

Experiment No. 1a
Title : Setting Up the Environment

Roll No.:16010423076**Experiments No.:1(a)****Aim : Setting Up the Environment (a) Kali OS on Virtual Machine**

Resources : A computer with Windows installed, Oracle Virtual box, Kali-Linux ISO Image

Theory:**What is Kali Linux?**

Kali Linux is an open-source, Debian-based Linux distribution designed specifically for cybersecurity professionals and ethical hackers. Developed and maintained by Offensive Security, Kali Linux is a powerful platform that includes a wide range of pre-installed tools for penetration testing, vulnerability assessment, digital forensics, and network security.

Features of Kali Linux

1. Pre-Installed Tools: It comes with over 600 advanced penetration testing tools such as Nmap, Metasploit, Wireshark, and Burp Suite.
2. Customizable: Users can modify and personalize it to suit their specific cybersecurity needs.
3. Cross-Platform Support: Kali Linux supports installation on various hardware, including desktops, laptops, ARM devices, and virtual machines.
4. Secure Development: The platform is developed using secure protocols and is regularly updated to ensure the latest tools and patches are available.
5. Multi-Language Support: Kali Linux is accessible to a wide audience with support for multiple languages.

Why is Kali Linux Used?

Kali Linux is primarily used for:

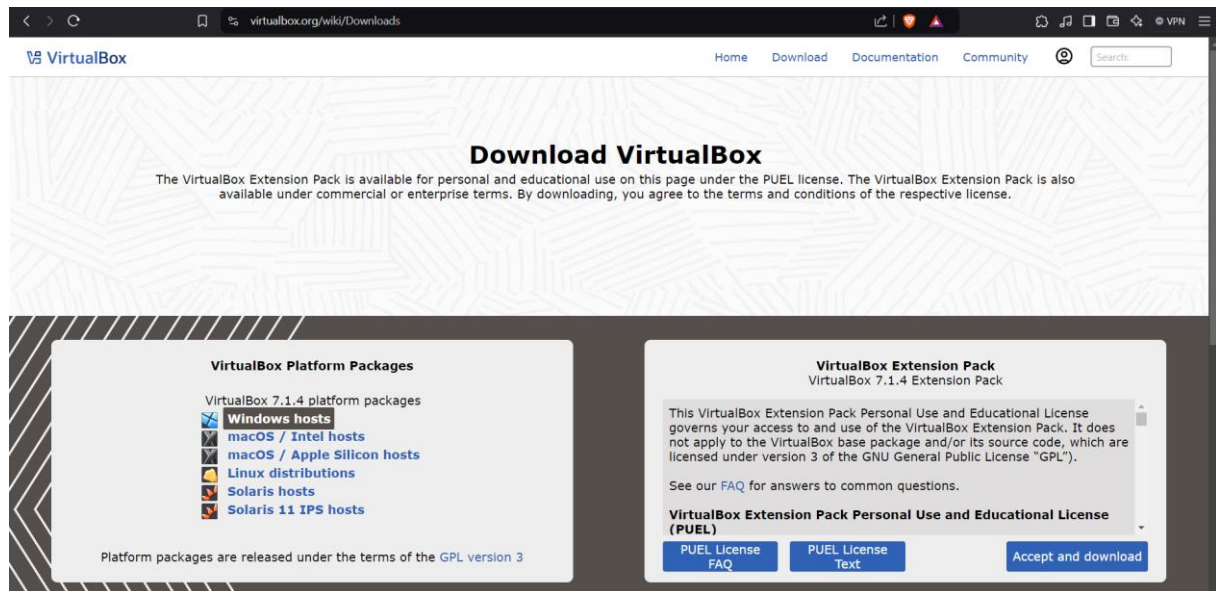
1. Penetration Testing: To simulate cyberattacks and evaluate the security posture of systems.
 2. Vulnerability Assessment: To identify weaknesses in software, hardware, or network configurations.
 3. Digital Forensics: To analyze digital evidence for investigations and incident response.
 4. Training and Research: To learn and experiment with cybersecurity concepts in a controlled environment.
 5. Network Security Audits: To analyze network traffic, test firewalls, and ensure compliance with security standards.
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IMPLEMENTATION AND RESULTS:

