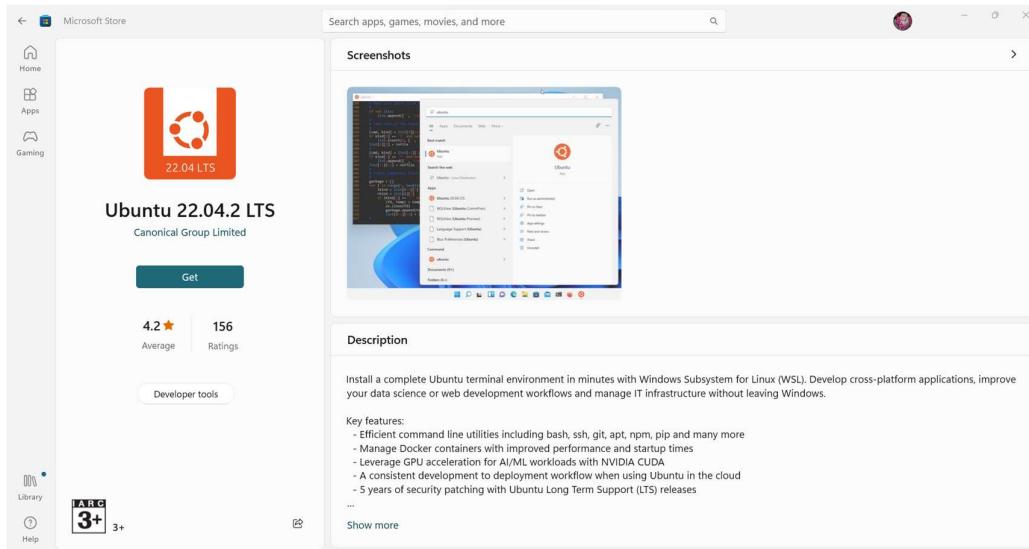


Install Kali Linux on VirtualBox

1. Download Ubuntu 22.04.2 LTS

Open Microsoft Store and search for Ubuntu 22.04.2 LTS. Click "Get" to download and install Ubuntu.



2. Enable Windows Subsystem

Open the command prompt and type **wsl --install**, followed by **wsl --update**.

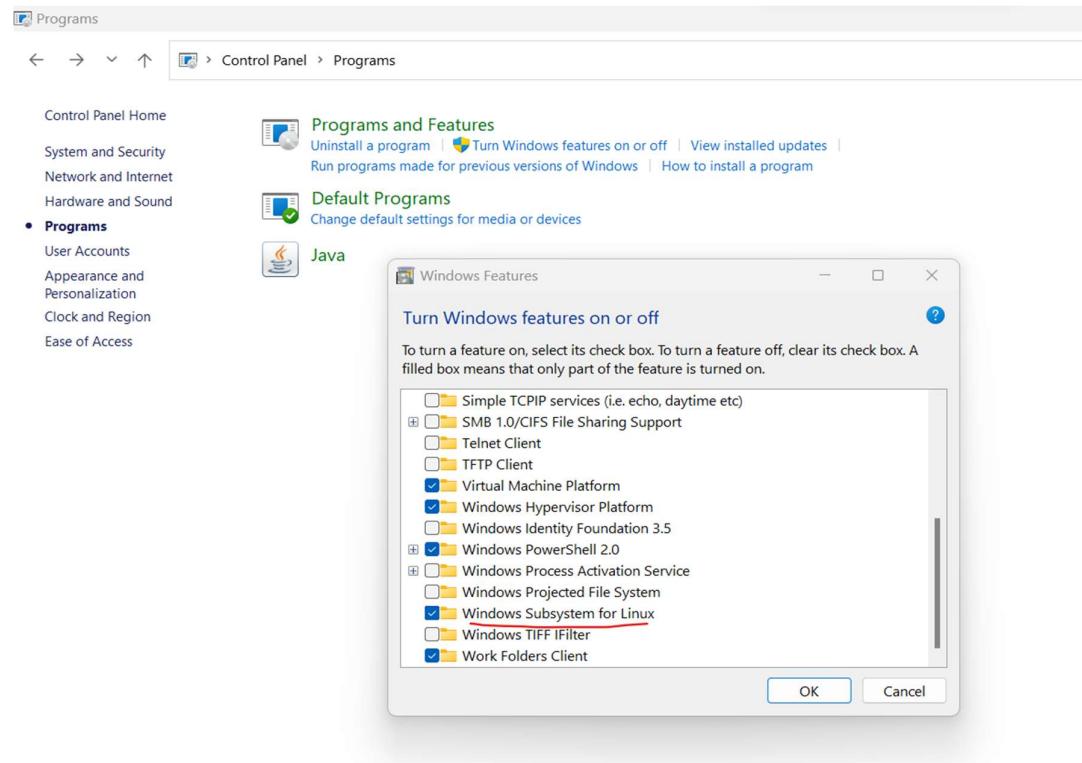
```
C:\Users\Balaji Venkatesan>wsl --install
The requested operation requires elevation.
Installing: Windows Subsystem for Linux
|[=====          22.0%
```

```
C:\Users\Balaji Venkatesan>wsl --install
The requested operation requires elevation.
Installing: Windows Subsystem for Linux
Windows Subsystem for Linux has been installed.
Installing: Ubuntu
Ubuntu has been installed.
The requested operation is successful. Changes will not be effective until the system is rebooted.
```

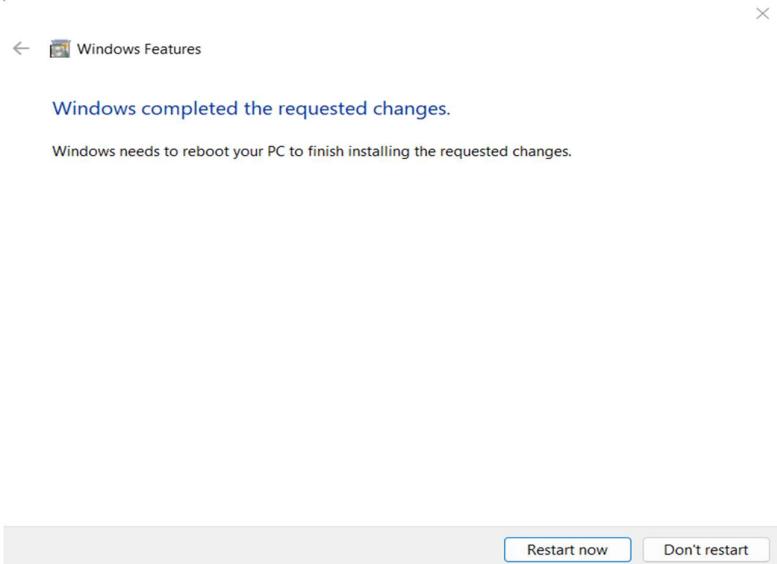
```
C:\Users\Balaji Venkatesan>wsl --update
Checking for updates.
The most recent version of Windows Subsystem for Linux is already installed.
```

Reboot the system.

Go to Control Panel -> Programs -> Turn Windows features on or off, and enable the Windows Subsystem for Linux.

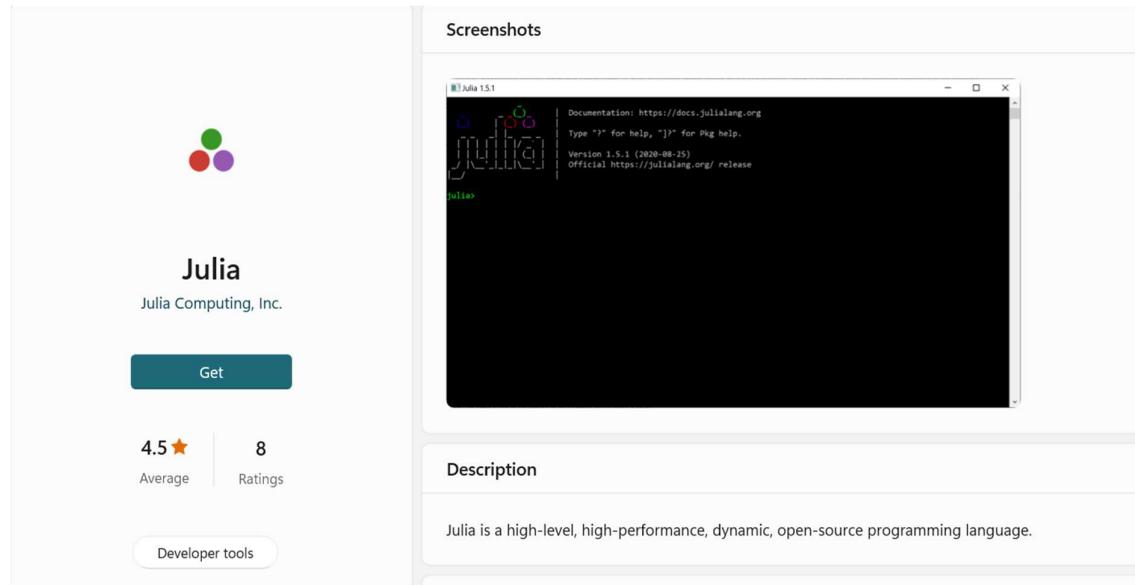


Click "Restart now."



