# Lab02 Passwords

Prepared By Wooi Ping Cheah

Reference: COMP3052.SEC PASSWORDS by Mike Pound

# Installing Kali-Linux & Ubuntu VMs Locally

- In the previous lab session, you did your work on the Kali-Linux and Ubuntu virtual machines, which were installed on the UNNC's Virtual Desktop Infrastructure (VDI). You accessed the VDI from your local (physical) machine through a remote login.

- In this lab session, you will install Kali-Linux and Ubuntu virtual machines directly on your local (physical) machine (i.e., your own pc/laptop, or the workstation in the lab). This is usually more efficient than working on a remote VDI.

- First of all, you need to download the Oracle VM VirtualBox installer to your local (physical) machine from the following website:
  https://www.virtualbox.org/wiki/Downloads
  You will then install the Kali-Linux and Ubuntu virtual machines from this installer.

# Installing Kali-Linux & Ubuntu VMs Locally

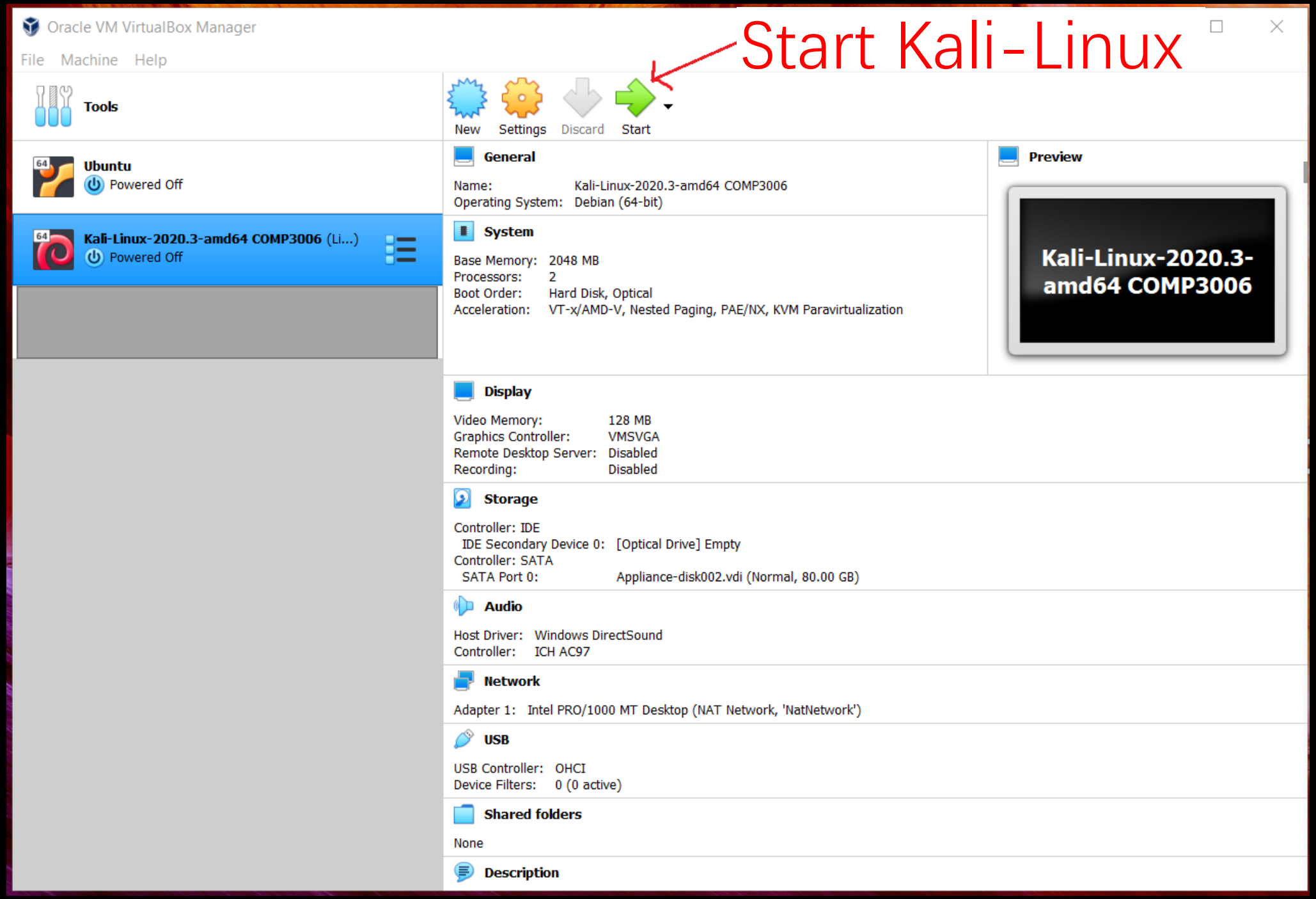
- Then, you need to download the SEC20220215VMs.ova file from one of the following websites:
  - https://nottinghamedu1.sharepoint.com/:u:/s/SEC/EcJfKxLK79dGrJTw2g9vQ8YB6awTY2SViK0S2CS2VT6jPw?e=zsz1S0
  - https://nottinghamedu1.sharepoint.com/:u:/r/sites/SEC/Shared%20Documents/General/SEC20220215VMs.ova?csf=1&web=1&e=yJmIQ9

  This OVA file specifies how the Kali-Linux and Ubuntu virtual machines are to be configured for the purpose of this module.

- You can now install and configure the Kali-Linux and Ubuntu virtual machines by following the instructions described in the following videoclip: https://video.nottingham.edu.cn/Panopto/Pages/Viewer.aspx?id=1b3d82b5-b12b-4302-90e7-afb800caf884&start=0
  (You need to log in with your UNNC's Moodle ID and password)

# Installing Kali-Linux & Ubuntu VMs Locally

- Once you have successfully installed and configured the Kali-Linux and Ubuntu virtual machines on your local (physical) machine, you can start running Kali-Linux and working on your lab exercises about Password Authentication now.

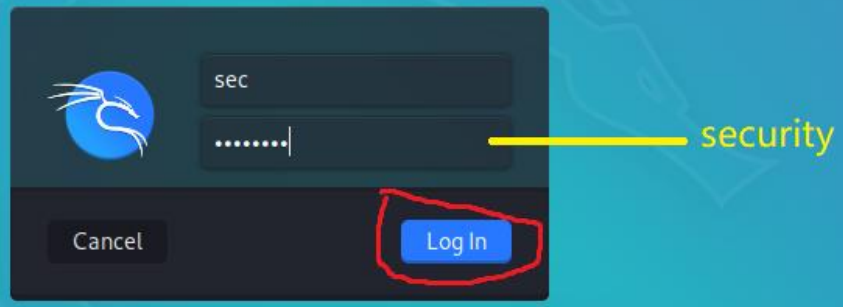

Oracle VM VirtualBox Manager
File Machine Help
Start Kali-Linux
Tools
New Settings Discard Start
Ubuntu
Powered Off
Kali-Linux-2020.3-amd64 COMP3006 (Li...)
Powered Off
General
Name: Kali-Linux-2020.3-amd64 COMP3006
Operating System: Debian (64-bit)
System
Base Memory: 2048 MB
Processors: 2
Boot Order: Hard Disk, Optical
Acceleration: VT-x/AMD-V, Nested Paging, PAE/NX, KVM Paravirtualization
Preview
Kali-Linux-2020.3-amd64 COMP3006
Display
Video Memory: 128 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled
Storage
Controller: IDE
IDE Secondary Device 0: [Optical Drive] Empty
Controller: SATA
SATA Port 0: Appliance-disk002.vdi (Normal, 80.00 GB)
Audio
Host Driver: Windows DirectSound
Controller: ICH AC97
Network
Adapter 1: Intel PRO/1000 MT Desktop (NAT Network, 'NatNetwork')
USB
USB Controller: OHCI
Device Filters: 0 (0 active)
Shared folders
None
Description

Kali-server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

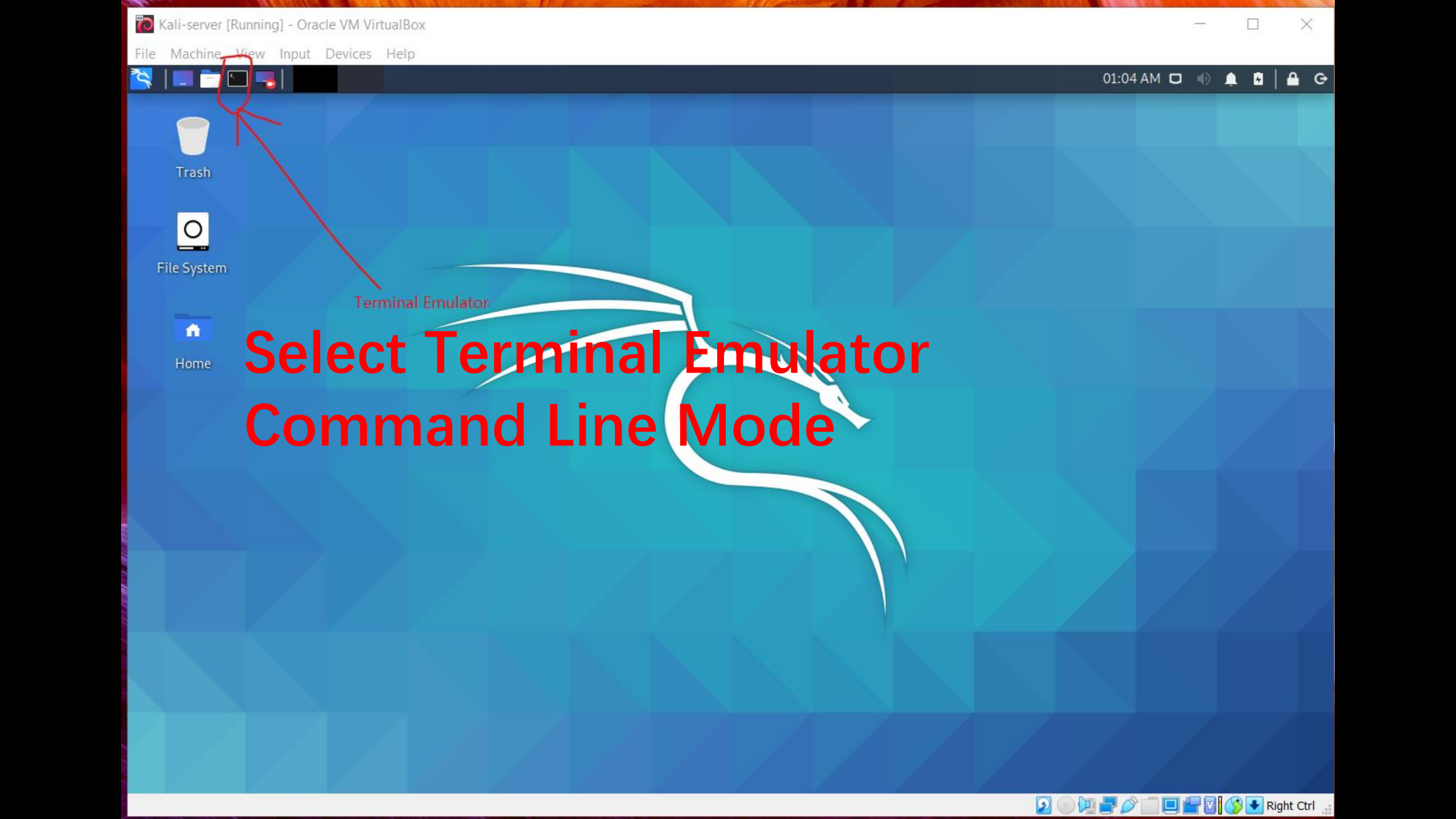
kali en_US.utf8 24 Jan, 01:58

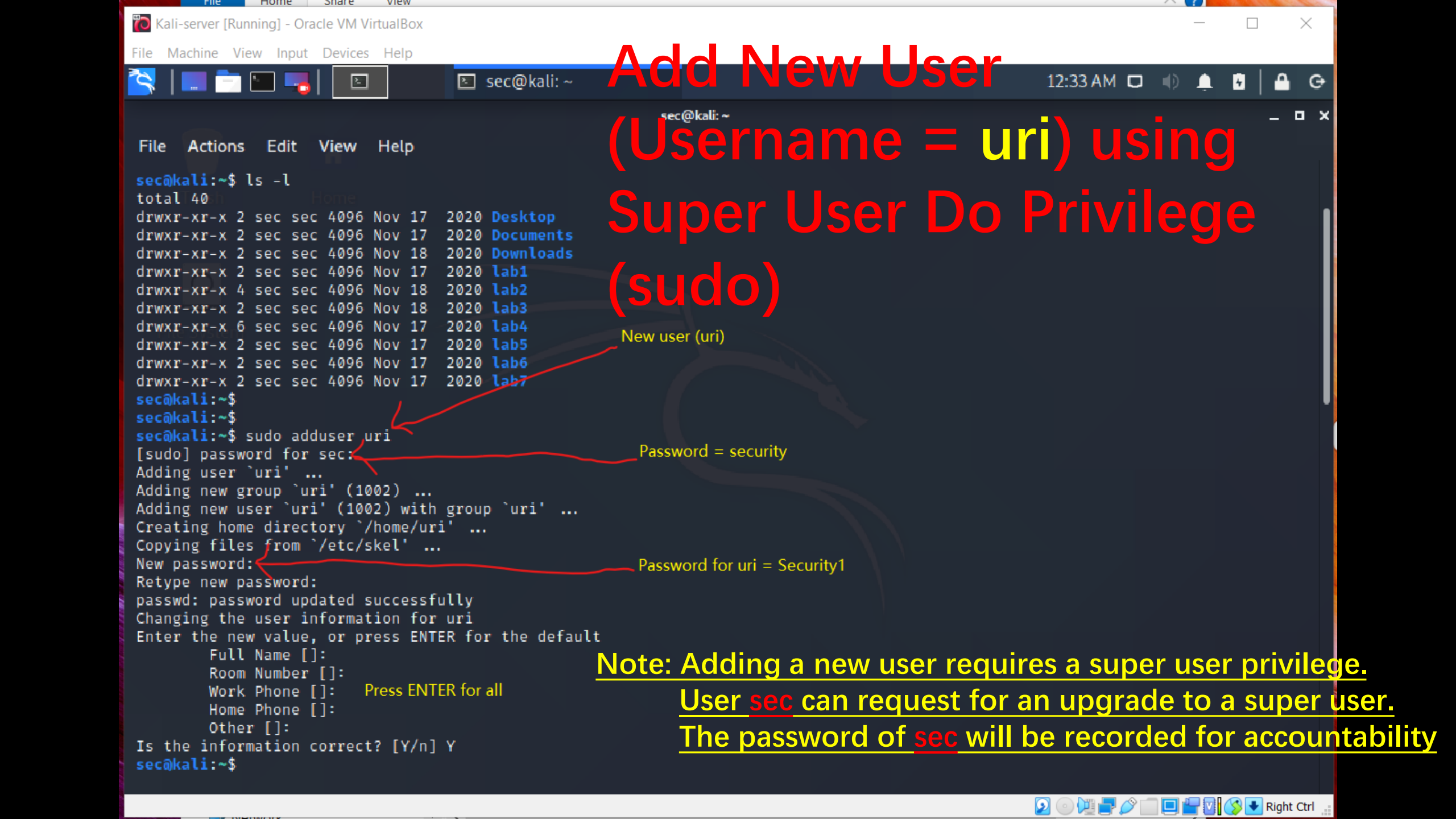
# Enter Username (sec) and Password (security) & Log In

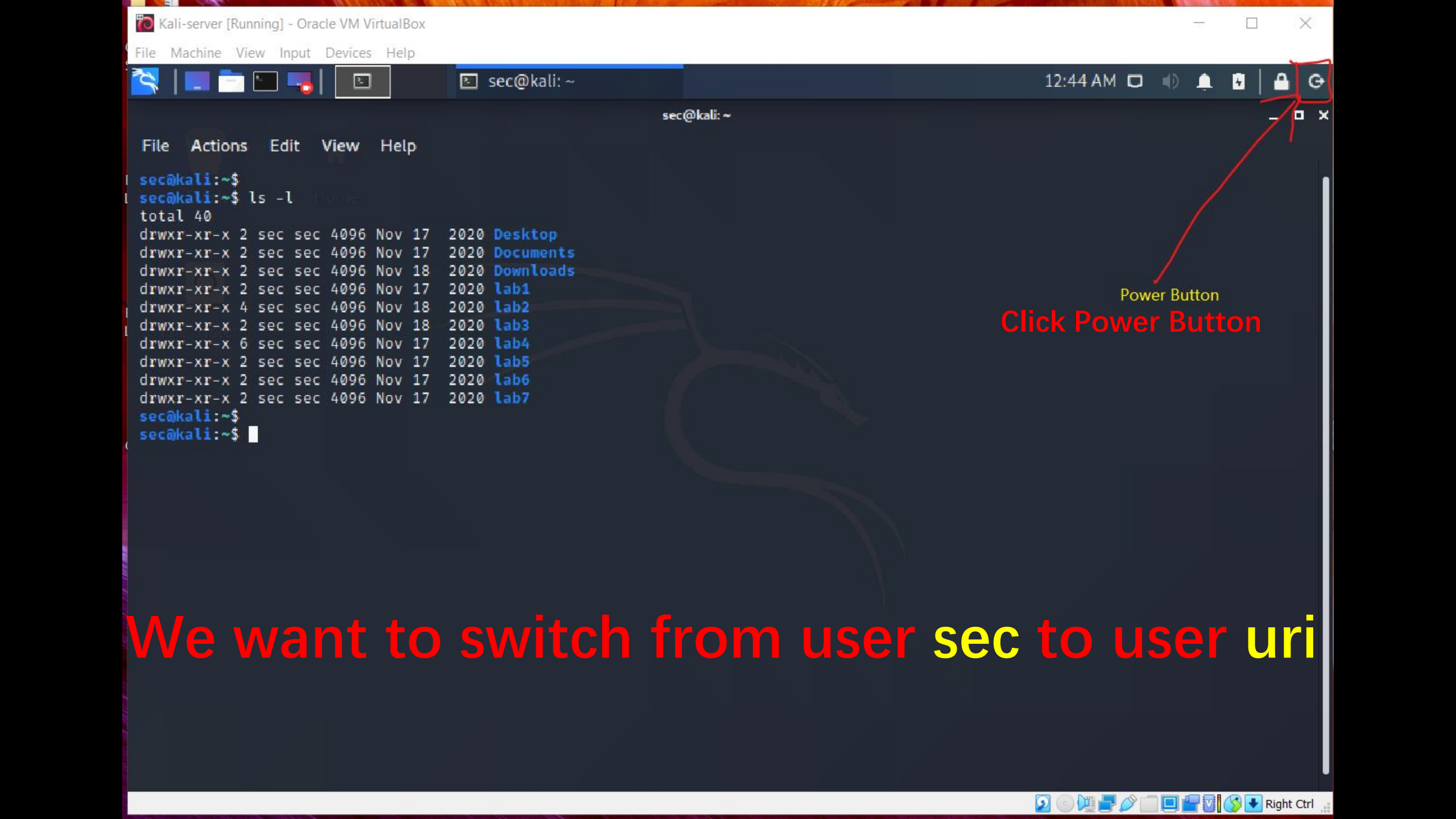


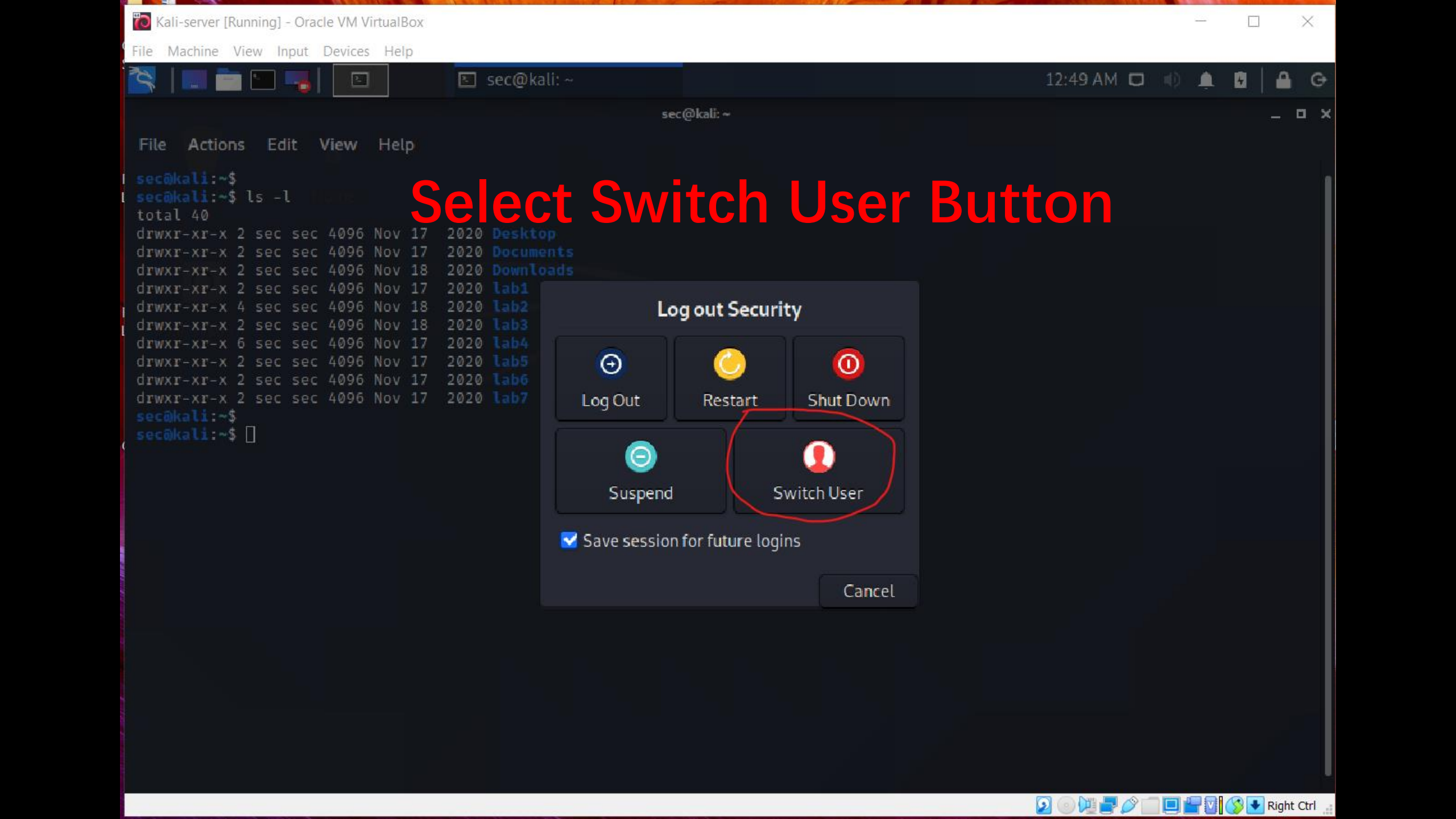

KALI
BY OFFENSIVE SECURITY

Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
01:04 AM
Trash
File System
Home
Terminal Emulator
Select Terminal Emulator
Command Line Mode
Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
12:33 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$ ls -l
total 40
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Nov 17 2020 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo adduser uri
[sudo] password for sec:
Adding user `uri' ...
Adding new group `uri' (1002) ...
Adding new user `uri' (1002) with group `uri' ...
Creating home directory `/home/uri' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for uri
Enter the new value, or press ENTER for the default
Full Name []:
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] Y
sec@kali:~$
Add New User (Username = uri) using Super User Do Privilege (sudo)
New user (uri)
Password = security
Password for uri = Security1
Press ENTER for all
Note: Adding a new user requires a super user privilege.
User sec can request for an upgrade to a super user.
The password of sec will be recorded for accountability
Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
12:44 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$
sec@kali:~$ ls -l
total 40
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Nov 17 2020 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$
Power Button
Click Power Button
We want to switch from user sec to user uri
Right Ctrl