Installing Kali Linux on a Windows Machine Using Oracle VirtualBox

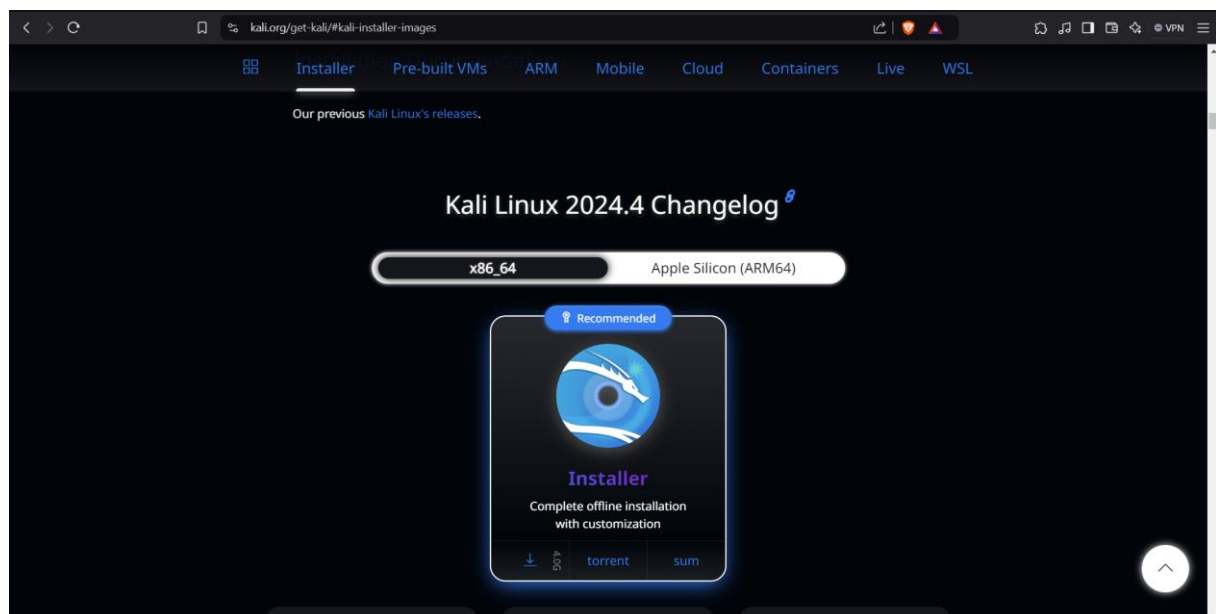
Step 1: Download Oracle VirtualBox

Go to <https://www.virtualbox.org/wiki/Downloads> and download the .exe file



Step 2: Download the Kali Linux ISO Image

Go to <https://www.kali.org/get-kali/#kali-installer-images> and download the ISO image.



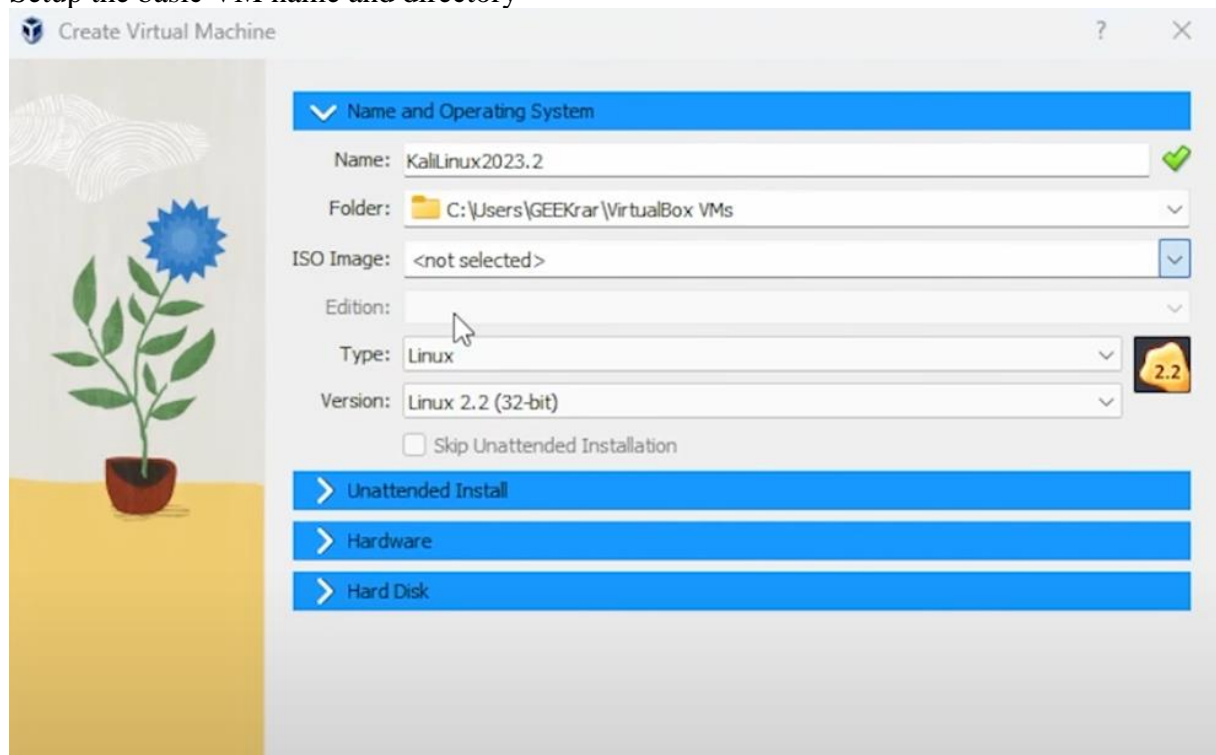
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Step 3: Set Up a New Virtual Machine in VirtualBox

