss few points which might lead to low Linux adoption. The practical part uses public survey as a method of research. It is meant to gather people's knowledge and opinion about Linux operating system, as well as their reasons for why they do or do not choose to adopt Linux as their operating system on their personal computers.

The goal of theoretical part of bachelor thesis is to provide viable comparison of strong and weak points of Linux and Windows operating systems. Furthermore, the goal of practical part is to unravel, why is Windows, according to Net Market Share, installed on 87 % of all world computers, whereas Linux is installed on only 2 % [1].

## **2 COMPARISON OF WINDOWS AND LINUX OPERATING SYSTEM**

The aim of this chapter is to compare Windows and Linux operating systems on different fields and subsequently comparing them with each other.

### **2.1 History**

This subchapter summarises the conditions and events in recent Windows and Linux history, which preceded the release of their most recent distributions and editions.

#### **2.1.1 History of MS Windows**

As listed on Computer Hope, the very first version of Windows operating system, Windows 1, was released in 1985 with the potential to become one of the best operating systems in the world. With release of Windows 95 in 1995, Windows managed to rise even more on popularity and reached its top in 2001 with release of Windows XP. Windows 7 was released on the 22<sup>nd</sup> of October 2009 [2]. As stated by Keith Ward, its predecessor, Windows Vista, was notorious for its low performance and frequent incompatibility with other software and peripherals. Windows 7 brought much needed enhancements. The most noticeable ones were lower hardware requirements, larger compatibility with programs on release, better performance and overall stability. This all resulted in Microsoft selling over 450 million licences of Windows 7 [3]. Despite receiving overall positive feedback about Windows 7, Microsoft decided to undergo great changes and decided to innovate their next version of Windows operating system. As a result, on 26<sup>th</sup> of October 2012, Windows 8 was released. As John Nedelcu says, its user interface has undergone great design changes, with the main example being the implementation of Metro design language and replacement of Start menu with Metro Start screen. Even though the Windows 8 had better performance than Windows 7, it faced great backlash from general public. Their main concern was new unfamiliar user interface. As a result, in August of 2013 Microsoft released Windows 8.1, free update for Windows 8 users to download. Its main feature was inclusion of Start menu into Metro. Despite the fact that Windows 8 failed to become popular, Mary Foley says, that Microsoft managed to sell over 200 million licences of Windows 8 [4]. This remained until the 29<sup>th</sup> of July 2015, when Microsoft released Windows 10 [5].



Figure 1: Comparison of Windows 7 and Windows 8 graphical user interface

### 2.1.2 History of Linux

As Kathleen Juell says, since 1991 when Linus Torvalds created first version of Linux kernel, the Linux operating system attracted attention of interested individuals. Its distributions and versions were more of a project to work upon than operating systems to serve to the public [6]. While throughout the years huge progress in developments was made, it still failed to attract desired publicity. The two major problems were its complexity and user interface unfriendliness. This changed with the release of Ubuntu 4.10 Warty Warthog. As listed by Chris Guiver, this version of Ubuntu was released on the 20<sup>th</sup> of October 2004 [7]. As said by Nick Congleton, the Ubuntu, being based on Debian distribution, benefited from use of Debian package format. However, what was new for Linux distributions, no other distributions to that day was made in a way to guide through the process of installation or configuration of the computer. In addition, easy accessibility of third party software together with ready user interface ensured satisfaction and brought much desired attention to Ubuntu and Linux [8]. While the exact number of users in 2004 is not known, in 2009 it was published by Christopher Dawson, that Ubuntu had over 13 million users [9]. In 2015, it was published by Alexia Emmanoulopoulou, that the number increased to 20 million users worldwide [10].

### 2.1.3 Comparison

Each release of new Windows version benefits from great home base of people who already use one of their versions of Windows. This, together with the fact that Microsoft stops to provide support for older versions of their Windows operating system, ensures the interest of their users in new versions of Windows. On the other hand, Linux, being relatively new operating system, does not have firm and numerous userbase it could benefit from. The number of users has started to grow only recently and in a way that cannot yet compete with Windows.

## **2.2 Operating system Windows 10 and Linux distributions**

This subchapter focuses on Windows 10, which is the most recent version released in 2019, in addition to various Linux distributions. The chosen examples of distributions both represent the most popular Linux distributions in use, as well as reflect distributions used by my own surveys participants.

### **2.2.1 Windows 10**

In 2019, Windows 10 is the most up-to-date operating system published by Microsoft. As Tony Prophet says, Windows 10 is furthermore divided into 4 main editions: Windows 10 Home, Windows 10 Pro, Windows 10 Enterprise and Windows 10 Education. These editions differ by amount of various features included, which is then reflected by their price. Furthermore, the features by which the editions differ tend to benefit specific group of users [11].

Windows 10 Home is designed to be fit for a regular home user. As adverted on official Microsoft websites, Windows 10 Home offers features such as Cortana, Microsoft Edge, DirectX 12, or fingerprint recognition. Windows 10 Pro, which is aimed at people in business environment, additionally offers utilities like remote desktop, shared PC configuration or BitLocker. Both Windows 10 Home and Windows 10 Pro are available for purchase in retail shops [12].

There are several aspects which make Windows 10 unique in comparison with its predecessors. As can be found on official Microsoft website, for the first time in Windows history, those who owned Windows 7, 8 or 8.1 licenses, could have upgraded to Windows 10 for free. Secondly, a lot of attention was paid to enhanced user interface, which will be covered later in this chapter. Furthermore, in addition to logging in by fingerprint, new feature Windows Hello also provides possibility of unlocking device through face recognition [13].

### **2.2.2 Linux Distributions**

As Margaret Rouse says. Linux distribution, often abbreviated as Linux distro, is a version of the open source Linux operating system, software packages and package management system. A software package is an archive file, which contains computer program code and metadata vital for its deployment, such as its description, version, or dependency on other packages. The package management system contains tool that automate installing, configuring, upgrading and removing of computer programs. This eliminates need of manual compilation of the operating system [14].

Due to the fact that the Linux kernel is an open source operating system, each operating system, that is created and uses it, has to be an open source as well. As long as this condition is kept, it can be manipulated with in any way. Correspondingly, it cannot be precisely said how many distributions have existed over the course of its existence. Each individual distribution is coded to fit certain group of people and their needs.

Ubuntu is a Linux distribution which, based on information by DistroWatch, uses the core infrastructure and architecture of Debian. It was created by Canonical Ltd. who wanted to have more user-friendly distribution of Linux. Canonical Ltd. continues to

periodically release updates and offers paid support [15]. While running stable updates on strict schedule, unstable testing updates with support for newest versions of programs are often being released. However, the high frequency of those updates can cause problems with programs and application as well as instability of whole system. As a result, Ubuntu is more flexible in terms of running paid programs than other distributions. The wide spread of this distribution caused by its user-friendliness allowed creation of huge community of unprofessionals who work on it together. As Canonical webpage says, Ubuntu, thanks to its similarity to Debian, is capable of using from over 51 000 Debian software packages with occasional need of code enhancements [16]. All these attributes make Ubuntu distribution more suitable to users with beginner experience.

As was written by Margaret Rouse, Linux Mint is a Linux distribution based on Ubuntu and Debian. It was designed to be an operating system which is modern, has great performance and is easy to use. Similarly to Debian and Ubuntu, it disposes of over 30 000 software packages. Furthermore, the distribution itself makes use of codecs and plug-ins that provide Adobe Flash, MP3 and DVD playback. In addition, it uses desktop environment called Cinnamon. This desktop environment derives from GNOME while simultaneously resembles traditional desktop metaphor. The result is a lower memory usage and feeling of a common interface [17].

As can be found on official Arch Linux webpage, Arch Linux is an original general purpose GNU/Linux distribution. Being designed as a creation tool, its core design provides minimal base system with purpose to be enhanced and improved to fit individual needs and purposes. Arch Linux distributes with its own package software called packman and Arch Build System, which enables easy upgrade of whole system as well as easy installation and creation of software packages [18]. Arch Linux is great example of the key thought behind creation of Linux – to create a foundation core which is then uniquely and personally upgraded and evolved.

### **2.2.3 Comparison**

The number of Linux distributions available is much greater than the amount of Windows editions that exist. While Windows editions Home and Pro focus at needs of regular daily users and people in business environment, numerous Linux distributions can achieve the same result. Moreover, the distributions themselves can be altered to meet the expectations and needs of individuals. Furthermore, while Windows provides several utility tools with the license, the amount of software available together with Linux distributions is much higher. And finally, as all Linux distributions are open source, it is possible to download and try one distribution, only to change it for different one without complications and expenses. On the other hand, in order to start using any of Windows 10 editions, it is necessary to buy a licence. These licences, which can be found on official Microsoft store, range from 170 USD (which is as of May 2019 roughly 3900 CZK) for Windows 10 Home edition to 309 USD (which is as of May 2019 roughly 7100 CZK) for Windows 10 Pro for Workstation [19].



## 2.3 Programs and applications

The main reason behind creating operating system is to have main controlling unit, which will be in charge of managing computer software, hardware, processes and memory. Additionally, it should provide tools that enable communication with computer without knowledge of computer's language. This subchapter focuses on most important programs and applications which were created by Microsoft for Windows and by various Linux developers for Linux distributions. Furthermore, this subchapter points out few examples of software that was developed by third party companies and can be installed exclusively on selected operating systems. Finally, the chapter addresses topic of security software.

### 2.3.1 Programs and applications on Windows 10

Official Microsoft webpage says, that Backup and Restore is a part of operating system that allows creation of backup files and system images, which can be later restored. The backup identity is ensured by use of Shadow Copy technology, which operates at block of volumes. It is possible to restore backups made by foreign computer on one's computer [20].

On official Microsoft webpage can be found, that Office 2019 is the latest Microsoft Office software suite designed for production of documents. While sharing many similarities with other Office suites, there are several features that make it unique. Firstly, Microsoft Office provides MS Outlook, an email and personal information manager. Secondly, it is possible to cooperate on the same document with someone in different place simultaneously through use of OneDrive or SharePoint Online. OneDrive and SharePoint Online are cloud software that utilize external storage through use of internet connection and allow to store and extract data at real time. Furthermore, Skype offers instant text, video and speech communication together with screen sharing. Finally, Microsoft Word, PowerPoint and Outlook are supported by voice dictation and speech recognition programme Dictate [21]. Official Microsoft website says that Dictate was developed under Microsoft Garage Project. It supports 29 languages and offers translation into 60 different languages. Furthermore, this feature is available to all Office 365 subscribers for free [22]. As was written by Michael Crider, Microsoft Office uses proprietary, closed document format „.docx. “ Over the years of Office's existence, despite the fact that they are using proprietary format, Office has managed to become international standard in global exchange of documents [23].

As is stated on Microsoft's official websites, Microsoft Photos is an application, which can view and edit images, share photos, create and edit raster graphic images and edit video clips. Examples of basic raster editor functions are cropping, red-eye reduction, or trimming photos from videos. The video editor called Story Remix creates videos from photos and songs which are available in the Photos application or implemented [24].

Cortana is described by Graham Barlow as a voice artificial intelligence application designed by Microsoft to help user with his daily activities. It can be controlled through voice commands or through typical text input. It can create notes and reminders, searches internet through Bing search engine, locate files in your device or OneDrive, or read information from a file. Cortana is also compatible with few other applications like

Uber, Netflix or Fitbit. What is more, Cortana is capable of learning about its user's habits and adapt itself to them [25].

Microsoft User Experience Virtualization is described on official Microsoft webpage as an application, which saves Windows OS settings and then applies it on other devices throughout the enterprise. It is also capable of creating different profiles, which can be used for example for third-party applications. This application ensures the same set environment whether throughout a company or for an individual alternating between workplaces [26].

As was written by Matt Klein, DirectX 12 is Microsoft's newest version of application programming interfaces, which are aimed to operate tasks related to multimedia. This application programming interface is in charge of running games and applications. The latest version achieves better performance of a system by usage of multi-adapter, which allows individual GPU's to be addressed separately [27].

BitLocker is defined on official Microsoft webpage as a Microsoft's encryption file system which is used to prevent malicious software from gaining access to user's files. BitLocker uses AES encryption algorithm. BitLocker is not designed to be used widely across entire disk, but rather in individual sectors [28].

Windows Defender Advanced Threat Protection is described on official Microsoft webpage as a platform that uses combination of different technology to prevent enterprise networks from advanced threats. For instance, it ensures that the configuration settings are set properly, catches emerging threats, makes regular detection checks that could have been missed, identifies unprotected systems and creates custom threat intelligence [29].

Microsoft's official webpage describe Windows Defender Antivirus as antivirus software developed by Microsoft. Apart from protecting computer from malware programs on computer and on the internet, Windows Defender offers additional utility features. Parental controls is a feature that sets time and content restrictions on computers. Find My Device feature works with all devices connected to one Microsoft Account. It is able to locate their GPS position if turned on, ring it or erase stored data [30].

Adobe Photoshop is described on its official website as world most elaborated raster graphic editor. It was developed by Adobe Inc. and is part of Adobe Creative Suite. This editor offers most tools for image edition in the world. Examples of more unique tools are Layers control, shaping tools or filling the image based on its surroundings. The relatively easy manipulation together with great number of tools makes it the most sought for raster graphic editor in the world, both professionally and recreationally. This graphics editor was developed for Windows and MacOS exclusively and is highly applied in graphical field [31].

