



BAHIRDAR UNIVERSITY

Department of Software Engineering

Operating System and System Programming

Individual Assignment

“ZORIN OS Installation Steps”

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1. Introduction

Zorin OS is an operating system which is developed on an open sources base system called Linux. It was first released by a group of OS developers called Zorin group in 2009. It was made for users who want to switch to Linux OS from windows and Mac OS. Due to its windows-like features it wasn't difficult for people to adapt it. The OS doesn't only have good-looking appearance but also is fast and smooth and runs perfectly on old and slow computers.

Another pro of the OS is that it is safe and protects individual privacy, since it doesn't collect any personal information from the user like other operating systems like windows do. Also, the system is less susceptible to viruses and it doesn't require license to use, this makes it good choice for students, families, schools or other small organizations.

Zorin OS is a bridge between the Windows OS and Linux. User who were a windows user doesn't find it difficult or complex to get used to it. It helps users take their first steps into Linux with confidence. Whether it is for school, work, or just to explore, Zorin OS makes computing feel friendly again.

2. Objectives

The main objective of this project is that to gain the necessary knowledge and skill about Zorin OS which is a Linux based operating system. The documentation gives the necessary information about the OS and shows the installation procedures, problems encountered during installation and the solution that helped fix it.

The documentation also provides the different types of file systems that Zorin OS supports like ext4, NTFS and others. It is worth knowing such kinds of information as it becomes very helpful to manage files in a better way, for example if some one needs to transfer data between different systems like windows and Linux the knowledge of the file systems is crucial for a successful operation.

Finally, the document reviews the good and bad sides of using the operating system and the ways in which it becomes better in the future. So, using this documentation one can get basic clue about the world of Linux operating system specially the Zorin operating system.

3. Requirements

Before beginning installation of any operating system or software it is necessary to check the hardware and software requirements of the OS. Even though Zorin OS supports even older computers, it still needs basic requirements from the computer. And we can classify it as hardware and software.

a. Software

The basic software requirements include:

- **Zorin OS ISO file**
- **OS image flasher** (E.g. Rufus, Balena Etcher...)
- **Virtual Box**

The iso file is a must to undergo the installation process, OS image flasher software might not be necessary if we want to install it on a virtual environment.

b. Hardware

To run the OS smoothly hardware requirements, include:

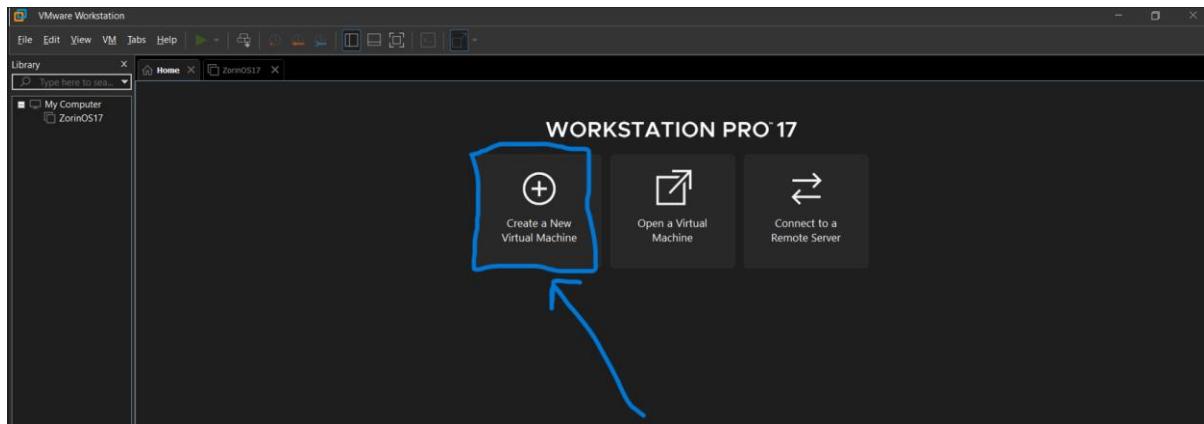
- A processor: At least **1 GHz Dual Core**
- Memory (RAM): **2 GB or more** (4 GB is better).
- Disk space: **15 GB minimum**.
- **A USB flash drive** (8 GB or more) for installation.
- An internet connection for updates and software.