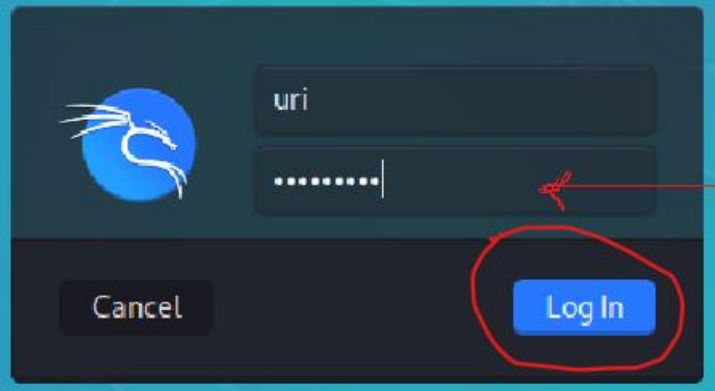

Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
12:49 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$
sec@kali:~$ ls -l
total 40
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Nov 17 2020 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$
Select Switch User Button
Log out Security
Log Out
Restart
Shut Down
Suspend
Switch User
Save session for future logins
Cancel
Right Ctrl

Kali-server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

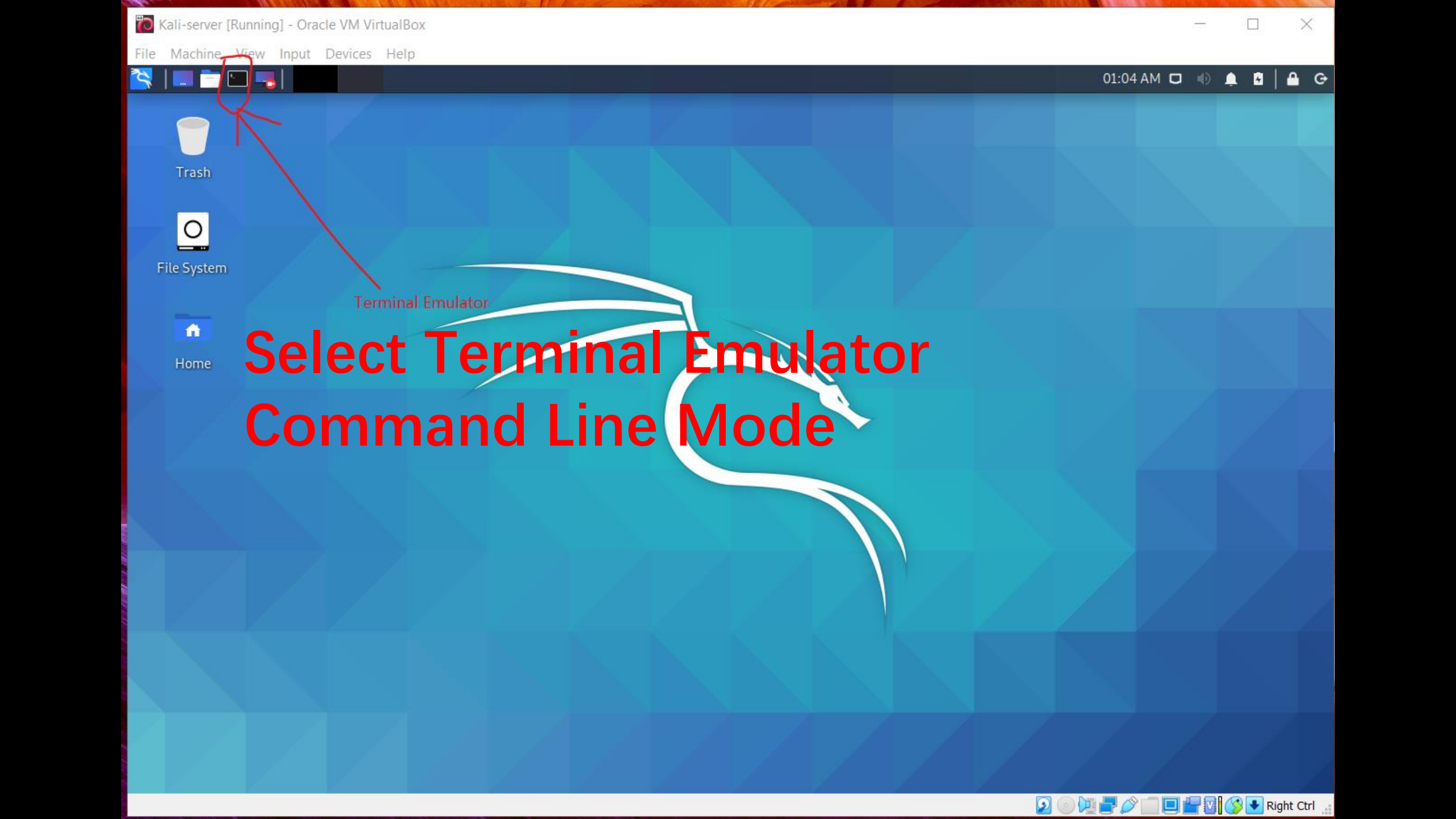
kali en_US.utf8 24 Jan, 00:51

# Enter Username (uri) and Password (Security1) & Log In

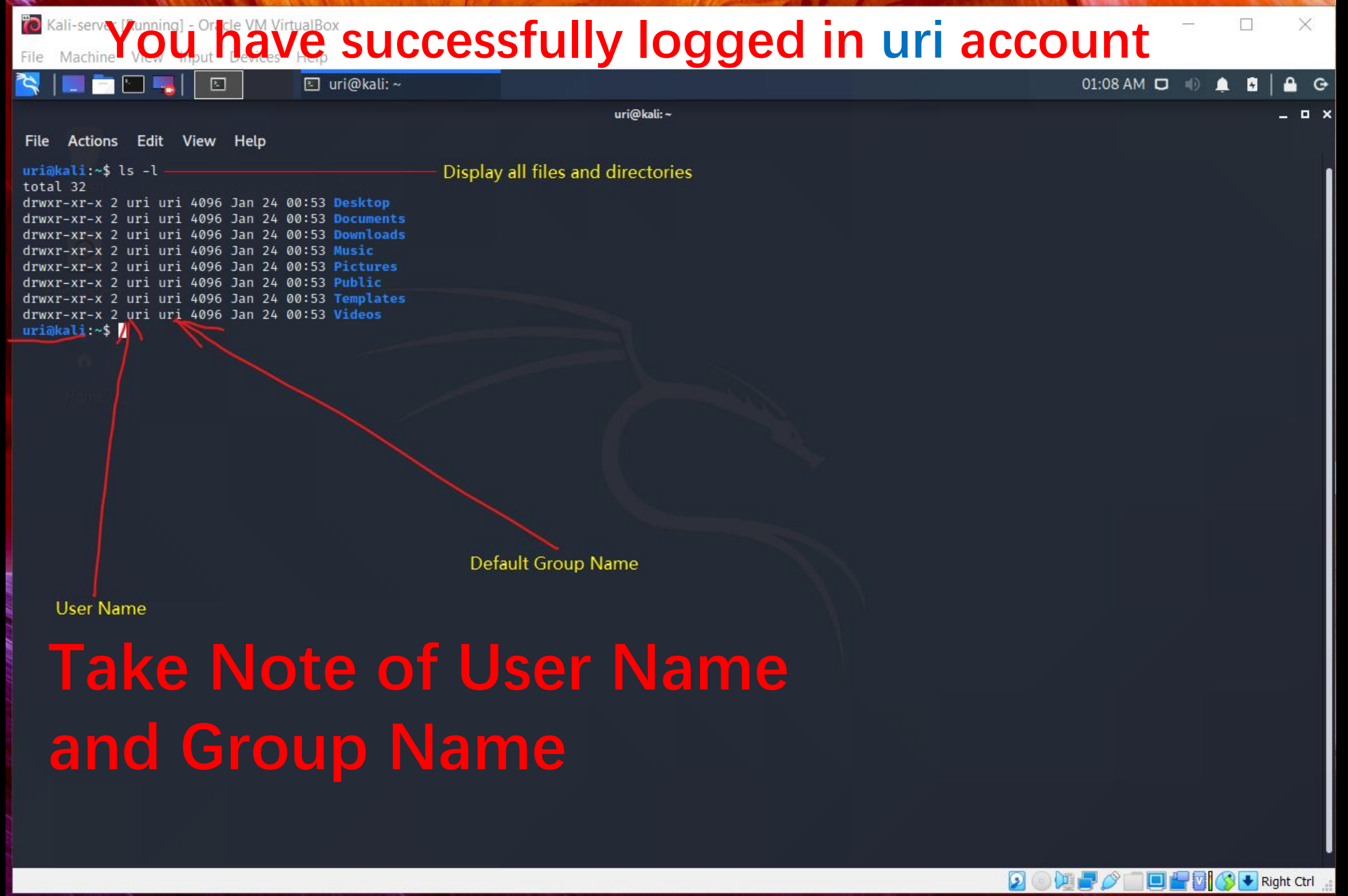



KALI
BY OFFENSIVE SECURITY

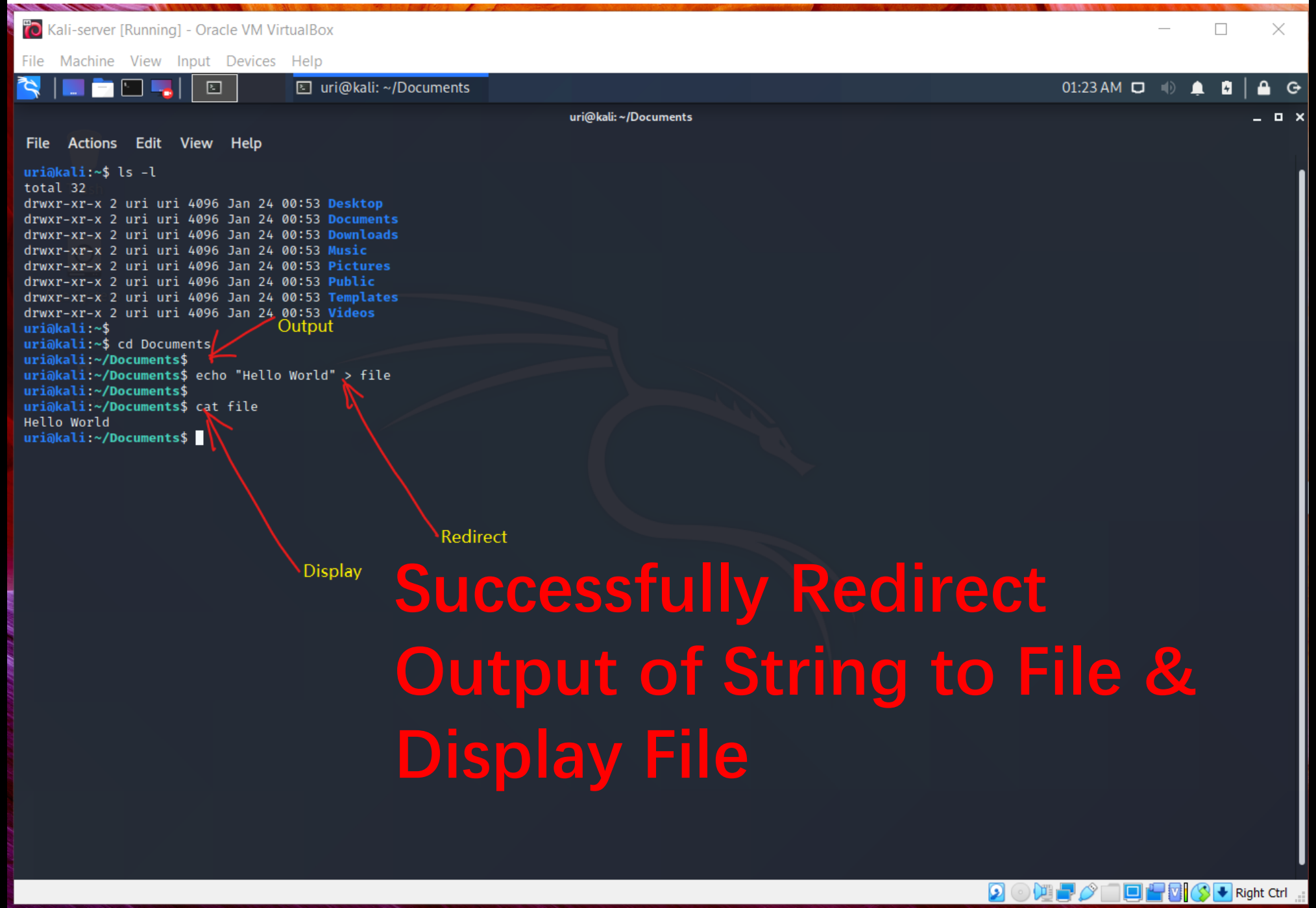
Right Ctrl

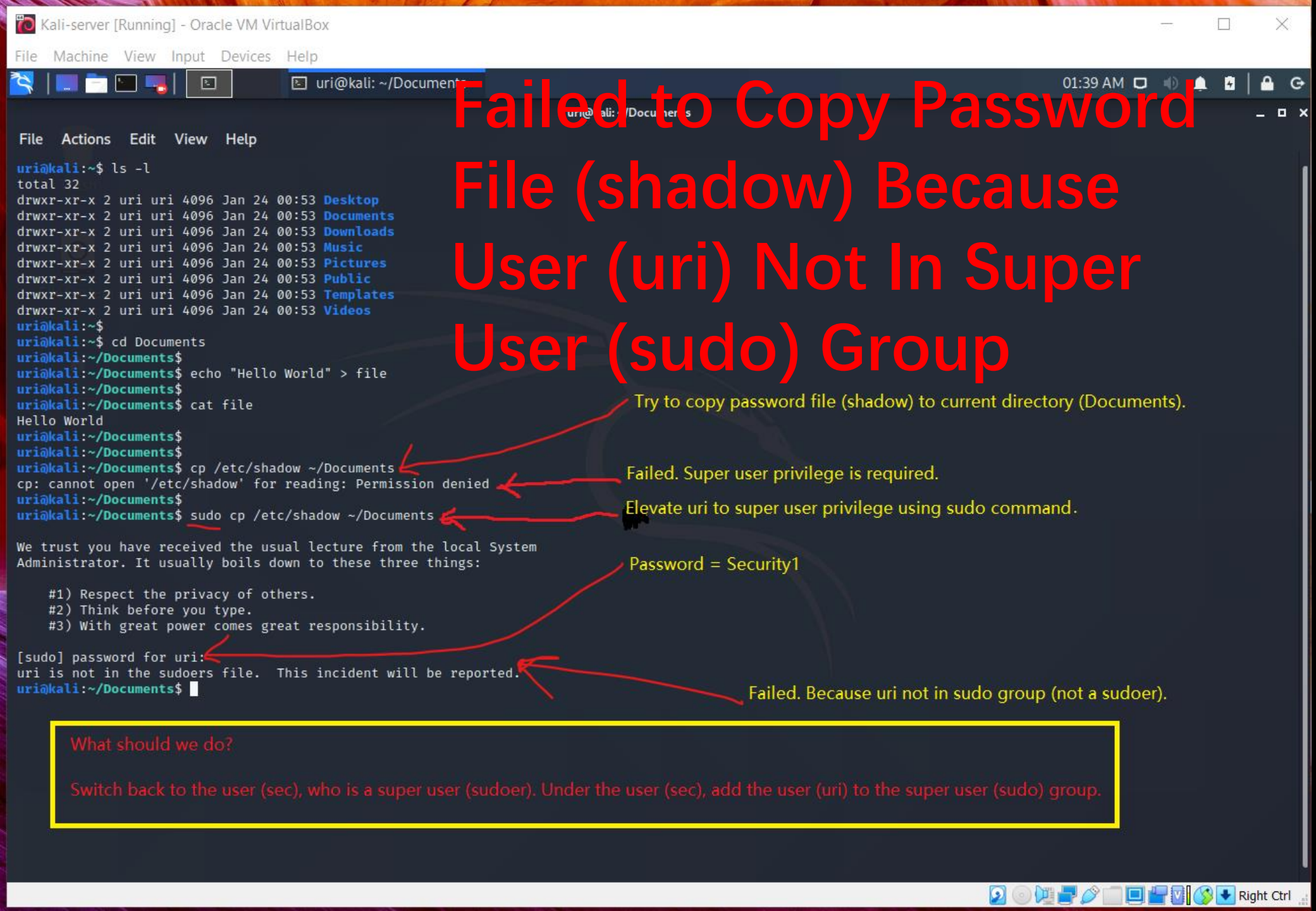

Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
01:04 AM
Trash
File System
Home
Terminal Emulator
Select Terminal Emulator
Command Line Mode
Right Ctrl

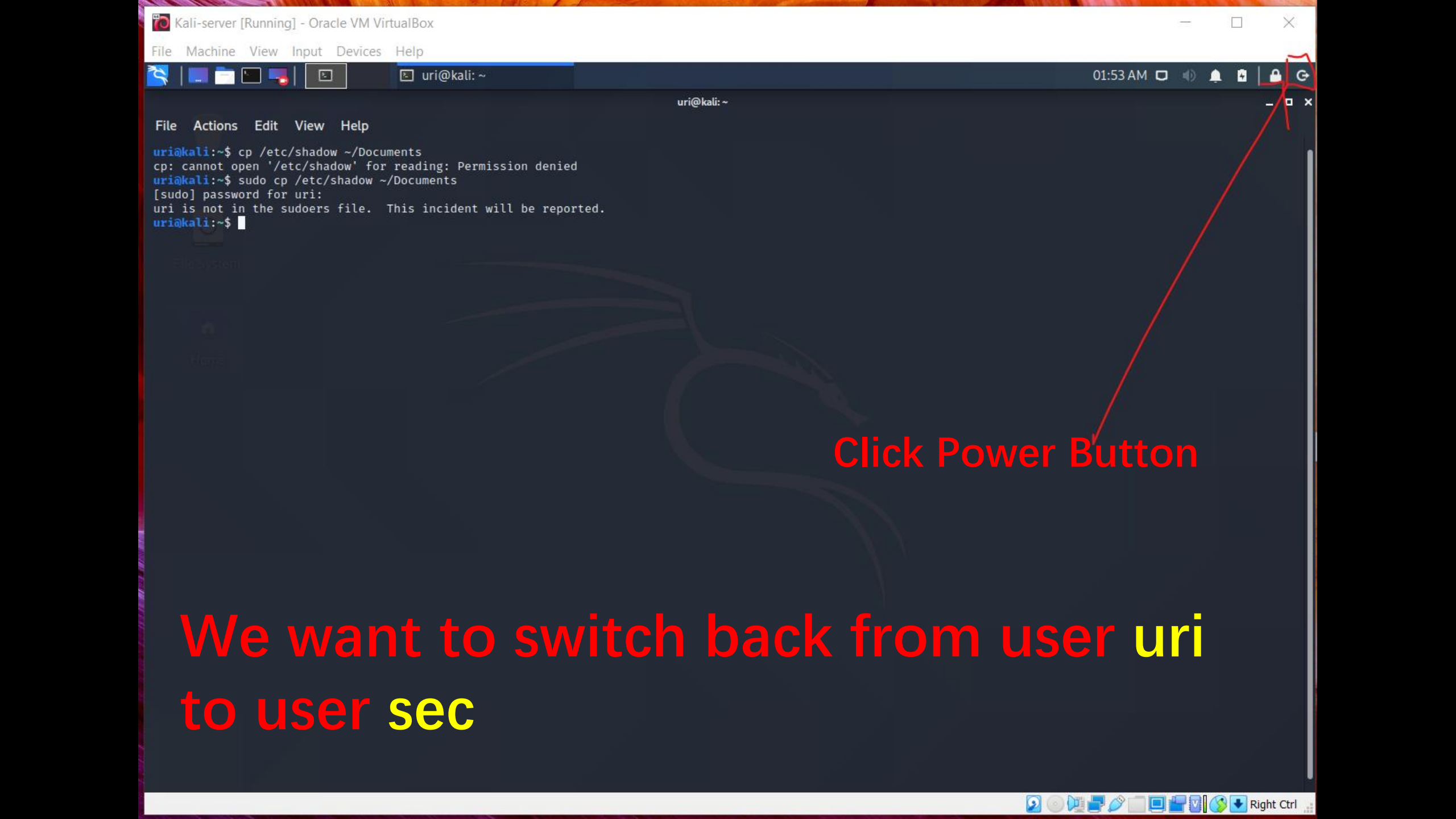
# You have successfully logged in uri account