AutoCAD 2020 is described on its official website as the latest version of Auto computer-aided design (AutoCAD) created by Autodesk, Inc. It is 2-dimensional and 3-dimensional drafting software used by, architecture, electrical electronics and mechanical designers. This program is capable of creating mechanical parts or electronic circuits and put them to test of elements such as friction or how they perform under performance. This graphics editor can be installed exclusively Windows and MacOS [32].

### 2.3.2 Programs and applications on Linux

The official webpage describes Bacula as a set of computer programs, which manage backup, recovery and verification of computer data across various networks of computers or on single personal computer. It is Client/Server based backup program which uses five major components: Director, Console, File, Storage and Monitor services. The Director oversees all undergoing actions as well as their scheduling. The Console communicates with the Director by using shell window, GNOME GUI interface or wxWidgets GUI. The File serves as a daemon on a machine that is supposed to be backed up, specific to its operating system and supplies Director with vital data and attributes for backup. The Storage is in charge of storing and recovering the data to the physical backup. And finally, the Monitor watches current status of data. In addition to Linux, Bacula can be installed on Windows operating system [33].

LibreOffice 6.2.3 is described on its official webpage as up to date version of open source office suite developed and updated by the Document Foundation to resemble Microsoft Office in function. It uses the international OpenDocument file format (ODF) while also supporting file formats of most other major office suites, including „.docx “[34].

Open Shot is, according to its publisher’s webpage, an open source video editor, which was created and is updated by OpenShot Studio s, LLC. It uses codecs supported by FFmpeg which allows it to process many different formats of audio and video. This program offers useful utilities such as desktop integration, unlimited layers, adjustment of clips on timeline, and image overlay [35].

According to Wine Project’s official webpage, Wine is an open source compatibility layer, which focuses on running applications designed for Windows operating system. The Wine translates Windows API calls into POSIX calls while running, eliminating memory and performance penalties [36].

Official webpage define dm-crypt as disk encryption subsystem in Linux kernel, which is used to encrypt files stored at device storage. Due to its implementation as device mapper target, it is capable of encrypting whole disks, software RAID volumes, logical volumes, partitions and files. It is highly flexible due to the fact that it only deals with transparent encryption of abstract block devices. This means that it can be used to encrypt any disk-backed file system, as long as it is supported by the operating system. Moreover, dm-crypt can be set to carry out pre-boot authentication through initrd, encrypting all data in the computer excluding kernel, bootloader and initrd image itself [37].

According to official webpage, ClamAV is open source security software run by ClamAV team. It provides user with ability to scan command line, daily updated virus database, built in support for mail file, archive, Portable Executable and document formats [38].

Official webpage describes GIMP as an advanced open source raster graphic editor, which was developed and updated by the GIMP Development Team. This program provides useful utilities, such as tile based memory management, suite of painting tools, layers and channels, advanced scripting capabilities, frame-as-layer animation format and great support of file format [39].

### 2.3.3 Comparison

Microsoft creates a lot of useful programs. Unfortunately, most of those programs are hidden behind a form of paywall. These programs are either bought together as a part of Windows operating system edition or direct payment. An example would be application BitLocker and office suite Office 2019. Program BitLocker is being sold as a part of Windows 10 Pro. Microsoft Office is being sold in several different versions in Office 365 program in form of a subscription or one time purchase. According to official store, Office 365 Home, Personal, Business and Business Premium can be subscribed for price ranging from 6.99 USD (which is as of May 2019 161 CZK) for Office 365 Personal to 12.50 USD (roughly 288 CZK) for Office 365 Business Premium. Additionally, it is possible to buy Office Home and Student for 149 USD (roughly 3462 CZK) as a one-time purchase. Finally, Microsoft allows students and tutors to get licence for Microsoft Office 365 Education for free, as long as their academic institution has signed up for this project [40]. Microsoft Office can be installed on both Window and MacOS [21]. While LibreOffice suite does not provide as many utility tools and features as a Microsoft Office suite, it is capable of completing its regular tasks. What is more, LibreOffice, together with most of software created for Linux, is free software. Additionally, LibreOffice is available for installation on Windows, Linux and MacOS. Another example of program, which has been discussed in this thesis and runs on both Windows and Linux, is Bacula and ClamAV. Both of these programs provide similar functionality as their selected counterprograms Backup and Restore and Windows Defender, which are only available for Windows.

Software developers who are directly connected with neither Windows nor Linux tend to favour Windows and MacOS over other operating systems. Professional programs such as Adobe Photoshop or AutoCAD, which are greatly used in professional sphere, become unavailable for users of different operating systems. Subsequently, there are several ways how to resolve this matter. Firstly, in order to install professional program on device, it would be necessary to buy and install Windows operating system onto the device. Secondly, it is possible to run program using emulator or compatibility layer, such as Wine. Unfortunately, this reduces speed and quality of program installed. Finally, it is possible to use program which simulates or copies functions of desired program. However, it is possible that program will not fulfil desired requests. On the other hand, there is also a lot of companies which create their programs for both Windows and Linux. According to Mehedi Hasan, most known anti-virus software, such as, Avast and ESET NOD32 can be installed on both Windows and Linux [41]. This is also the case for some professional software. According to MathWorks official website, MATLAB also runs on both Windows and Linux [42].

## 2.4 Computer games

People use computers not only for work, but also for entertainment. One of the popular ways of entertainment on computer is playing computer games. In order to be able to install and play the most up to date games, players have to own suitable hardware and software. This subchapter focuses on topic of computer games and their compatibility operating systems, with emphasis given to Linux.

### **2.4.1 Computer games on Windows**

As Mark Overmars says, video games have been popular since the early home computers have become accessible in the 1970s. Popular games such as Pac-Man or Donkey Kong, which until now could be only played at arcade consoles, became available to be played at home. Despite the fact, the consoles at the time were still more favoured. Changes started to happen in the first half 1990s, when computer games started to rise on popularity thanks to superior performance of the computers and use of peripherals. Titles such as Lemmings, Sid Meier's Civilisation or DOOM utilized the performance of computers to create better visual and gaming experience. At the time, the issues with sound and video drivers proved caused game installation difficult for unexperienced person. This changed in 1995 with release of Windows 95 and DirectX. DirectX enabled incorporation of high-performance multimedia [43]. As stated by Logan Rivenes, it was also during this time when computer gamers started to utilize internet for gaming, with release of gaming titles such as StarCraft or EverQuest [44]. This resulted in Windows becoming the main computer gaming platform even as of 2019. Game developing companies such as Electronic Arts, Activision Blizzard or Ubisoft choose Windows as their main platform for release of their games.

### **2.4.2 Computer games on Linux**

The origins of gaming on Linux operating systems can be dated back to 1994. In this year, as written by Michael Johnson, DOOM was ported to Linux. This was done by a member of DOOM's original developer team, Dave Taylor [45]. This inspired other developers to port their games over to Linux. One of the more known developers was Scott Draeker and his Loki Software company. According to Linux and Main, Loki Software has managed over its existence to port over twenty game titles despite their poor financial management that led to their bankruptcy [46]. As written by Tony Smith, Loki Software managed to port titles such as: Civilization: Call to Power, Quake III Arena, Railroad Tycoon II or Myth II: Soulblighter [47]. In 2012, according to Valve's official blog, Valve announced their intention of porting Steam client and their original game Left 4 Dead 2 to Ubuntu. It was stated that their intentions at that time were to experiment with Linux environment in order to be able to import their products to all Linux operating systems [48]. As written by Kyle Orland, Valve released following year its own version of Linux operating system – SteamOS. This based on Debian distribution is designed to serve as a medium for playing games thanks to Steam, which is directly implemented. At the time, over 1000 games were available for Linux gamers to play as well as variety of third party drivers [49]. However, SteamOS does not stand well as a non-gaming operating system, as it was primary created to play games. On the other hand, it is possible to access GNOME desktop and install additional software.

According to Seth Macy, release Vulkan API marked important milestone in Linux gaming. Firstly mentioned in 2015, Vulkan was promised to be next-generation open source platform for gaming. While providing same function as DirectX 12, Vulkan works regardless of device or its operating system. What is more, unlike Direct X12, Vulkan provides better hardware control [50].

Proton is the newest Steam's addition added to its tools. As stated on its official website, Proton has been released in 2018. Proton is based on Wine compatibility layer and is integrated as a part Steam client on Linux operating systems. In theory, this tool

should enable gamers to play games which are not optimised for Linux operating system with ease. In reality, there are currently over 5000 computer games listed to work at Proton. Among those games can be found popular and newly released games, such as: Sekiro: Shadows Die Twice, Witcher 3: The Wild Hunt or Rocket League. Steam continues to release patches to make sure that Linux gamers are able to play new games as soon as possible [51].

### **2.4.3 Comparison**

In 2019, gamers who play on Windows 10, thanks to DirectX 12, have no problems running any computer games purchased since most of the games are optimized for it. As mentioned in this thesis, it has been the case for most of the time since its original release in 1995. On the other hand, gamers on Linux were in much more complex situation. Either they were lucky enough to have their game ported to Linux, or they could not play it, unless they had Windows installed. Or, as has been mentioned previously, they could try to run these games through emulators or application layers with mixed results. Over the time, with release of more elaborate tools were released, gaming on Linux became increasingly more viable. In 2019, it is possible with use of Proton and Vulkan to play many game titles with a simple click of a button. While there are still some compatibility issues to resolve, gaming on Linux is going towards promising future.

## **2.5 Security and stability**

While people use operating systems to run applications, they also use it to store valuable data. Subsequently, it is important that the operating system ensures that the data entrusted is kept as safely as possible. This subchapter focuses on security and stability of Linux and Windows operating systems.

### **2.5.1 Security and stability of Windows**

There are several factors that affect safety of Windows operating system. Firstly, using the operating system as admin with all privileges attached creates great safety hazard. A virus infection can cause devastating aftermath on the system if given full access. This threat is being partially negated by changes in behaviour of Windows 10. The program has to describe its actions in detail, before it is given permission to execute. Moreover, while not serving as an actual line of defence, Windows 10 has other means of control. Audit policy for files and folders creates records of successful and unsuccessful attempts of logging, creating register about what is happening on device. Secondly, as was written by Jack Wallen, Windows environment stayed rather similar over the years and essentially created a monoculture. This resulted in creation of potentially fast spread environment [52]. If a properly created virus or malware manages to infect one device, it can hastily use this condition to infect many other devices using the same operating system. Finally, in case of a mistake existing within a code, only a designated group of hired Microsoft developers with access to code can address matter at hand, since Windows' code is not publicly available. During the time it takes to localise faulty line or lines, fixing them and issuing an update, users can

suffer from a long period, during which they will not be able to use their devices properly.

Windows operating system is notorious for its problems with updates that end up effecting system's stability. Windows 10 is no different. As Greg Synek says, Microsoft's Windows 10, due to its policy, has rights to install any issued updates onto device, without the need of notifying or choosing of what is being installed, which can lead to significant drop of performance. In addition, the updates might contain unfinished and faulty lines of code, which can cause complete failure of whole system [53]. Furthermore, after the update installation finishes, the device can restart itself without a warning, potentially resulting in loss of work.

It is worth a notion that Windows 10 can cause trouble without even being installed on the computer. As was written by Ian Paul in September of 2015, shortly after its launch, users of Windows 7 and Windows 8.1, who had their automatic updates available, found out that their computers have downloaded installation files for Windows 10 as a part of update, whether they planned to install it or not. Shortly after, they faced notifications of Windows 10 update which lacked dismiss option. To that matter, Microsoft stated that those who experienced these notifications must have already agreed to have Windows 10 installed at some point. The update notifications became increasingly more urgent, until the point when Microsoft changed behaviour of close button. It was no longer meant to close the dialog window, but rather serve as consent to schedule upgrade to Windows 10 [54].

The biggest problem with Windows 10 update occurred, according to Chris Hoffman, during scheduled update in October of 2018. In order to fix problem with duplications of folders created by update in April of 2018, the October's update was to delete those extra copies. However, due to a fault in the code the update deleted the folders regardless if they were empty or contained data [55].

### **2.5.2 Security and stability of Linux**

There are several factors that affect safety of Linux operating systems. Firstly, as was published on PCWorld, the use of Linux operating system as admin with all privileges is quite rare. Consequently, if virus manages to infect profile on operating system, it is unable to cause any vital damage to the system. In addition, before and installation of a program on Linux operating system takes place, the program has to ask for permission, increasing the overall control over the device. In case if malicious software managing to get installed into the device, there are means to uncover it. Linux Audit framework, auditing system, creates detailed recordings of all actions performed or attempted. Moreover, the diversity of Linux distributions makes it more resistible to spread of malicious software [56]. The possibility of personal alteration makes it hard to create universal malware and any potential infection is only short spread. When a security threat occurs, every single Linux user can try to fix the faulty line of code. Anyone who manages to find this solution can send it to people behind the development of particular distribution, who then can release a hotfix.

Linux operating system is deemed as a highly stable operating system. However, it should be mentioned that the stability should be based on each distribution individually. On the other hand, sources like UbuntuPIT rate the most common distributions as stable [57].

### **2.5.3 Comparison**

Linux and Windows operating system share several similarities when security is considered. Firstly, both of them benefit from third party antivirus software, although these developers slightly favour Windows. Secondly, both have internal means to control what is happening inside their software. Linux, however, benefits from internal infrastructure more than Windows does. Furthermore, there is proportionally far less malware for Linux than there is for Windows. As a result, Linux operating system can be described as more secure. Considering stability of Windows and Linux operating systems, Windows tends to cause many troubles due to its update and licence policy, which endanger its stability. Linux on the other hand gives complete freedom over what is user doing and does not engage them with potentially harmful updates, unless they agree.