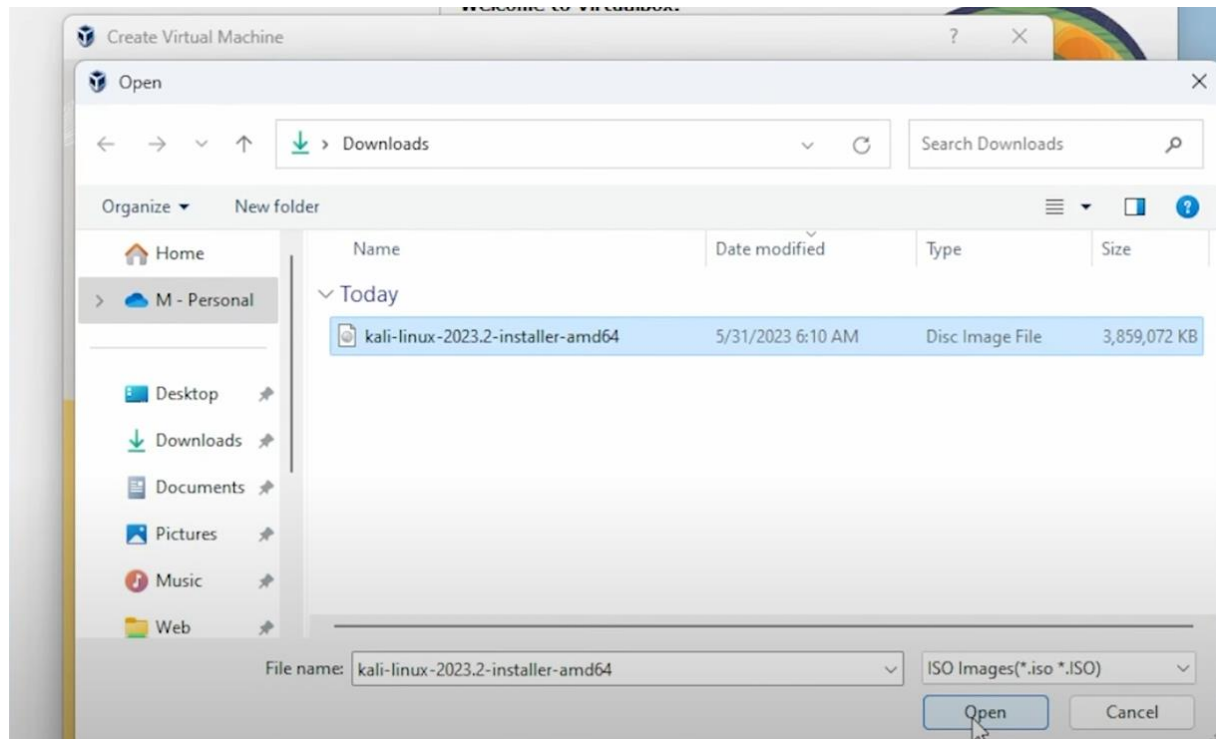
Click on new



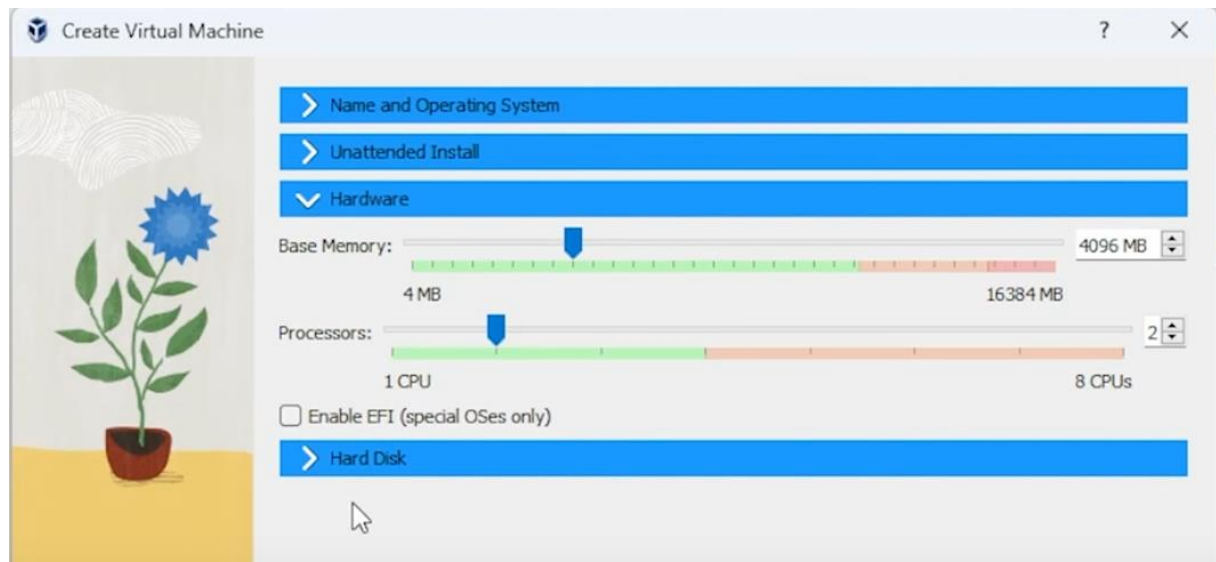
Setup the basic VM name and directory