3. Download Julia

Open Microsoft Store and search for Julia. Click "Get" to download and install Julia.



After the download is complete, open Julia and wait for the installation to finish.

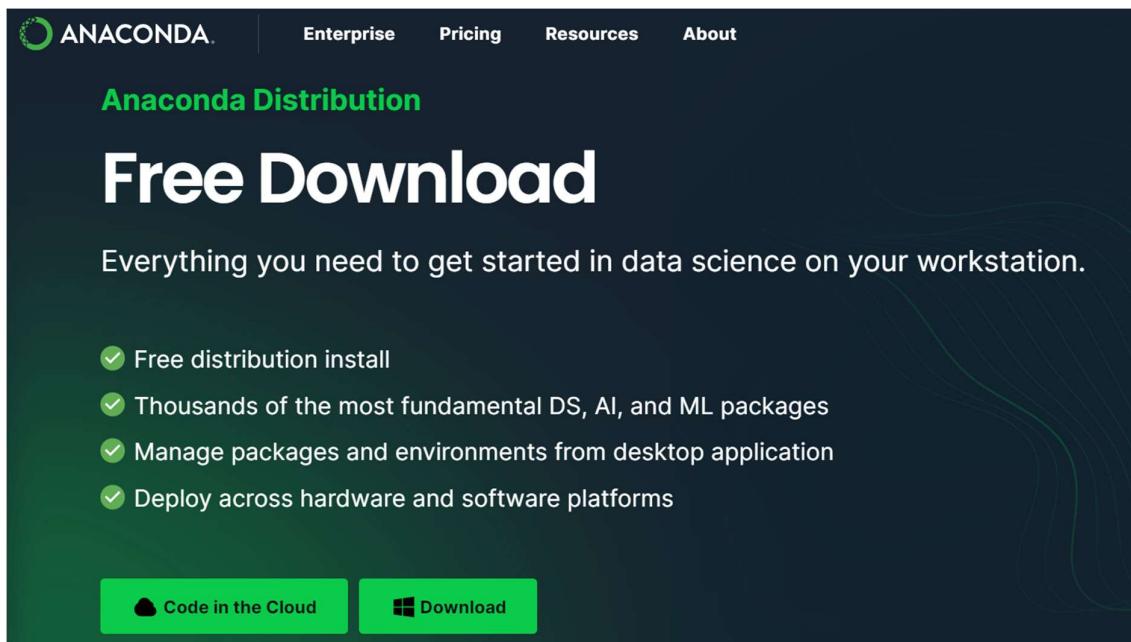
```
Installing Julia 1.9.3+0.x64.w64.mingw32

julia>
```

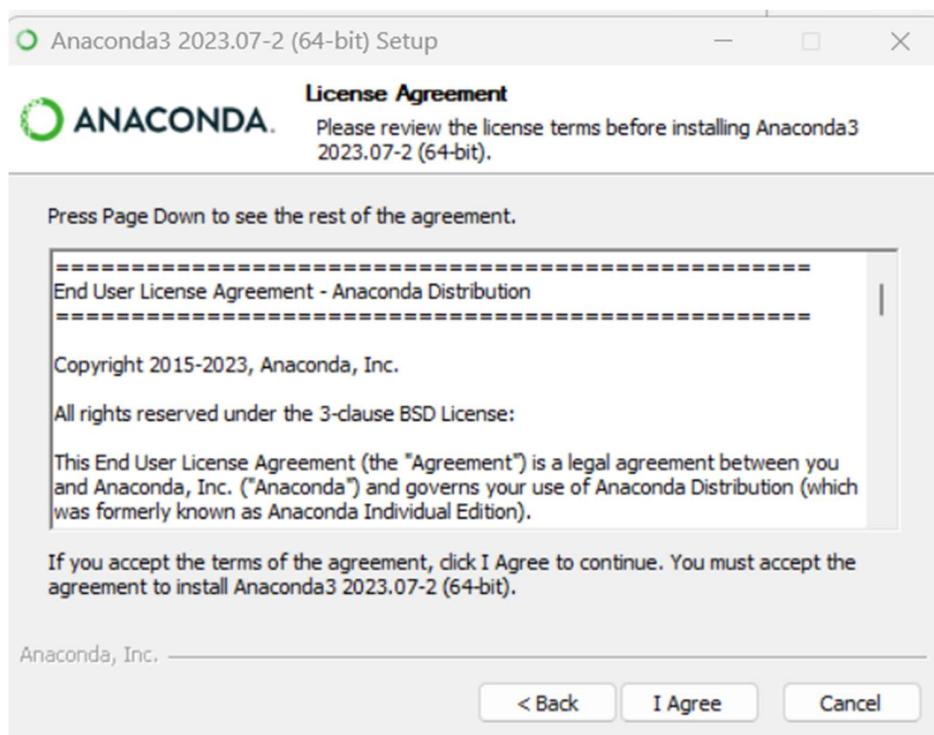
Documentation: <https://docs.julialang.org>
Type "?" for help, "]?" for Pkg help.
Version 1.9.3 (2023-08-24)
Official <https://julialang.org/> release

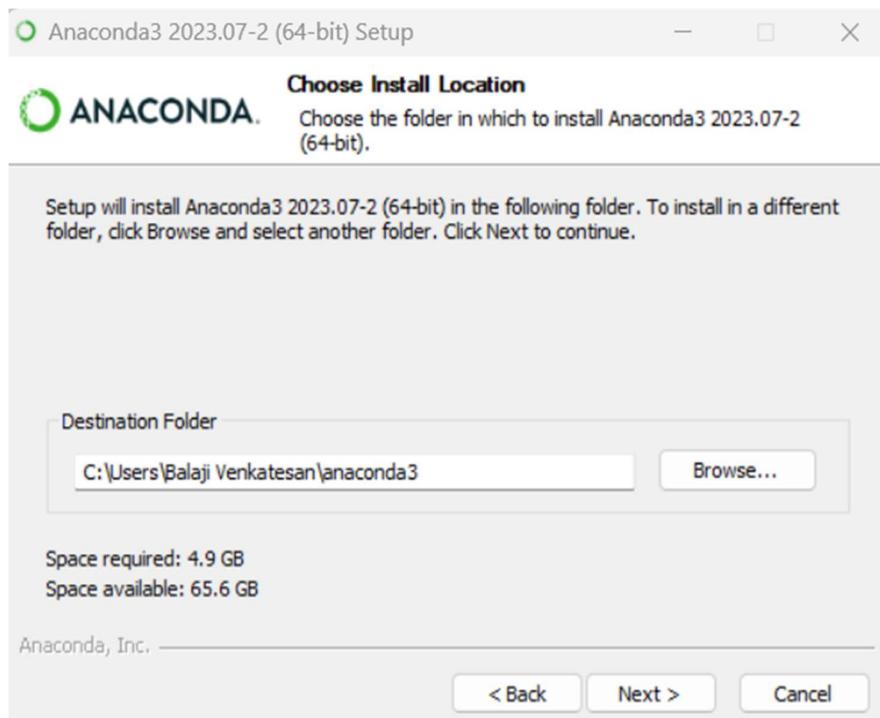
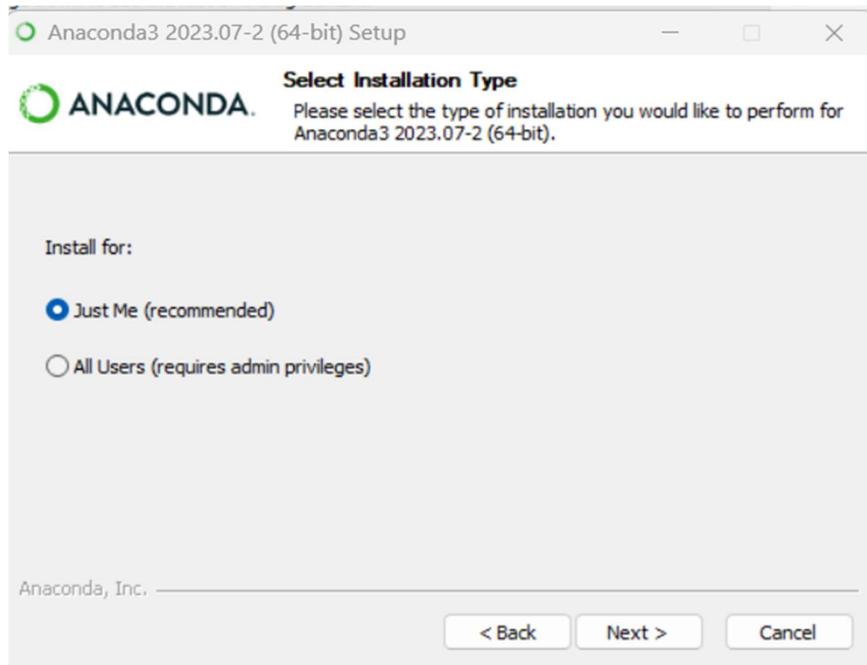
4. Download Anaconda Navigator