# Take Note of User Name and Group Name


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
uri@kali: ~/Documents
01:23 AM
uri@kali: ~/Documents
File Actions Edit View Help
uri@kali:~$ ls -l
total 32
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Desktop
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Documents
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Downloads
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Music
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Pictures
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Public
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Templates
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Videos
uri@kali:~$
uri@kali:~$ cd Documents
uri@kali:~/Documents$
uri@kali:~/Documents$ echo "Hello World" > file
uri@kali:~/Documents$
uri@kali:~/Documents$ cat file
Hello World
uri@kali:~/Documents$
Output
Redirect
Display
Successfully Redirect Output of String to File & Display File
Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
uri@kali: ~/Documents
01:39 AM
File Actions Edit View Help
uri@kali:~$ ls -l
total 32
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Desktop
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Documents
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Downloads
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Music
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Pictures
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Public
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Templates
drwxr-xr-x 2 uri uri 4096 Jan 24 00:53 Videos
uri@kali:~$
uri@kali:~$ cd Documents
uri@kali:~/Documents$
uri@kali:~/Documents$ echo "Hello World" > file
uri@kali:~/Documents$
uri@kali:~/Documents$ cat file
Hello World
uri@kali:~/Documents$
uri@kali:~/Documents$
uri@kali:~/Documents$ cp /etc/shadow ~/Documents
cp: cannot open '/etc/shadow' for reading: Permission denied
uri@kali:~/Documents$
uri@kali:~/Documents$ sudo cp /etc/shadow ~/Documents
We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:
#1) Respect the privacy of others.
#2) Think before you type.
#3) With great power comes great responsibility.
[sudo] password for uri:
uri is not in the sudoers file. This incident will be reported.
uri@kali:~/Documents$
Failed to Copy Password File (shadow) Because User (uri) Not In Super User (sudo) Group
Try to copy password file (shadow) to current directory (Documents).
Failed. Super user privilege is required.
Elevate uri to super user privilege using sudo command.
Password = Security1
Failed. Because uri not in sudo group (not a sudoer).
What should we do?
Switch back to the user (sec), who is a super user (sudoer). Under the user (sec), add the user (uri) to the super user (sudo) group.
Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
uri@kali: ~
01:53 AM
uri@kali: ~
File Actions Edit View Help
uri@kali:~$ cp /etc/shadow ~/Documents
cp: cannot open '/etc/shadow' for reading: Permission denied
uri@kali:~$ sudo cp /etc/shadow ~/Documents
[sudo] password for uri:
uri is not in the sudoers file. This incident will be reported.
uri@kali:~$
Click Power Button
We want to switch back from user uri to user sec
Right Ctrl

Kali-server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

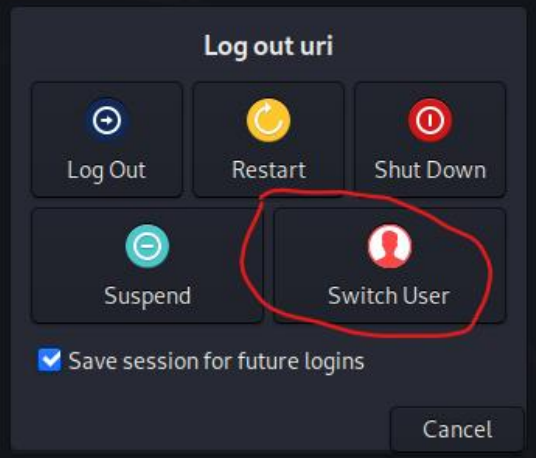
uri@kali: ~ 01:57 AM

uri@kali: ~

File Actions Edit View Help

```
uri@kali:~$ cp /etc/shadow ~/Documents
cp: cannot open '/etc/shadow' for reading: Permission denied
uri@kali:~$ sudo cp /etc/shadow ~/Documents
[sudo] password for uri:
uri is not in the sudoers file.  This incident will be reported.
uri@kali:~$
```

# Select Switch User Button



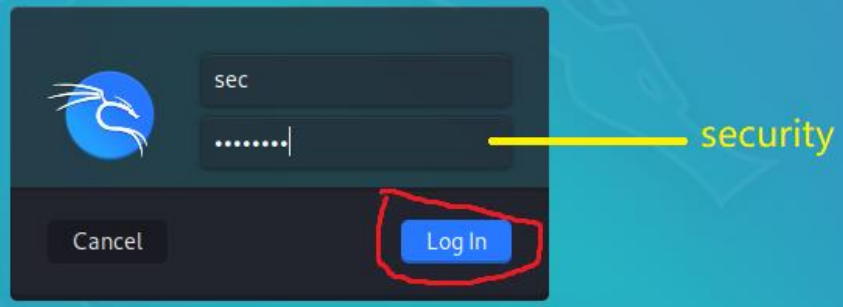

Right Ctrl

Kali-server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

kali en_US.utf8 24 Jan, 01:58

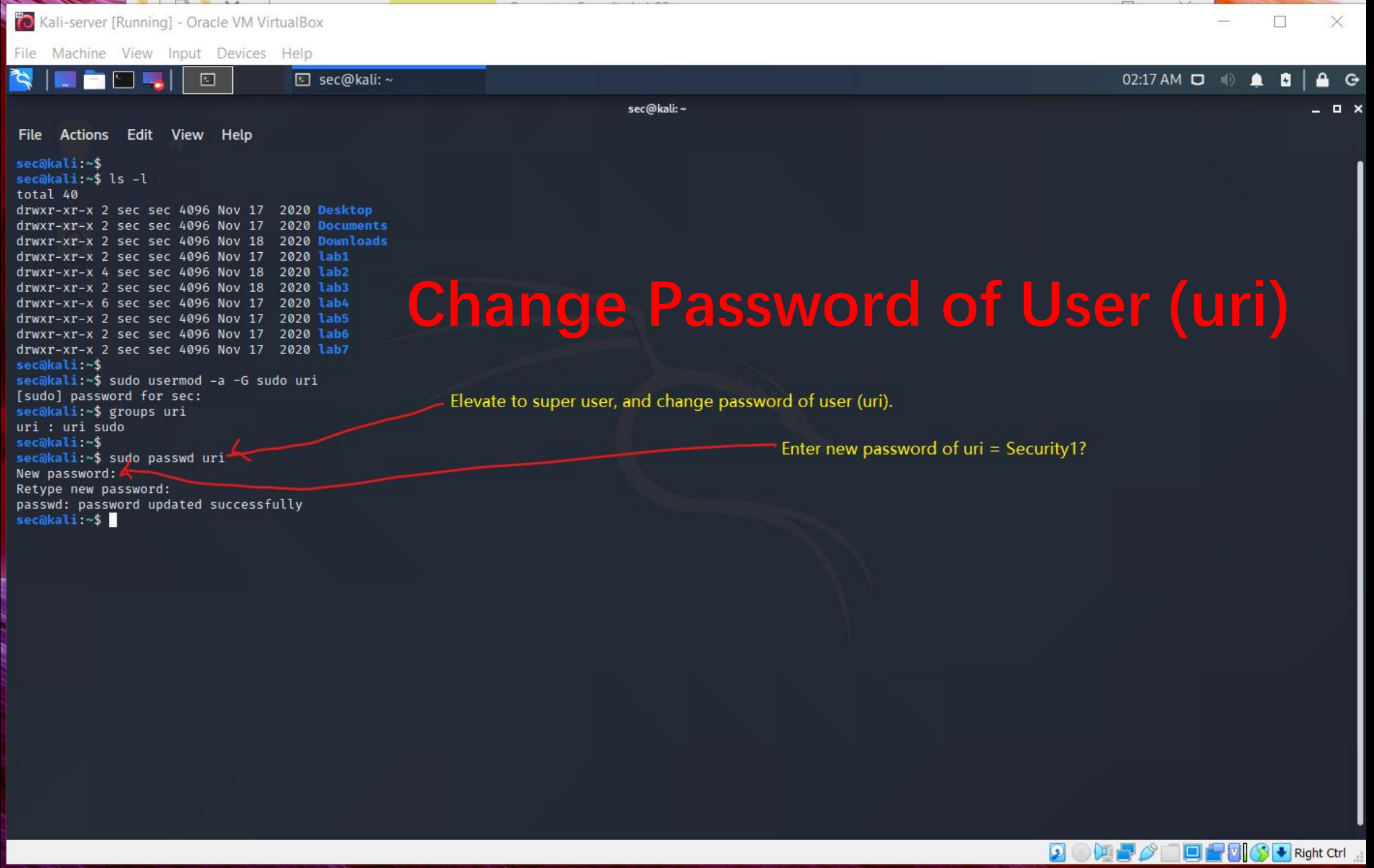
# Enter Username (sec) and Password (security) & Log In




KALI
BY OFFENSIVE SECURITY

Right Ctrl


You may refer to the following website to learn more about the Linux command "sudo usermod –a –G sudo uri":
https://techoverflow.net/2019/04/30/what-does-sudo-usermod-a-g-docker-user-do-on-linux/


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
02:17 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$
sec@kali:~$ ls -l
total 40
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Nov 17 2020 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ sudo usermod -a -G sudo uri
[sudo] password for sec:
sec@kali:~$ groups uri
uri : uri sudo
sec@kali:~$
sec@kali:~$ sudo passwd uri
New password:
Retype new password:
passwd: password updated successfully
sec@kali:~$
Change Password of User (uri)
Elevate to super user, and change password of user (uri).
Enter new password of uri = Security1?
Right Ctrl

Kali-server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

sec@kali: ~ 02:30 AM

sec@kali: ~

File Actions Edit View Help

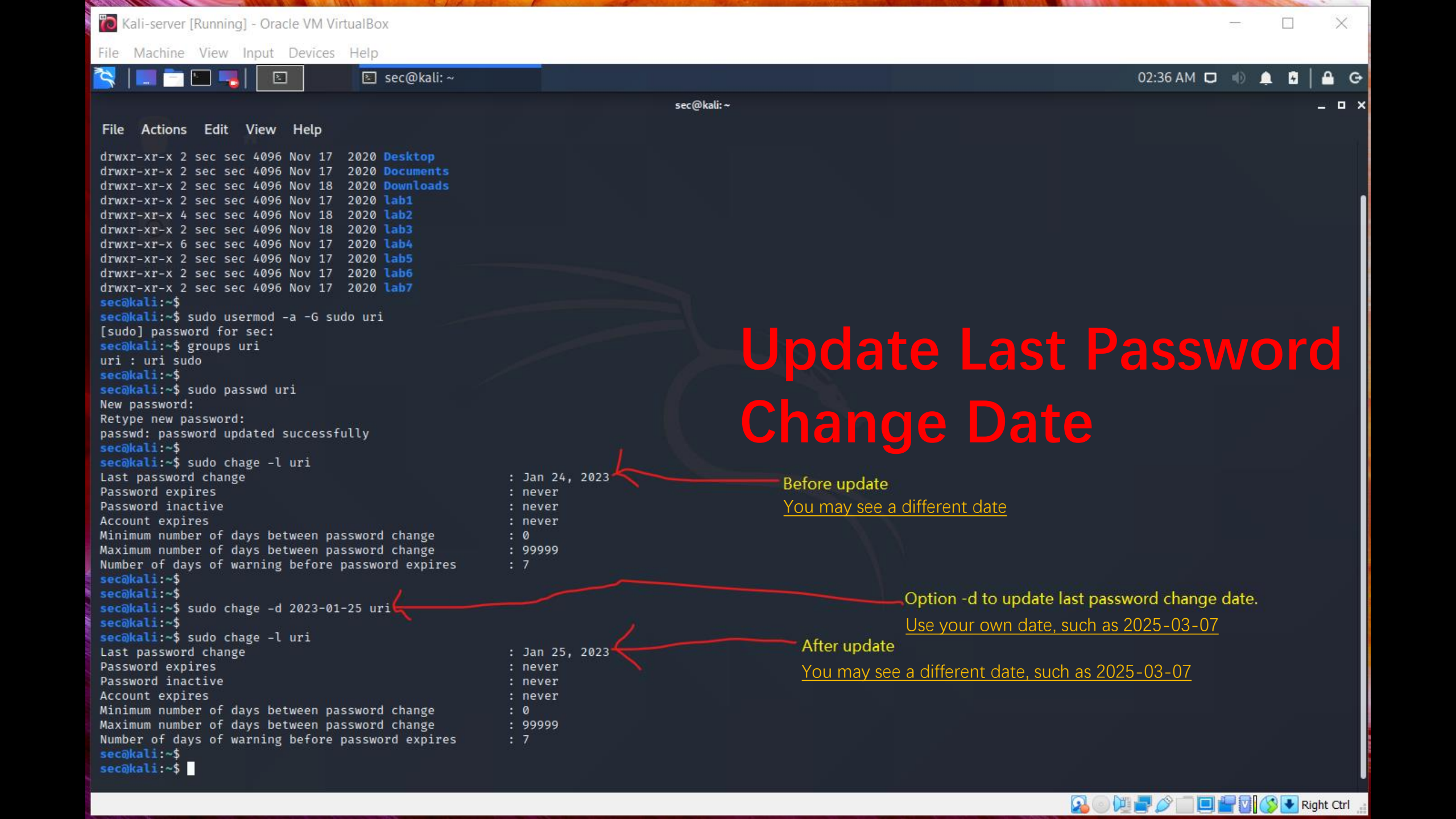
```
sec@kali:~$
sec@kali:~$ ls -l
total 40
drwxr-xr-x 2 sec sec 4096 Nov 17  2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17  2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18  2020 Downloads
drwxr-xr-x 2 sec sec 4096 Nov 17  2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18  2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18  2020 lab3
drwxr-xr-x 6 sec sec 4096 Nov 17  2020 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17  2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17  2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17  2020 lab7
sec@kali:~$
sec@kali:~$ sudo usermod -a -G sudo uri
[sudo] password for sec:
sec@kali:~$ groups uri
uri : uri sudo
sec@kali:~$
sec@kali:~$ sudo passwd uri
New password:
Retype new password:
passwd: password updated successfully
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change                                    : Jan 24, 2023
Password expires                                        : never
Password inactive                                       : never
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 99999
Number of days of warning before password expires       : 7
sec@kali:~$
```

# Retrieve User Password Aging Related Information

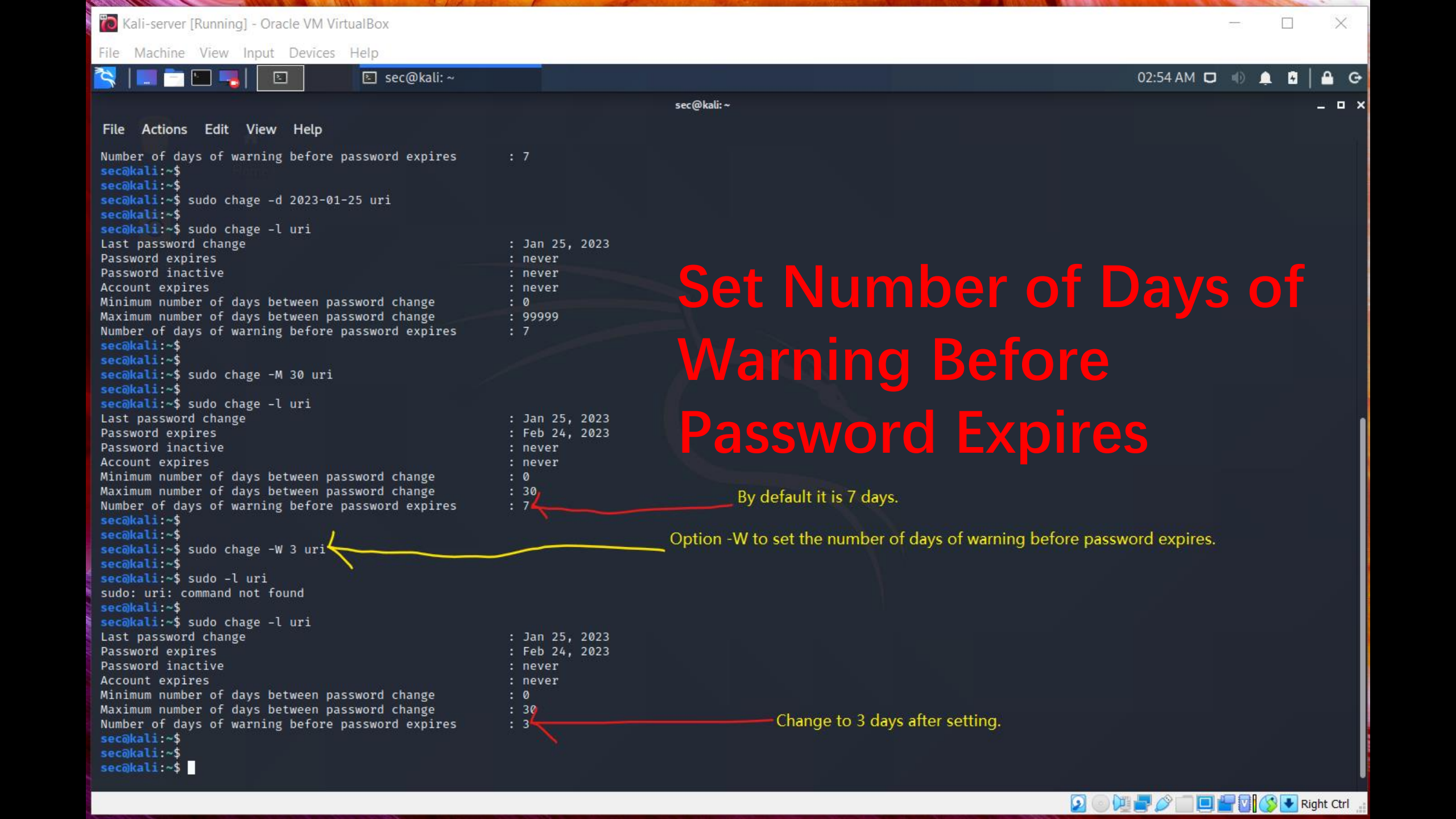
Using chage (change age) command.
Option -l for displaying password aging related information.

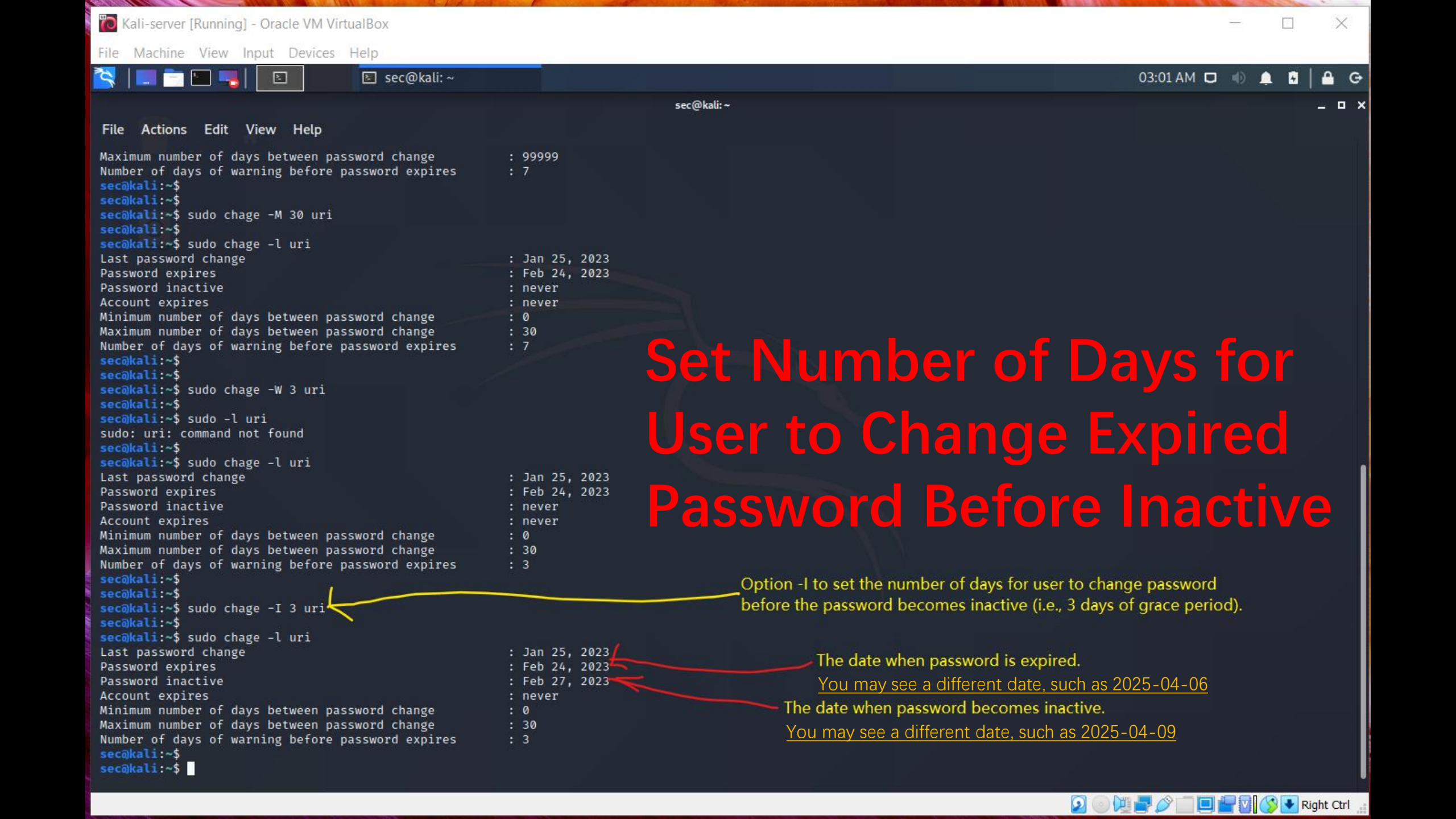
Note: The information here may be different on your machine

Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
02:36 AM
sec@kali: ~
File Actions Edit View Help
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Nov 17 2020 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ sudo usermod -a -G sudo uri
[sudo] password for sec:
sec@kali:~$ groups uri
uri : uri sudo
sec@kali:~$
sec@kali:~$ sudo passwd uri
New password:
Retype new password:
passwd: password updated successfully
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 24, 2023
Password expires : never
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -d 2023-01-25 uri
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 25, 2023
Password expires : never
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
Update Last Password Change Date
Before update
You may see a different date
Option -d to update last password change date.
Use your own date, such as 2025-03-07
After update
You may see a different date, such as 2025-03-07
Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
02:44 AM
sec@kali: ~
File Actions Edit View Help
[sudo] password for sec:
sec@kali:~$ groups uri
uri : uri sudo
sec@kali:~$
sec@kali:~$ sudo passwd uri
New password:
Retype new password:
passwd: password updated successfully
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 24, 2023
Password expires : never
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -d 2023-01-25 uri
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 25, 2023
Password expires : never
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -M 30 uri
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 25, 2023
Password expires : Feb 24, 2023
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 30
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
Set Number of Days for Password Validity
No date shown before setting to 30 days.
Before setting to 30 days
Option -M to set the number of days for password validity.
The date shown after setting to 30 days.
You may see a different date, such as 2025-04-06
After setting to 30 days
Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
02:54 AM
sec@kali: ~
File Actions Edit View Help
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -d 2023-01-25 uri
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 25, 2023
Password expires : never
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -M 30 uri
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 25, 2023
Password expires : Feb 24, 2023
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 30
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -W 3 uri
sec@kali:~$
sec@kali:~$ sudo -l uri
sudo: uri: command not found
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 25, 2023
Password expires : Feb 24, 2023
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 30
Number of days of warning before password expires : 3
sec@kali:~$
sec@kali:~$
sec@kali:~$
Set Number of Days of Warning Before Password Expires
By default it is 7 days.
Option -W to set the number of days of warning before password expires.
Change to 3 days after setting.
Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
03:01 AM
sec@kali: ~
File Actions Edit View Help
Maximum number of days between password change : 99999
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -M 30 uri
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 25, 2023
Password expires : Feb 24, 2023
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 30
Number of days of warning before password expires : 7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -W 3 uri
sec@kali:~$
sec@kali:~$ sudo -l uri
sudo: uri: command not found
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 25, 2023
Password expires : Feb 24, 2023
Password inactive : never
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 30
Number of days of warning before password expires : 3
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -I 3 uri
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change : Jan 25, 2023
Password expires : Feb 24, 2023
Password inactive : Feb 27, 2023
Account expires : never
Minimum number of days between password change : 0
Maximum number of days between password change : 30
Number of days of warning before password expires : 3
sec@kali:~$
sec@kali:~$
Set Number of Days for User to Change Expired Password Before Inactive
Option -I to set the number of days for user to change password before the password becomes inactive (i.e., 3 days of grace period).
The date when password is expired.
You may see a different date, such as 2025-04-06
The date when password becomes inactive.
You may see a different date, such as 2025-04-09
Right Ctrl

Kali-server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

sec@kali: ~ 03:09 AM

sec@kali: ~

File Actions Edit View Help

```
Maximum number of days between password change          : 30
Number of days of warning before password expires       : 7
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -W 3 uri
sec@kali:~$
sec@kali:~$ sudo -l uri
sudo: uri: command not found
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change                                    : Jan 25, 2023
Password expires                                        : Feb 24, 2023
Password inactive                                       : never
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 30
Number of days of warning before password expires       : 3
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -I 3 uri
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change                                    : Jan 25, 2023
Password expires                                        : Feb 24, 2023
Password inactive                                       : Feb 27, 2023
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 30
Number of days of warning before password expires       : 3
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo chage -E 2023-12-31 uri
sec@kali:~$
sec@kali:~$ sudo chage -l uri
Last password change                                    : Jan 25, 2023
Password expires                                        : Feb 24, 2023
Password inactive                                       : Feb 27, 2023
Account expires                                         : Dec 31, 2023
Minimum number of days between password change          : 0
Maximum number of days between password change          : 30
Number of days of warning before password expires       : 3
sec@kali:~$
sec@kali:~$
```

# Set Account Expiry Date

Option -E to set account expiry date. After this date the account will become inactive even though the password is still valid. Only the system administrator can reactivate it.