## **2.6 User interface**

People use interface to interact with software and hardware. This makes it one of the more important elements of any operating system. This chapter focuses on user interface of Windows 10 and selected Linux distributions, which were popular among responders of my survey.

### **2.6.1 Windows 10 user interface**

As Tom Warren points out, developers of Windows 10 decided to reuse the core elements of Windows 7 graphical user interface while giving it a modern look. The basic element is the Desktop. It offers fully customisable background as well as a place to save icons of programs and files. The most important part of Desktop is the Taskbar. On it, running programs, Notification Area, Task View as well as Start Menu can be found. Notification area shows programs running in background as well as information about time, date, volume etc. The Task View button gives overview of all open windows. Furthermore, it also provides possibility of creating additional desktops for better workspace orientation. The Start Menu is divided into 2 halves. The left half resembles redesigned Start Menu known from Windows 7, from where it is possible to access all applications and folders. On the other hand, right half contains Live Tiles, which can display actualities such as weather, newspaper headlines etc. The windows remained the same with polished design in comparison to previous versions [58].



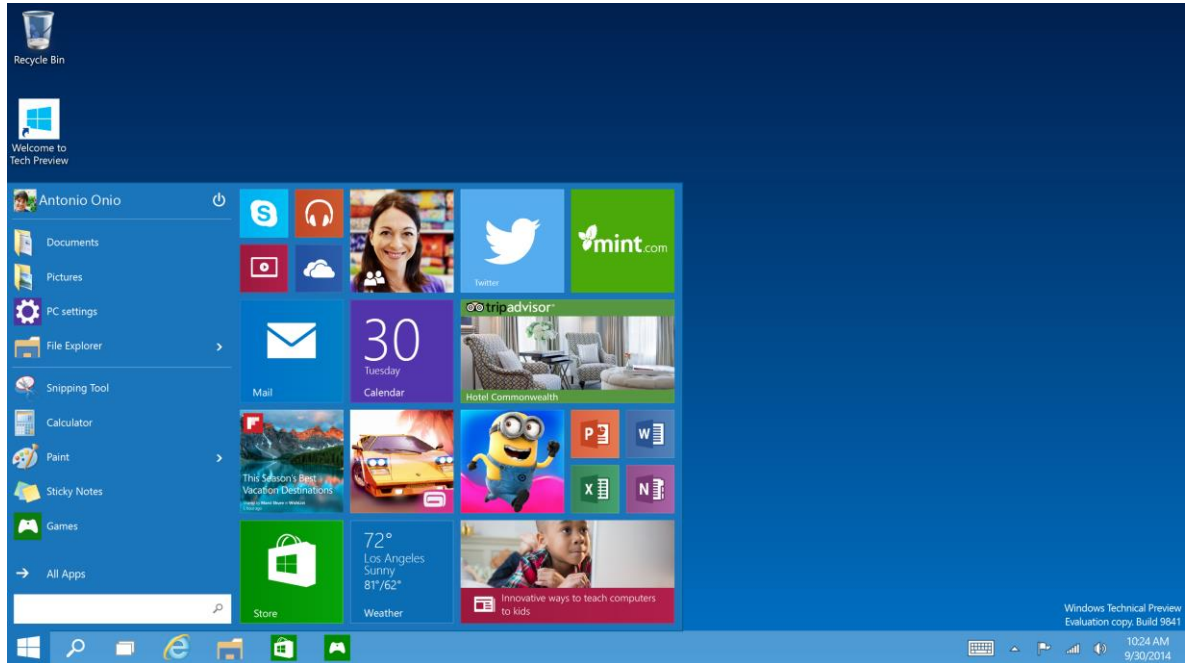


Figure 2: Windows 10 graphical user interface

## 2.6.2 Linux user interface

Due to their great variety of Linux distributions, user interface experience can be different with each distribution. Even though most of the distributions use same desktop environment, there are many different substitutions. There is also variety of software available, which enhance or ease interaction with user interface in some way. The desktop environments chosen are the ones used by mentioned Linux distributions.

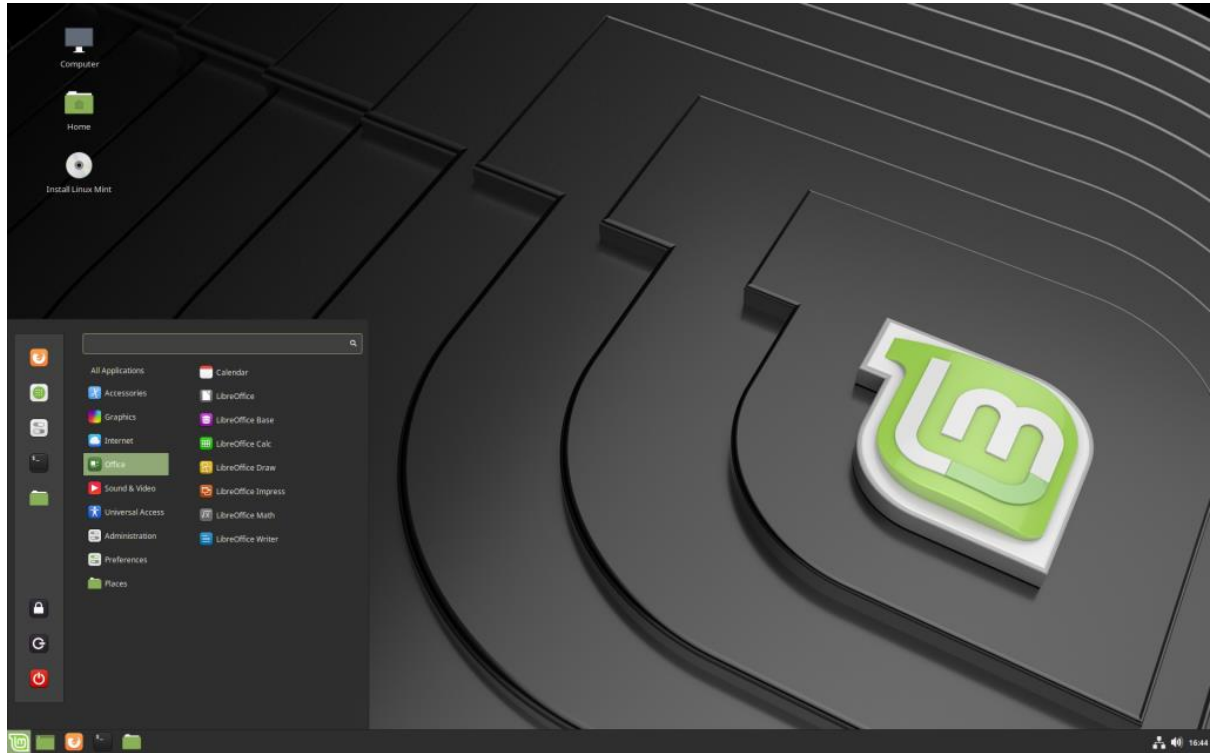
Back in the early days of development, Linux operating system was practically inoperable, if its user did not know how to use Bash terminal. According to Chris Hoffman, most modern versions of the popular distributions can be controlled without need of any terminal commands. On the other hand, terminal can be used to achieve the same means as in graphical user interface, only faster [59].

GNOME is described on its official website as open source desktop environment designed for Unix-like operating systems. It was created by The GNOME Project whose aim is to create software frameworks for software development, program end-user applications and provide availability both locally and globally. There are 2 versions of desktop environment provided by different login sessions, GNOME Flashback and GNOME Shell. GNOME Flashback provides desktop with taskbar GNOME Panel, window manager Metacity and few gnome-applets on the taskbar. Applets are simple applications with one specific task. This login session has lower hardware requirements. GNOME Shell is default GNOME desktop environment. It provides desktop with various function elements. The application menu is in charge of displaying, closing or creating new application windows. The status menu works as a shortcut to system settings and system status indicator. Dash creates shortcuts to favourite applications, as well as displays list of installed applications. It is possible to alter or even to install new features through extensions [60].



*Figure 3: GNOME3 user interface on Linux Ubuntu*

According to Opensource, Cinnamon is open source desktop environment which was built from GNOME3 to resemble GNOME2. It provides desktop with customisable desktop effects, panels equipped with main menu, windows list and launchers, Activities Overview and settings editor. There is also variety of applets and extensions available for download [61]. This desktop environment shares resemblance with Windows graphical user interface design.



*Figure 4: Cinnamon user interface on Linux Mint*

### **2.6.3 Comparison**

While both Windows 10 and Linux distributions possess terminal, it is much more utilized on Linux distributions. Furthermore, it is extremely rare for most modern Linux distributions and Windows 10 to have command that cannot be executed with use of graphical user interface. When GUI is considered, Linux distributions benefit from more choices of GUI software and their higher customisability.

## **2.7 The process of installation**

This chapter focuses and compares process of installation of Windows 10 and Linux distribution Linux Mint on my own personal computer. Its hardware attributes are as follows: Intel(R) Core(TM) i5-3350P CPU @ 3.1 GHz 3.10 GHz, 8 GB RAM, 64 bit.

### **2.7.1 The process of installation of Windows 10**

There are several possible ways to install Windows 10. As was mentioned previously In my thesis, during its original release and for a short period of time after, it was possible for those who owned Windows 7, 8 or 8.1 licenses to simply download installation files via Windows Update and install it. Nowadays, it is necessary to buy a license key, whether in local store or online and download installation files. It is possible to download either installation client for straightforward installation, or to create installation media on flash drive or DVD for installation on different device. It is also possible to download and install Windows 10 without applying license key,

although its use and features will be restricted.

In order to test the complexity of Windows 10 installation, I have installed it on personal computer. Firstly, I went to official Microsoft websites and downloaded the installer. After doing so, I chose to create installation media on my flash drive. Then I was asked to choose computer architecture, language and edition to install. Subsequently, I was asked to choose media which I was going to use. Then, the installation program downloaded and prepared itself onto the flash drive. Secondly, I was to install the operating system on my laptop. After entering BIOS and choosing to boot my flash drive from Boot menu, a Windows Setup window asked me to choose installation language, time and currency format as well as keyboard or mouse input method. After choosing, option to start setup appeared. This led to program asking for product key. Since it is possible to install this operating system and insert the product key later, I skipped this part. After that I carefully read the license terms which I agreed with. Consequently, I was given the option to either upgrade the operating system already installed and preserve data or install Windows 10 only, with possibility of deleting all previous data in the process. After choosing the latter, I was taken to drive management window. There I was given the option to choose where to install the operating system, as well as to divide the driver into sections. This then led to start of the process of installation. Following the installation process and choosing my settings, upgrades began to download. When the upgrading process was over, I could enter username and create password. Finally, after doing so, the installation process was finished and I could start working. The whole installation did not take longer than 15 minutes, excluding the time needed for downloading of installation files and upgrades.

### **2.7.2 The process of installation of Linux Mint 19.1**

There are several possible ways to install Linux Mint 19.1. Firstly, it is possible to update older versions of Linux Mint to Linux Mint 19.1. To begin with, the version installed has to be the latest of its version, which is in case of Linux Mint 19.1 version 18.3. It is then possible through upgrade manager and terminal to download 19.1 files. After that, it will be available to start simulation of the operating system, from which the installation can be started. Secondly, if being installed on device with different operating system, it is necessary to download installation files and create installation media. After that, the installation media has to be booted from BIOS so that the installation process can start.

In order to test the complexity of Linux Mint installation, I have installed Linux Mint 19.1 on personal computer. Firstly, I went to official Linux Mint websites and downloaded the installer. There I was given a choice between 3 different desktop environments: Cinnamon, MATE and XFCE together with computer architectures. After choosing Cinnamon and correct computer architecture, I was given several options of mirror sites, few of them being in the Czech Republic. The downloaded file then had to be either burned into a DVD, or into flash disk. Since I wanted to install the operating system from flash drive, I had to burn the file with program called Etcher. Secondly, I was to install the operating system on my laptop. After entering BIOS and choosing to boot my flash drive from Boot menu, I entered software Live media screen. There I was able to try the operating system or to install it. After choosing the latter by

clicking on Install Linux Mint icon, I was welcomed by an installation window. In it, after selecting language, keyboard layout, allowing installation of third party drivers, I was given option of installing the operating system alongside already installed operating system or to erase it and install only Linux Mint while also erasing all existing data, which I proceeded to choose. Finally, after choosing user settings like time zone, computer name or password, the installation started. After restarting the computer, I was able to start working. The whole installation did not take longer than 5 minutes, excluding the time needed for downloading and burning.

### **2.7.3 Comparison**

In case of both Windows 10 and Linux Mint, my experience was quite pleasant. Both operating system guided me through the process of installation and explained everything accordingly. Furthermore, both provided visually similar graphical user interface, further easing installation process. However, there were few small differences that put installation of Linux Mint in front of Windows 10 for me. Firstly, the whole process took about one third of the time Windows 10 installation needed. At first glance, one could say that this might have been caused by difference in size of installation files. However, Linux Mint official webpage recommends approximately 20 GB of hard disk space [62], whereas Microsoft official webpage recommends 32 GB of hard disk space [63]. This means, that while Linux Mints installation file is 2/3 size of Windows 10 installation file, it only needs 1/3 time of Windows 10 installation. Furthermore, Linux Mint, unlike Windows 10, allowed me to test freshly installed distribution out right after the installation before restarting computer. This way, I could say easily whether this distribution suits me or not.