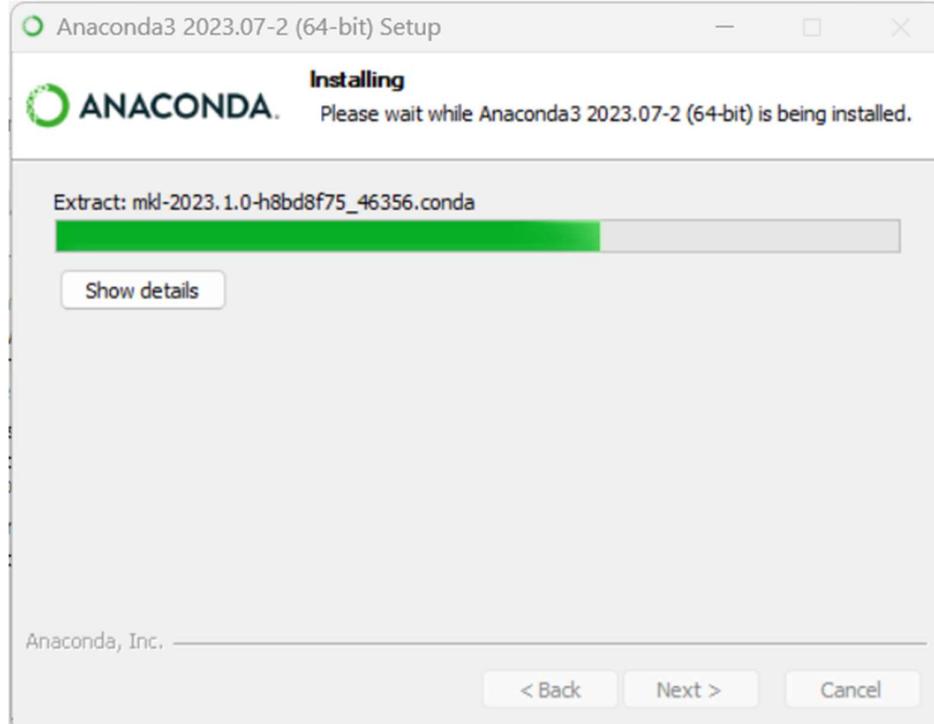
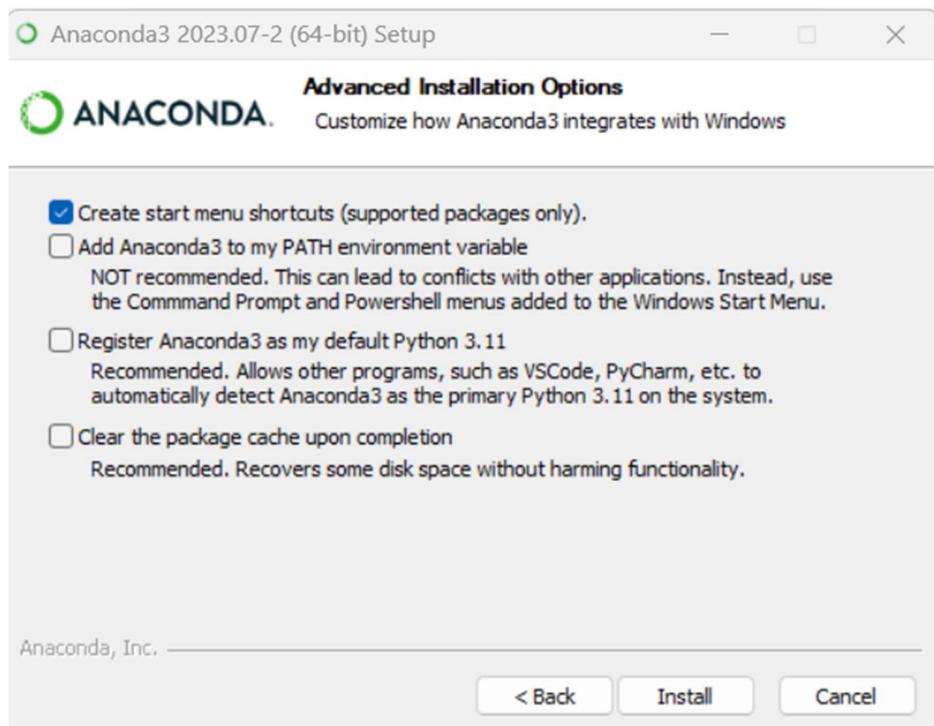
Click "Download" to get Anaconda Navigator.

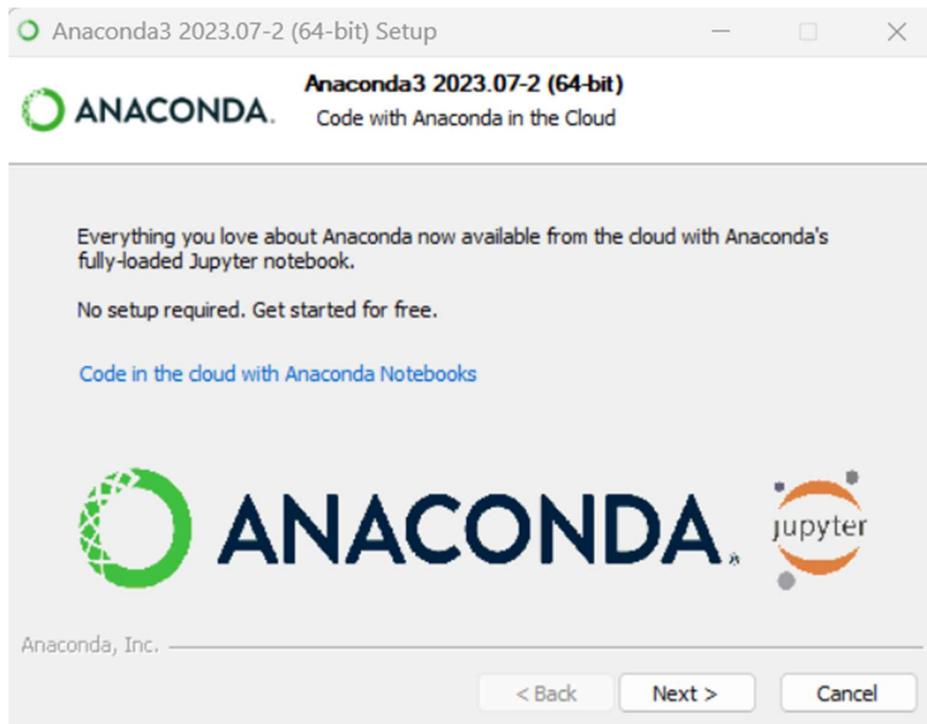


Open the downloaded .exe file and follow the installation wizard to install Anaconda Navigator.