Use your own date, such as 2025-12-31

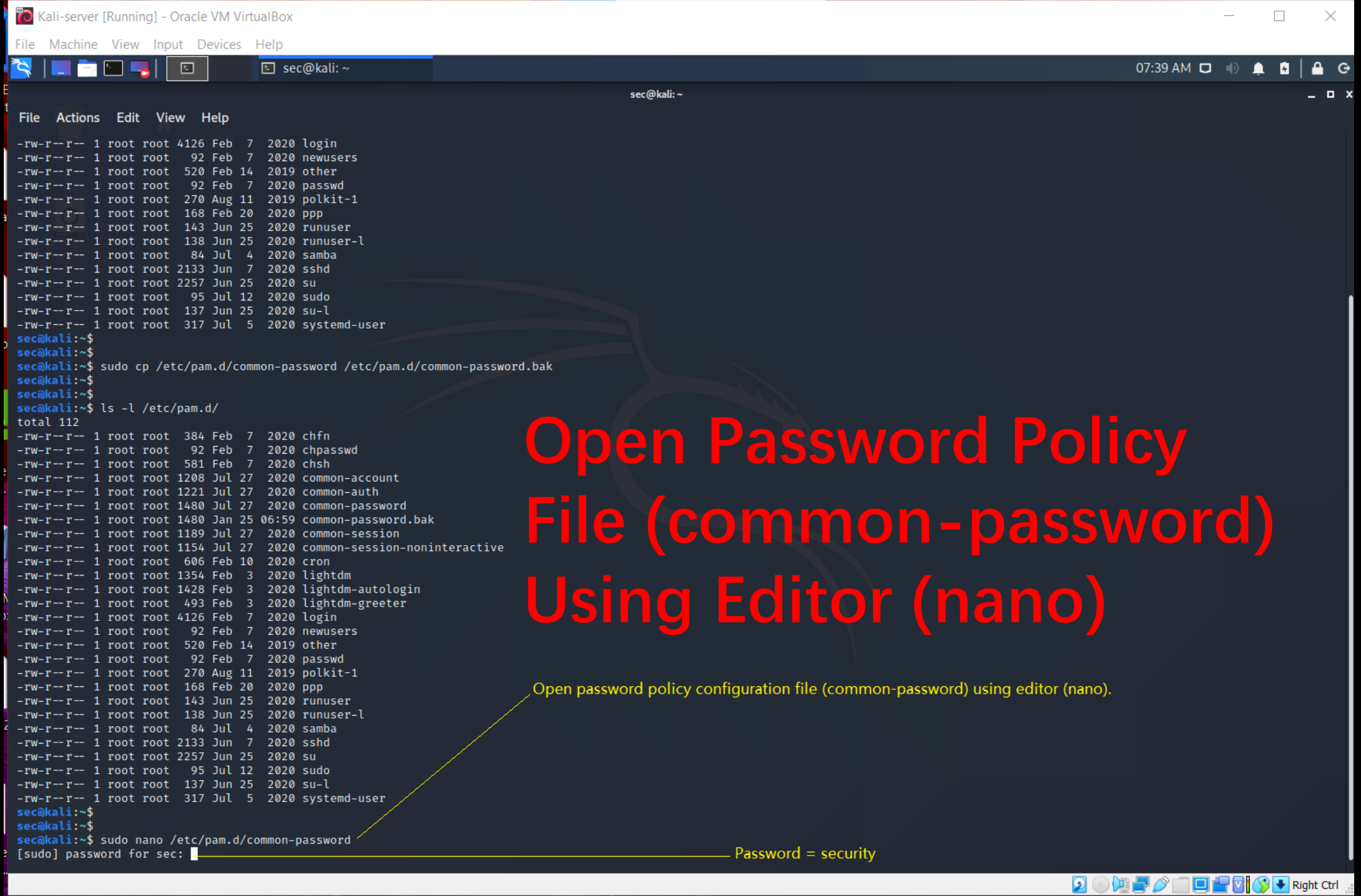
The account expiry date after setting.

You may see a different date, such as Dec 31, 2025

Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
06:18 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$ ls -l /etc/pam.d/
total 108
-rw-r--r-- 1 root root 384 Feb 7 2020 chfn
-rw-r--r-- 1 root root 92 Feb 7 2020 chpasswd
-rw-r--r-- 1 root root 581 Feb 7 2020 chsh
-rw-r--r-- 1 root root 1208 Jul 27 2020 common-account
-rw-r--r-- 1 root root 1221 Jul 27 2020 common-auth
-rw-r--r-- 1 root root 1480 Jul 27 2020 common-password
-rw-r--r-- 1 root root 1189 Jul 27 2020 common-session
-rw-r--r-- 1 root root 1154 Jul 27 2020 common-session-noninteractive
-rw-r--r-- 1 root root 606 Feb 10 2020 cron
-rw-r--r-- 1 root root 1354 Feb 3 2020 lightdm
-rw-r--r-- 1 root root 1428 Feb 3 2020 lightdm-autologin
-rw-r--r-- 1 root root 493 Feb 3 2020 lightdm-greeter
-rw-r--r-- 1 root root 4126 Feb 7 2020 login
-rw-r--r-- 1 root root 92 Feb 7 2020 newusers
-rw-r--r-- 1 root root 520 Feb 14 2019 other
-rw-r--r-- 1 root root 92 Feb 7 2020 passwd
-rw-r--r-- 1 root root 270 Aug 11 2019 polkit-1
-rw-r--r-- 1 root root 168 Feb 20 2020 ppp
-rw-r--r-- 1 root root 143 Jun 25 2020 runuser
-rw-r--r-- 1 root root 138 Jun 25 2020 runuser-l
-rw-r--r-- 1 root root 84 Jul 4 2020 samba
-rw-r--r-- 1 root root 2133 Jun 7 2020 sshd
-rw-r--r-- 1 root root 2257 Jun 25 2020 su
-rw-r--r-- 1 root root 95 Jul 12 2020 sudo
-rw-r--r-- 1 root root 137 Jun 25 2020 su-l
-rw-r--r-- 1 root root 317 Jul 5 2020 systemd-user
sec@kali:~$
Display password and authentication related configuration files used by
Password Authentication Module (PAM).
Password policies are defined in this file. We will open the file with nano,
and look at the content later.
Encrypted/Hashed user passwords are kept in this file.
Display Password and Authentication Related Files
Note: It is a good idea to automate the password policies of an organisation.
A Password Authentication Module (PAM) provides exactly this kind of support.
The file “common-password” defines which PAM is adopted, and what password policies are used.
Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
07:00 AM
sec@kali: ~
File Actions Edit View Help
-rw-r--r-- 1 root root 1354 Feb 3 2020 lightdm
-rw-r--r-- 1 root root 1428 Feb 3 2020 lightdm-autologin
-rw-r--r-- 1 root root 493 Feb 3 2020 lightdm-greeter
-rw-r--r-- 1 root root 4126 Feb 7 2020 login
-rw-r--r-- 1 root root 92 Feb 7 2020 newusers
-rw-r--r-- 1 root root 520 Feb 14 2019 other
-rw-r--r-- 1 root root 92 Feb 7 2020 passwd
-rw-r--r-- 1 root root 270 Aug 11 2019 polkit-1
-rw-r--r-- 1 root root 168 Feb 20 2020 ppp
-rw-r--r-- 1 root root 143 Jun 25 2020 runuser
-rw-r--r-- 1 root root 138 Jun 25 2020 runuser-l
-rw-r--r-- 1 root root 84 Jul 4 2020 samba
-rw-r--r-- 1 root root 2133 Jun 7 2020 sshd
-rw-r--r-- 1 root root 2257 Jun 25 2020 su
-rw-r--r-- 1 root root 95 Jul 12 2020 sudo
-rw-r--r-- 1 root root 137 Jun 25 2020 su-l
-rw-r--r-- 1 root root 317 Jul 5 2020 systemd-user
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo cp /etc/pam.d/common-password /etc/pam.d/common-password.bak
sec@kali:~$
sec@kali:~$
sec@kali:~$ ls -l /etc/pam.d/
total 112
-rw-r--r-- 1 root root 384 Feb 7 2020 chfn
-rw-r--r-- 1 root root 92 Feb 7 2020 chpasswd
-rw-r--r-- 1 root root 581 Feb 7 2020 chsh
-rw-r--r-- 1 root root 1208 Jul 27 2020 common-account
-rw-r--r-- 1 root root 1221 Jul 27 2020 common-auth
-rw-r--r-- 1 root root 1480 Jul 27 2020 common-password
-rw-r--r-- 1 root root 1480 Jan 25 06:59 common-password.bak
-rw-r--r-- 1 root root 1189 Jul 27 2020 common-session
-rw-r--r-- 1 root root 1154 Jul 27 2020 common-session-noninteractive
-rw-r--r-- 1 root root 606 Feb 10 2020 cron
-rw-r--r-- 1 root root 1354 Feb 3 2020 lightdm
-rw-r--r-- 1 root root 1428 Feb 3 2020 lightdm-autologin
-rw-r--r-- 1 root root 493 Feb 3 2020 lightdm-greeter
-rw-r--r-- 1 root root 4126 Feb 7 2020 login
-rw-r--r-- 1 root root 92 Feb 7 2020 newusers
-rw-r--r-- 1 root root 520 Feb 14 2019 other
-rw-r--r-- 1 root root 92 Feb 7 2020 passwd
-rw-r--r-- 1 root root 270 Aug 11 2019 polkit-1
-rw-r--r-- 1 root root 168 Feb 20 2020 ppp
-rw-r--r-- 1 root root 143 Jun 25 2020 runuser
-rw-r--r-- 1 root root 138 Jun 25 2020 runuser-l
-rw-r--r-- 1 root root 84 Jul 4 2020 samba
-rw-r--r-- 1 root root 2133 Jun 7 2020 sshd
-rw-r--r-- 1 root root 2257 Jun 25 2020 su
-rw-r--r-- 1 root root 95 Jul 12 2020 sudo
-rw-r--r-- 1 root root 137 Jun 25 2020 su-l
-rw-r--r-- 1 root root 317 Jul 5 2020 systemd-user
sec@kali:~$
Backup Password Policy Configuration File (common-password)
Backup password policy configuration file (common-password).
Later, we will modify the file by installing a new Password Authentication Module (PAM).
Original file
Backup file
Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
07:39 AM
sec@kali: ~
File Actions Edit View Help
-rw-r--r-- 1 root root 4126 Feb 7 2020 login
-rw-r--r-- 1 root root 92 Feb 7 2020 newusers
-rw-r--r-- 1 root root 520 Feb 14 2019 other
-rw-r--r-- 1 root root 92 Feb 7 2020 passwd
-rw-r--r-- 1 root root 270 Aug 11 2019 polkit-1
-rw-r--r-- 1 root root 168 Feb 20 2020 ppp
-rw-r--r-- 1 root root 143 Jun 25 2020 runuser
-rw-r--r-- 1 root root 138 Jun 25 2020 runuser-l
-rw-r--r-- 1 root root 84 Jul 4 2020 samba
-rw-r--r-- 1 root root 2133 Jun 7 2020 sshd
-rw-r--r-- 1 root root 2257 Jun 25 2020 su
-rw-r--r-- 1 root root 95 Jul 12 2020 sudo
-rw-r--r-- 1 root root 137 Jun 25 2020 su-l
-rw-r--r-- 1 root root 317 Jul 5 2020 systemd-user
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo cp /etc/pam.d/common-password /etc/pam.d/common-password.bak
sec@kali:~$
sec@kali:~$
sec@kali:~$ ls -l /etc/pam.d/
total 112
-rw-r--r-- 1 root root 384 Feb 7 2020 chfn
-rw-r--r-- 1 root root 92 Feb 7 2020 chpasswd
-rw-r--r-- 1 root root 581 Feb 7 2020 chsh
-rw-r--r-- 1 root root 1208 Jul 27 2020 common-account
-rw-r--r-- 1 root root 1221 Jul 27 2020 common-auth
-rw-r--r-- 1 root root 1480 Jul 27 2020 common-password
-rw-r--r-- 1 root root 1480 Jan 25 06:59 common-password.bak
-rw-r--r-- 1 root root 1189 Jul 27 2020 common-session
-rw-r--r-- 1 root root 1154 Jul 27 2020 common-session-noninteractive
-rw-r--r-- 1 root root 606 Feb 10 2020 cron
-rw-r--r-- 1 root root 1354 Feb 3 2020 lightdm
-rw-r--r-- 1 root root 1428 Feb 3 2020 lightdm-autologin
-rw-r--r-- 1 root root 493 Feb 3 2020 lightdm-greeter
-rw-r--r-- 1 root root 4126 Feb 7 2020 login
-rw-r--r-- 1 root root 92 Feb 7 2020 newusers
-rw-r--r-- 1 root root 520 Feb 14 2019 other
-rw-r--r-- 1 root root 92 Feb 7 2020 passwd
-rw-r--r-- 1 root root 270 Aug 11 2019 polkit-1
-rw-r--r-- 1 root root 168 Feb 20 2020 ppp
-rw-r--r-- 1 root root 143 Jun 25 2020 runuser
-rw-r--r-- 1 root root 138 Jun 25 2020 runuser-l
-rw-r--r-- 1 root root 84 Jul 4 2020 samba
-rw-r--r-- 1 root root 2133 Jun 7 2020 sshd
-rw-r--r-- 1 root root 2257 Jun 25 2020 su
-rw-r--r-- 1 root root 95 Jul 12 2020 sudo
-rw-r--r-- 1 root root 137 Jun 25 2020 su-l
-rw-r--r-- 1 root root 317 Jul 5 2020 systemd-user
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo nano /etc/pam.d/common-password
[sudo] password for sec:
Open Password Policy File (common-password) Using Editor (nano)
Open password policy configuration file (common-password) using editor (nano).
Password = security
Right Ctrl

Kali-server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

sec@kali: ~ 07:43 AM

sec@kali: ~

File Actions Edit View Help

## Read and Understand Content of Password Policy File (common-password)

```
 GNU nano 4.9.3                                  /etc/pam.d/common-password
#
# /etc/pam.d/common-password - password-related modules common to all services
#
# This file is included from other service-specific PAM config files,
# and should contain a list of modules that define the services to be
# used to change user passwords.  The default is pam_unix.

# Explanation of pam_unix options:
#
# The "sha512" option enables salted SHA512 passwords.  Without this option,
# the default is Unix crypt.  Prior releases used the option "md5".
#
# The "obscure" option replaces the old `OBSCURE_CHECKS_ENAB' option in
# login.defs.
#
# See the pam_unix manpage for other options.

# As of pam 1.0.1-6, this file is managed by pam-auth-update by default.
# To take advantage of this, it is recommended that you configure any
# local modules either before or after the default block, and use
# pam-auth-update to manage selection of other modules.  See
# pam-auth-update(8) for details.

# here are the per-package modules (the "Primary" block)
password        [success=1 default=ignore]      pam_unix.so obscure sha512
# here's the fallback if no module succeeds
password        requisite                       pam_deny.so
# prime the stack with a positive return value if there isn't one already;
# this avoids us returning an error just because nothing sets a success code
# since the modules above will each just jump around
password        required                        pam_permit.so
# and here are more per-package modules (the "Additional" block)
password        optional        pam_gnome_keyring.so
# end of pam-auth-update config
```

"obscure" password check method is selected. It provides simple checking, as follows:

(1) Palindrome - It makes sure that the new password isn't the reverse of the last password.

(2) Case Change Only - It makes sure that the new password isn't the case change only.

(3) Similar - It ensures the old and new one aren't similar to each other.

(4) Simple - Complex passwords have to be used instead of some common keywords, such as "password".

(5) Rotated - It ensures that the new password isn't the rearrangement of characters of the last password, such as from "linux" to "inuxl".

sha512 hashing function is used.

pam_unix.so is a traditional password authentication module for unix operating system. It is simpler than the later PAMs.

It provides very basic password checks that stop users choosing very weak passwords.

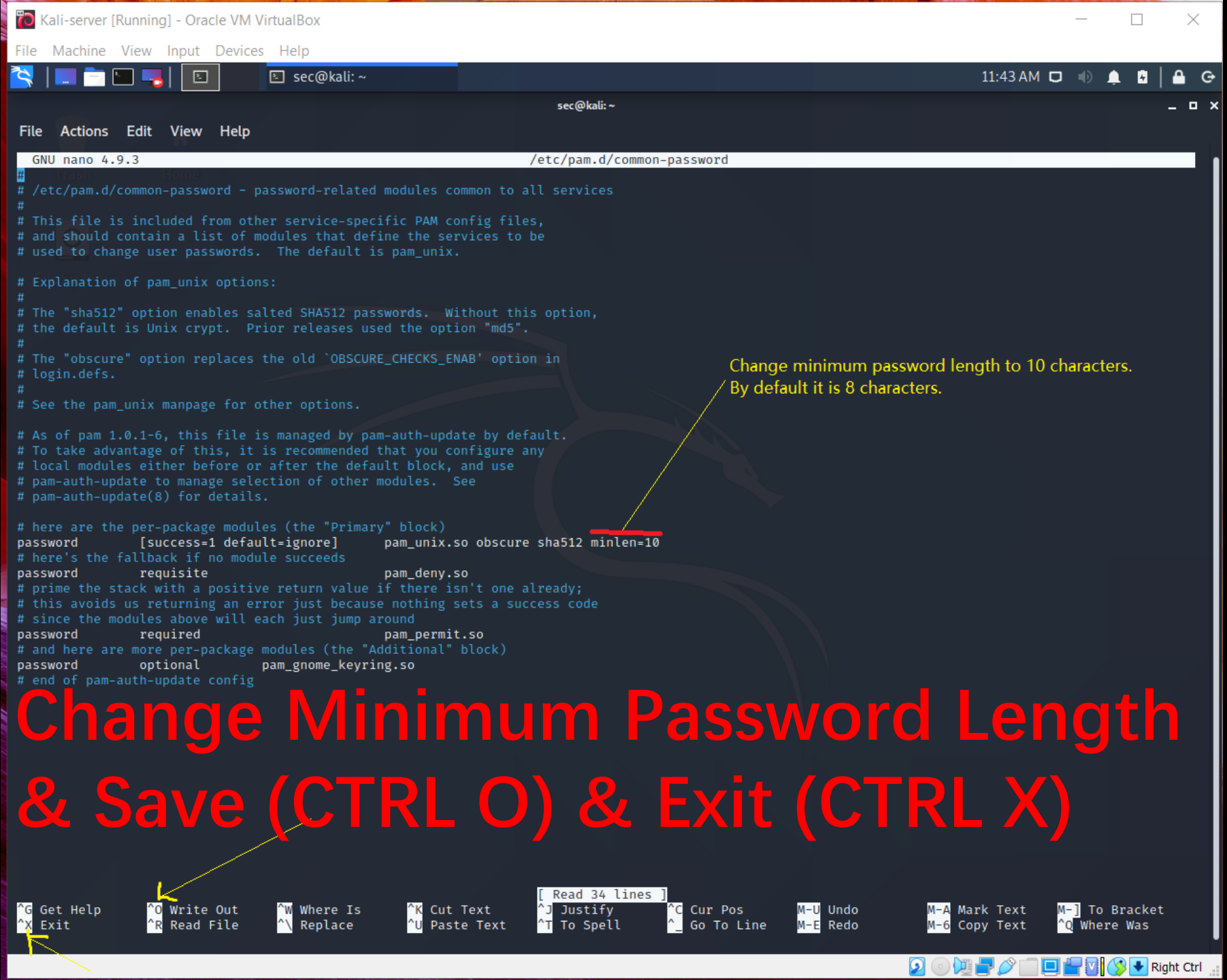
# Read and Understand Content of Password Policy File (common-password)

[ Read 34 lines ]