4. Installation steps

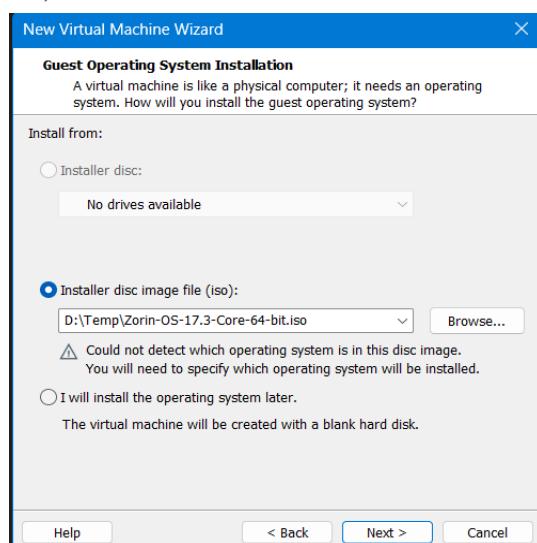
After making sure that our computer is eligible for the installation we will proceed to that installation step, I have installed the operating system on VMware Workstation virtual environment the basic steps that I have followed are listed below.

Step-by-Step Procedures

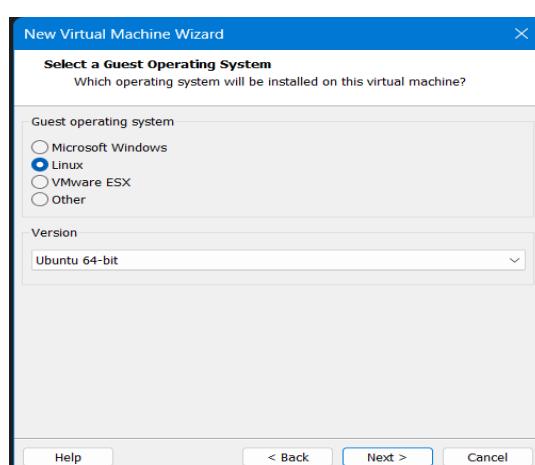
1. Download the iso file from the official page (<https://zorin.com/os/download/>).
2. Download VMware workstation from (<https://vmware-player.en.uptodown.com/windows>).
3. Install the VMware workstation from the downloaded setup file.
4. Open the VMware workstation software.
5. Click on the button marked below.



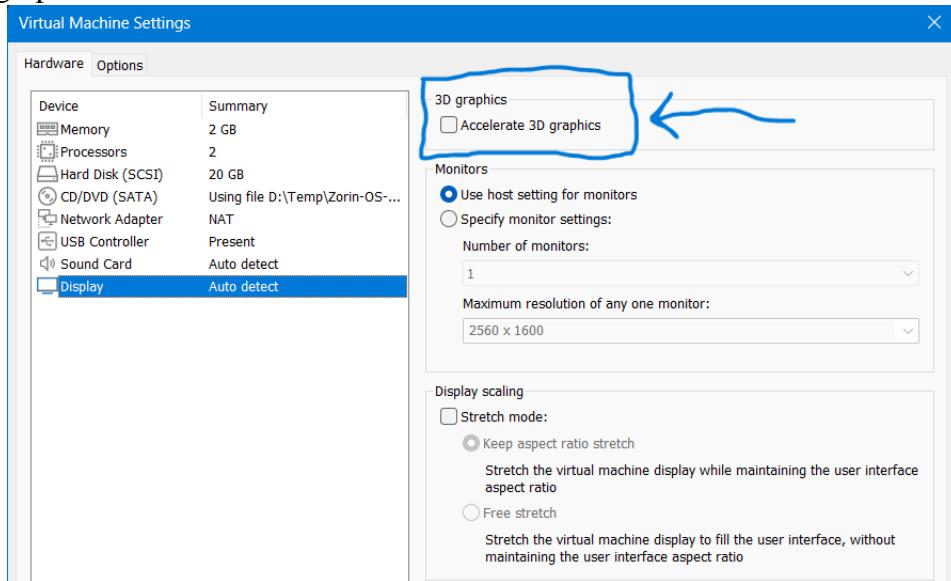
6. Click on next
7. Select the middle option, select the iso file and click next