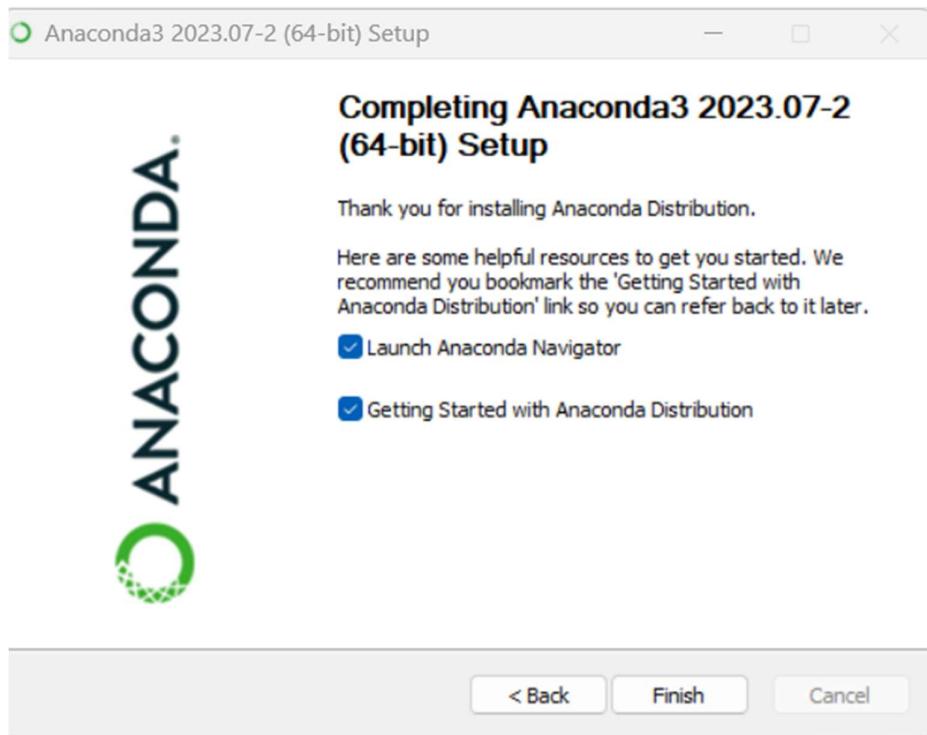






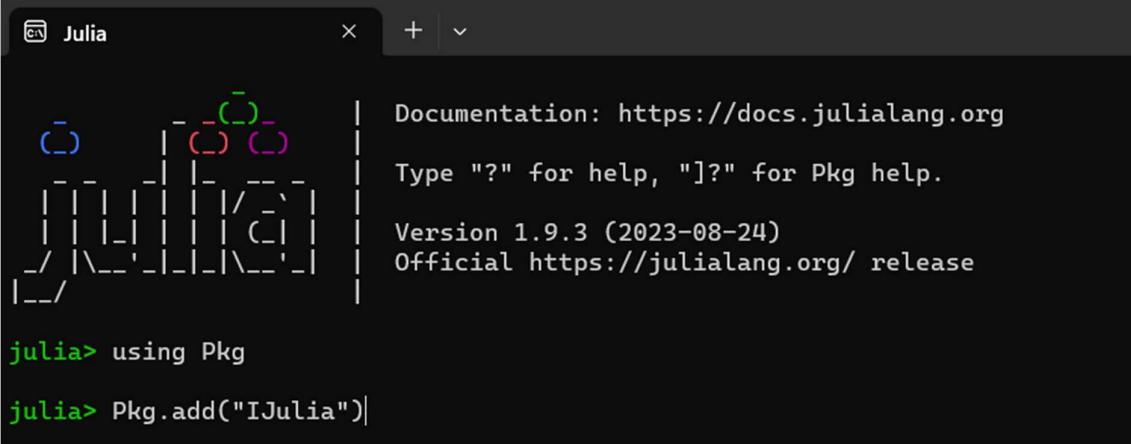


Click "Finish" to complete the installation.



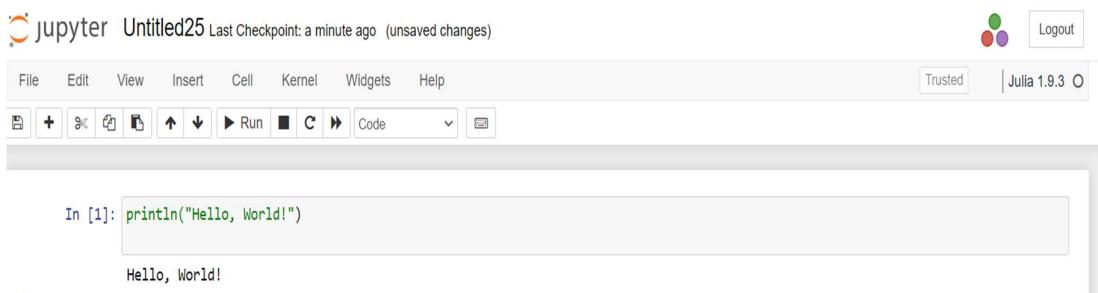
5. Importing Julia in Anaconda Navigator – Jupyter Notebook

Open Julia and type the following command to import Julia to Jupyter Notebook.



A screenshot of a terminal window titled "Julia". The window shows the Julia logo (a stylized tree or fractal pattern) on the left. To the right of the logo, the text "Documentation: https://docs.julialang.org" is displayed. Below it, "Type "?" for help, "]??" for Pkg help." is shown. Further down, "Version 1.9.3 (2023-08-24)" and "Official https://julialang.org/ release" are listed. At the bottom of the terminal window, two commands are entered: "julia> using Pkg" and "julia> Pkg.add("IJulia")".

Open Jupyter Notebook and click "New -> Julia" to execute the programs.



6. Download and Install Oracle Virtual Box

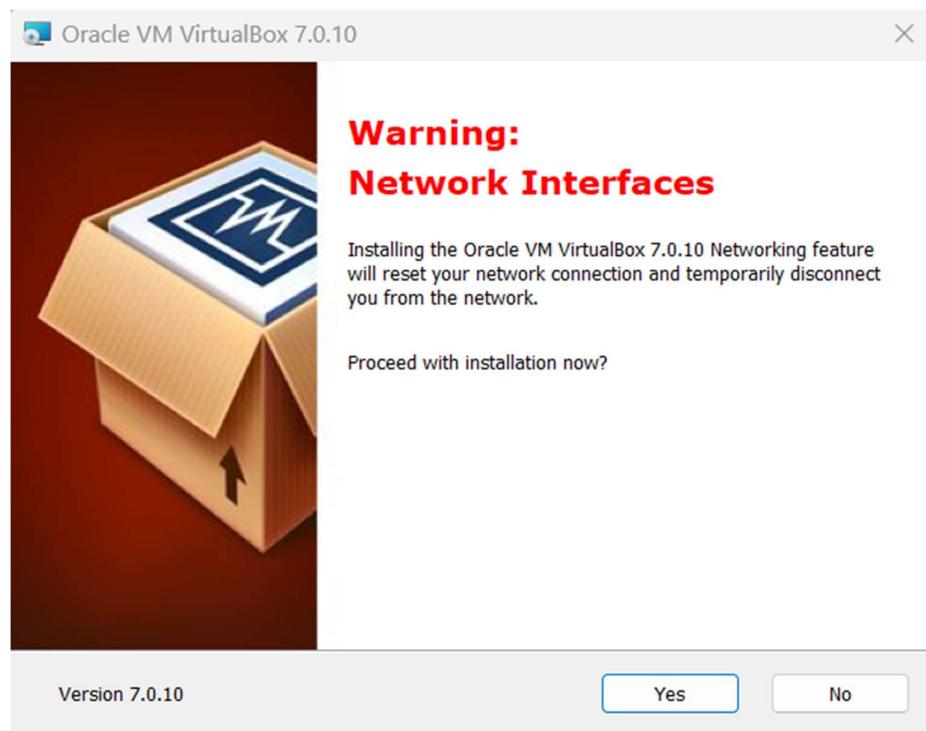
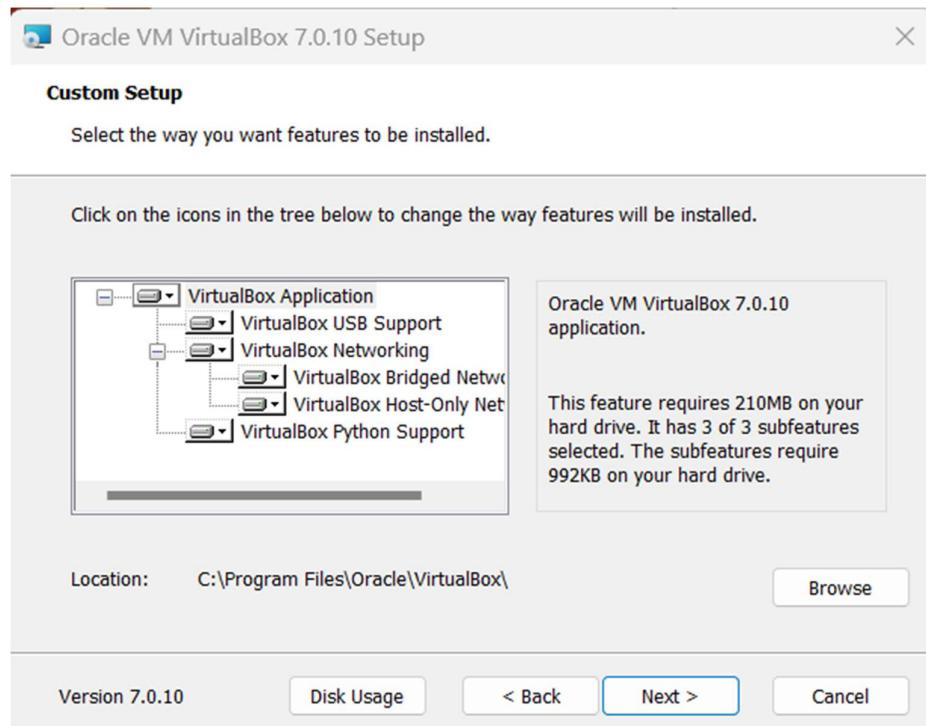
Visit the official Oracle VM VirtualBox website at
<https://www.virtualbox.org/wiki/Downloads>.