## **3 REASONS FOR LOW ADOPTION**

This chapter focuses on reasons which lead to low adoption of Linux operating systems on personal computers. The reasons were chosen based on results of my public survey as well as of my personal believe.

### **3.1 Insufficient program and game support**

As will be pointed out in results of my public survey, some people pointed out insufficient support for games and programs. This topic has been addressed by this thesis. While it is true that many software and games does not work on Linux OS directly, there are possibilities such as compatibility layers or emulators that can make that possible. I believe, that cases of software incompatible even with these media become more unique.

### **3.2 Complexity of Linux**

As will be pointed out in results of my public survey, some people believe that Linux operating systems are more complex than operating systems. This appears to be partially true. Some Linux distributions, such as previously discussed Arch Linux, prove to be difficult to manually set up in order to start using it properly. On the other hand, other Linux distributions, such as previously mentioned Ubuntu or Linux Mint, are proven to be very easy to set up and use. Moreover, their graphical user interface can be optimized to resemble other operating system visually. In my personal opinion, I believe that people connect Linux with terminal without realising that use of terminal does not mean lack of graphical user interface.

### **3.3 Aggressive Microsoft marketing**

As will be pointed out in results of my public survey, some people stated that since they had operating system already installed, they did not need to find any other alternative. Despite the fact that Windows dominates computer market as a preinstalled operating system, according to nixCraft, companies that preinstall Linux OS on their merchandise exist. For example, Dell sells laptops suitable mainly for developers and businessmen who tend to travel a lot with Redhat Enterprise Linux or Ubuntu pre-installed [64].

## **4 PUBLIC SURVEY ON USE OF LINUX**

In order to get access to reliable data about use of Linux by general public, I decided to carry out a public survey on topic of Linux.

### **4.1 Goal of survey**

The goal of this survey was to find out, what is the public opinion on Linux operating system. The survey was held among random people, who decided to participate in the survey based on my shared poll on social media and various university social groups. The survey was to find out, what are participant's preferences of operating system, as well as their experience and knowledge with Linux operating system.

### **4.2 Tasks and questions of survey**

The main task of the survey stands as follows:  
What is public experience with Linux operating system?

This main task of the survey is then supplied by supplementing questions:

1. Do people possess knowledge of Linux operating system?
2. How many people use Linux operating system?
3. Why do people use Linux operating system?
4. Which Linux distributions are used the most?

### **4.3 Method of survey**

The goal of the survey was to acquire experience and knowledge of the general public. The survey focused on whether the Linux operating system is known, how much it is used, what is the opinion of people about it and what made them start using it. The survey was performed as a quantity type of research survey through use of poll to obtain public opinion on Linux operating system.

In order to collect data as a part of my bachelor thesis, I have decided to use online poll method of survey. Firstly, I chose the media through which I would spread the poll. I have chosen social media and social groups. I have obtained the data through use of online poll, which consisted of thirteen questions. The poll was made of open cloze and multiple choice questions. I have chosen this form of poll to get answers from diverse public and its execution is more likely to be answered. This poll was created by me and was completely anonymous.

## 4.4 Results of survey

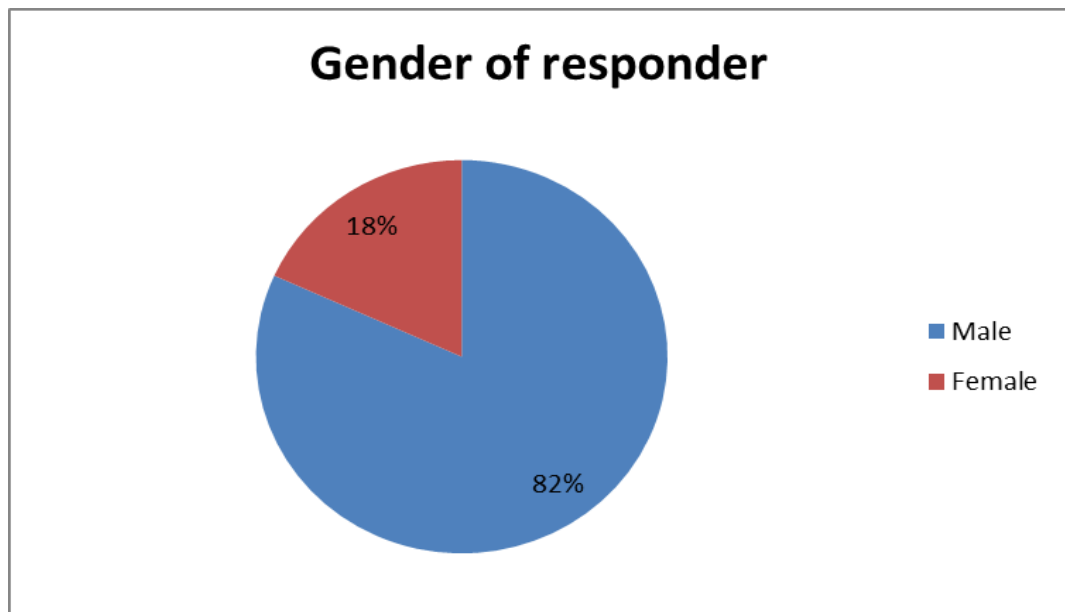
As of 21<sup>st</sup> of May, 170 people took part of the survey.

### Question one – Gender of responder

#### Chart one – Gender of responder

	Amount	%
Male	139	82%
Female	31	18%

#### Graph one – Gender of responder



It is clear from the graph that most of responders (82%) were male.

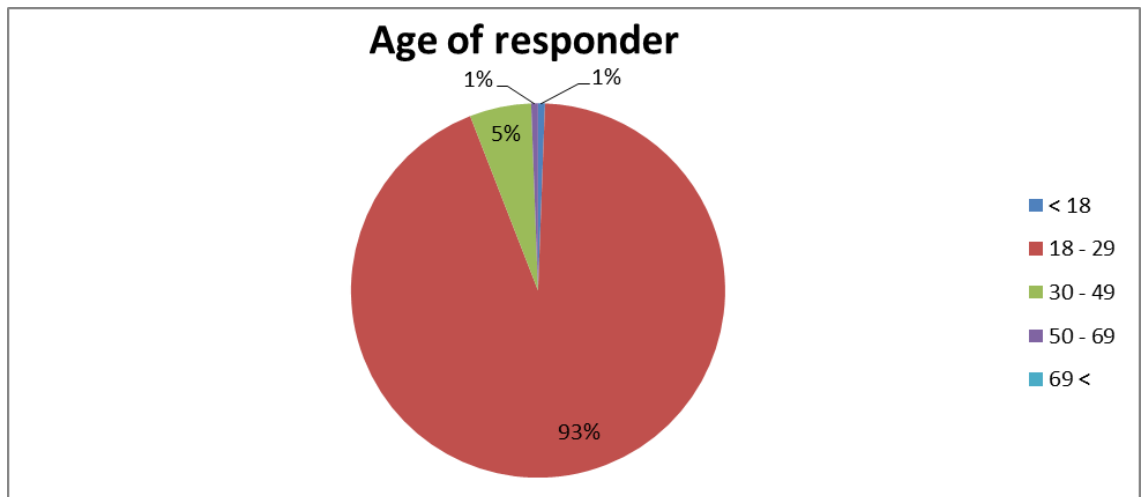


## Question two – Age of responder

### Chart two – Age of responder

	Amount	%
< 18	1	1%
18 - 29	159	93%
30 - 49	9	5%
50 - 69	1	1%
69 <	0	0%

### Graph two – Age of responder



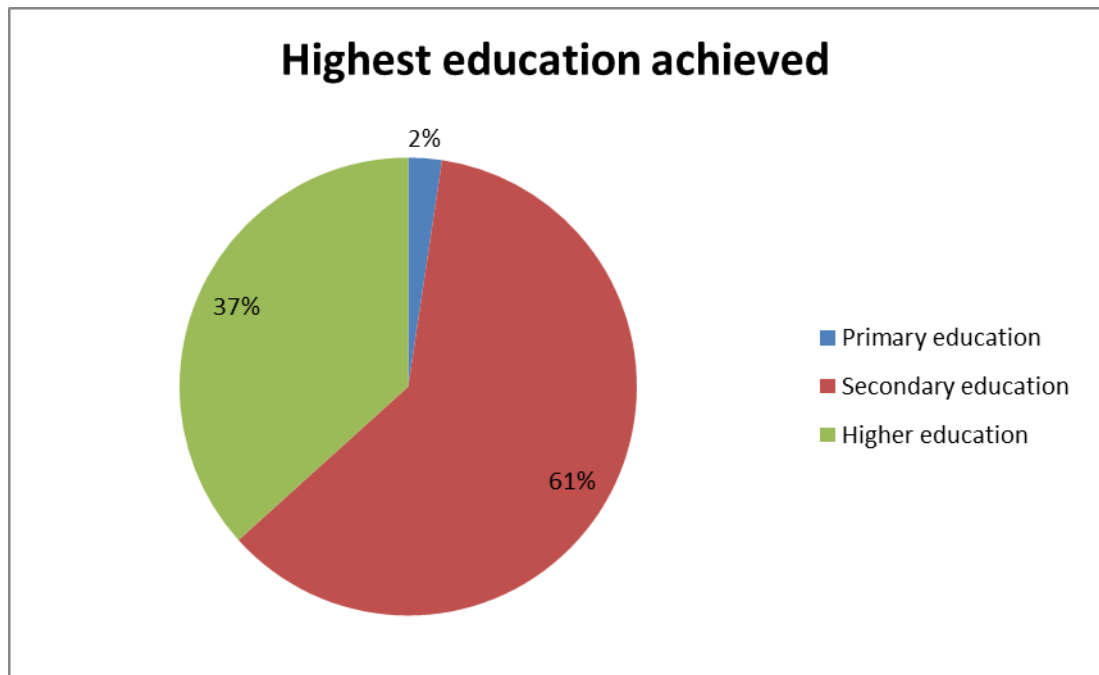
It is clear from the graph that most of responders (93%) were of the age span between 18 and 29 years. Following, responders of age span between 30 and 49 years were the second largest group (5%). Finally, only 1% of responders of age lower than 18 and 1% of responders between 50 and 69 years of age decided to take part of this survey.

### Question three – Highest education level achieved

Chart three – Highest education level achieved

	Amount	%
Primary education	4	2%
Secondary education	103	61%
Higher education	62	37%

Graph three – Highest education level achieved



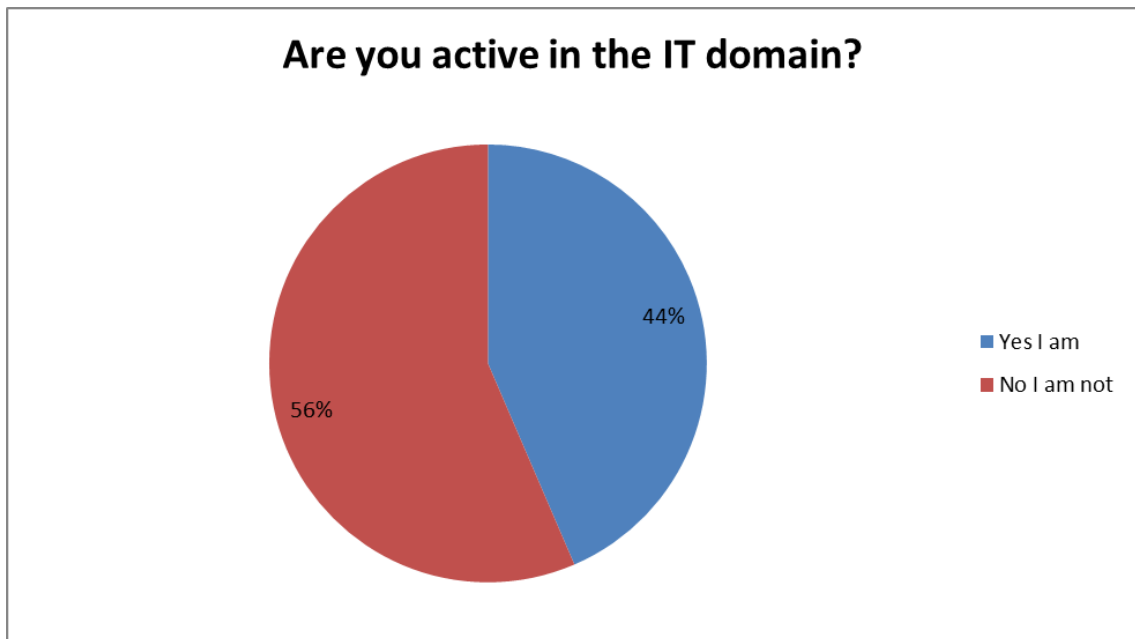
It is clear from the graph that most of the responders (61 %) have achieved secondary education, followed with responders who have achieved higher education (37 %). Finally, the smallest group of responders (2 %) has achieved Primary education.