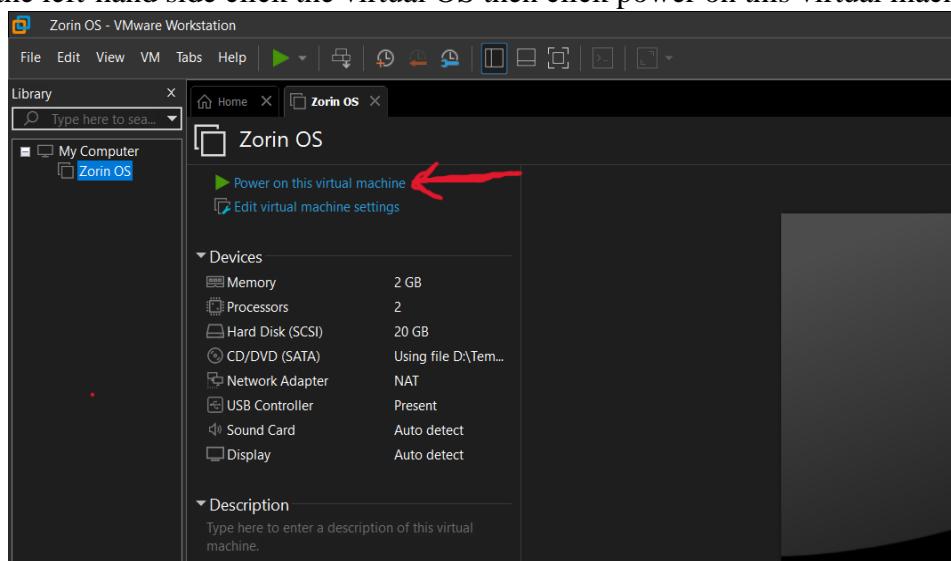
8. Select the guest operating system as Linux and the version Ubuntu 64bit.



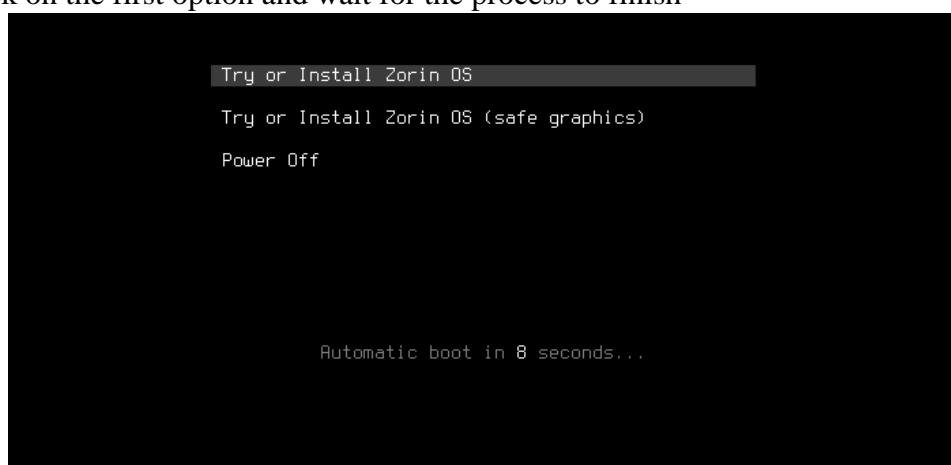
9. Give the virtual machine a name and click next
10. Leave the default disk capacity as it is and click next
11. Click on edit virtual machine settings, then under the display option uncheck accelerate 3D graphics.