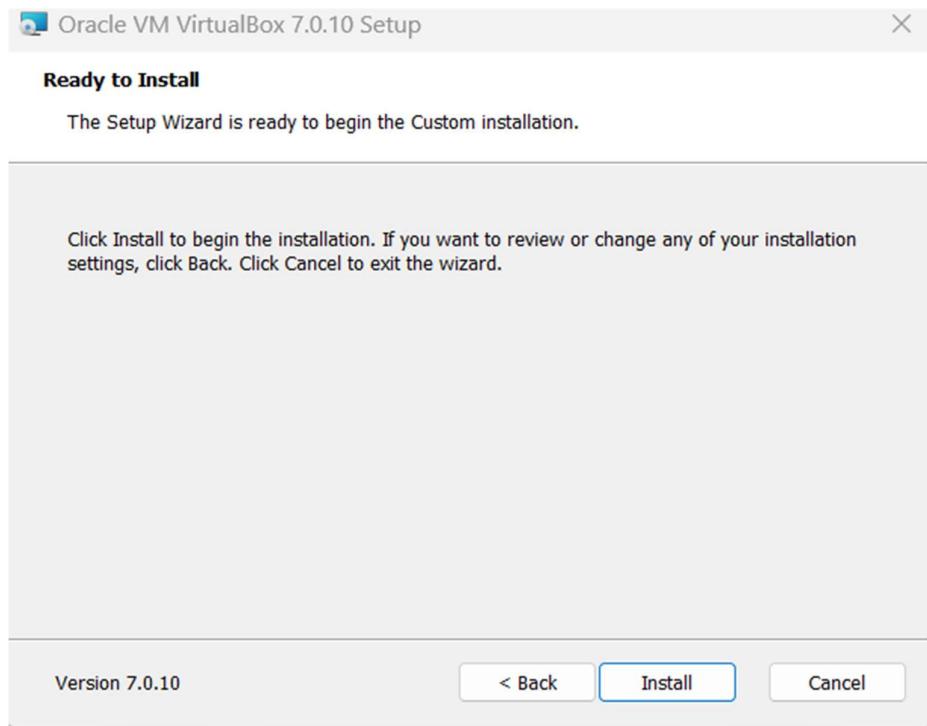
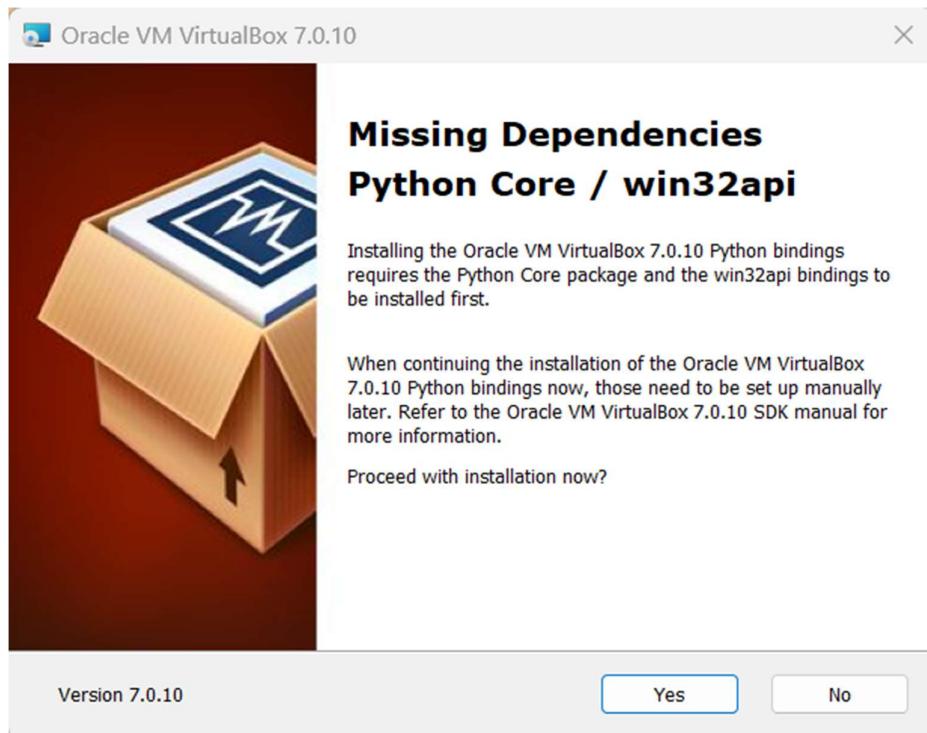


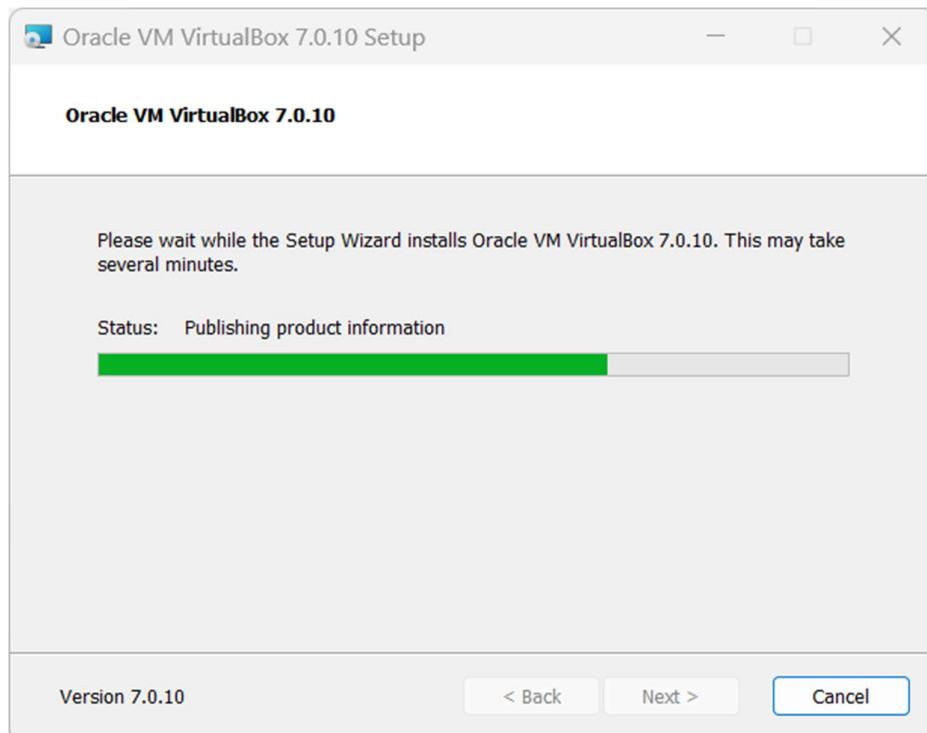
The screenshot shows the 'Download VirtualBox' page of the VirtualBox website. On the left, there's a sidebar with links to 'About', 'Screenshots', 'Downloads', 'Documentation', 'End-user docs', 'Technical docs', 'Contribute', and 'Community'. The main content area features the 'VirtualBox' logo and the heading 'Download VirtualBox'. Below this, it says 'Here you will find links to VirtualBox binaries and its source code.' A section titled 'VirtualBox binaries' contains a note about accepting terms and conditions and a link to the latest builds. Another section, 'VirtualBox 7.0.10 platform packages', lists supported hosts: Windows hosts, macOS / Intel hosts, Linux distributions, Solaris hosts, and Solaris 11 IPS hosts.

Choose the appropriate version (7.0.10) of VirtualBox for your host operating system and click on the corresponding link to download the installer file. Follow the installation wizard prompts to install VirtualBox.



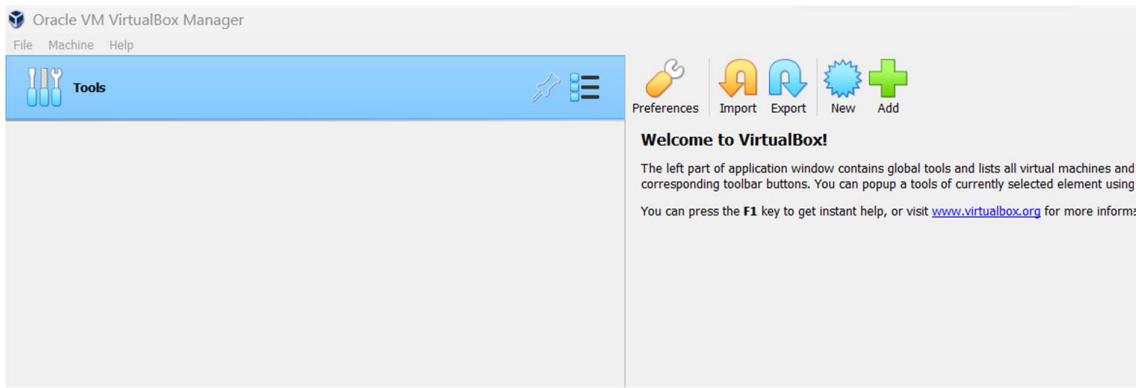






Click "Finish" to complete the installation and start the virtual box.