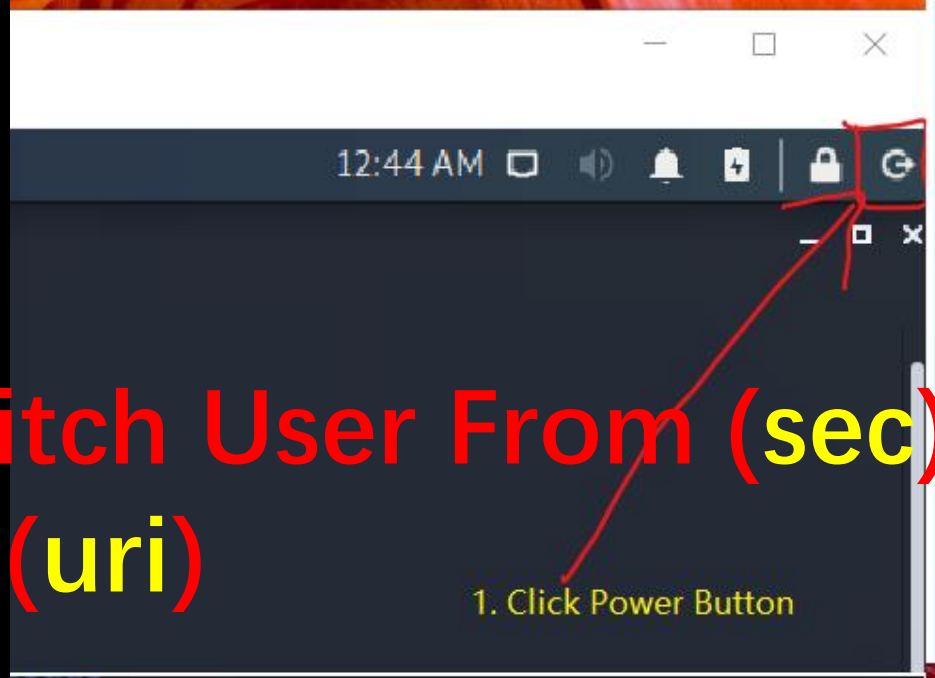
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo M-A Mark Text M-] To Bracket M-Q Previous ^B Back

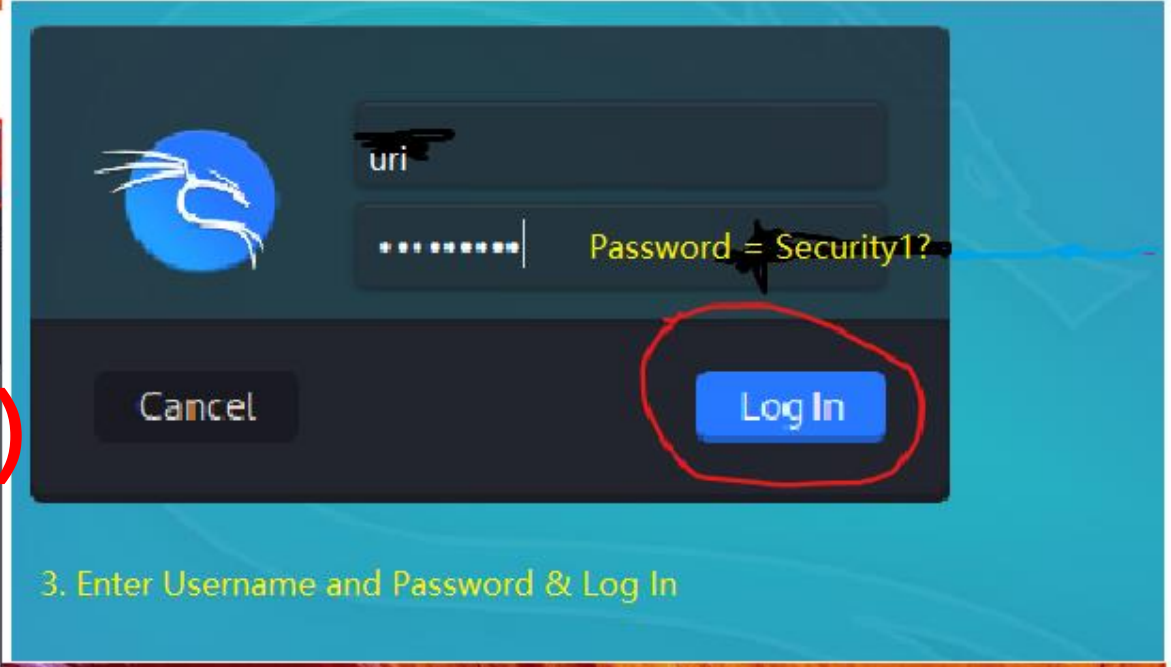
^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell ^_ Go To Line M-E Redo M-6 Copy Text ^Q Where Was M-W Next ^F Forward

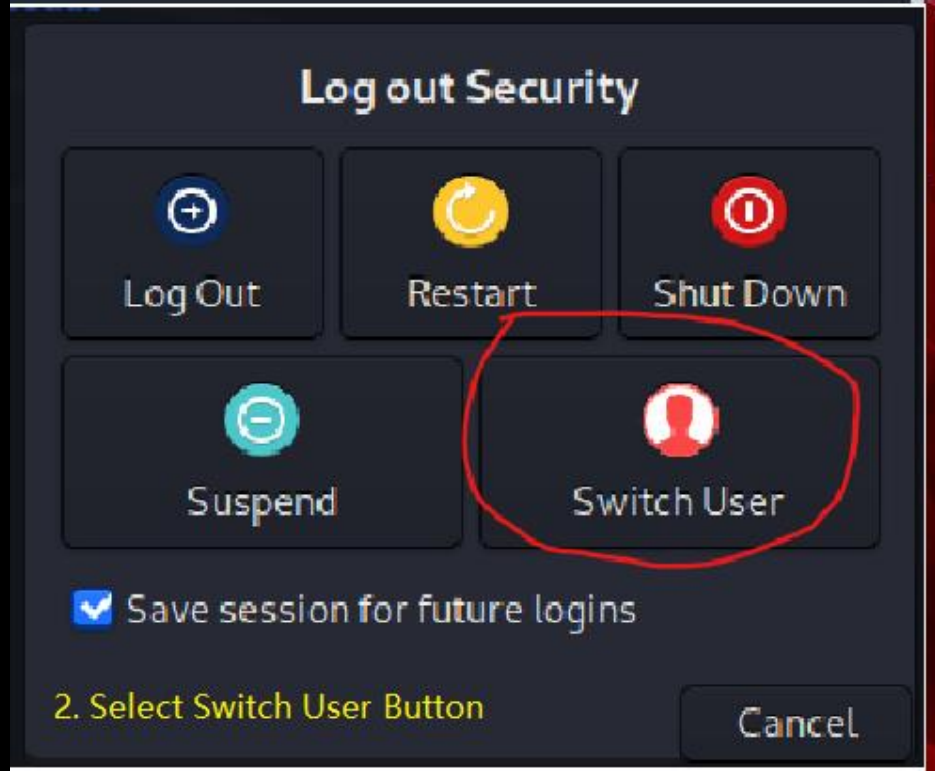
Right Ctrl

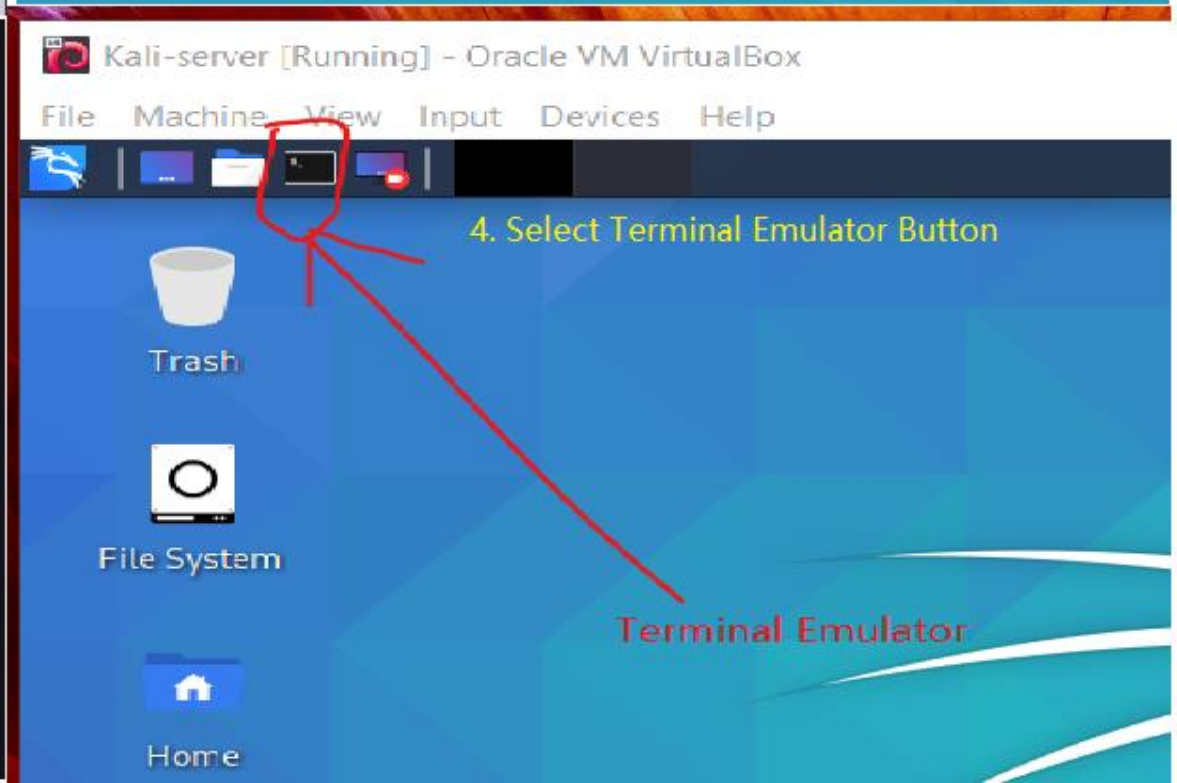

Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
11:43 AM
sec@kali: ~
File Actions Edit View Help
GNU nano 4.9.3 /etc/pam.d/common-password
#
# /etc/pam.d/common-password - password-related modules common to all services
#
# This file is included from other service-specific PAM config files,
# and should contain a list of modules that define the services to be
# used to change user passwords. The default is pam_unix.
# Explanation of pam_unix options:
#
# The "sha512" option enables salted SHA512 passwords. Without this option,
# the default is Unix crypt. Prior releases used the option "md5".
#
# The "obscure" option replaces the old `OBSCURE_CHECKS_ENAB' option in
# login.defs.
#
# See the pam_unix manpage for other options.
# As of pam 1.0.1-6, this file is managed by pam-auth-update by default.
# To take advantage of this, it is recommended that you configure any
# local modules either before or after the default block, and use
# pam-auth-update to manage selection of other modules. See
# pam-auth-update(8) for details.
# here are the per-package modules (the "Primary" block)
password [success=1 default=ignore] pam_unix.so obscure sha512 minlen=10
# here's the fallback if no module succeeds
password requisite pam_deny.so
# prime the stack with a positive return value if there isn't one already;
# this avoids us returning an error just because nothing sets a success code
# since the modules above will each just jump around
password required pam_permit.so
# and here are more per-package modules (the "Additional" block)
password optional pam_gnome_keyring.so
# end of pam-auth-update config
Change minimum password length to 10 characters.
By default it is 8 characters.
Change Minimum Password Length
& Save (CTRL O) & Exit (CTRL X)
[ Read 34 lines ]
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo M-A Mark Text M-] To Bracket
^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell ^_ Go To Line M-E Redo M-6 Copy Text ^Q Where Was
Right Ctrl

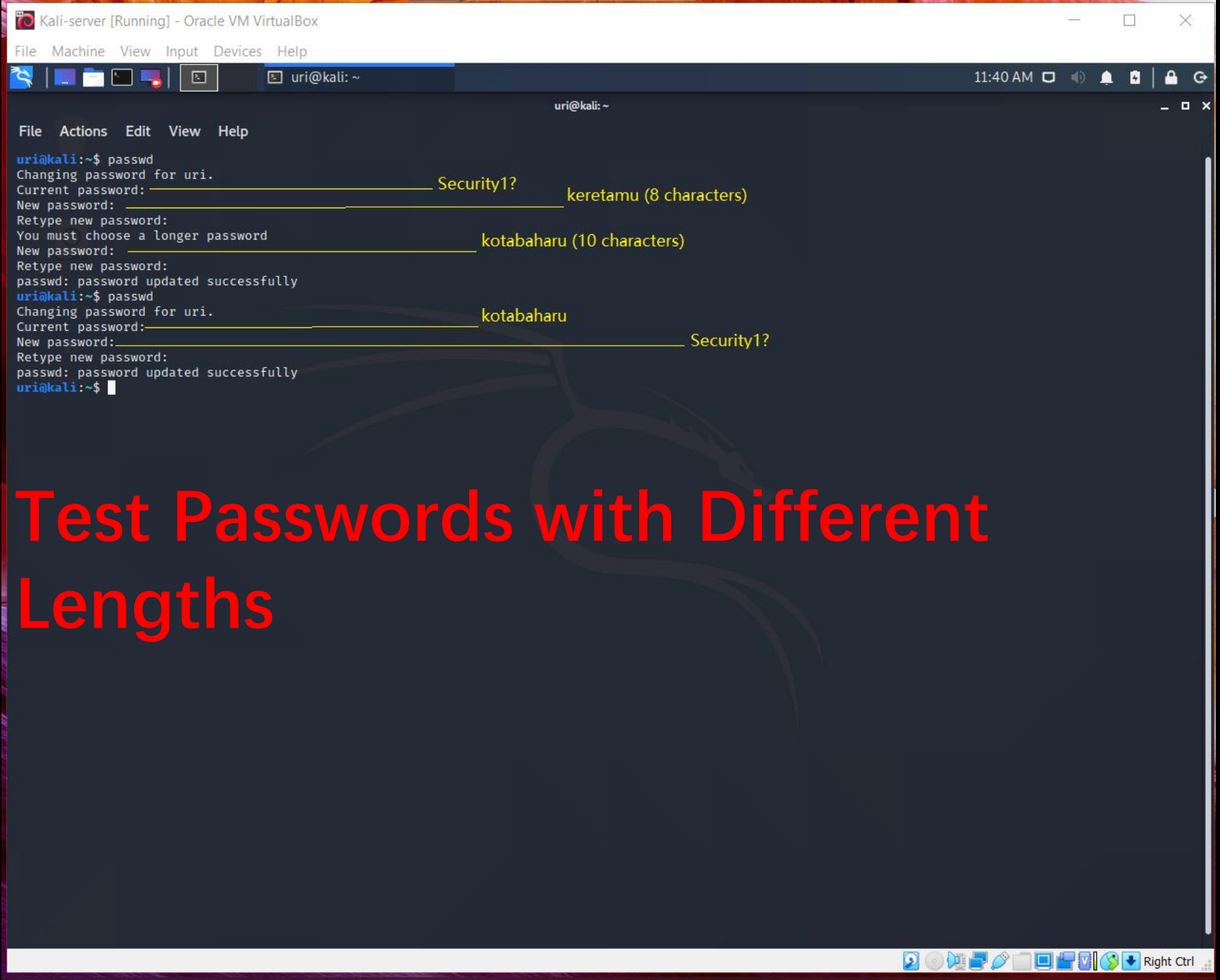
# Switch User From (sec)
# To (uri)



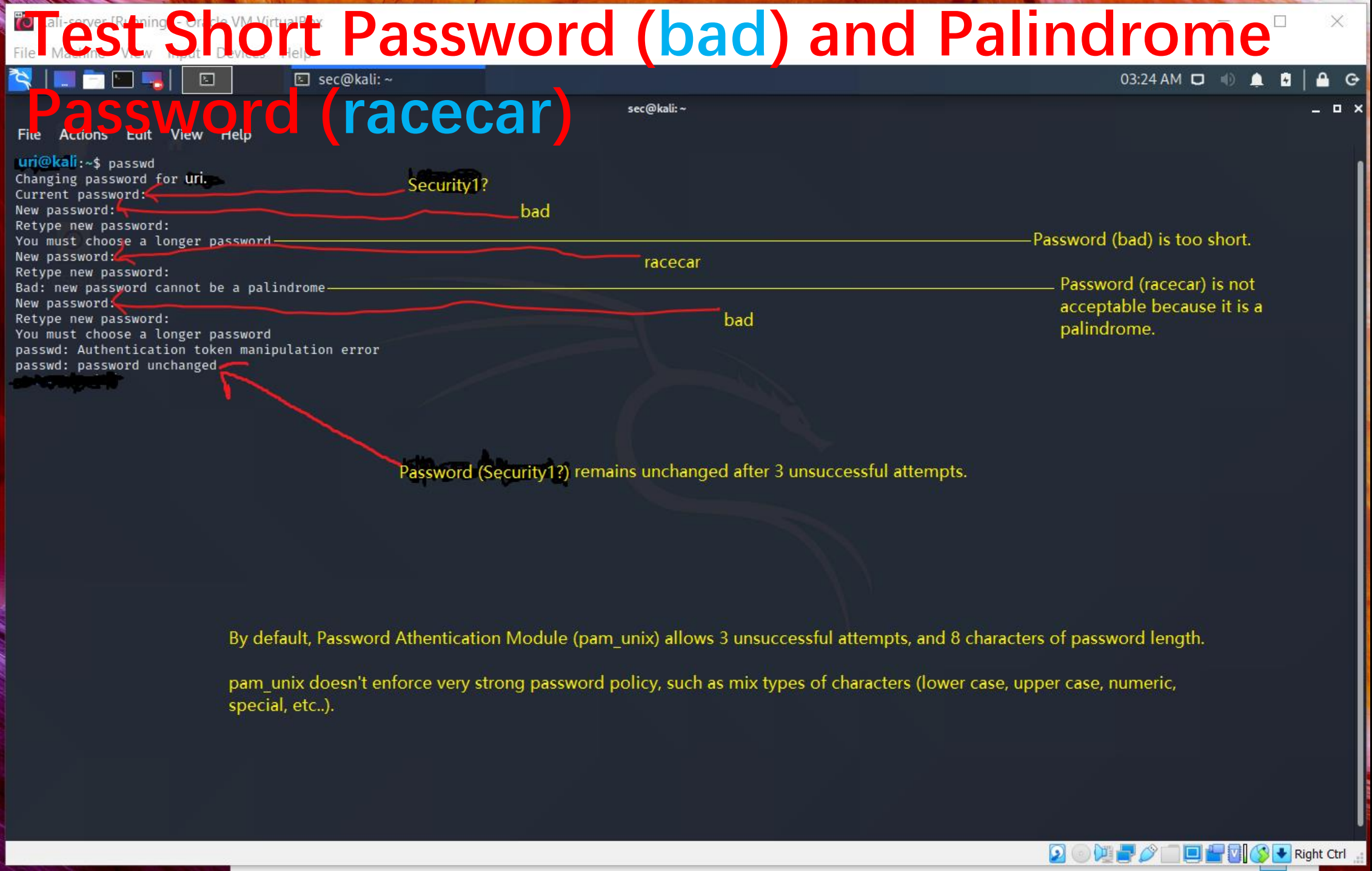



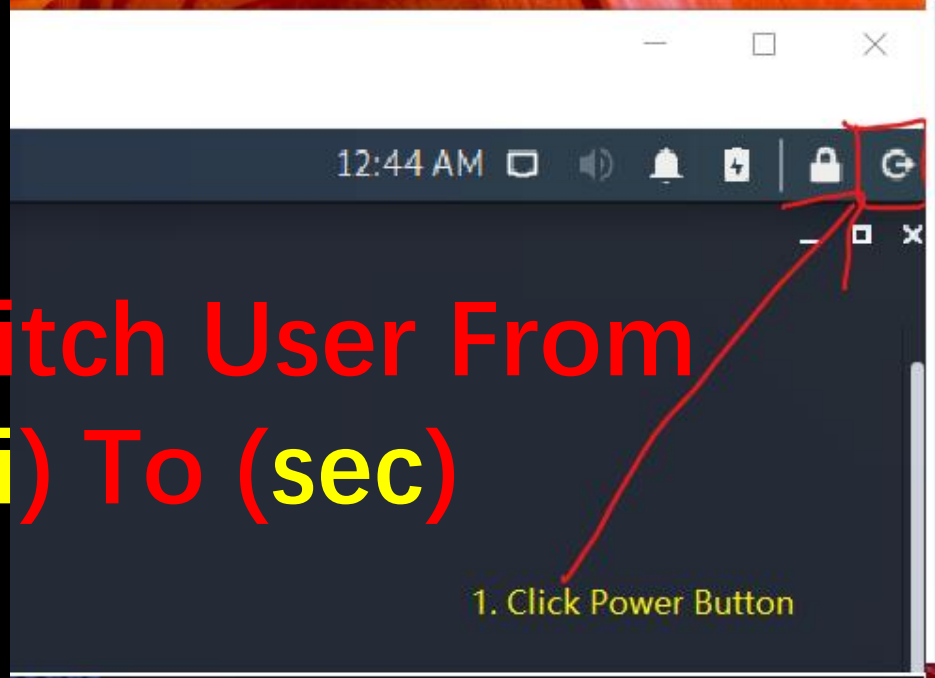



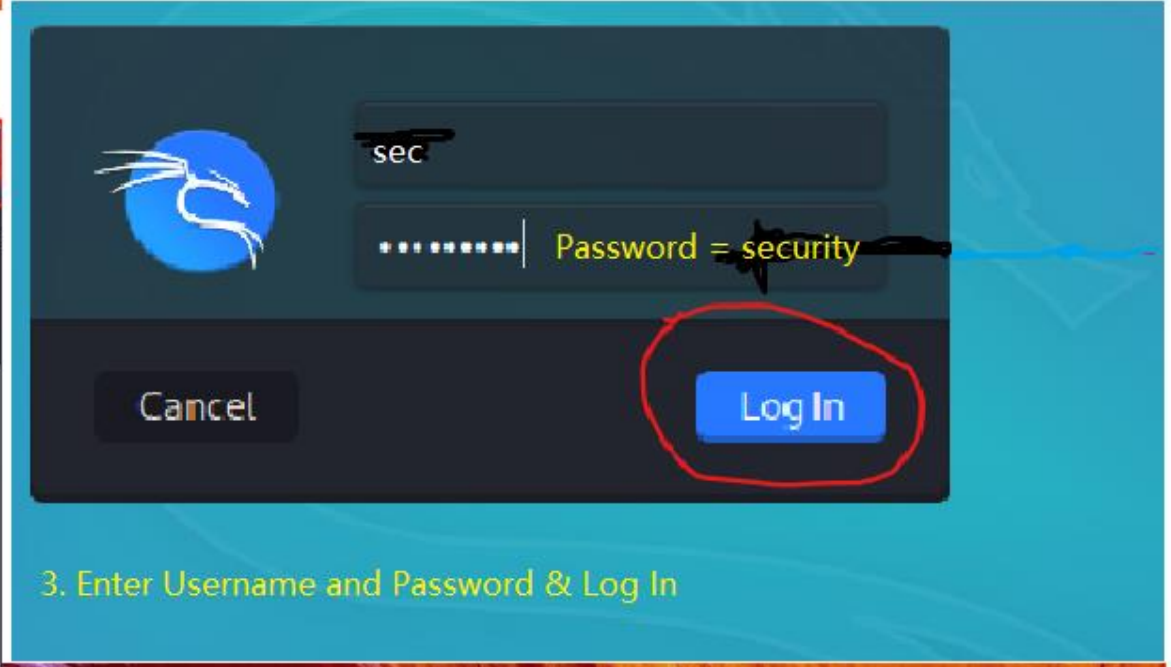

Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
uri@kali: ~
11:40 AM
uri@kali: ~
File Actions Edit View Help
uri@kali:~$ passwd
Changing password for uri.
Current password:
Security1?
New password:
keretamu (8 characters)
Retype new password:
You must choose a longer password
New password:
kotabaharu (10 characters)
Retype new password:
passwd: password updated successfully
uri@kali:~$ passwd
Changing password for uri.
Current password:
kotabaharu
New password:
Security1?
Retype new password:
passwd: password updated successfully
uri@kali:~$
Test Passwords with Different Lengths
Right Ctrl