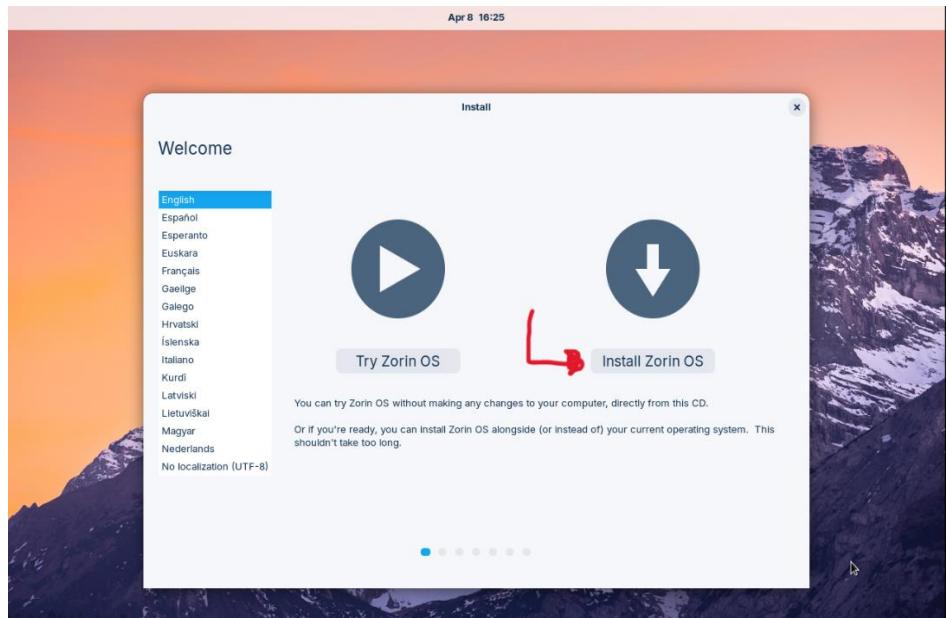
12. Then click on ok and finish.
13. On the left-hand side click the virtual OS then click power on this virtual machine.



14. Click on the first option and wait for the process to finish



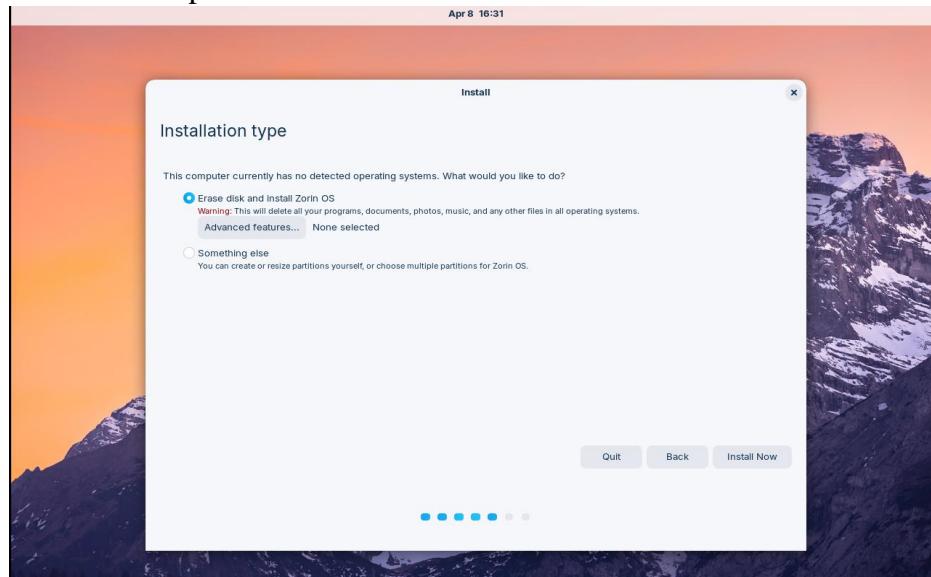
15. When the following window appears click on the second option



16. Leave the default keyboard setting and click on continue.

17. Click continue.

18. Select on the first option and continue



19. Select a region and continue.

20. Finally Give user name and password and wait until the installation finishes.

Who are you?

Your name: Yonas Sera ✓

Your computer's name: yonas-virtual-machine ✓

The name it uses when it talks to other computers.