**Question four – Are you active in the IT domain?**

**Chart four – Are you active in the IT domain?**

	Amount	%
Yes I am	74	44 %
No I am not	96	56 %

**Graph four – Are you active in the IT domain?**



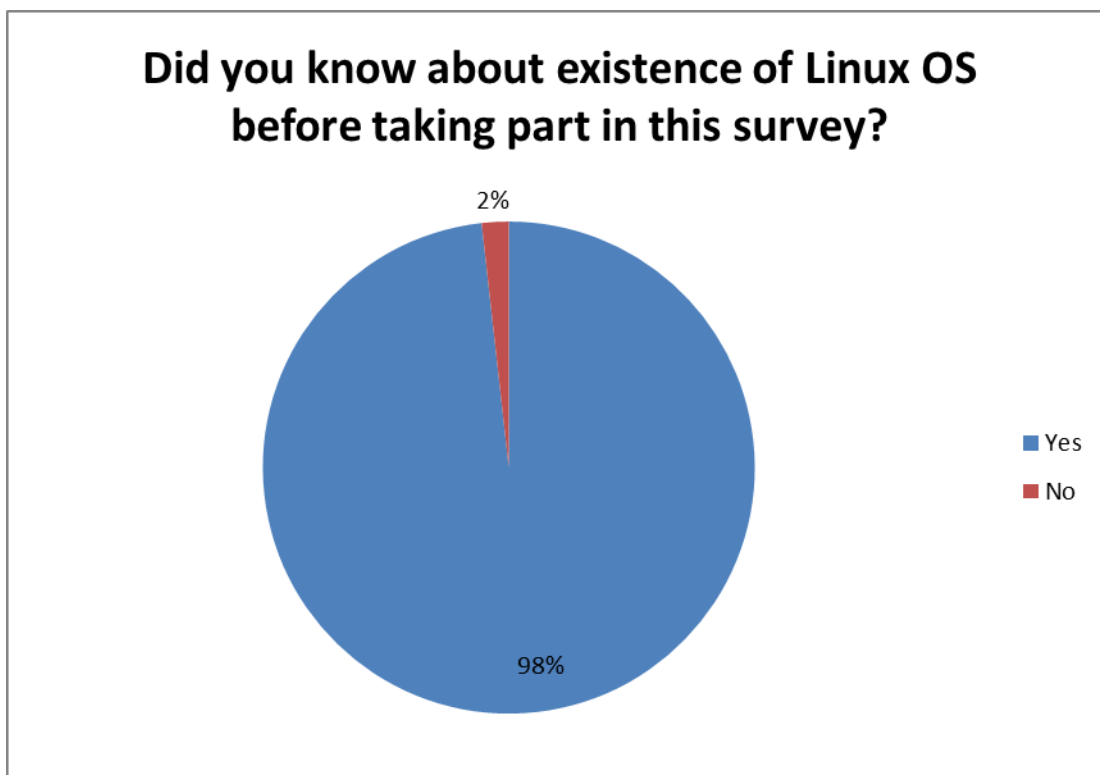
As seen in the graph, over the half of the responders (56%) stated, that they are not active in the IT domain.

**Question five – Did you know about existence of Linux OS before taking part in this survey?**

**Chart five – Did you know about existence of Linux OS before taking part in this survey?**

	Amount	%
Yes	167	98%
No	3	2%

**Graph five – Did you know about existence of Linux OS before taking part in this survey?**



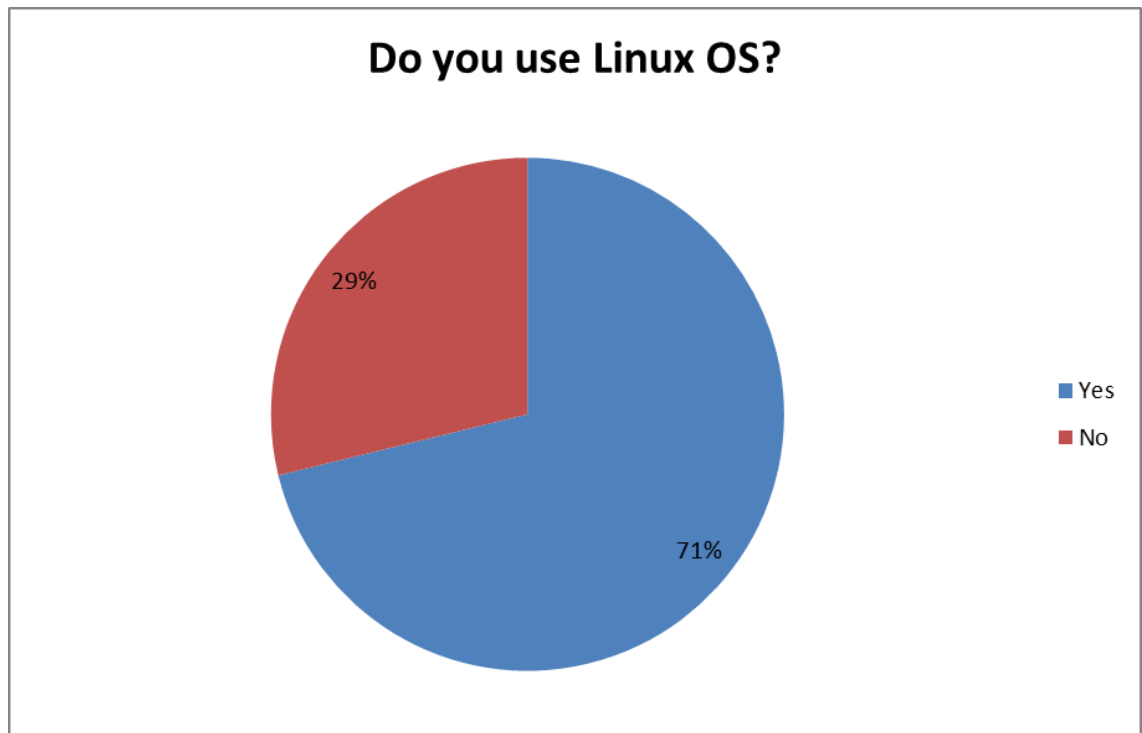
It is clear from the graph that majority of the responders (98%) knew about existence of Linux operating system before taking part in the survey.

**Question six – Do you use Linux operating system?**

**Chart six – Do you use Linux operating system?**

	Amount	%
Yes	121	71%
No	49	29%

**Graph six – Do you use Linux operating system?**



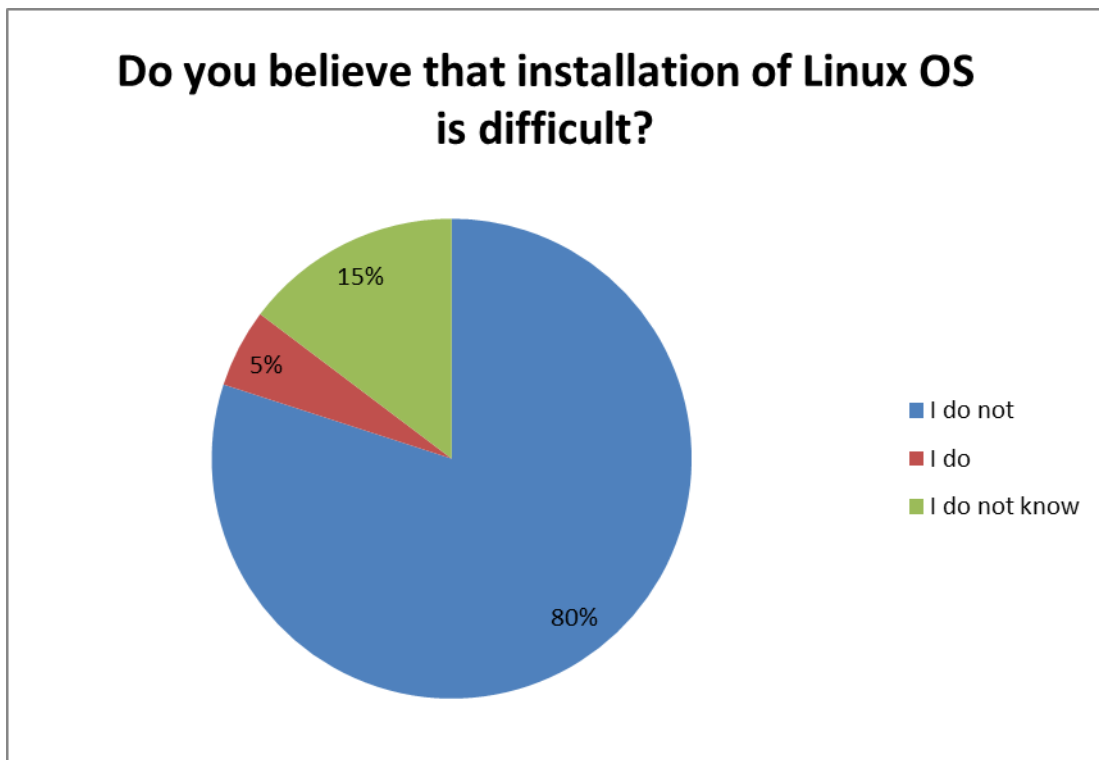
It is clear from the graph that most of the responders (71%) were users of Linux operating system.

**Question seven – Do you believe that installation of Linux OS is difficult?**

**Chart seven – Do you believe that installation of Linux OS is difficult?**

	Amount	%
No	136	80%
Yes	9	5%
I do not know	25	15%

**Graph seven – Do you believe that installation of Linux OS is difficult?**



As seen in the graph, it is safe to say that majority of responders (80%) did not find the installation of Linux operating system difficult. On the other hand, the minority of responders (5%) believed that installation of Linux operating system is difficult. Subsequently, small part of the responders (15%) had no experience with installation of Linux operating system.

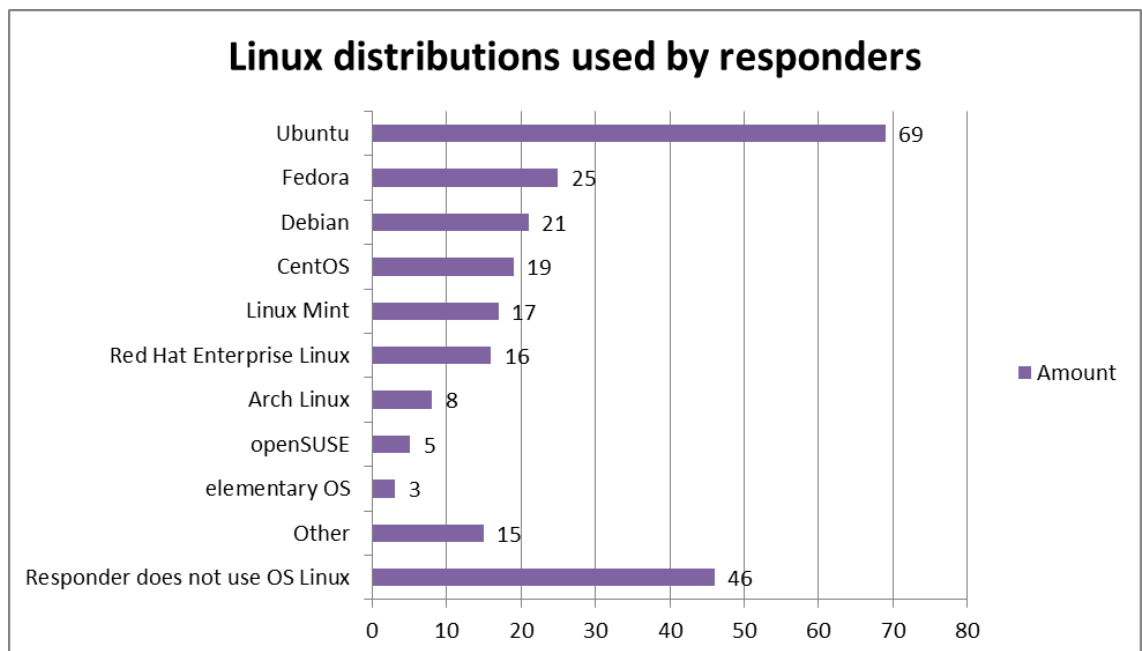
### Question eight – What Linux distribution do you use?

#### Chart eight – What Linux distribution do you use?

(Disclaimer: Responders were given the option to pick more than one distribution)

	Amount	%
Ubuntu	69	41%
Fedora	25	18%
Debian	21	13%
CentOS	19	11%
Linux Mint	17	10%
Red Hat Enterprise Linux	16	10%
Arch Linux	8	5%
openSUSE	5	3%
elementary OS	3	2%
Other	15	9%
Responders that do not use Linux OS	46	27%

#### Graph eight – What Linux distribution do you use?



It is clear, that among the responders Ubuntu distribution was the most popular distribution with 69 responders using it. Following, distribution Fedora was the second most used distribution with 25 responders using it. In terms of use, distributions Debian with 21 responders, CentOS with 19 responders, Linux Mint with 17 responders and

Red Hat Enterprise Linux with 16 responders categorised as more used distributions. Subsequently, distributions Arch Linux with 8 responders, openSUSE with 5 responders and elementary OS with 3 responders list as the least used distributions among responders. Finally, 15 individual responders also mentioned use of different Linux distribution.