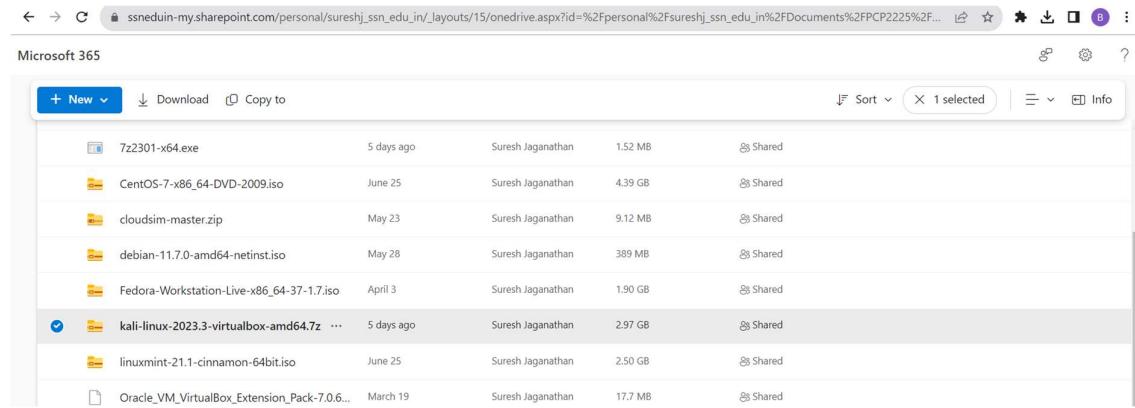
7. Download and Install 7-ZIP software.

A screenshot of the Microsoft 365 OneDrive interface. The navigation bar shows "Microsoft 365" and the user's name "Suresh Jaganathan". The current location is "PCP2225 > Software-Resources". The main area displays a list of files with columns for Name, Modified, Modified By, File size, Sharing, and Activity. The file "7z2301-x64.exe" is selected, indicated by a blue checkmark icon.

Open the downloaded .exe file.

Two screenshots of the 7-Zip 23.01 (x64) Setup wizard. The left screenshot shows the "Destination folder:" step with the path "C:\Program Files\7-Zip\" entered in the input field. The right screenshot shows the completion step with the message "7-Zip 23.01 (x64) is installed" and a green progress bar.

8. Download Kali Linux ISO file.



A screenshot of a Microsoft 365 SharePoint library interface. The URL in the address bar is ssneduin-my.sharepoint.com/personal/sureshj_ssn_edu_in/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fsureshj_ssn_edu_in%2FDocuments%2FPCP2225%2F.... The page shows a list of files:

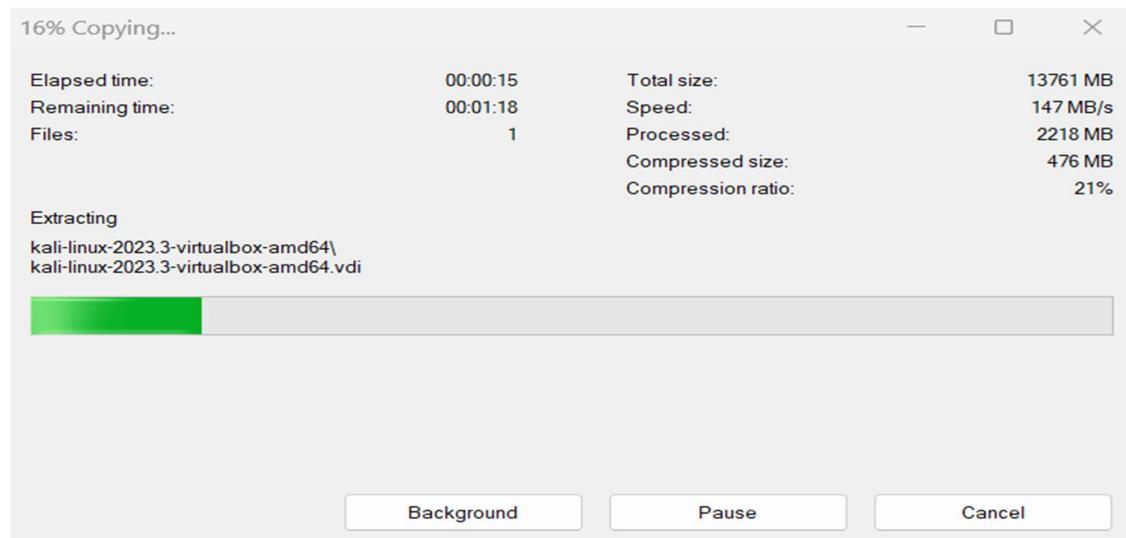
File	Last Modified	Owner	Size	Permissions
7z2301-x64.exe	5 days ago	Suresh Jaganathan	1.52 MB	Shared
CentOS-7-x86_64-DVD-2009.iso	June 25	Suresh Jaganathan	4.39 GB	Shared
cloudsim-master.zip	May 23	Suresh Jaganathan	9.12 MB	Shared
debian-11.7.0-amd64-netinst.iso	May 28	Suresh Jaganathan	389 MB	Shared
Fedora-Workstation-Live-x86_64-37-1.7.iso	April 3	Suresh Jaganathan	1.90 GB	Shared
kali-linux-2023.3-virtualbox-amd64.7z	5 days ago	Suresh Jaganathan	2.97 GB	Shared
linuxmint-21.1-cinnamon-64bit.iso	June 25	Suresh Jaganathan	2.50 GB	Shared
Oracle_VM_VirtualBox_Extension_Pack-7.0.6...	March 19	Suresh Jaganathan	17.7 MB	Shared

Extract the downloaded file using 7-ZIP.



A screenshot of the 7-Zip extraction interface. The path in the address bar is `D:\Cyber security lab\kali-linux-2023.3-virtualbox-amd64.7z\`. The file list shows:

Name	Size	Packed Size	Modified	Attributes	CRC	Encrypted	Method	Block	Folders	Files
kali-linux-2023.3...	14 429 78...	3 184 589 ...	2023-08-2...	D drwxr-xr-x	42C785C6	-			0	2