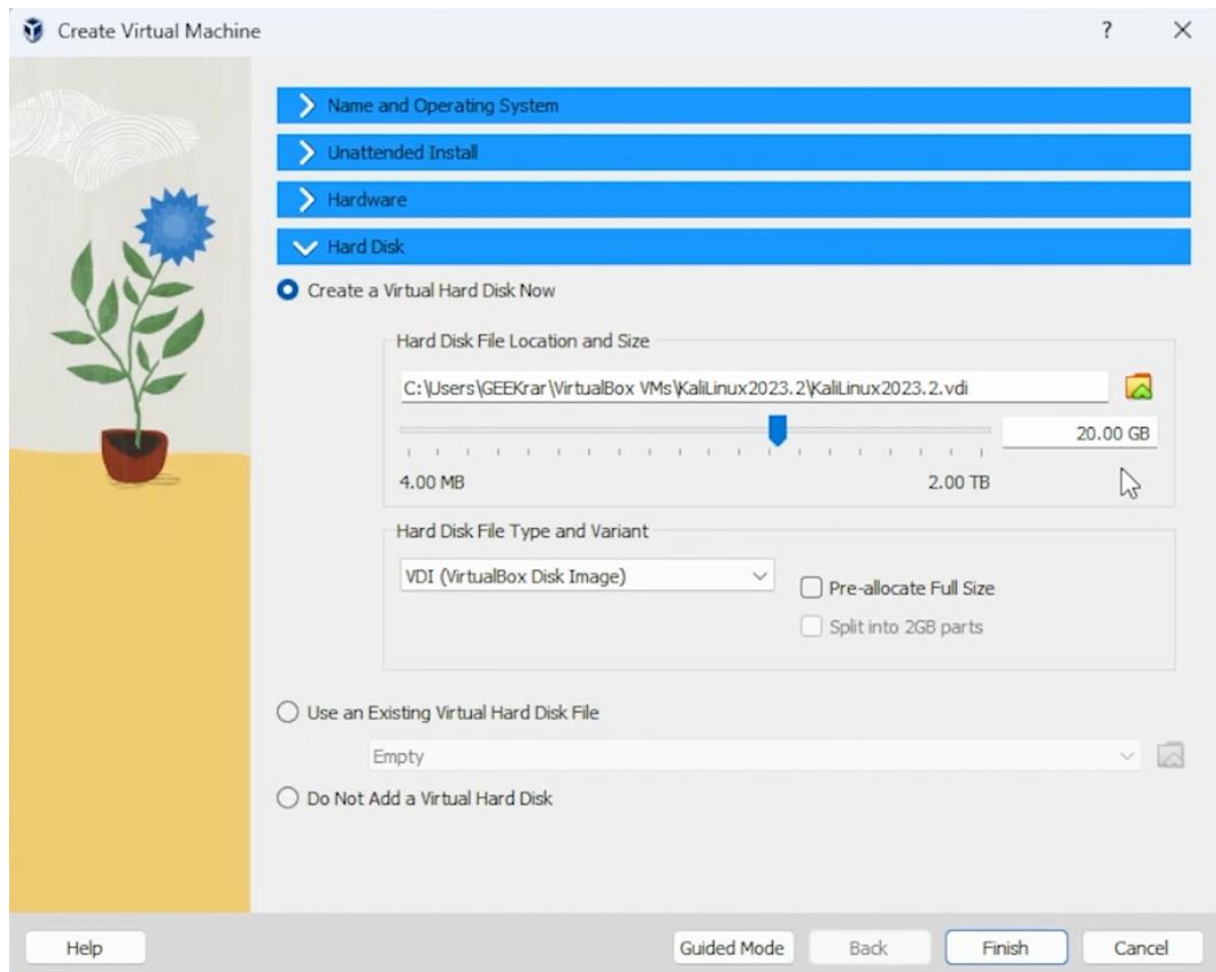
Select the ISO image to install Kali



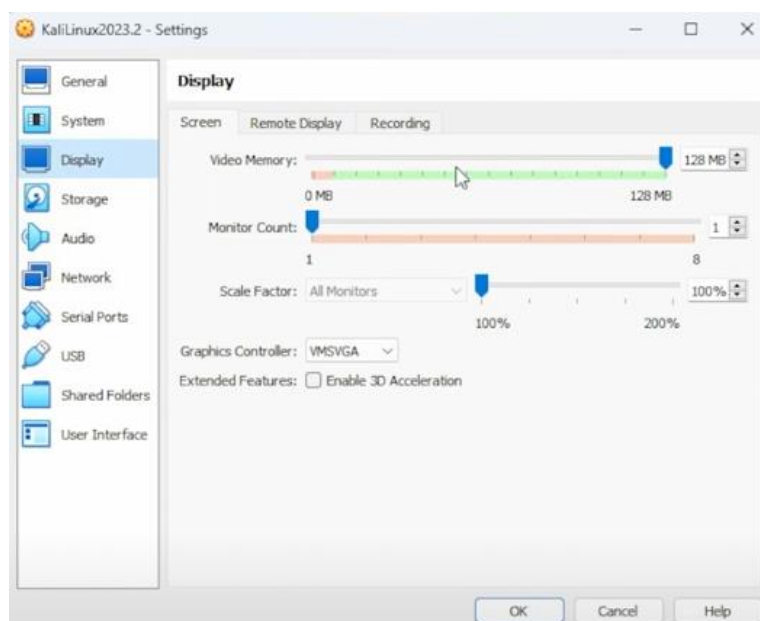
Step 4: Allocate Memory (RAM)