Pick a username: yonas ✓

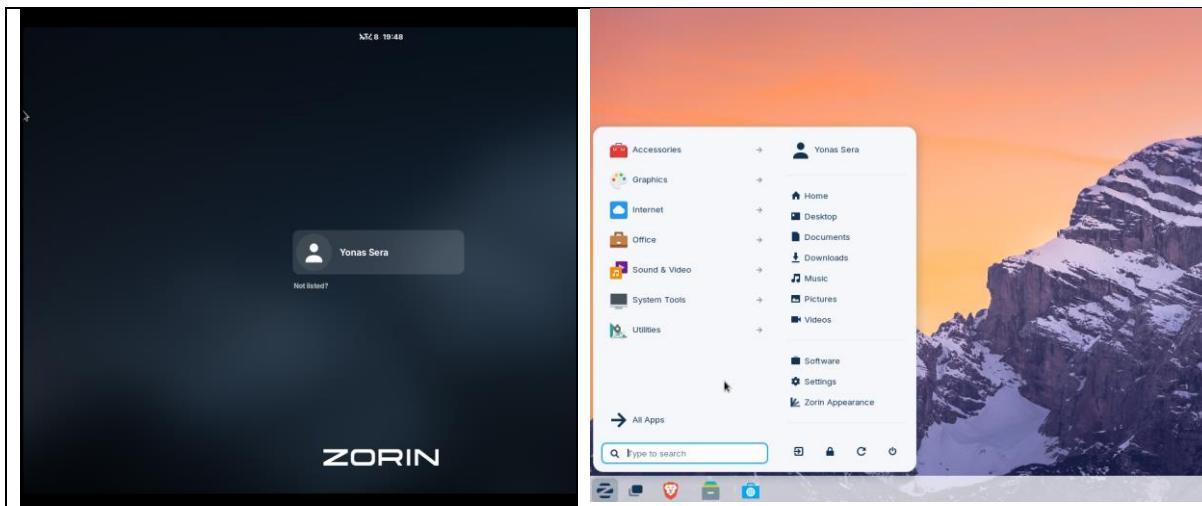
Choose a password: Short password

Confirm your password: Passwords do not match

Log in automatically

Require my password to log in

- ❖ After following the steps, the installation is completed successfully.



5. Issues (Problems faced)

During the installation process I have faced two major problems.

- The first problem was related to setting the guest operating system version, I set it to version other than Ubuntu 64 bit and finally it showed me kernel panic

```
[ 4.902754] Kernel panic - not syncing: No working init found. Try passing i
nity= option to kernel. See Linux Documentation/admin-guide/init.rst for guidance
.
[ 4.905735] CPU: 1 PID: 1 Comm: swapper/0 Not tainted 6.8.0-52-generic #53~22
.04.1-Ubuntu
[ 4.907574] Hardware name: VMware, Inc. VMware Virtual Platform/440BX Desktop
Reference Platform, BIOS 6.00 11/12/2020
[ 4.910582] Call Trace:
[ 4.911396] <TASK>
[ 4.911840] dump_stack_lvl+0x27/0xa0
[ 4.912566] dump_stack+0x10/0x20
[ 4.913222] panic+0x366/0x3c0
[ 4.913833] ? kernel_execve+0x156/0x1b0
[ 4.914617] ? __pxf_kernel_init+0x10/0x10
[ 4.915489] kernel_init+0x1a2/0x200
[ 4.916108] ret_from_fork+0x44/0x70
[ 4.916814] ? __pxf_kernel_init+0x10/0x10
[ 4.917604] ret_from_fork_asm+0x1b/0x30
[ 4.918359] <TASK>
[ 4.919181] Kernel Offset: 0xc00000 from 0xffffffff81000000 (relocation range
: 0xffffffff80000000-0xffffffffffff)
[ 4.921150] ---[ end Kernel panic - not syncing: No working init found. Try
passing init= option to kernel. See Linux Documentation/admin-guide/init.rst for
guidance. l---
```

- The second problem was a graphics error, I used the “accelerate 3D graphics” option and it showed me this error.



The host's Vulkan graphics driver version is unsupported. X
Please upgrade it to the latest version.

6. Solution

For the first problem I changed the guest operating system version to ubuntu 64 bit, then the problem was solved and the kernel panic error disappeared.

For the second problem, I went to the display setting and unchecked the “accelerate 3D Graphics”.

After solving the two problems I managed to successfully install the Zorin OS.

7. File system support

File system is the method in which an operating system uses to manage files, including organizing and storing data for a convenient usage. Zorin OS uses ext4 file system by default which is very stable, fast and safe. It supports journaling, so that it keeps track of changes that happens in the computer, like for example if there is a sudden power loss the feature fixes it keeping everything safe.

Zorin OS also supports filesystems like NTFS and FAT32, which are common on windows. so, file sharing with windows is very easy. exFAT which is a modern version of FAT32 is also supported on Zorin, so we can share files without worrying about file size restrictions.