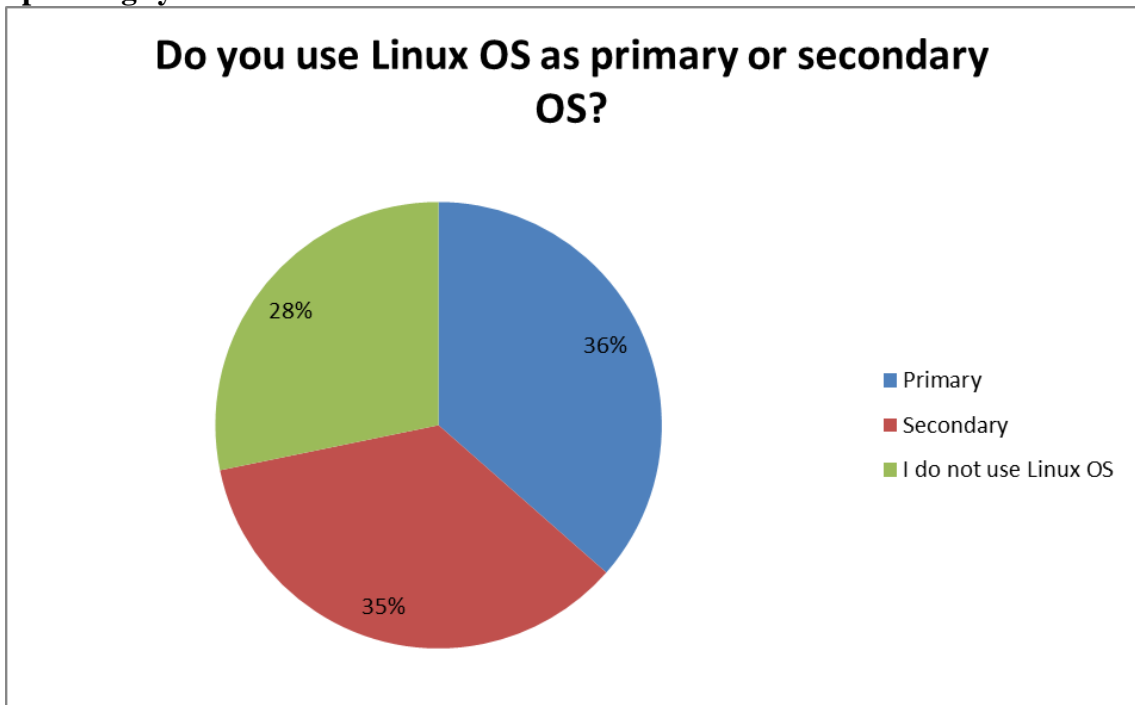


**Question nine – Do you use Linux operating system as primary or secondary operating system?**

**Chart nine – Do you use Linux operating system as primary or secondary operating system?**

	Amount	%
Primary	62	36 %
Secondary	60	35 %
I do not use Linux OS	48	28 %

**Graph nine – Do you use Linux operating system as primary or secondary operating system?**



As can be seen in the graph, about one third (36%) of responders use Linux as their primary operating system. Subsequently, almost another third (35%) of responders stated that they use Linux as their secondary operating system. Finally, the rest of responders (28%) stated that they do not use Linux operating system.

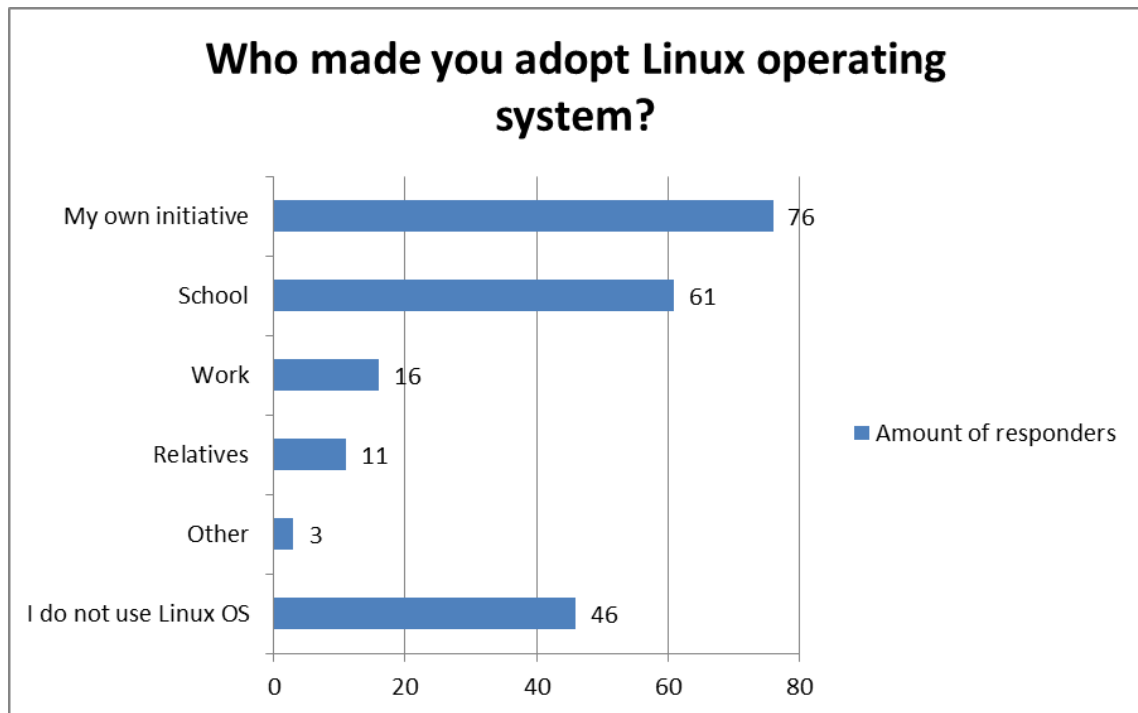
### Question ten – Who made you adopt Linux operating system?

#### Chart ten – Who made you adopt Linux operating system?

(Disclaimer: Responders were given the option to pick more than one option of who made them to adopt Linux operating system)

	Amount	%
My own initiative	76	45%
School	61	36%
Work	16	9%
Relatives	11	6%
Other	3	2%
I do not use Linux OS	46	27%

#### Graph ten – Who made you adopt Linux operating system?



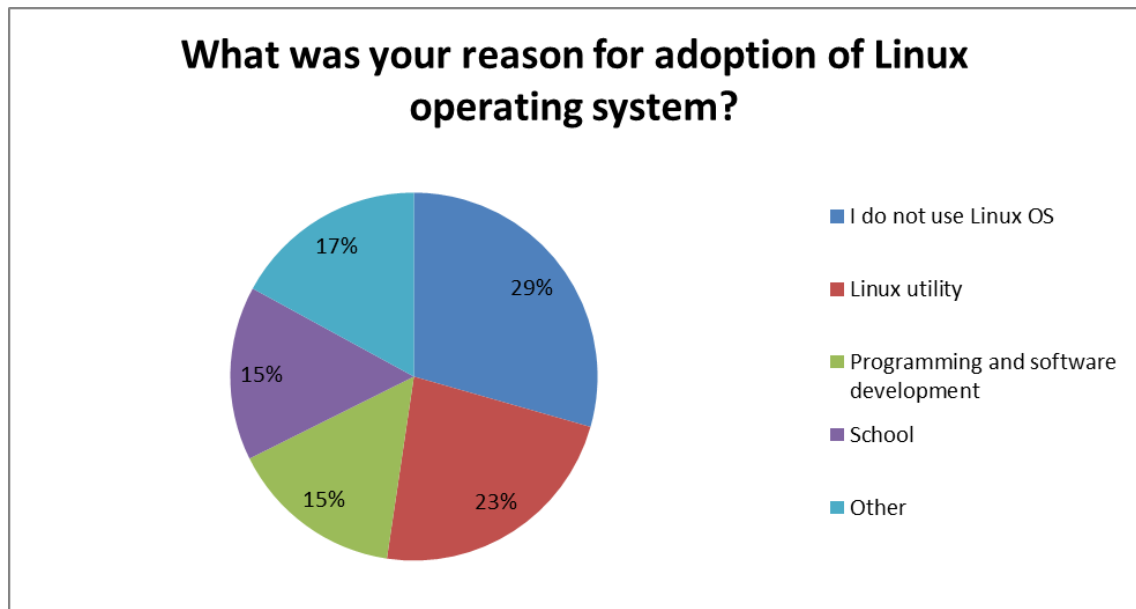
From the graph it can be read that 76 of responders decided to use Linux operating system on their own. Following, 61 responders chose to adapt Linux operating system because of school. Only 16 responders stated that they adopted Linux operating system because of work. Furthermore, only 11 responders chose to adopt Linux operating system under influence of relatives. 3 responders stated that their adoption of Linux operating system was influenced by other means. Finally, 46 responders answered that they do not use Linux operating system.

**Question eleven – What was your reason for adoption of Linux operating system?**

**Chart eleven – What was your reason for adoption of Linux operating system?**

	Amount	%
My own initiative	76	45%
School	61	36%
Work	16	9%
Relatives	11	6%
Other	3	2%
I do not use Linux OS	46	27%

**Graph eleven – What was your reason for adoption of Linux operating system?**



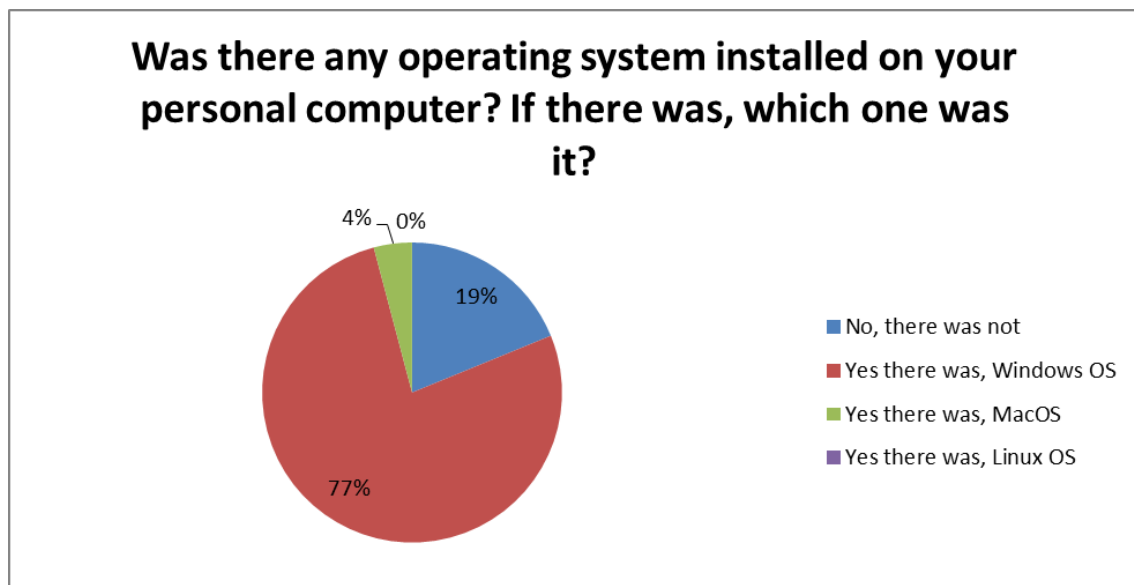
Responder’s answers were sorted into categories based on similarity. As shown in the graph, most of the responders who use Linux operating system (23%) decided to start using it due to its utility. Subsequently, same portion of responders (15%) decided to start using Linux operating software because of programming and software development, and as a result of school initiative. Furthermore, approximately same amount of responders (17%) stated various reasons that led to their adoption of Linux operating system, such as stability, weak performance hardware, safety or applications.

**Question twelve – Was there any operating system installed on your personal computer? If there was, which one was it?**

**Chart twelve – Was there any operating system installed on your personal computer? If there was, which one was it?**

	Amount	%
No, there was not	32	19%
Yes there was, Windows OS	131	77%
Yes there was, MacOS	7	4%
Yes there was, Linux OS	0	0%

**Graph twelve – Was there any operating system installed on your personal computer? If there was, which one was it?**



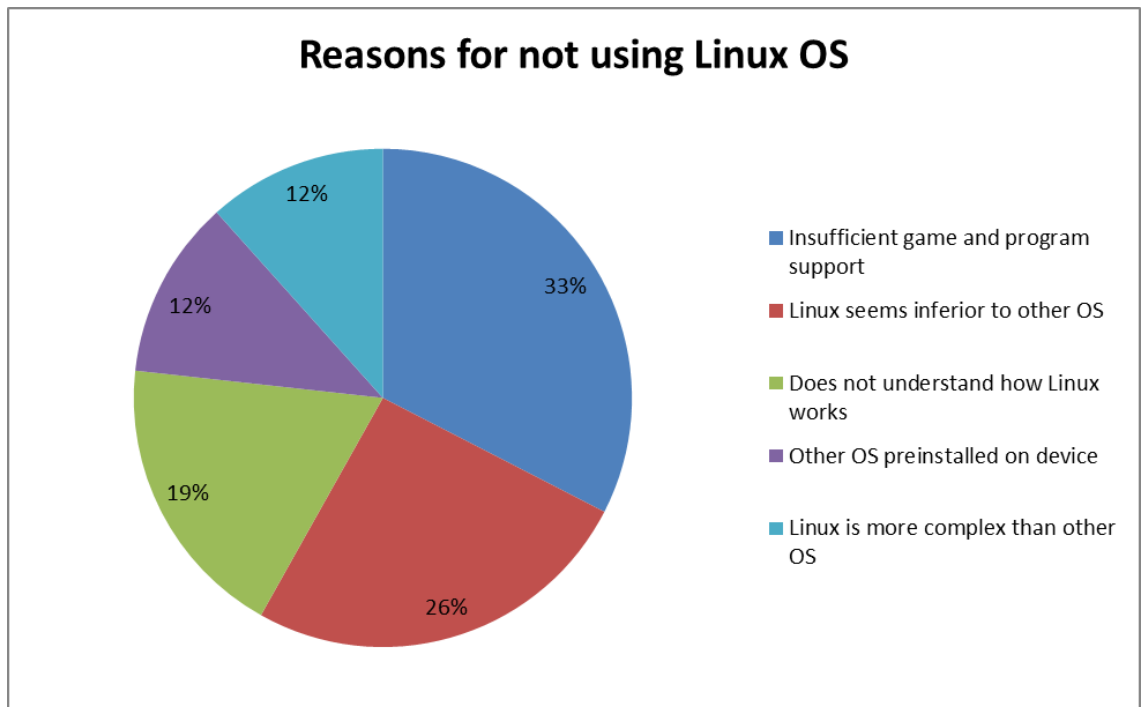
Majority of responders (77%) stated, that they had already Microsoft OS installed on their personal computer when it was bought. Subsequently, minority of responders (4%) had MacOS installed on their personal computer at the time of purchase. Furthermore, small part of responders (19%) answered, that they bought their personal computer without any operating system installed. Finally, not a single responder had Linux OS installed on their personal computer when bought.