Step 5: Create a Virtual Hard Disk

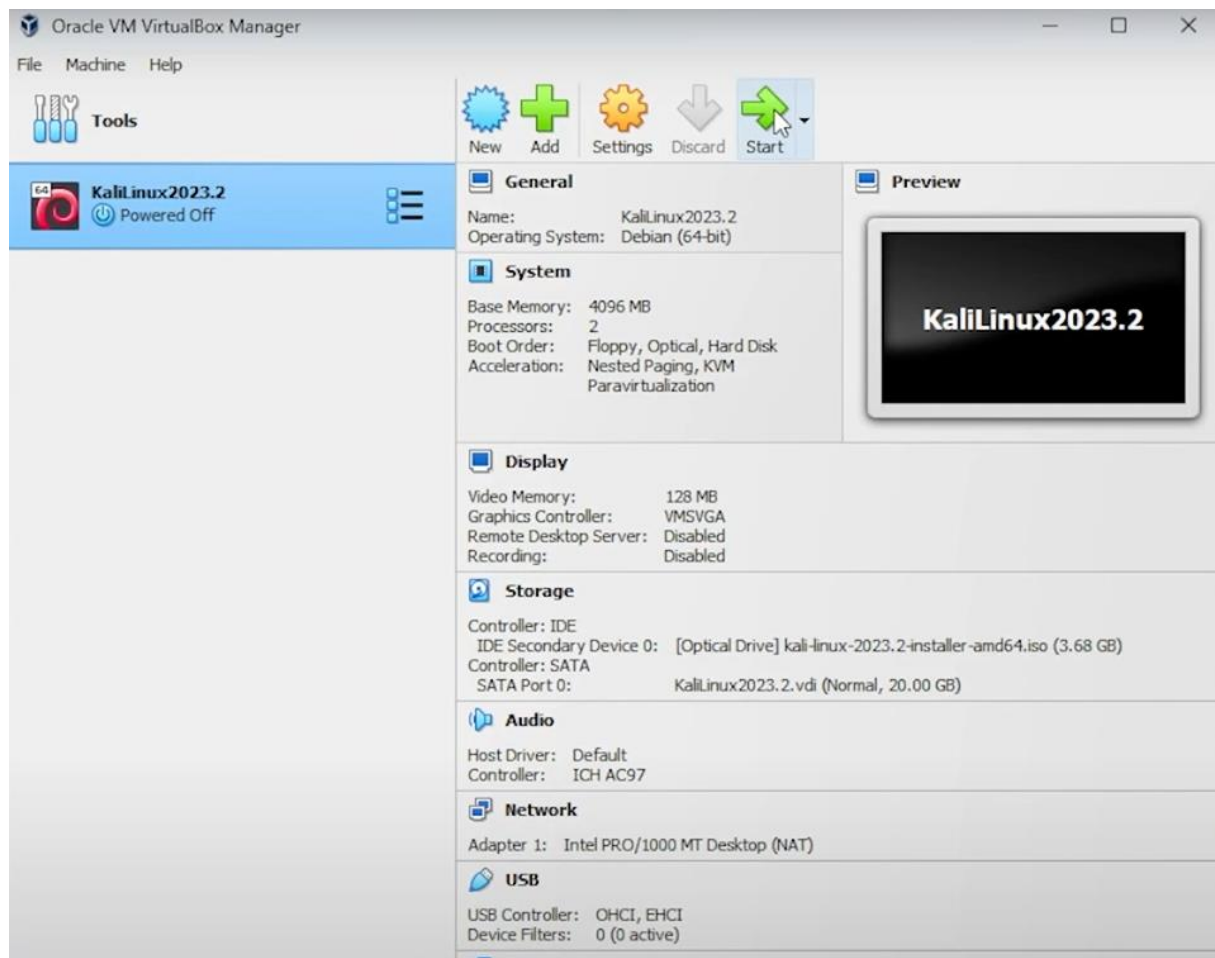


Step 6: Configure Virtual Machine Settings for Display, System, etc