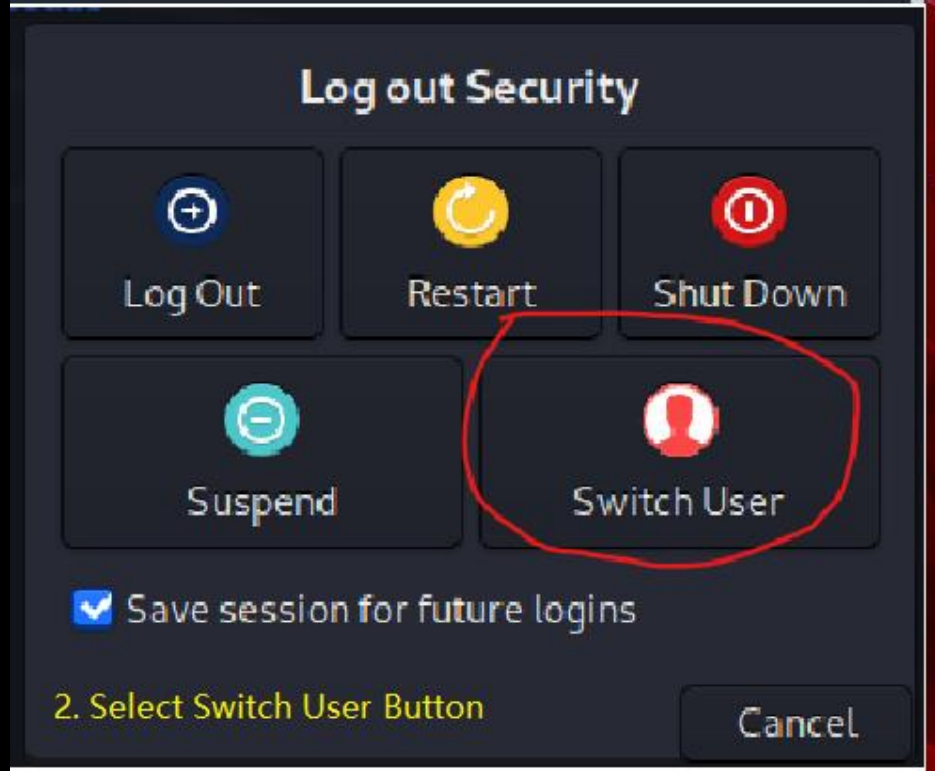
# Test Short Password (bad) and Palindrome Password (racecar)

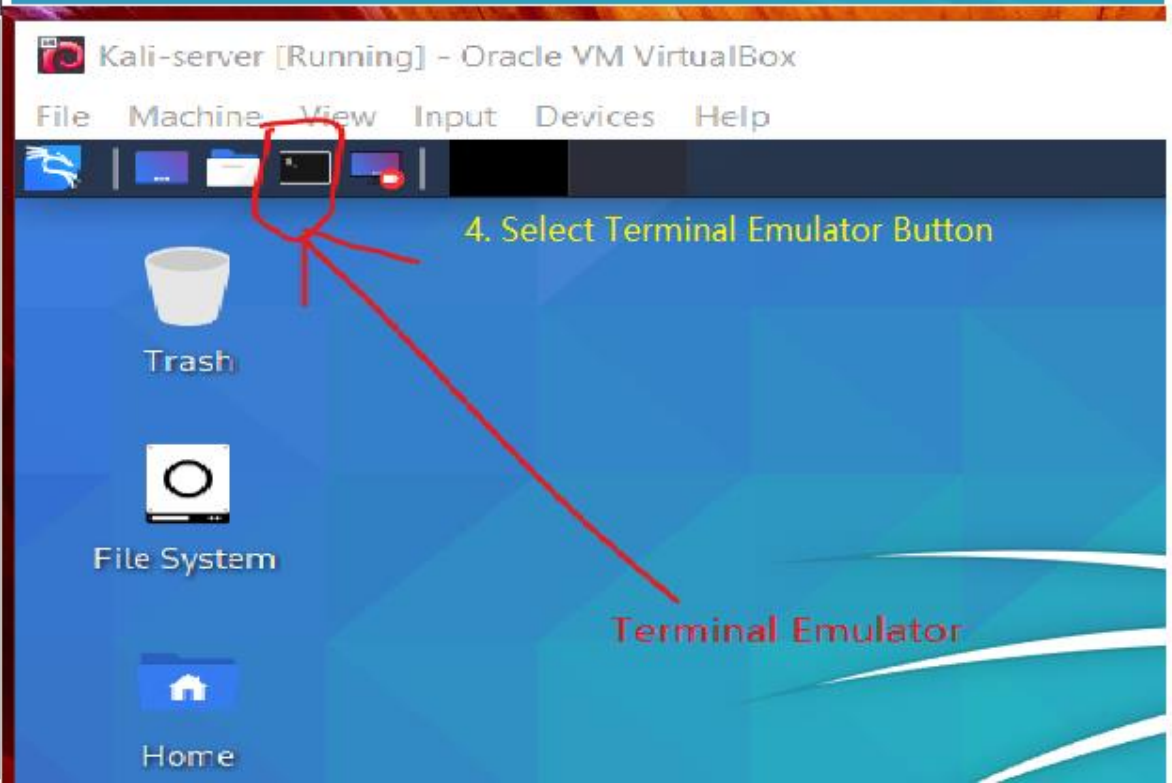


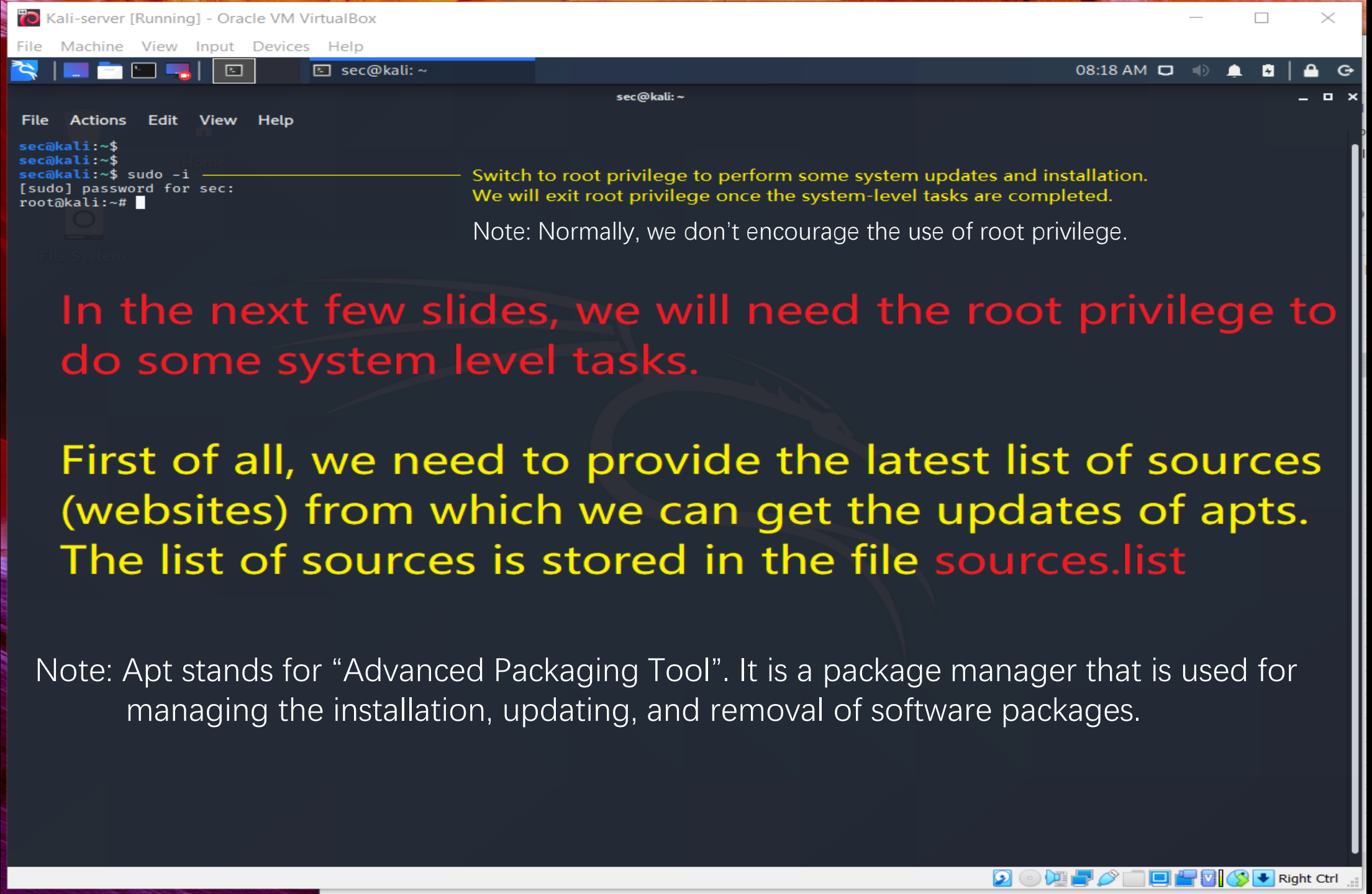
# Switch User From (uri) To (sec)