**Question thirteen – If you do not use Linux operating system, briefly state why.**

**Chart thirteen – If you do not use Linux operating system, briefly state why.**

	Amount	%
Insufficient game and application support	14	33%
Linux seems inferior to other OS	11	26%
Does not understand how Linux works	8	19%
Other OS preinstalled on device	5	12%
Linux is more complex than other OS	5	12%

**Graph thirteen – If you do not use Linux operating system, state briefly why.**



Out of 170 responders, 43 gave their answer to why they do not use Linux operating system. Their answers were sorted into categories based on their statements. Most of those 43 responders (33%) stated that the reason why they did not adopt Linux operating system was its insufficient support for games and programs. Following, 26% of responders believed Linux operating system to be inferior in comparison with other operating systems. 19% of responders stated, that their reason for not adapting Linux operating system was their lack of understanding how Linux operating system works. 12% of responders answered, that due to the fact that they already had competitive

operating system installed, they had no need to install a new one. And finally, another 12% of responders found Linux operating system to be more complex than other operating systems on the market.

## 4.5 Conclusion of survey

The goal of this survey was to find out, what is the public knowledge and experience on Linux operating system. The survey was held among random people, who decided to participate in the survey based on my shared poll on social media and in social groups. The survey was done by use of online poll. Based on the answers, it can be stated that most of people in age between 18 and 29 are experienced and possess knowledge about Linux operating system. I consider the result of this poll as a partial success, since the public media I used to advertise my survey failed to attract people of different age span.

Questions in the survey managed to answer both main and supplementary questions. I have found out, whether people know about Linux operating system, how many people use Linux, what made them start using it and which Linux distributions are used the most.

I would personally like to point out answer number six, which came as a surprise to me. In this question, responders were asked, whether they do or do not use Linux operating system, to which 71% answered that they do. Even though I knew that the poll was done mainly by younger generations, I expected to receive answer between 10% and 20%. Furthermore, I was also surprised that 45% of responders chose to start using Linux on their own. Additionally, this has been even more surprising as amount of people who are active in IT domain and took part of this survey was quite low.

Furthermore, I would like to address question number eight. In this question, I asked responders on which Linux distribution they use. Most of responders stated, that they use distribution Ubuntu. Ubuntu, as mentioned in this thesis, is know for its user friendliness. Subsequently, it can be said that most of responders preffer to use Linux distributions, which are easy to use. This is further supported by the fact, that Linux Mint ranks among more used distributions among responders. Linux Mint, as stated in this thesis, belongs together with Ubuntu among the most user friendly distributions. This would essentially mean, that responders preffer distributions appropriate for people who are not technically interested and that these distributions exist. Arch Linux, which is described in this thesis, is used by only 8 responders. This would mean, that while people who preffer to set up and build their own operating system from start do exist, they are in a minority among general public.

## 5 CONCLUSION

This bachelor thesis focused on the low adoption of Linux operating system on desktop PC's.

In the theoretical part, I have compared Windows and Linux operating systems on the base of their recent history, latest versions of their operating software, quality and quantity of programs and applications they provide, their compatibility of computer games, security and stability, user interface, and the process of installation. In these comparisons, I tried to point out the most important differences between Windows and Linux operating systems, so that it can be clearly seen, which of them is superior in the topic at hand. Furthermore, I have discussed several reasons which might be the cause of low Linux adoption.

In the practical part, I have found out with use of survey research method the public knowledge and opinion on Linux operating system. I have succeeded to get answers to my main question as well as all sub questions. The survey research was done on online social media and social groups in form of poll survey. I believe this form to have been chosen accordingly due to the fact that anyone could participate in it, which better represents general public opinion. Furthermore, this approach managed to attract attention of many responders, which again gave better representation of general public opinion. However, I do not consider the survey to be complete success due to the fact that it failed to attract attention of people with diverse age categories. Despite the fact, the popularity Linux operating system has among responders of relatively young age promises better future of Linux adoption.

On base of information in literature, I have identified three reasons for low Linux adoption on desktop Pc's: insufficient program and game support, persistent vision of Linux as a complex operating system and aggressive Microsoft marketing strategy. These were further supported by results of my survey.



## LIST OF REFERENCES

- [1] Operating System Market Share. *NetMarketShare* [online]. [cit. 2019-05-25]. Available at: <https://netmarketshare.com/operating-system-market-share.aspx?options=%7B%22filter%22%3A%7B%22%24and%22%3A%5B%7B%22deviceType%22%3A%7B%22%24in%22%3A%5B%22Desktop%2Flaptop%22%5D%7D%7D%5D%7D%2C%22dateLabel%22%3A%22Trend%22%2C%22attributes%22%3A%22share%22%2C%22group%22%3A%22platform%22%2C%22sort%22%3A%7B%22share%22%3A-1%7D%2C%22id%22%3A%22platformsDesktop%22%2C%22dateInterval%22%3A%22Monthly%22%2C%22dateStart%22%3A%222018-05%22%2C%22dateEnd%22%3A%222019-04%22%2C%22segments%22%3A%22-1000%22%7D>
- [2] Microsoft Windows history. *Computer Hope* [online]. 2nd April, 2019 [cit. 2019-05-23]. Available at: <https://www.computerhope.com/history/windows.htm>
- [3] WARD, Keith. 5 Ways Windows 7 Beats Windows Vista: Windows 7 is faster, and has less bloat than its predecessor. *Lifewire* [online]. October 30, 2018 [cit. 2019-01-21]. Available at: <https://www.lifewire.com/ways-windows-7-beats-windows-vista-3507044>
- [4] FOLEY, Mary. Microsoft: More than 200 million Windows 8 licenses sold: Microsoft has surpassed the 200 million licenses sold milestone with Windows 8, according to Vice President of Marketing Tami Reller. *ZDNet* [online]. 13th February, 2019 [cit. 2019-05-23]. Available at: <https://www.zdnet.com/article/microsoft-more-than-200-million-windows-8-licenses-sold/>
- [5] NEDELCO, John. Windows 7 vs. Windows 8: Comparison: Old Meets New. *Windows Report* [online]. May 16, 2018 [cit. 2019-01-21]. Available at: <https://windowsreport.com/windows-7-vs-windows-8/>
- [6] JUELL, Kathleen. Operating System Market Share. *DigitalOcean* [online]. 27th October, 2017 [cit. 2019-05-25]. Available at: <https://www.digitalocean.com/community/tutorials/brief-history-of-linux>
- [7] GUIVER, Chris. Releases: List of releases. *Ubuntu wiki* [online]. 18th May, 2019 [cit. 2019-05-23]. Available at: <https://wiki.ubuntu.com/Releases>
- [8] CONGLETON, Nick. What Is Ubuntu? The Past and Present of the Ubuntu Linux Distro. *Make Tech Easier* [online]. December 31, 2018 [cit. 2019-01-21]. Available at: <https://www.maketecheasier.com/what-is-ubuntu/>
- [9] DAWSON, Christopher. Ubuntu a minor player? Not outside the States. *ZDNet* [online]. June 17, 2009 [cit. 2019-05-16]. Available at: <https://www.zdnet.com/article/ubuntu-a-minor-player-not-outside-the-states/>
- [10] EMMANOULOPOULOU, Alexia. Infographic: How many people use Ubuntu?. *Ubuntu blog* [online]. April 7, 2016 [cit. 2019-05-16]. Available at: <https://blog.ubuntu.com/2016/04/07/ubuntu-is-everywhere>
- [11] PROPHET, Tony. Introducing Windows 10 Editions. *Windows blog* [online]. 13 May, 2015 [cit. 2019-05-16]. Available at: <https://blogs.windows.com/windowsexperience/2015/05/13/introducing-windows-10-editions/>

- [12] Compare Windows 10 editions. *Microsoft* [online]. [cit. 2019-05-16].  
Available at: <https://www.microsoft.com/en-us/windows/compare>
- [13] Windows 10 available as a free upgrade on July 29. *Windows News Center* [online]. 1 June, 2015 [cit. 2019-05-16].  
Available at: <https://news.microsoft.com/2015/06/01/windows-10-available-as-a-free-upgrade-on-july-29/>
- [14] ROUSE, Margaret. Linux distros (Linux distribution). *TechTarget* [online]. April, 2017 [cit.2018-11-20].  
Available at: <https://searchdatacenter.techtarget.com/definition/Linux-distros-Linux-distribution>
- [15] Ubuntu. *DistroWatch* [online]. November 24, 2018 [cit. 2018-11-20].  
Available at: <https://distrowatch.com/table.php?distribution=ubuntu>
- [16] Debian is the rock on which Ubuntu is built. *Ubuntu* [online]. 2019 [cit. 2019-05-23].  
Available at: <https://www.ubuntu.com/community/debian>
- [17] ROUSE, Margaret. Linux Mint. *TechTarget* [online]. June, 2015 [cit. 2019-01-21].  
Available at: <https://whatis.techtarget.com/definition/Linux-Mint>
- [18] Arch Linux. *archlinux* [online]. 23 November, 2018 [cit. 2019-01-21].  
Available at: [https://wiki.archlinux.org/index.php/Arch\\_Linux](https://wiki.archlinux.org/index.php/Arch_Linux)
- [19] The best Windows ever. *Microsoft* [online]. [cit. 2019-05-16].  
Available at: [https://www.microsoft.com/en-us/store/b/windows?icid=Homepage\\_LeftNav\\_05\\_Windows\\_en\\_US&activetab=tab:shopwindows10](https://www.microsoft.com/en-us/store/b/windows?icid=Homepage_LeftNav_05_Windows_en_US&activetab=tab:shopwindows10)
- [20] Back up and restore your files. *Microsoft* [online]. 30 November 2017 [cit. 2018-12-02].  
Available at: <https://support.microsoft.com/en-gb/help/17143/windows-10-back-up-your-files>
- [21] Get the most from Office with Office 365. *Microsoft* [online]. [cit. 2019-05-20].  
Available at: [https://products.office.com/en-US/compare-all-microsoft-office-products-b?&OCID=AID737190\\_SEM\\_JMeJhpOo&MarinID=sJMeJhpOo%7c250561049506%7c%2bmicrosoft+%2boffice%7cb%7cc%7c%7c54456346747%7caud-312771920869%3akwd-1309826907&lnkd=Google\\_O365SMB\\_NI&gclid=Cj0KCQjwoInnBRDDARIsANBVyAQVhRIbtlPDiuXXTFbvDRh1vrNhhDGfImMMuFVz2h3HBFSRfVp\\_bOMaAiDhEALw\\_wcB&activetab=tab:primaryr1](https://products.office.com/en-US/compare-all-microsoft-office-products-b?&OCID=AID737190_SEM_JMeJhpOo&MarinID=sJMeJhpOo%7c250561049506%7c%2bmicrosoft+%2boffice%7cb%7cc%7c%7c54456346747%7caud-312771920869%3akwd-1309826907&lnkd=Google_O365SMB_NI&gclid=Cj0KCQjwoInnBRDDARIsANBVyAQVhRIbtlPDiuXXTFbvDRh1vrNhhDGfImMMuFVz2h3HBFSRfVp_bOMaAiDhEALw_wcB&activetab=tab:primaryr1)
- [22] Dictate-Speech Recognition for Microsoft Office. *Dictate* [online]. [cit. 2019-05-17].  
Available at: <https://dictate.ms/>
- [23] CRIDER, Michael. What Is a .DOCX File, and How Is It Different from a .DOC File in Microsoft Word?. *How-To-Geek* [online]. 2nd May 2017 [cit. 2019-05-23].  
Available at: <https://www.howtogeek.com/304622/what-is-a-.docx-file-and-how-is-it-different-from-a-.doc-file-in-microsoft-word/>
- [24] Microsoft Photos. *Microsoft* [online]. 10 October 2014 [cit. 2018-12-02].  
Available at: <https://www.microsoft.com/en-us/p/microsoft-photos/9wzdncrfjbh4?activetab=pivot:overviewtab>
- [25] BARLOW, Graham. How Cortana will change the way you use Windows 10. *TechRadar* [online]. August 1, 2015 [cit. 2018-11-20].  
Available at: <https://www.techradar.com/news/software/operating-systems/how-cortana-will-change-the-way-you-use-windows-1299774>