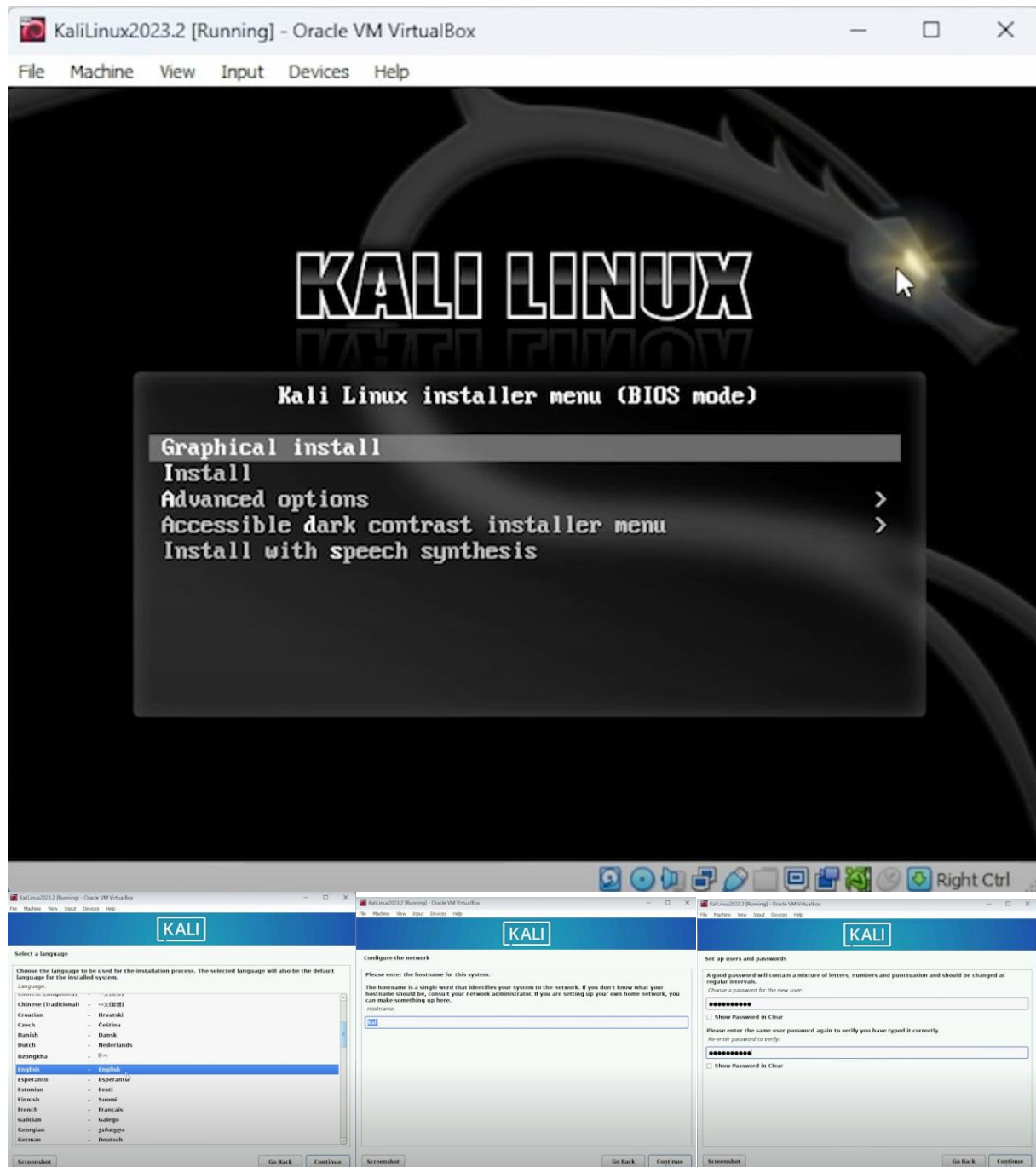
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Step 7: Start the Virtual Machine