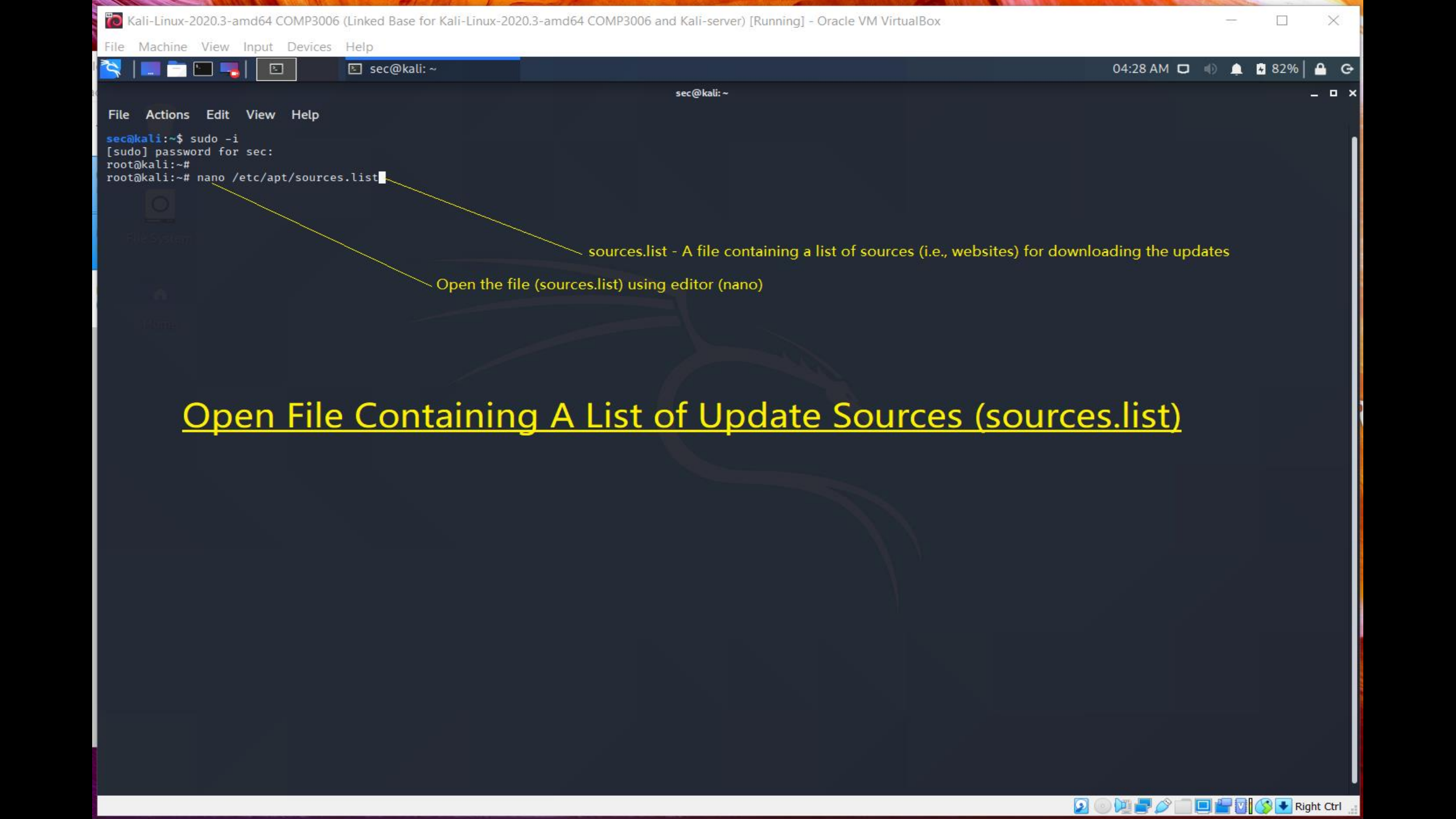


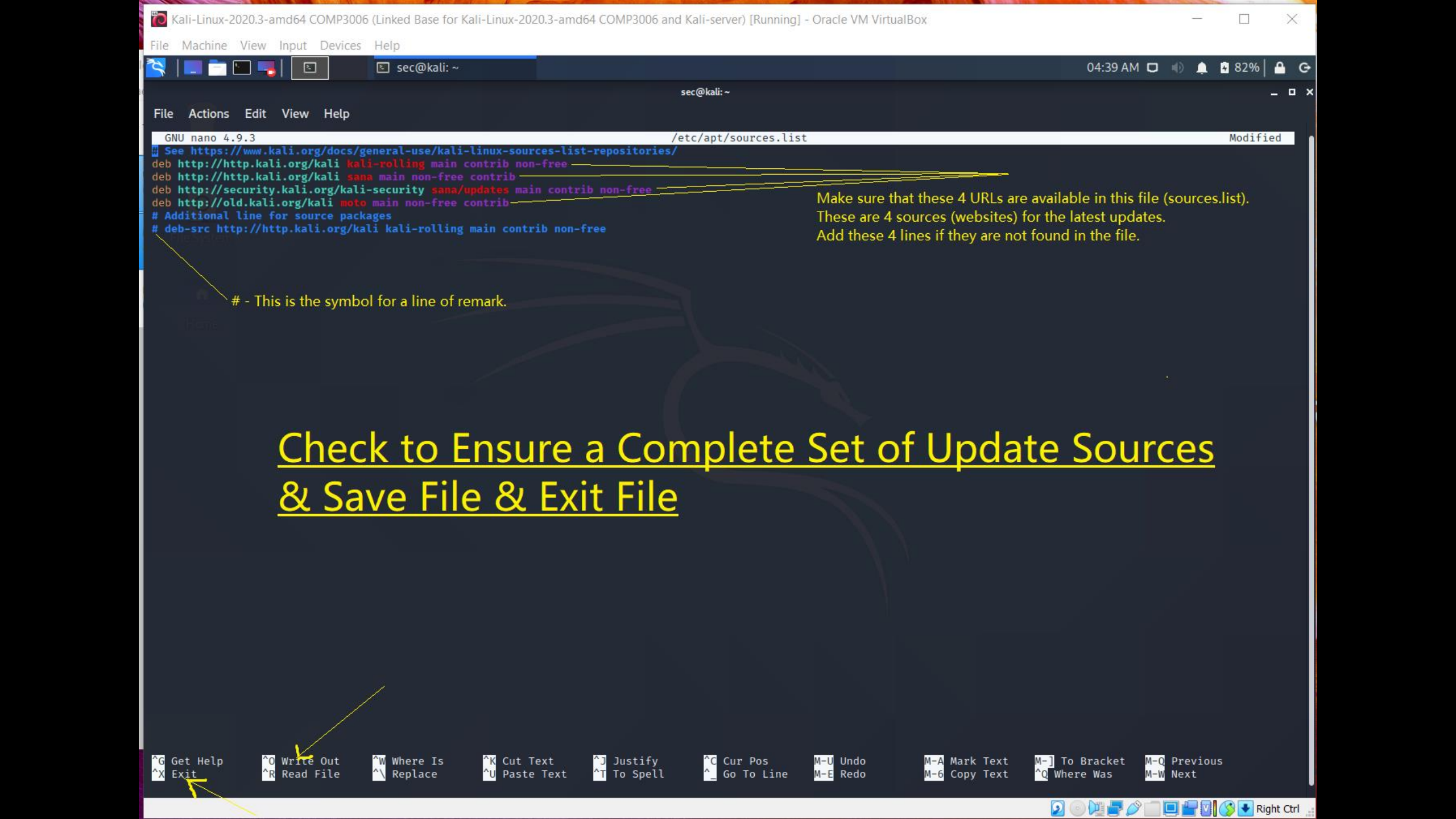



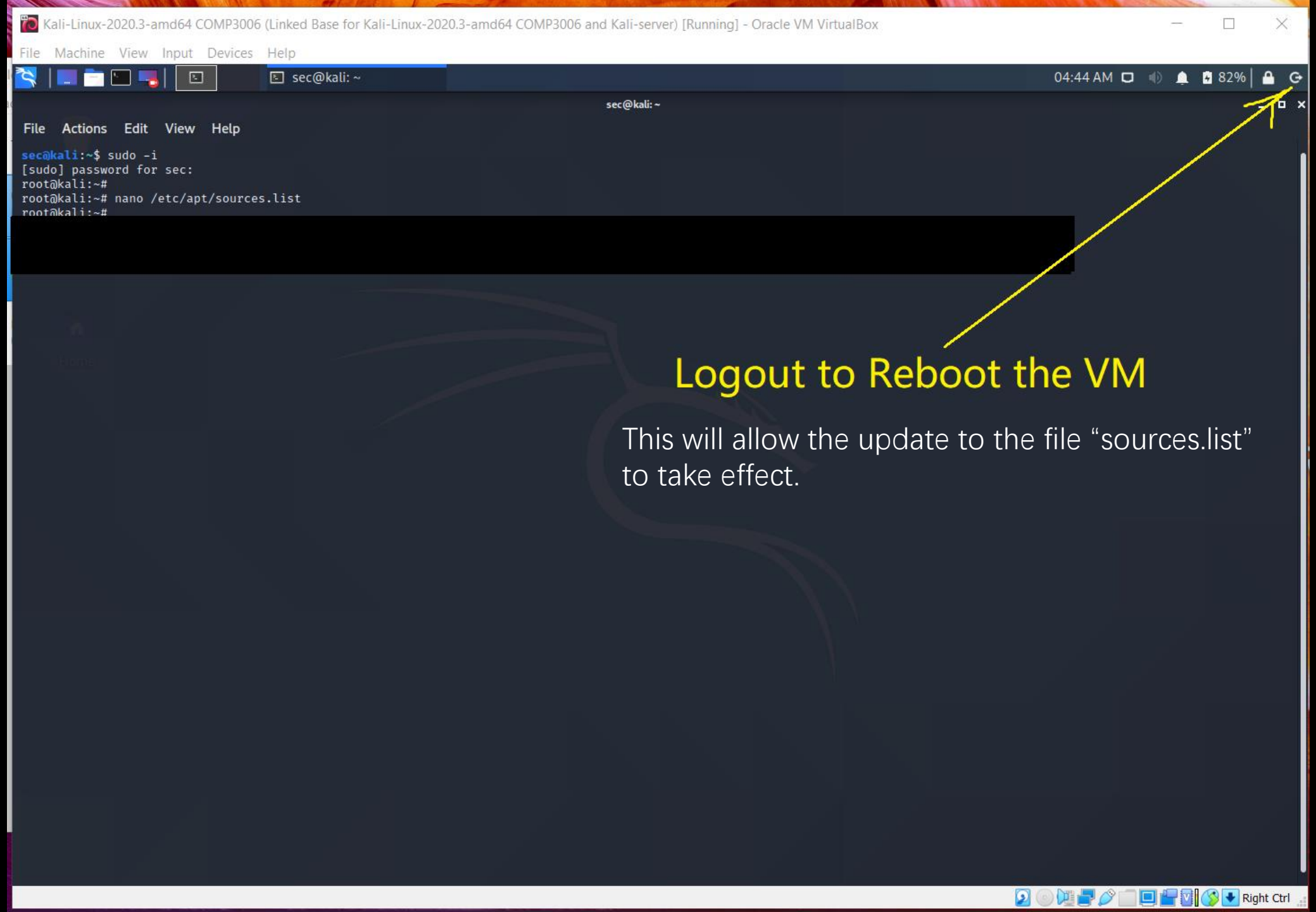



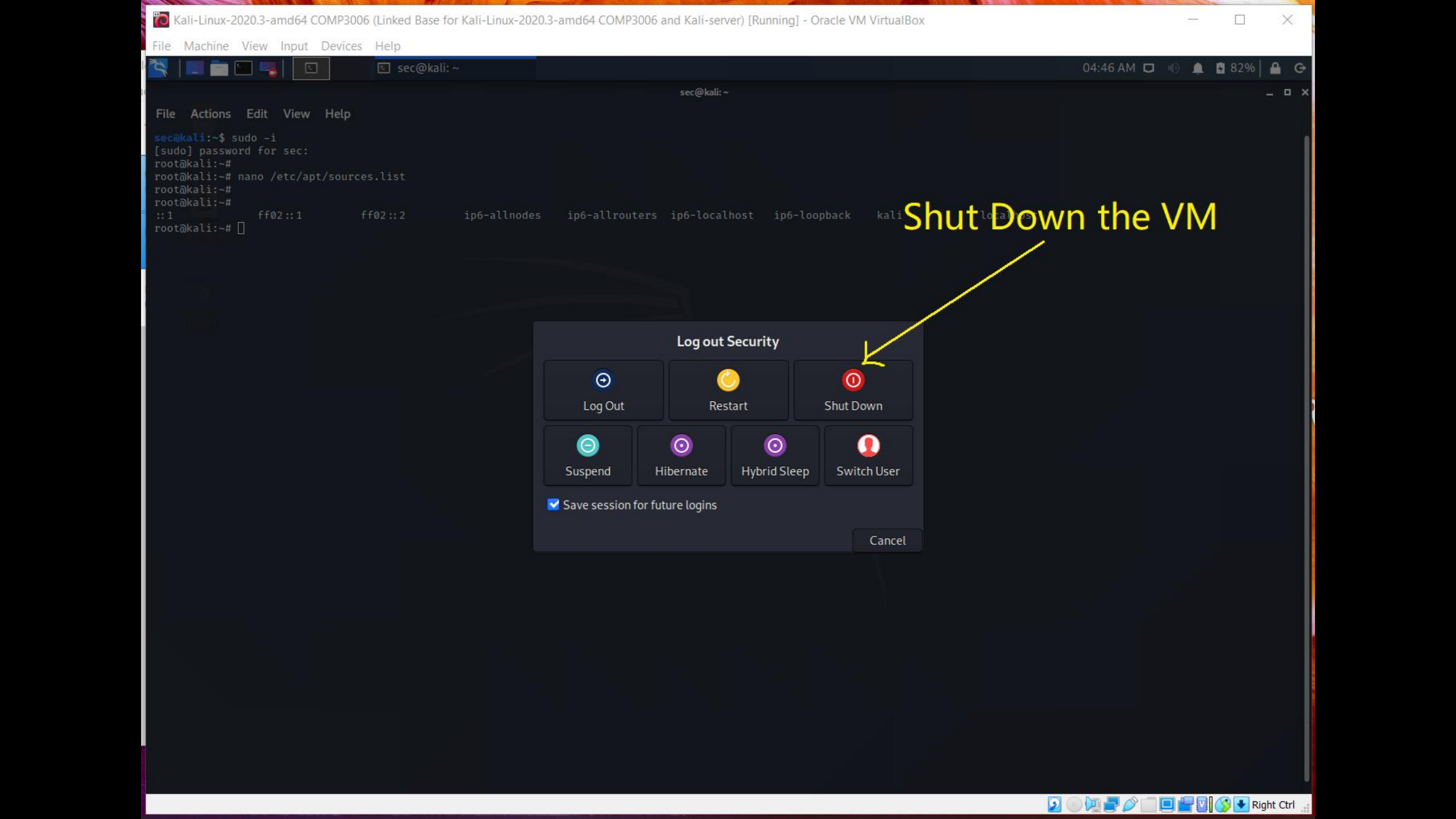



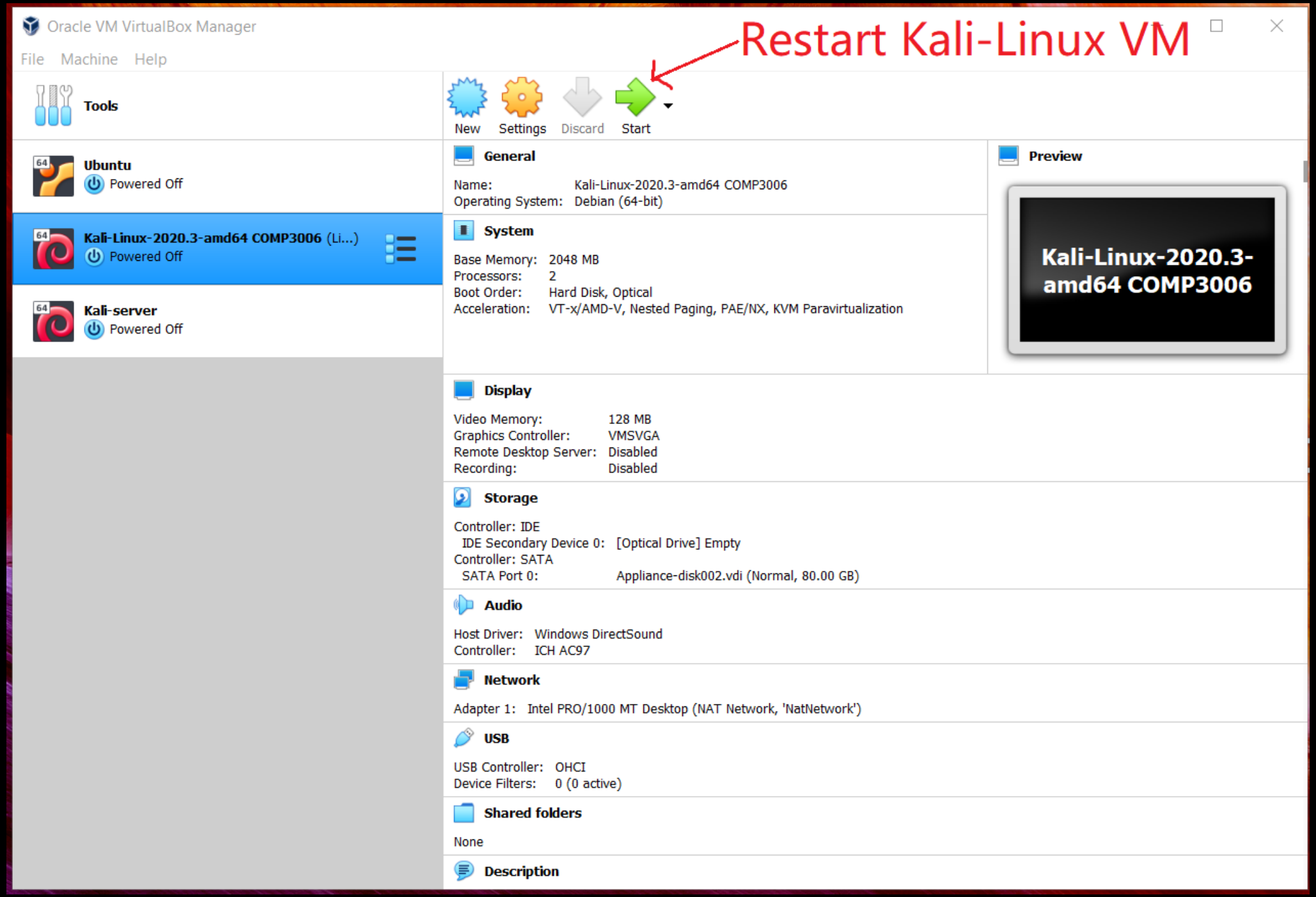

Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
08:18 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo -i
[sudo] password for sec:
root@kali:~#
Switch to root privilege to perform some system updates and installation.
We will exit root privilege once the system-level tasks are completed.
Note: Normally, we don't encourage the use of root privilege.
In the next few slides, we will need the root privilege to do some system level tasks.
First of all, we need to provide the latest list of sources (websites) from which we can get the updates of apts. The list of sources is stored in the file sources.list
Note: Apt stands for "Advanced Packaging Tool". It is a package manager that is used for managing the installation, updating, and removal of software packages.
Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
04:28 AM
82%
sec@kali: ~
File Actions Edit View Help
sec@kali:~$ sudo -i
[sudo] password for sec:
root@kali:~#
root@kali:~# nano /etc/apt/sources.list
sources.list - A file containing a list of sources (i.e., websites) for downloading the updates
Open the file (sources.list) using editor (nano)
Open File Containing A List of Update Sources (sources.list)
Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
04:39 AM 82%
sec@kali: ~
File Actions Edit View Help
GNU nano 4.9.3 /etc/apt/sources.list Modified
# See https://www.kali.org/docs/general-use/kali-linux-sources-list-repositories/
deb http://http.kali.org/kali kali-rolling main contrib non-free
deb http://http.kali.org/kali sana main non-free contrib
deb http://security.kali.org/kali-security sana/updates main contrib non-free
deb http://old.kali.org/kali moto main non-free contrib
# Additional line for source packages
# deb-src http://http.kali.org/kali kali-rolling main contrib non-free
Make sure that these 4 URLs are available in this file (sources.list).
These are 4 sources (websites) for the latest updates.
Add these 4 lines if they are not found in the file.
# - This is the symbol for a line of remark.
Check to Ensure a Complete Set of Update Sources
& Save File & Exit File
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo M-A Mark Text M-] To Bracket M-Q Previous
^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell ^_ Go To Line M-E Redo M-6 Copy Text ^Q Where Was M-W Next
Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
04:44 AM
82%
sec@kali: ~
File Actions Edit View Help
sec@kali:~$ sudo -i
[sudo] password for sec:
root@kali:~#
root@kali:~# nano /etc/apt/sources.list
root@kali:~#
Logout to Reboot the VM
This will allow the update to the file “sources.list” to take effect.
Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
04:46 AM
82%
sec@kali: ~
File Actions Edit View Help
sec@kali:~$ sudo -i
[sudo] password for sec:
root@kali:~#
root@kali:~# nano /etc/apt/sources.list
root@kali:~#
root@kali:~#
::1 ff02::1 ff02::2 ip6-allnodes ip6-allrouters ip6-localhost ip6-loopback kali
root@kali:~#
Shut Down the VM
Log out Security
Log Out
Restart
Shut Down
Suspend
Hibernate
Hybrid Sleep
Switch User
Save session for future logins
Cancel
Right Ctrl

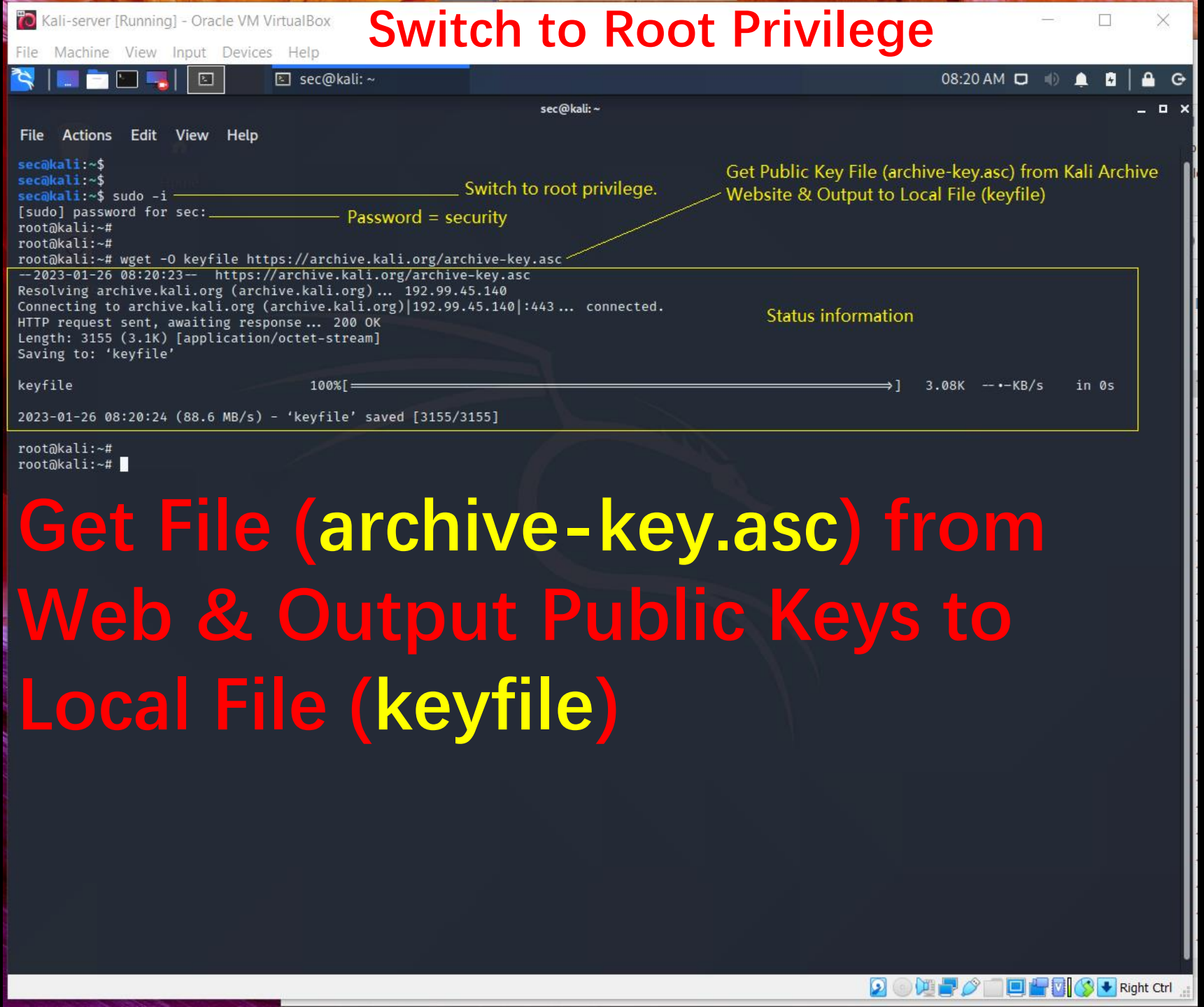

Oracle VM VirtualBox Manager
Restart Kali-Linux VM
File
Machine
Help
Tools
New
Settings
Discard
Start
Ubuntu
Powered Off
Kali-Linux-2020.3-amd64 COMP3006 (Li...)
Powered Off
Kali-server
Powered Off
General
Name: Kali-Linux-2020.3-amd64 COMP3006
Operating System: Debian (64-bit)
System
Base Memory: 2048 MB
Processors: 2
Boot Order: Hard Disk, Optical
Acceleration: VT-x/AMD-V, Nested Paging, PAE/NX, KVM Paravirtualization
Preview
Kali-Linux-2020.3-amd64 COMP3006
Display
Video Memory: 128 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled
Storage
Controller: IDE
IDE Secondary Device 0: [Optical Drive] Empty
Controller: SATA
SATA Port 0: Appliance-disk002.vdi (Normal, 80.00 GB)
Audio
Host Driver: Windows DirectSound
Controller: ICH AC97
Network
Adapter 1: Intel PRO/1000 MT Desktop (NAT Network, 'NatNetwork')
USB
USB Controller: OHCI
Device Filters: 0 (0 active)
Shared folders
None
Description

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

# Log In As User (sec) and Password (security)


Right Ctrl


Kali-server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Switch to Root Privilege
sec@kali: ~
08:20 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo -i
Switch to root privilege.
[sudo] password for sec:
Password = security
root@kali:~#
root@kali:~#
root@kali:~# wget -O keyfile https://archive.kali.org/archive-key.asc
Get Public Key File (archive-key.asc) from Kali Archive Website & Output to Local File (keyfile)
--2023-01-26 08:20:23-- https://archive.kali.org/archive-key.asc
Resolving archive.kali.org (archive.kali.org)... 192.99.45.140
Connecting to archive.kali.org (archive.kali.org)|192.99.45.140|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3155 (3.1K) [application/octet-stream]
Saving to: 'keyfile'
Status information
keyfile 100%[===>] 3.08K --.-KB/s in 0s
2023-01-26 08:20:24 (88.6 MB/s) - 'keyfile' saved [3155/3155]
root@kali:~#
root@kali:~#
Get File (archive-key.asc) from Web & Output Public Keys to Local File (keyfile)
Right Ctrl

Kali-server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

sec@kali: ~ 08:24 AM

sec@kali: ~

File Actions Edit View Help

# Display the content of keyfile, which is a list/block of PGP Public Keys

```
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo -i
[sudo] password for sec:
root@kali:~#
root@kali:~#
root@kali:~# wget -O keyfile https://archive.kali.org/archive-key.asc
--2023-01-26 08:20:23--  https://archive.kali.org/archive-key.asc
Resolving archive.kali.org (archive.kali.org)... 192.99.45.140
Connecting to archive.kali.org (archive.kali.org)|192.99.45.140|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3155 (3.1K) [application/octet-stream]
Saving to: 'keyfile'

keyfile                          100%[=============================================>]   3.08K  --.-KB/s    in 0s

2023-01-26 08:20:24 (88.6 MB/s) - 'keyfile' saved [3155/3155]

root@kali:~#
root@kali:~#
root@kali:~# cat keyfile
-----BEGIN PGP PUBLIC KEY BLOCK-----

mQINBE9U1CgBEAChen9+cvBS8ioHoCU6wBbL9jaIk5P7ZkPpjDsovMvimqZaozS8
fEAZM23gJlFratc+rRllV9hPZmGqhtT50RLDzC3yFOvFnJqAPvpVDO2ipQCVnJDX
0eWDhT62RDwk+FhjksEDwP7Yc4CgohdGDYQu1zTBSLL5qen3rckCnHF2OnSiKnYM
8YCIKAYMt4VRArAvivjOMspN+1xy2S8GYXX2felsu3Ir1DXvUIE7b/9sdK6MzBcq
joDH34OqX6isqAW0+K93lmVN+U4yFMzfEB74UMQNWKg39mCB0K/VfQ89ih4zvF9a
zENbFzfF0O0h09oHF4ZTaUFeI8JImp/x9FC+LveUyJot9t/xv0HVUd08Y4PgO48C
iXOTqqqm/DPF0AbHJGpTuonOsKy3/dYhk7Fvsfn02DMds+RKsukBEzypTIIIzMBF
Uwiq/GaaNRWw6lnOyE4wMmpwRa11QVDDWkMpuOr1tPV7M+EMAhZY7cyHDmRTOFL3
H0CxYnInis+k1NQikqtLxNrzWdxsXU25BMbEsAQq7aRTs7wpOnUK+yY+qTG/V5nl
J6II+/CtWJthIef22r8EYX1BQOXRggamy0nxViC3S6kjuU2Lb1qnDb/c7T9hB72
4T9yrRHJbygTvQD8BJBADgRy7+XInCp01V4nAJZSu20qopEg082SdWK9FwARAQAB
tCZLYWxpIExpbnV4IFJlcG9zaXRvcnkgPGRldmVsQGthbGkub3JnPokCVQQTAQoA
PwIbAwYLCQgHAwIGFQgCCQoLBBYCAwECHgECF4AWIQRExlE6jk+z0wh191jtRE/W
fY0L9gUCYe/xTgUJGD63pgAKCRDtRE/wfY0L9ofUD/9zichMeQ5+XxHnpHTSmUN
9eCcis6NGIbW+hTfSxSttfCQBrxKGfYXwVcqGRIiSDp9FcfqH5UsgPOzgJzmLBLV
i0HfMRDpcCWJzk8VfWde/5Hv0P0XSx/Y+VR7PMJVOzWkF7o0kM4bITx3M5BYY08s
leoZMNZo9sSR0GdzbXoIXkuBwMG+nw0qjfsyI8Qcsi52Uk8YhdCkgaAb8vYyxMwO
qKJ6SIIENT6ycyZw4ueFZXZY/RYPJFvWZEYB0cFOMbNwlrXFUZyr4fDdPruaPlZL
zBIU8jwEE372frdRuXilJ2Q+Me9jhSxvnJegJsHDdgeLU6IDeAiaAaTzvufr3KmA
YifZ1Q20+DzdN5RZ5+3vNV9cihVb3qizSUe0y6LfpPeIPoa+ENzT4WqhP6rfMMhF
2KcwhNFP+faB+qs79YqIWnChrJNiE5HQDDgP6DY1ETmjj6Bo+DC9RyasWT5pSJY
8rOVJ+1bE4sxlqtvDVlAdR1LwIpHeskz4o/lAMPHSNTX2WBDJdYvhT28xTC3cYlA
kcdpvBbjj7C4VqgMvsPLg13lfR/A28ADO6AxY323+OpPv6crsDbYOcIBpwBgHb96
AYyottiEfNnLBCysR/m34TdlYvFW0KDYsbMYLCJH/uzJK3l8TCdVBfkzDMMctSFV
nFY/xHhDFweArXNHru2CJLkCDQRPVNQoARAAoMOCt6yDngNUawaFLqFzzkQ2UDt1
LyWMM5qRusYmVW7DbMqRgl816AhW3qGXlpET2QDK/C7np8kiwkx22cWkK2W7e877
bKGX1jH0k8jIZWxE15pBCBkTk+zb6elC263qiw36jxAlEnwd4eP0OAY6SxD9xi5H
fJ7zXO+2hF4bVgofRGNmr5IA9SPL0yRJo+dNm3Sh+MhdNMpvJpOdk0PWqq1ZP9LC
```

This is a list (or block) of trusted public keys obtained from (and recommended by) Kali Archive Website (archieve.kali.org).

Each line in this block represents a public key for a trusted entity, in the form of a hash code.