- [26] Microsoft User Experience Virtualization (UE-V) 2.x. *Microsoft* [online]. April 19, 2017 [cit. 2018-11-20]. Available at: <https://docs.microsoft.com/en-us/microsoft-desktop-optimization-pack/uev-v2/>
- [27] KLEIN, Matt. What is Direct X 12 and Why is it Important?. *How-To Geek* [online]. June 30, 2015 [cit. 2018-11-20]. Available at: <https://www.howtogeek.com/221115/what-is-direct-x-12-and-why-is-it-important/>
- [28] What's New in BitLocker. *Microsoft* [online]. August 31, 2016 [cit. 2018-11-20]. Available at: [https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-R2-and-2012/dn306081\(v=ws.11\)](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-R2-and-2012/dn306081(v=ws.11))
- [29] Windows Defender Advanced Threat Protection. *Microsoft* [online]. November 7, 2018 [cit. 2018-11-20]. Available at: <https://docs.microsoft.com/en-us/windows/security/threat-protection/windows-defender-atp/windows-defender-advanced-threat-protection>
- [30] The most secure Windows yet – and built to stay that way. *Microsoft* [online]. [cit. 2019-05-20]. Available at: <https://www.microsoft.com/en-GB/windows/comprehensive-security>
- [31] ROUSE, Margaret. Photoshop. *TechTarget* [online]. September, 2015 [cit. 2019-05-17]. Available at: <https://whatis.techtarget.com/definition/Photoshop>
- [32] Autocad: What's new in AutoCAD 2020. *Autodesk* [online]. 2019 [cit. 2019-05-17]. Available at: <https://www.autodesk.com/products/autocad/features>
- [33] What is Bacula?. *Bacula* [online]. [cit. 2018-12-02]. Available at: <https://blog.bacula.org/what-is-bacula/>
- [34] What is LibreOffice?. *LibreOffice* [online]. [cit. 2019-05-20]. Available at: <https://www.libreoffice.org/discover/libreoffice/>
- [35] About OpenShot. *OpenShot* [online]. [cit. 2018-12-02]. Available at: <https://www.openshot.org/about/>
- [36] About Wine. *WineHQ* [online]. [cit. 2018-12-02]. Available at: <https://www.winehq.org/about>
- [37] BROZ, Milan. *Dmccrypt*. *GitLab* [online]. 1 April 2018 [cit. 2018-12-02]. Available at: <https://gitlab.com/cryptsetup/cryptsetup/wikis/DMCCrypt>
- [38] About. *ClamAV* [online]. [cit. 2018-12-12]. Available at: <https://www.clamav.net/about>
- [39] About GIMP. *GIMP - GNU Image Manipulation Program* [online]. [cit. 2018-12-02]. Available at: <https://www.gimp.org/about/introduction.html>
- [40] Office 365 Education. *Microsoft* [online]. 2nd May 2017 [cit. 2019-05-23]. Available at: <https://www.microsoft.com/en-us/education/products/office/default.aspx>
- [41] HASAN, Mehedi. Best Linux Antivirus: Top 10 Reviewed and Compared. *UbuntuPIT* [online]. [cit. 2019-05-23]. Available at: <https://www.ubuntupit.com/best-linux-antivirus-top-10-reviewed-compared/>
- [42] Pricing and Licensing. *MathWorks* [online]. [cit. 2019-05-23]. Available at: [https://uk.mathworks.com/pricing-licensing.html?s\\_iid=hp\\_ff\\_t\\_pricing](https://uk.mathworks.com/pricing-licensing.html?s_iid=hp_ff_t_pricing)
- [43] OVERMARS, Mark. A Brief History of Computer Games. *Stichting SP&L* [online]. 30th January, 2012 [cit. 2019-05-24]. Available at: [https://www.stichtingspel.org/sites/default/files/history\\_of\\_games.pdf](https://www.stichtingspel.org/sites/default/files/history_of_games.pdf)

- [44] RIVENES, Logan. The History of Online Gaming. *Datapath* [online]. 17th January, 2017 [cit. 2019-05-24].  
Available at: <https://datapath.io/resources/blog/the-history-of-online-gaming/>
- [45] JOHNSON, Michael. DOOM. *Linux Journal* [online]. 1st December, 1994 [cit. 2019-05-24]. Available at: <https://www.linuxjournal.com/article/1>
- [46] POWELL, Dennis. Loki: A promising plan gone terribly wrong. *Linux and Main* [online]. 18th April, 2002 [cit. 2019-05-24].  
Available at: <https://archive.is/1oHCR>
- [47] SMITH, Tony. Loki game for Linux. *The Register* [online]. 18th May, 1999 [cit. 2019-05-24]. Available at: [https://www.theregister.co.uk/1999/05/18/loki\\_game\\_for\\_linux/](https://www.theregister.co.uk/1999/05/18/loki_game_for_linux/)
- [48] Steam'd Penguins. *Linux: Valve* [online]. 16th July, 2012 [cit. 2019-05-24]. Available at: <http://blogs.valvesoftware.com/linux/steamd-penguins/>
- [49] ORLAND, Kyle. The state of Linux gaming in the SteamOS era: After 14 months in beta, where does Valve's new platform push stand?. *Ars Technica* [online]. 26th February, 2015 [cit. 2019-05-24].  
Available at: <https://arstechnica.com/gaming/2015/02/the-state-of-linux-gaming-in-the-steamos-era/>
- [50] MACY, Seth. What is Vulkan and what does it mean for the future of gaming?: The next generation universal gaming platform. *TechRadar* [online]. 15th June, 2016 [cit. 2019-05-24]. Available at: <https://www.techradar.com/how-to/gaming/what-is-amd-vulkan-and-what-does-it-mean-for-the-future-of-gaming-1323469>
- [51] With Proton and Steam Play, many Windows games now work on Linux!. *ProtonDB* [online]. [cit. 2019-05-24].  
Available at: <https://www.protondb.com/>
- [52] WALLEN, Jack. 5 fundamental differences between Windows 10 and Linux. *TechRepublic* [online]. September 20, 2017 [cit. 2018-12-09].  
Available at: <https://www.techrepublic.com/article/5-fundamental-differences-between-windows-10-and-linux/>
- [53] SYNEK, Greg. Microsoft admits non-insiders are beta testing Windows updates. *TechSpot* [online]. 13th December, 2018 [cit. 2019-05-24].  
Available at: <https://www.techspot.com/news/77846-microsoft-admits-non-insiders-beta-testing-windows-updates.html>
- [54] PAUL, Ian. A lawsuit over an unwanted Windows 10 upgrade just cost Microsoft \$10,000: Microsoft recently paid a (very small) price for its Windows 10 upgrade tactics, and that was before they became increasingly aggressive. [online]. June 27, 2016 [cit. 2019-01-23].  
Available at: <https://www.pcworld.com/article/3088755/windows/a-lawsuit-over-an-unwanted-windows-10-upgrade-just-cost-microsoft-10000.html>
- [55] HOFFMAN, Chris. Microsoft Explains Why Windows 10's October 2018 Update Was Deleting People's Files. *How-To Geek* [online]. October 9, 2018 [cit. 2019-01-23].  
Available at: <https://www.howtogeek.com/fyi/microsoft-explains-why-windows-10s-october-2018-update-was-deleting-peoples-files/>
- [56] NOYES, Katherine. Why Linux Is More Secure Than Windows. *PCWorld* [online]. 3rd August, 2010 [cit. 2019-05-24].  
Available at: [https://www.pcworld.com/article/202452/why\\_linux\\_is\\_more\\_secure\\_than\\_windows.html](https://www.pcworld.com/article/202452/why_linux_is_more_secure_than_windows.html)

- [57] HASAN, Mehedi. Most Stable Linux Distros: 5 versions of Linux We Recommend. *UbuntuPIT* [online]. [cit. 2019-05-24].  
Available at: <https://www.ubuntupit.com/stable-linux-distros-5-versions-linux-recommend/>
- [58] WARREN, Tom. A closer look at Windows 10: A better Windows 7 is on the way. *The Verge* [online]. 30th September, 2014 [cit. 2019-05-24].  
Available at: <https://www.theverge.com/2014/9/30/6874549/windows-10-preview-screenshots-features>
- [59] HOFFMAN, Chris. Beginner Linux Users: Don't Be Scared of the Terminal. *How-To Geek* [online]. 23rd September, 2016 [cit. 2019-05-24].  
Available at: <https://www.howtogeek.com/138675/htg-explains-why-you-shouldnt-be-scared-of-the-terminal-on-linux/>
- [60] *Features/Gnome3* [online]. April 5, 2011 [cit. 2019-01-23].  
Available at: <https://fedoraproject.org/wiki/Features/Gnome3>
- [61] BOTH, David. 10 reasons to use Cinnamon as your Linux desktop environment: Cinnamon is a Linux desktop environment reminiscent of GNOME 2 that offers flexibility, speed, and a slew of features. *Opensource* [online]. January 18, 2017 [cit. 2019-01-23].  
Available at: <https://opensource.com/article/17/1/cinnamon-desktop-environment>
- [62] Linux Mint 19.1 "TESSA" Cinnamon, Mate a Xfce. *Linux Mint CZ&SK* [online]. [cit. 2019-05-23].  
Available at: <https://www.linux-mint-czech.cz/2018/12/linux-mint-19-1-tessa-cinnamon-mate-a-xfce/>
- [63] How to Find Windows 10 Computer Specifications & Systems Requirements. *Microsoft* [online]. [cit. 2019-05-23].  
Available at: <https://www.microsoft.com/en-gb/windows/windows-10-specifications#primaryR2>
- [64] GITE, Vivek. 16 Places To Buy A Laptop With Linux Preloaded. *NixCraft* [online]. 12th February, 2019 [cit. 2019-05-24].  
Available at: <https://www.cyberciti.biz/hardware/laptop-computers-with-linux-installed-or-preloaded/>

## LIST OF FIGURES, REFFERENCES

- [1] NEDELUCU, John. Windows 7 vs Windows 8.1. In: Windows Report [online]. 16th May, 2018 [cit. 2019-05-26].  
Avaiable at: <https://windowsreport.com/windows-7-vs-windows-8/>
- [2] MOLNÁR, Jiří. Windows 10 Tech Preview Start Menu. In: Diit [online]. 1st October, 2014 [cit. 2019-05-26].  
Avaiable at: <https://diit.cz/clanek/windows-9-je-nakonec-windows-10-testovaci-verze-bude-k-dispozici-jiz-dnes>
- [3] Activities overview. In: GNOME [online]. [cit. 2019-05-26].  
Avaiable at: <https://www.gnome.org/gnome-3/>
- [4] Cinnamon 19.1. In: Linux Mint CZ&SK [online]. 19.12.2018 [cit. 2019-05-26].  
Avaiable at: <https://www.linux-mint-czech.cz/2018/12/linux-mint-19-1-tessa-cinnamon-mate-a-xfce-beta/>

# LIST OF ABBREVIATIONS

PC	Personal computer
DVD	Digital Video Disc
MP3	Moving Picture Experts Group Layer-3 Audio
OS	Operating system
GNU	GNU's Not Unix!
GNOME GNU	Network Object Model Environment
USD	United States dollar
CZK	Czech koruna
MS	Microsoft
GPU	Graphics Processing Unit
GUI	Graphical user interface
ODF	Open Document Format
API	Application Program Interface
POSIX	The Portable Operating System Interface
RAID	Redundant array of independent disks
GIMP	GNU Image Manipulation Program
BIOS	Basic input/output system
GB	Gigabyte
IT	Information Technology

# APPENDIX

The online poll can be found on following web address:

<https://docs.google.com/forms/d/e/1FAIpQLSdoWxv-0MQM2wyR9ESQUhNoiNQh9fmZ5dWk3cjgxU4EZZGSww/viewform>

This is a print screen of the online survey poll:

The screenshot shows a Google Form with the following content:

## Používání operačního systému Linux

Dotazník k bakalářské práci ohledně rozšíření a používání operačního systému Linux

**\*Povinné pole**

**Pohlaví \***

- Muž
- Žena

**Věk \***

- < 18
- 18 - 29
- 30 - 49
- 50 - 69
- 70 <



Nejvyšší dosažené vzdělání



\*

- Bez vzdělání
- Základní vzdělání
- Střední vzdělání
- Vyšší odborné vzdělání
- Vysokoškolské vzdělání

Pohybujete se aktivně v IT sféře?

\*

- Ano
- Ne

Věděli jste o existenci OS Linux před tím, než jste se rozhodli vyplnit tento dotazník?

\*

- Ano
- Ne

Používáte operační systém Linux?

\*

- Ano
- Ne

Myslíte si že instalace OS Linux je moc náročná?

\*

- Ano
- Ne
- Nevím

Jakou distribuci Linuxu používáte? \*

- Nepoužívám OS Linux
- Elementary OS
- Linux Mint
- Arch Linux
- Ubuntu
- Tails
- openSUSE
- RedHat
- Debian
- CentOS
- Jiná...

Používáte OS Linux jako primární nebo sekundární operační systém? \*

- Primární
- Sekundární
- OS Linux nepoužívám

Kdo inicializoval váš přechod na OS Linux? \*

- OS Linux nepoužívám
- Škola
- Práce
- Vlastní iniciativa
- Příbuzní
- Jiná...

Co byl váš důvod pro váš přechod na OS Linux? \*

- Nepoužívám OS Linux.
- Jiná...

Byl na vámi zakoupeném PC již nainstalovaný operační systém? Pokud ano, jaký? \*

- Ne
- Ano - Microsoft Windows
- Ano - MacOS
- Ano - Linux

Pokud OS Linux nepoužíváte, stručně uveďte proč

Text stručné odpovědi