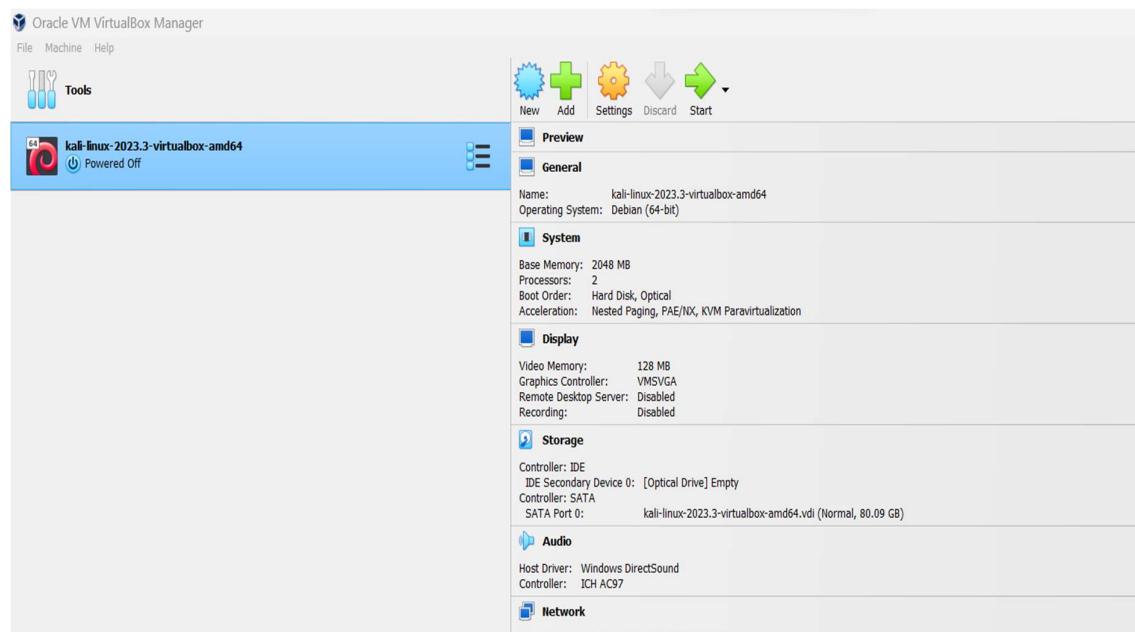
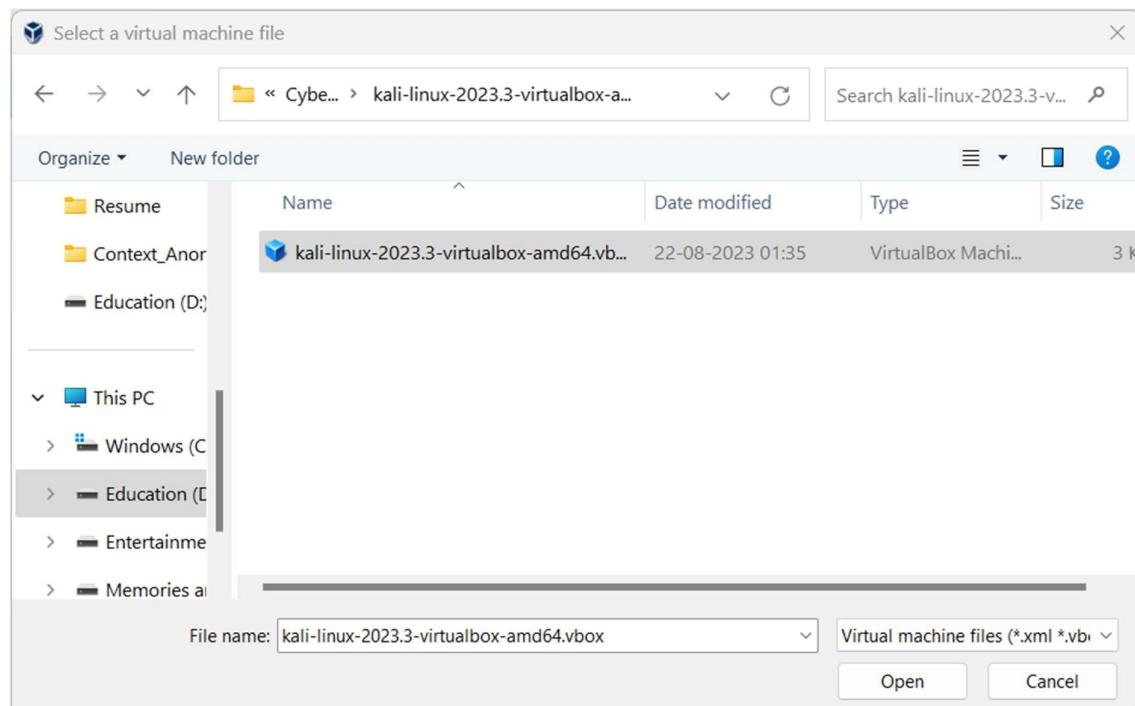
A screenshot of the 7-ZIP extraction progress window. The status bar at the top says "16% Copying...". The main area displays performance metrics and the file being extracted:

Elapsed time:	00:00:15	Total size:	13761 MB
Remaining time:	00:01:18	Speed:	147 MB/s
Files:	1	Processed:	2218 MB
		Compressed size:	476 MB
		Compression ratio:	21%

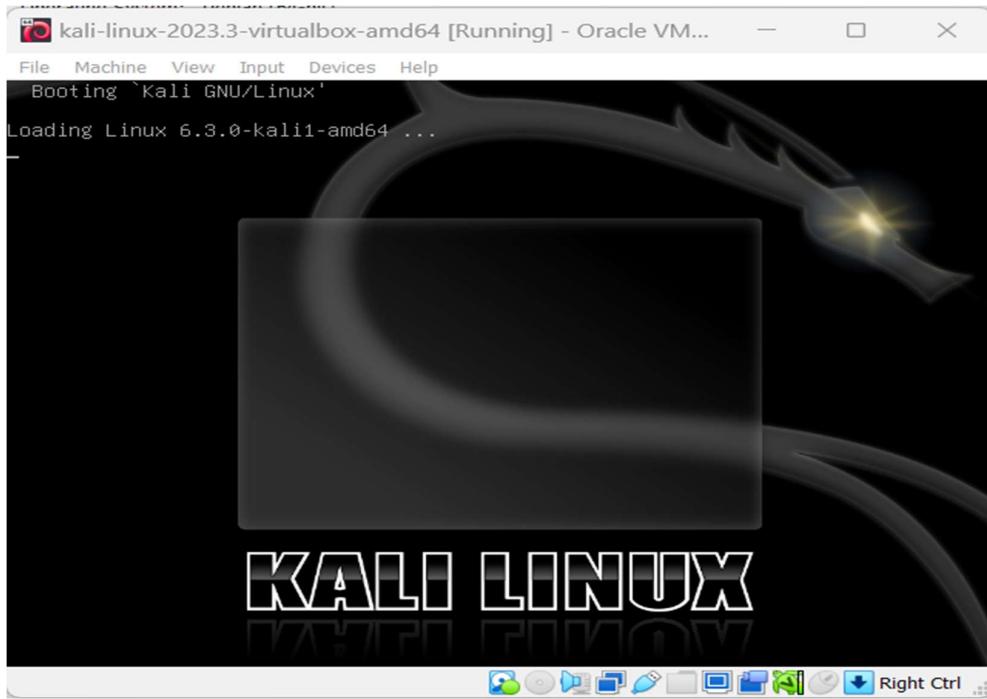
Below the metrics, it says "Extracting" and shows the path `kali-linux-2023.3-virtualbox-amd64\kali-linux-2023.3-virtualbox-amd64.vdi`. A green progress bar indicates the extraction progress, which is currently at 16%. At the bottom are buttons for "Background", "Pause", and "Cancel".

9. Import Kali Linux to Oracle Virtual Box.

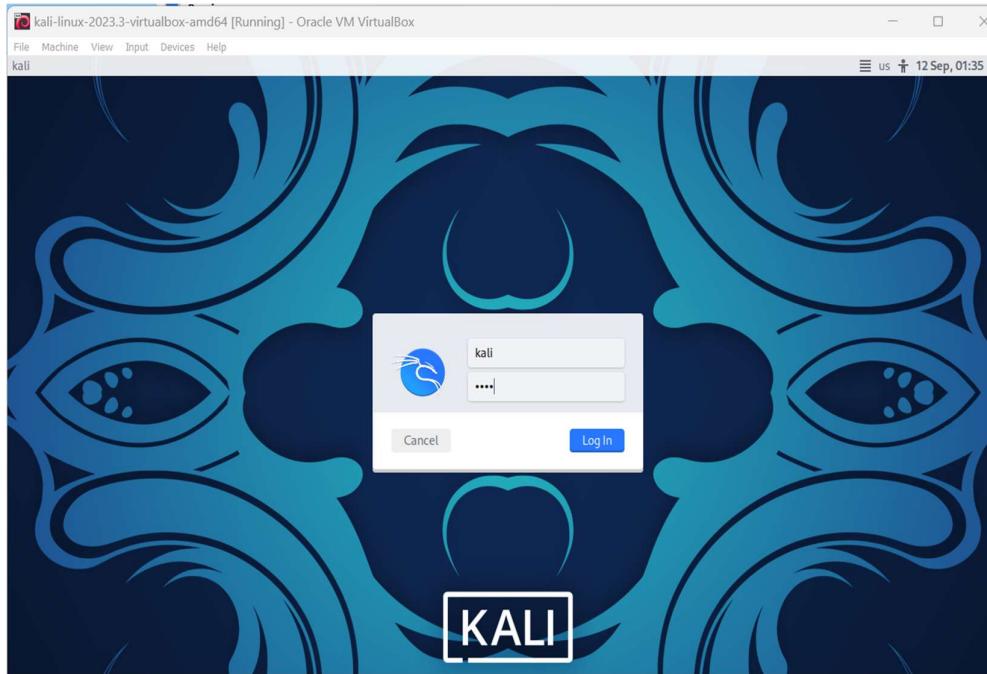
Open Oracle VirtualBox and click "Add." Select the extracted file.



Start the Virtual Machine.