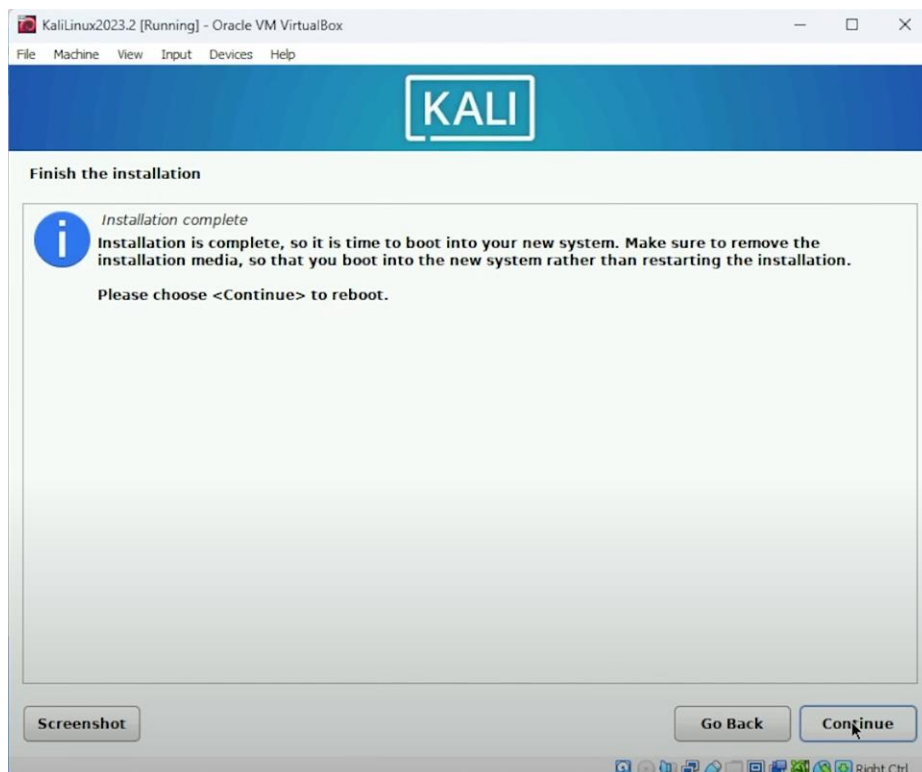
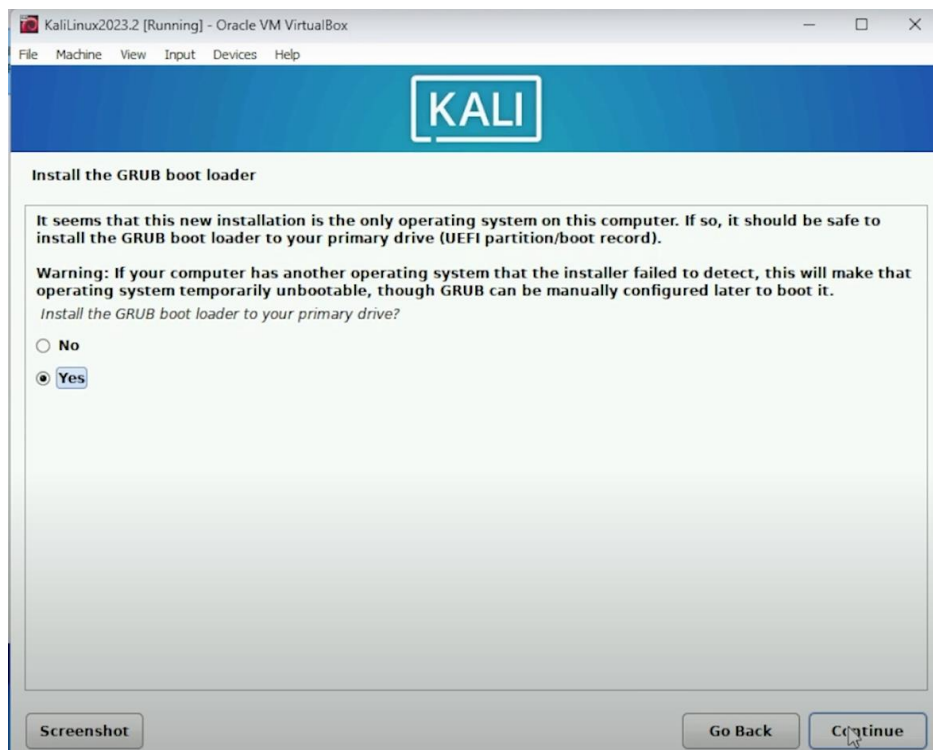