Advanced file systems including Btrfs, ZFS and HFS+ are also supported on Zorin, enabling its users to access features like snapshots, backups and error correction which is useful for servers and developers. HFS+ and APFS are used in macOS, Zorin can still read them even though writing to APFS may be limited. Overall its support for different file systems makes the OS flexible and compatible with other systems.

General File System Support for Zorin

Filesystem	Used For	Supported?
ext4	Default Linux system	<input checked="" type="checkbox"/> Yes (default)
NTFS	Windows drives	<input checked="" type="checkbox"/> Yes
FAT32	USB & old drives	<input checked="" type="checkbox"/> Yes
exFAT	New USB & SD cards	<input checked="" type="checkbox"/> Yes
Btrfs, ZFS	Advanced users	<input checked="" type="checkbox"/> Optional
HFS+, APFS	macOS drives	<input type="checkbox"/> Limited

8. Advantage and disadvantage

Every system has its own upside and downside now we will see both in detail.

a. Advantages

The best thing about Zorin OS is its easy-to-use design. specially since it is similar to windows window users find it very familiar, the menu button, taskbar, and desktop icons are much alike with windows so users are not expected to learn everything from scratch. This makes it beginner-friendly. Another thing is, it is safe and private, as I described in the introduction it doesn't collect personal data like other operating system do. Zorin OS is based on the most common and trusted OS Ubuntu and gets security updates more often, viruses are not common generally in Linux due to its high security. It is also very fast and lite as compared to other OS like windows and even runs smoothly on older computers, in addition it has minimalist desktop view so it makes it simple to use.

b. Disadvantages

The common disadvantage is that sometimes apps that are built for windows operating system may not be made for Linux based systems, even though we can use apps like wine or Lutris to run windows apps, it doesn't always run smoothly. So, users will be forced to use other alternatives. Another thing is hardware compatibility issues, unless a specific driver is installed Wi-Fi, Bluetooth, or printers may not work directly also it may not support every game that are supported on windows so it becomes not convenient for gamers.

9. Conclusion

Zorin OS gives clean, fast and safe environment, especially coming from windows OS to try Linux gives great experience. It helps do normal activities like schoolwork, browsing the internet, watching videos all with fewer problems and more control. Its strongest point is the design, it is beautiful and minimalist and works well in new and older computers. It gives full control over its looks and feels like changing themes, installing free software and many more. Even though some bumps occur, like fixing network connectivity or dealing with software that doesn't install easily with a little patience, problems can be solved and we can learn a lot through the process. And Zorin offers strong community and good documentation whenever problem occurs so it is a great way to dive into the Linux world. Overall if the priority is secure, beginner-friendly, and modern operating system then Zorin OS is brilliant option.

10. Future Outlook / Recommendations

Looking ahead, Zorin OS seems to have a bright future. Many people are finding it useful and friendly to interact with Linux system. But still it can be even better, one improvement would be support for different types of hardware like Wi-Fi and Bluetooth without needing extra steps. Also adding better support for printers, scanners, and special touchpads creates good environment to switch to Zorin OS.

Another helpful change would be improving the software center, sometimes it becomes difficult to install apps and search results are a little bit confusing. Learning from Android's and windows app store which are clean and powerful would be a great decision. Although Linux gaming is growing, further upgrades and improvements can be made to make it gaming friendly for people who love to play games. Also growing its community by providing forums, tutorials, beginner guides would help more users, and increasing language support for regions like Ethiopia and other African countries with better translations would make it inclusive for many users.

11.Understanding Virtualization in Modern Operating Systems

What?

Virtualization is a way of installing a certain operating system on a hypervisor without affecting the existing operating system. A hypervisor is a software that creates a virtual machine to serve as a physical computer E.g. VMware, Virtual Box. By creating multiple virtual machines we can install many operating systems independently on a single computer.

Why?

The technology plays a great role in saving money, space, and energy. For instance if I want to try multiple operating system without actually installing it on my pc I can install them on a virtual machine without affecting the host OS or other virtual machines. Also if some problem occurs the host or other virtual machines won't be affected by it.

How?

Virtualization works by utilizing the computer's hardware(CPU, RAM, Storage) and dividing those resources between virtual systems. The hypervisor is responsible for managing the traffic between the real computer and virtual machines.