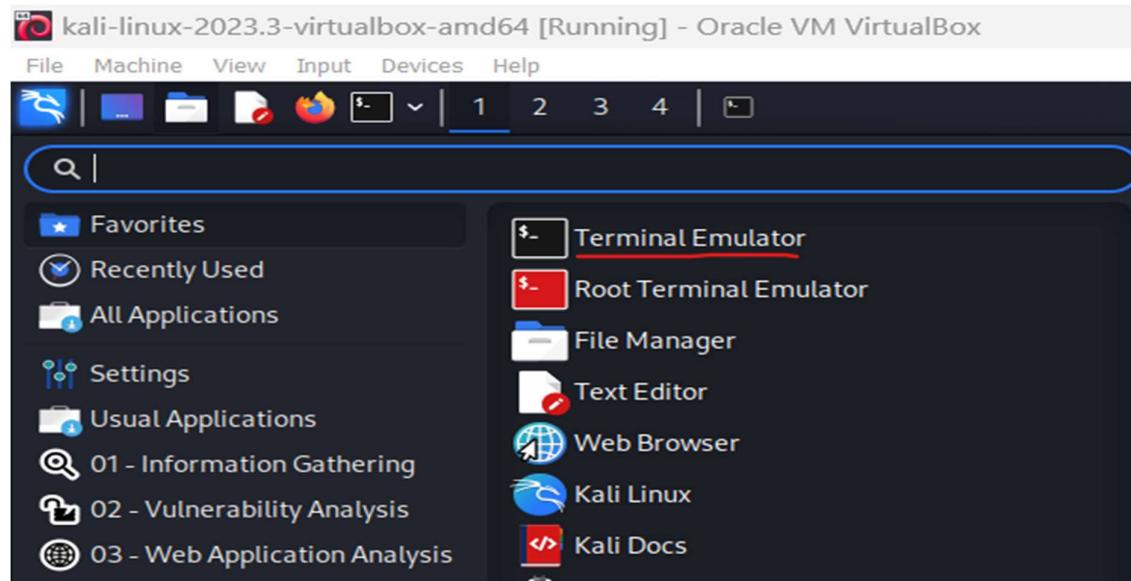
Enter the username and password as "kali."



10. Running commands in Kali Linux

Open the Terminal in Kali Linux and type the following commands. Here are brief descriptions for each command:

1. **Ping:** Tests network reachability by sending ICMP echo requests and receiving responses.
2. **Traceroute:** Traces the route data packets take to reach a destination, revealing the network path and latency.
3. **Netstat:** Displays network-related information such as active connections and routing tables.
4. **Tcpdump:** Captures and analyses network traffic, aiding in network troubleshooting and monitoring.
5. **Dig:** Performs DNS queries to retrieve information about domain names and their associated records.
6. **Nmap:** Scans and maps network hosts, services, and open ports, useful for network reconnaissance and security auditing.



```
kali@kali: ~
File Actions Edit View Help
└─(kali㉿kali)-[~]
└─$ sudo apt-get update
[sudo] password for kali:
Get:1 http://kali.download/kali kali-rolling InRelease [41.2 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 Packages [19.3 MB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Contents (deb) [45.3 MB]
Get:4 http://kali.download/kali kali-rolling/contrib amd64 Packages [116 kB]
Get:5 http://kali.download/kali kali-rolling/contrib amd64 Contents (deb) [221 kB]
Get:6 http://kali.download/kali kali-rolling/non-free amd64 Packages [218 kB]
Get:7 http://kali.download/kali kali-rolling/non-free amd64 Contents (deb) [908 kB]
Fetched 66.1 MB in 23s (2,918 kB/s)
Reading package lists... Done
```

```
└─(kali㉿kali)-[~]
└─$ sudo apt install traceroute
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
traceroute is already the newest version (1:2.1.2-1).
0 upgraded, 0 newly installed, 0 to remove and 451 not upgraded.
```

```
└─(kali㉿kali)-[~]
└─$ traceroute www.google.com
traceroute to www.google.com (142.250.76.68), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  0.266 ms  0.246 ms  0.242 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * *^Z
zsh: suspended  traceroute www.google.com
```

```
└─(kali㉿kali)-[~]
└─$ ping google.com
PING google.com (142.250.195.46) 56(84) bytes of data.
64 bytes from maa03s37-in-f14.1e100.net (142.250.195.46): icmp_seq=1 ttl=117 time=4.73 ms
64 bytes from maa03s37-in-f14.1e100.net (142.250.195.46): icmp_seq=2 ttl=117 time=10.1 ms
64 bytes from maa03s37-in-f14.1e100.net (142.250.195.46): icmp_seq=3 ttl=117 time=8.34 ms
64 bytes from maa03s37-in-f14.1e100.net (142.250.195.46): icmp_seq=4 ttl=117 time=4.51 ms
^Z
zsh: suspended  ping google.com
```

```
(kali㉿kali)-[~]
└$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
net-tools is already the newest version (2.10-0.1).
net-tools set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 451 not upgraded.
```

```
(kali㉿kali)-[~]
└$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
udp      0      0 10.0.2.15:49097        maa05s14-in-f4.1e:33475 ESTABLISHED
udp      0      0 10.0.2.15:43992        maa05s14-in-f4.1e:33469 ESTABLISHED
udp      0      0 10.0.2.15:38901        maa05s14-in-f4.1e:33472 ESTABLISHED
udp      0      0 10.0.2.15:48123        maa05s14-in-f4.1e:33472 ESTABLISHED
udp      0      0 10.0.2.15:37885        maa05s14-in-f4.1e:33477 ESTABLISHED
udp      0      0 10.0.2.15:34833        maa05s14-in-f4.1e:33473 ESTABLISHED
udp      0      0 10.0.2.15:bootpc       10.0.2.2:bootps      ESTABLISHED
udp      0      0 10.0.2.15:40031        maa05s14-in-f4.1e:33473 ESTABLISHED
udp      0      0 10.0.2.15:46194        maa05s14-in-f4.1e:33478 ESTABLISHED
udp      0      0 10.0.2.15:60546        maa05s14-in-f4.1e:33469 ESTABLISHED
udp      0      0 10.0.2.15:49288        maa05s14-in-f4.1e:33470 ESTABLISHED
```

```
(kali㉿kali)-[~]
└$ sudo tcpdump -c 100
tcpdump: verbose output suppressed, use -v[v] ... for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
02:45:42.659648 IP6 fe80::ed02:607:9263:a4fc > ip6-allrouters: ICMP6, router solicitation, l
ength 8
02:45:42.676629 IP 10.0.2.15.56805 > 10.101.1.10.domain: 8129+ PTR? c.f.4.a.3.6.2.9.7.0.6.0.
2.0.d.e.0.0.0.0.0.0.0.0.0.0.8.e.f.ip6.arpa. (90)
02:45:42.680236 IP 10.101.1.10.domain > 10.0.2.15.56805: 8129 NXDomain* 0/1/0 (149)
02:45:42.779451 IP 10.0.2.15.59547 > 10.101.1.10.domain: 40561+ PTR? 10.1.101.10.in-addr.arpa. (42)
02:45:42.783492 IP 10.101.1.10.domain > 10.0.2.15.59547: 40561 NXDomain 0/1/0 (101)
02:45:42.783981 IP 10.0.2.15.34425 > 10.101.1.10.domain: 38124+ PTR? 15.2.0.10.in-addr.arpa. (40)
02:45:42.792605 IP 10.101.1.10.domain > 10.0.2.15.34425: 38124 NXDomain 0/1/0 (99)
02:45:47.843089 ARP, Request who-has 10.0.2.2 tell 10.0.2.15, length 28
02:45:47.844962 ARP, Reply 10.0.2.2 is-at 52:54:00:12:35:02 (oui Unknown), length 46
02:45:47.876433 IP 10.0.2.15.40169 > 10.101.1.10.domain: 51602+ PTR? 2.2.0.10.in-addr.arpa.
```

```
[~]$ dig www.ssn.in
; <>> DiG 9.18.16-1-Debian <>> www.ssn.in
;; global options: +cmd
;; Got answer:
;; ->>HEADER<- opcode: QUERY, status: NXDOMAIN, id: 31111
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1
;
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.ssn.in.           IN      A
;
;; AUTHORITY SECTION:
ssn.in.          1386    IN      SOA     ns1.epik.com. support.epik.com. 2019103102 1
0800 3600 604800 3600
;
;; Query time: 832 msec
;; SERVER: 10.101.1.10#53(10.101.1.10) (UDP)
;; WHEN: Tue Sep 12 02:47:00 EDT 2023
;; MSG SIZE rcvd: 95
```

```
[~](kali㉿kali)-[~]
$ sudo apt install nmap
[sudo] password for kali:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
nmap is already the newest version (7.94+dfsg1-1kali1).
nmap set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 451 not upgraded.
```

```
[~](kali㉿kali)-[~]
$ nmap wikipedia.org
Starting Nmap 7.94 ( https://nmap.org ) at 2023-09-12 02:48 EDT
Nmap scan report for wikipedia.org (103.102.166.224)
Host is up (0.0098s latency).
Other addresses for wikipedia.org (not scanned): 2001:df2:e500:ed1a::1
rDNS record for 103.102.166.224: text-lb.eqsin.wikimedia.org
Not shown: 996 filtered tcp ports (no-response)
PORT      STATE SERVICE
80/tcp    open  http
110/tcp   open  pop3
143/tcp   open  imap
443/tcp   open  https
Nmap done: 1 IP address (1 host up) scanned in 5.19 seconds
```

Result

The Kali Linux has been successfully installed in Oracle VirtualBox, and the commands have been executed and verified successfully.