Step 8: Follow the Kali Linux Installation Process

Follow all the steps to install the image based on requirements



Step 9: Install GRUB Bootloader

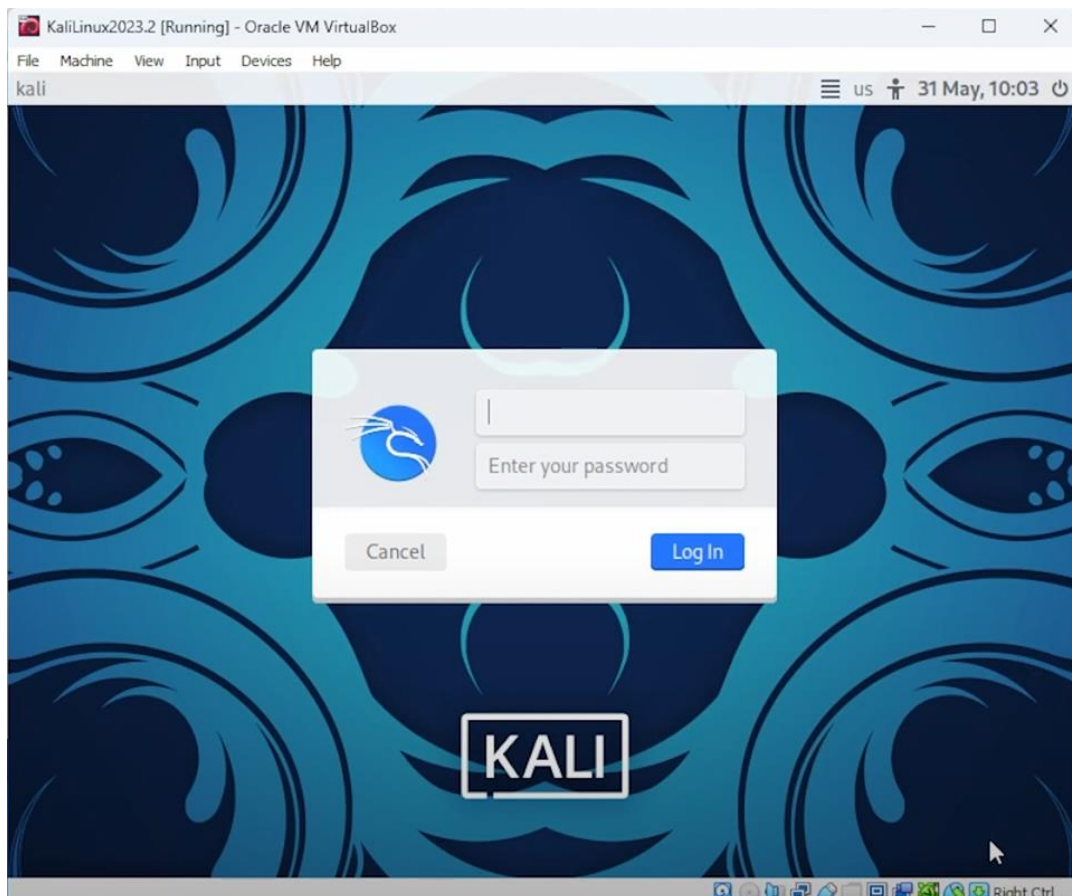


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Step 10: Finish Installation



After reboot the Kali VM becomes Ready to use



Outcomes:

CO1 : Realize that premise of vulnerability analysis and penetration testing(VAPT)

Conclusion: (Conclusion to be based on the objectives and outcomes achieved)

From this experiment, I learned the foundational premise of vulnerability analysis and penetration testing (VAPT) by setting up a secure and isolated environment to use Kali Linux. Installing Kali Linux on VirtualBox provided me with a safe platform to explore its powerful tools for ethical hacking and cybersecurity assessments without compromising the host system. This process reinforced the importance of using virtual machines for testing, ensuring risks are contained while enabling practical hands-on experience with penetration testing methodologies.

Grade: AA / AB / BB / BC / CC / CD /DD

Signature of faculty in-charge with date

REFERENCES:

<https://www.geeksforgeeks.org/how-to-install-virtualbox-on-windows/>
<https://www.kali.org/docs/installation/hard-disk-install/>
<https://www.youtube.com/watch?v=M0mBpTPE78k>
<https://www.youtube.com/watch?v=MPkni85O9JA&t=866s>

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