Right Ctrl

# Get File (archive-key.asc) from Web & Output Public Keys & Add to List of Trusted Keys

Kali-server [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

sec@kali: ~ 08:28 AM

File Actions Edit View Help

```
H0CxYnInis+k1NQikqtLxNrzWdxsXU25BMbEsAQq7aRTs7wpOnUK+yY+qTG/V5nl
...
fY0L9gUCYe/xTgUJGD63pgAKCRDtRE/wfY0L9ofUD/9zichMeQ5+XxHnpHTSmUNR
9eCcis6NGIbW+hTfSxSttfCQBrxKGfYXwVcqGRIiSDp9FcfqH5UsgPOzgJzmlBLV
i0HfMRDpcCWJzk8VfWde/5Hv0P0XSx/Y+VR7PMJVOzWkF7o0kM4bITx3M5BYY08s
leoZMNZo9sSR0GdzbXoIXkuBwMG+nw0qjfsyI8Qcsi52Uk8YhdCkgaAb8vYyxMwO
qKJ6SIIENT6ycyZw4ueFZXZY/RYPJFvWZEYB0cFOMbNwlrXFUZyr4fDdPruaPlZW
zBIU8jwEE372frdRuXilJ2Q+Me9jhSxvnJegJsHDdgeLU6IDeAiaAaTzvufr3KmA
YifZ1Q20×DzdN5RZ5×3vNV9cihVb3qizSUe0y6LfpPeIPoa+ENzT4WqhP6rfMMhF
2KcwhNFP+faB+qs79YqIWnChrJNiE5HQDDgP6DY1ETmjj6Bo+DC9RyasWT5pSJYA
8rOVJ+1bE4sxlqtvDVlAdR1LwIpHeskz4o/lAMPHSNTX2WBDJdYvhT28xTC3cYlA
kcdpvBbjj7C4VqgMvsPLg13lfR/A28ADO6AxY323+OpPv6crsDbYOcIBpwBgHb96
AYyottiEfNnLBCysR/m34TdlYvFW0KDYsbMYLCJH/uzJK3l8TCdVBfkzDMMctSFV
nFY/xHhDFweArXNHru2CJLkCDQRPVNQoARAAoMOCt6yDngNUawaFLqFzzkQ2UDt1
LyWMM5qRusYmVW7DbMqRgl816AhW3qGXlpET2QDK/C7np8kiwkx22cWkK2W7e877
bKGX1jH0k8jIZWxE15pBCBkTk+zb6elC263qiw36jxAlEnwd4eP0OAY6SxD9x15H
fJ7zXO+2hF4bVgofRGNmr5IA9SPL0yRJo+dNm3Sh+MhdNMpvJpOdk0PWqq1ZP9LC
1XCYNtjlImsemugLloKIrdpwAcHJ6XqhyI5IujftmUfN6hL33MAl34Auy/4ElUFU
9DjvWI7lu+R7P8jdDQB3C10/epbmRu7vqtRNUMf7q+MERZQCPqn75qO8P4zGGHdD
hVRQjAlefx6ULvhRllfCkjrSrpnHFGcYLzPXQuxuhSLvZyCnJrG1XmgLB5SAFPxI
K1oBydqZOYPsPGKZSvMHpBPv9yR2tM6yBjBzBV3/wQCaHD9Yp3sZD9RxSWtAvk3e
zRjQon81W4S0J6dUZL2mog7gWzDj9v42cIV890ezS077dpeL2fSZOUr3fMrM1ZPf
JKue8SrvlVVV1wySA6VxBss71iWZNEHC5gD/geC863FaOxXKFZXWxD+MeM/hrUef
mj67fQ4rjzTgKFRtivmSKzggA3FeOeUCg0gadG9sGH/gfxToA61T/xxEWEyuwJiO
2SVS/iBjQnfcjDMAEQEAAYkCPAQYAQoAJgIbDBYhBETGUTqOT7PTCHX3WO1ET/B9
jQv2BQJh7/JiBQkYPri6AAoJEO1ET/B9jQv2cjYQAJIsOlkH0jl09uVIY84TOYru
4+SMChH6AJklY/600EX8zTBIb0641dsSWk2XyXF+exrlnp/v5ctPb+TbYTDUsQA4
o2lTJ/rLpUIGJU04tIfA0VMCCyCJAOO1OVpEGU1QwRCQ+NnLDHKdNjvJgF9Y3dpY
LL388O6BY0tBPF+/DTsoeJLkb6dohJmyk6ls5zi7ZvY2ab1AmwVXBEfYolisla69
OcGbNrabtpMdd/zdCVxyoHuXaYEuqdMLGbYTDoPI9I2gSBOxIHIJ7z/rHFCDaSSB
iDDE/+mLZLcbj9pSuQn40ZWEPWELUz1YyjI4bSWYQ/gr5UQhQcNmH1KVULm/s6Sx
1MBUvWLXFxqb+T7PqWeUAIMTZTjfBiMqJjPzZ61zBBeQDKvciEy/UnunvX+e1cNQ
1aDzeqaQ3OqJaoFbjmzE218SelQvWCCWQ24ixgQZp8/xd3ae5oQNwqdC0Z6azyMu
l5dzA+1VxXqlTVZ5gH1/74PZP1YeKPgmSx3LrP3gpOP7Rp99wTZ77b9layR9ZyEP
IdcIJF0QNSIrKXHjdh5pTqvLhnw58WjGFOhfyA0/YGsV2wbByGuSOAoGEZMg+hs4
4P3CudqoHQeHZOcflpRwRqheyZc+n2AGxN+RFpvaRV9cs8CiuHyvGHTgq7eear53
ktZPxNR6/WtX7iCfqkg4
=3Lxm
-----END PGP PUBLIC KEY BLOCK-----
root@kali:~#
root@kali:~#
root@kali:~#
root@kali:~# wget -q -O - https://archive.kali.org/archive-key.asc | apt-key add
OK
root@kali:~#
root@kali:~#
root@kali:~#
root@kali:~#
```

quiet - to not display status information

Output

Standard output (i.e., screen)

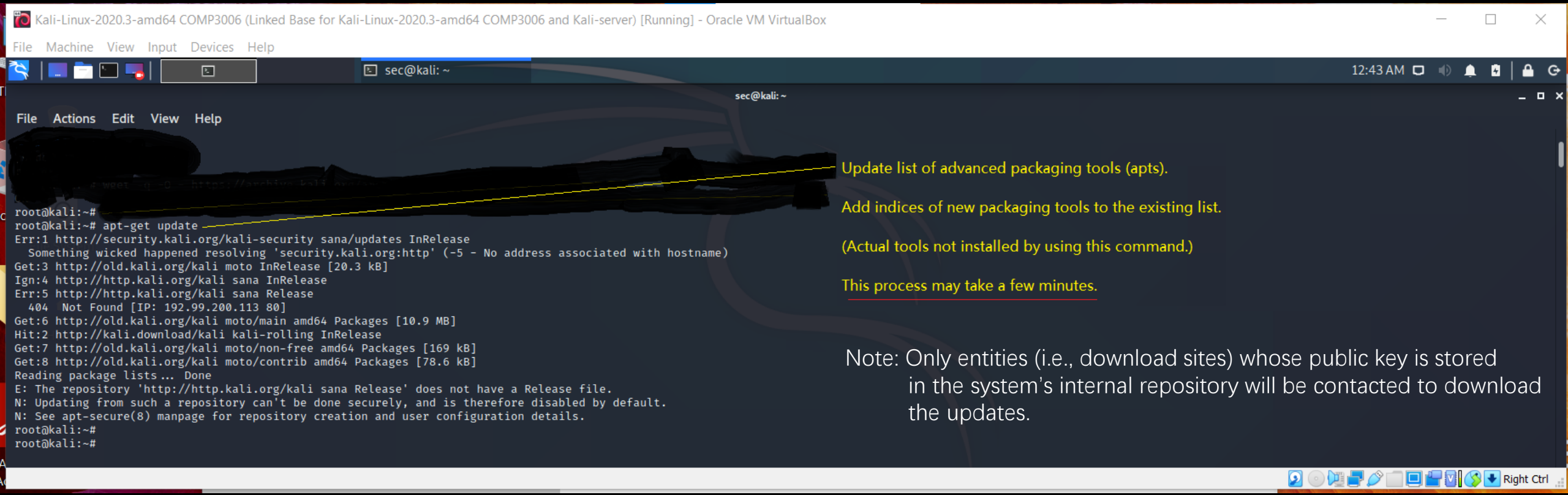
Add PGP public keys to the list of trusted keys

No status information

It will add this list/block of trusted keys to the system's internal repository of trusted public keys for future reference.

Right Ctrl

# Update List of Advanced Packaging Tools (apts)



# Install Package (libpam-cracklib) to Get Password Authentication Module (pam_cracklib.so)

```
root@kali:~#
root@kali:~# apt-get update
Err:1 http://security.kali.org/kali-security sana/updates InRelease
  Something wicked happened resolving 'security.kali.org:http' (-5 - No address associated with hostname)
Get:3 http://old.kali.org/kali moto InRelease [20.3 kB]
Ign:4 http://http.kali.org/kali sana InRelease
Err:5 http://http.kali.org/kali sana Release
  404  Not Found [IP: 192.99.200.113 80]
Get:6 http://old.kali.org/kali moto/main amd64 Packages [10.9 MB]
Hit:2 http://kali.download/kali kali-rolling InRelease
Get:7 http://old.kali.org/kali moto/non-free amd64 Packages [169 kB]
Get:8 http://old.kali.org/kali moto/contrib amd64 Packages [78.6 kB]
Reading package lists ... Done
E: The repository 'http://http.kali.org/kali sana Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
root@kali:~#
root@kali:~#
root@kali:~# apt-get install libpam-cracklib
Reading package lists ... Done
Building dependency tree
Reading state information ... Done
The following package was automatically installed and is no longer required:
  libjsoncpp1
Use 'apt autoremove' to remove it.
The following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu cracklib-runtime firefox-esr gcc-12-base libbinutils libc-bin libc-dev-bin libc-l10n libc6 libc6-dev libc6-i386 libcrack2 libctf-nobfd0 libctf0 libdeflate0 libffi8
  libgdk-pixbuf-2.0-0 libgdk-pixbuf-xlib-2.0-0 libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-common libgprofng0 libjansson4 liblerc4 libnsl-dev libnsl2 libnspr4 libnss3 libstdc++6 libtiff6 libtirpc-common libtirpc-dev libtirpc3 libvpx7
  libwebp7 libx11-6 libx11-xcb1 libzstd1 locales rpcsvc-proto wamerican
Suggested packages:
  binutils-doc fonts-stix | otf-stix fonts-lmodern glibc-doc libnss-nis libnss-nisplus manpages-dev
Recommended packages:
  manpages-dev libc-devtools
The following NEW packages will be installed:
  cracklib-runtime gcc-12-base libcrack2 libdeflate0 libffi8 libgdk-pixbuf-2.0-0 libgdk-pixbuf-xlib-2.0-0 libgprofng0 liblerc4 libnsl-dev libnsl2 libpam-cracklib libtiff6 libtirpc-dev libvpx7 libwebp7 rpcsvc-proto wamerican
The following packages will be upgraded:
  binutils binutils-common binutils-x86-64-linux-gnu firefox-esr libbinutils libc-bin libc-dev-bin libc-l10n libc6 libc6-dev libc6-i386 libctf-nobfd0 libctf0 libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-common libjansson4 libnspr4 lib
  libstdc++6 libtirpc-common libtirpc3 libx11-6 libx11-xcb1 libzstd1 locales
25 upgraded, 18 newly installed, 0 to remove and 1809 not upgraded.
Need to get 84.4 MB of archives.
After this operation, 42.5 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:2 http://old.kali.org/kali moto/main amd64 libpam-cracklib amd64 1.1.3-7.1 [83.7 kB]
Get:1 http://kali.download/kali kali-rolling/main amd64 libffi8 amd64 3.4.4-1 [22.9 kB]
Get:1 http://kali.download/kali kali-rolling/main amd64 libffi8 amd64 3.4.4-1 [22.9 kB]
Get:1 http://kali.download/kali kali-rolling/main amd64 libffi8 amd64 3.4.4-1 [22.9 kB]
```

Install the package (libpam-cracklib) to get the Password Authentication Module (pam_cracklib.so).

(pam_cracklib.so) is a stronger password authetication module than the standard module (pam_unix.so).

This process may take a few minutes to complete.

Enter Y to continue.

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

sec@kali: ~

12:29 AM

sec@kali: ~

File Actions Edit View Help

Configuring libc6:amd64

There are services installed on your system which need to be restarted when certain libraries, such as libpam, libc, and libssl, are upgraded. Since these restarts may cause interruptions of service for the system, y
normally be prompted on each upgrade for the list of services you wish to restart. You can choose this option to avoid being prompted; instead, all necessary restarts will be done for you automatically so you can av
asked questions on each library upgrade.

Restart services during package upgrades without asking?

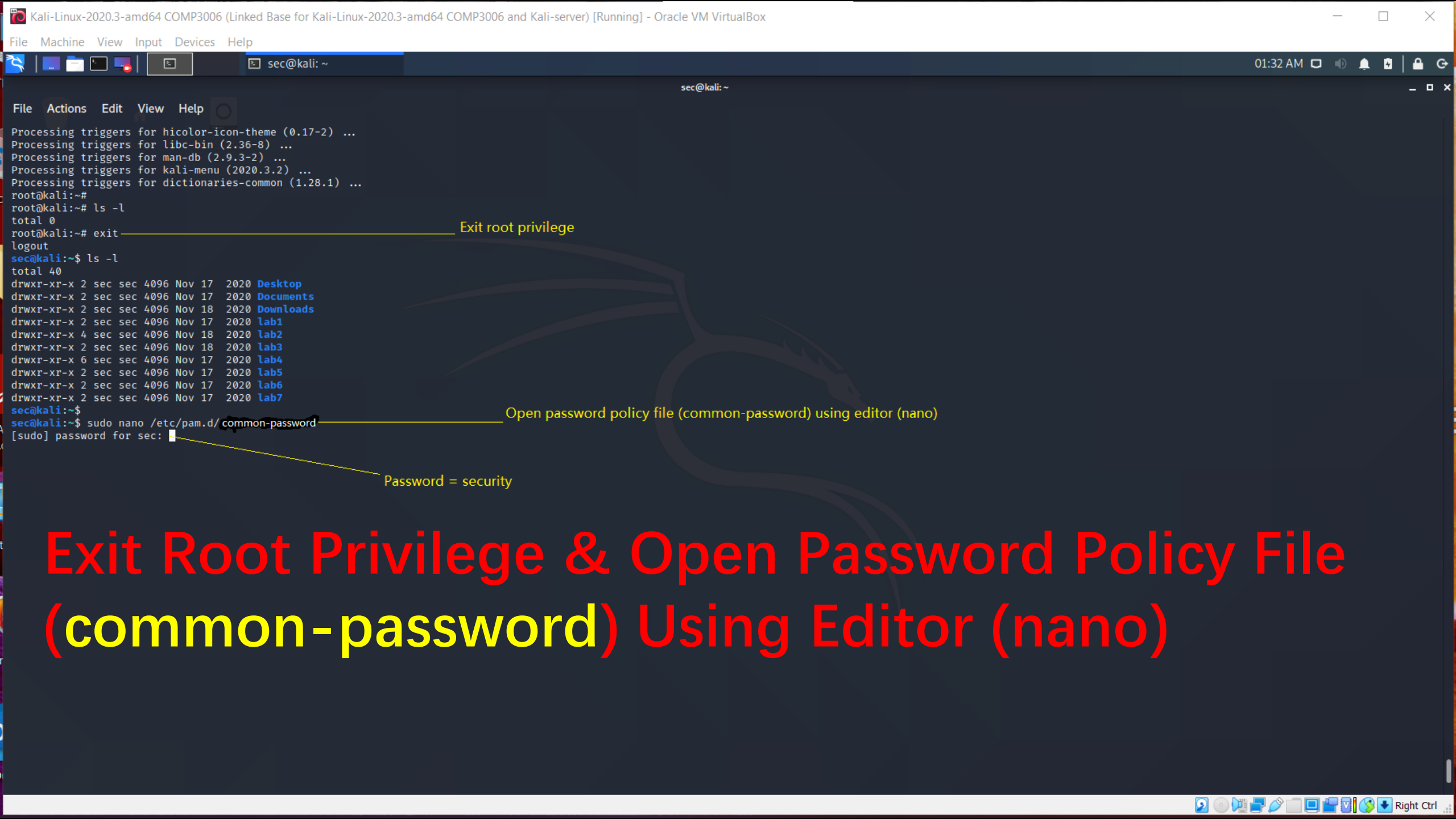
<Yes> <No>

Select Yes to allow package upgrades without asking.

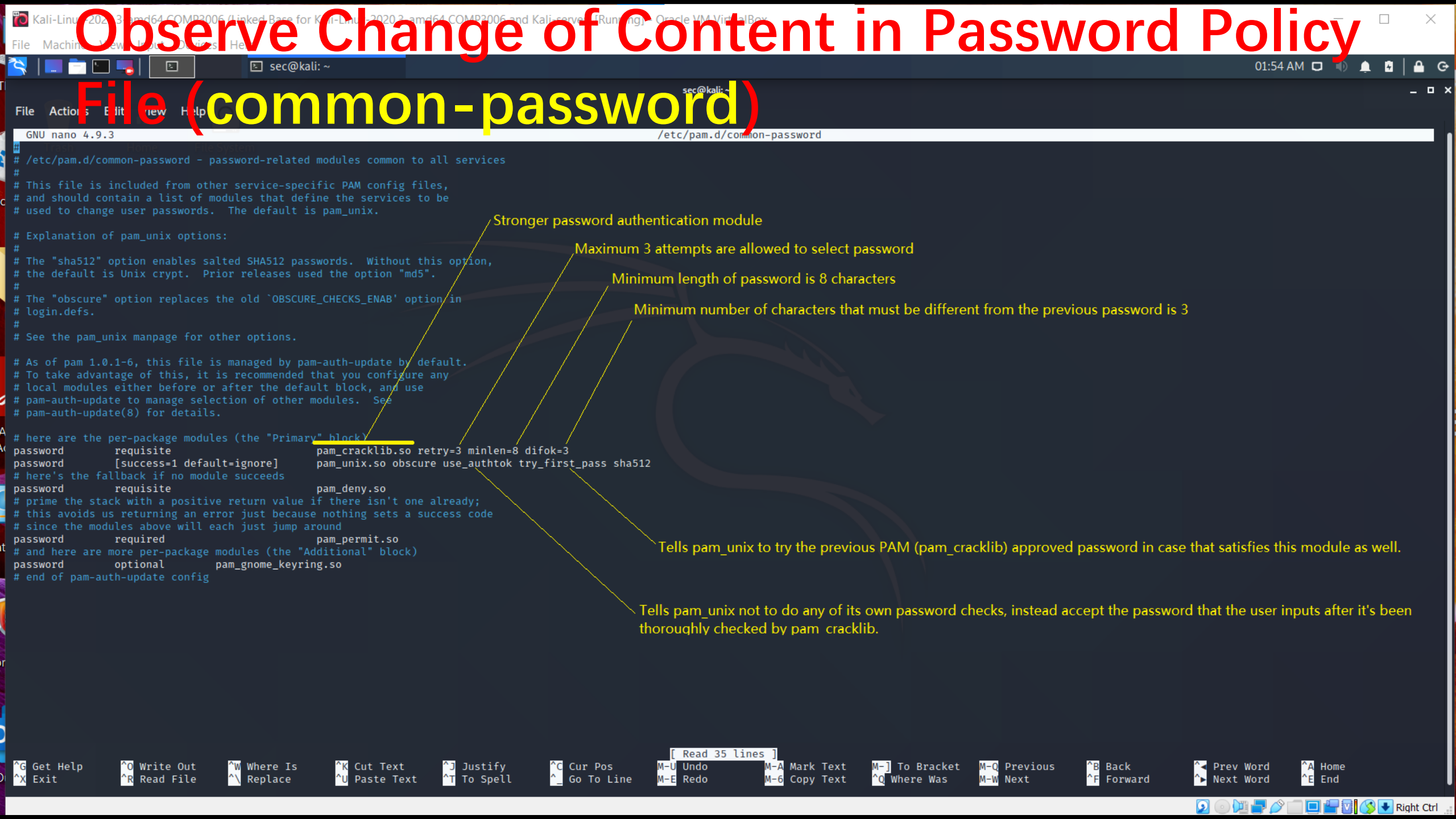
# Select Yes to Allow Package Upgrades Without Asking

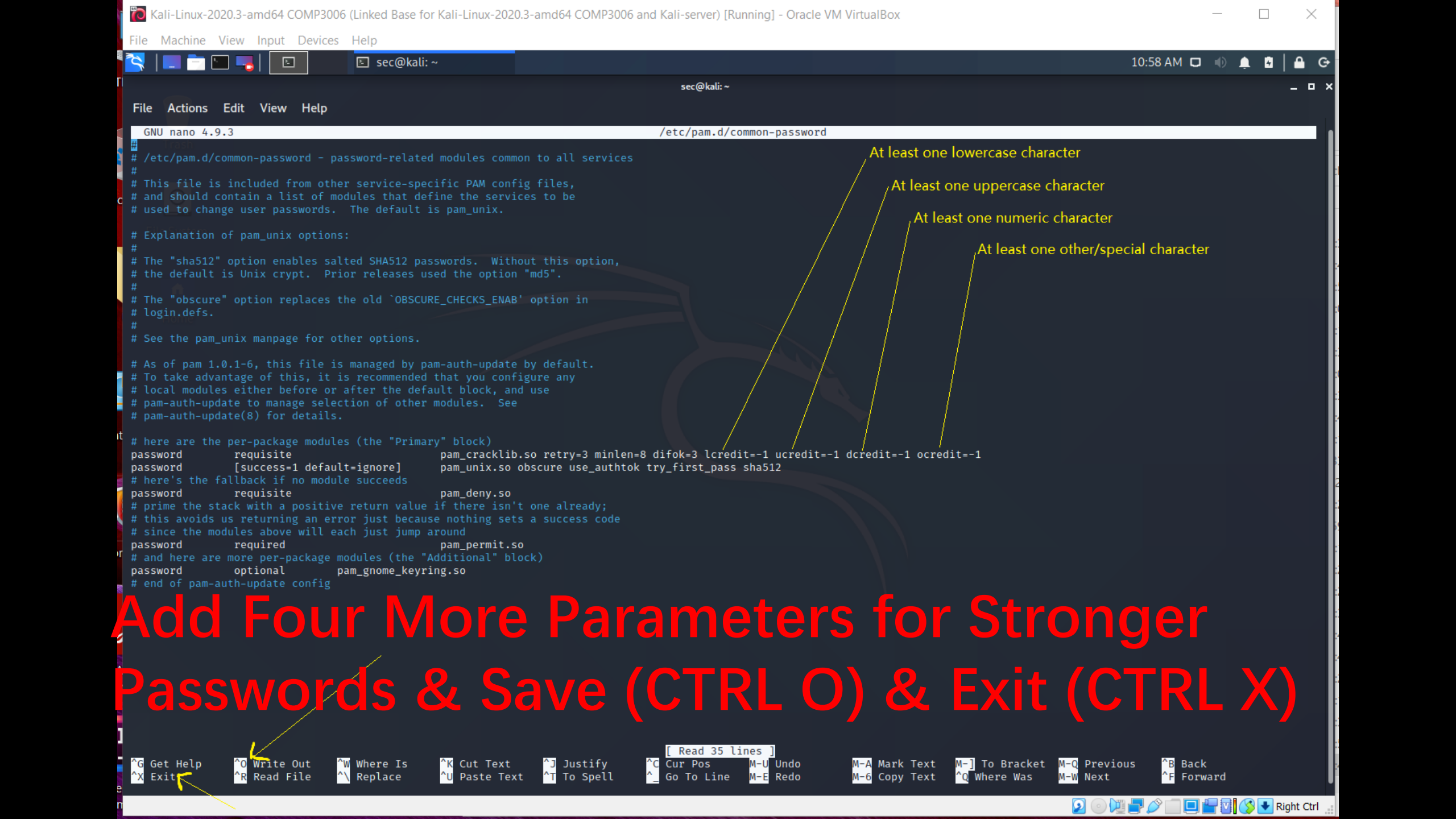
Right Ctrl

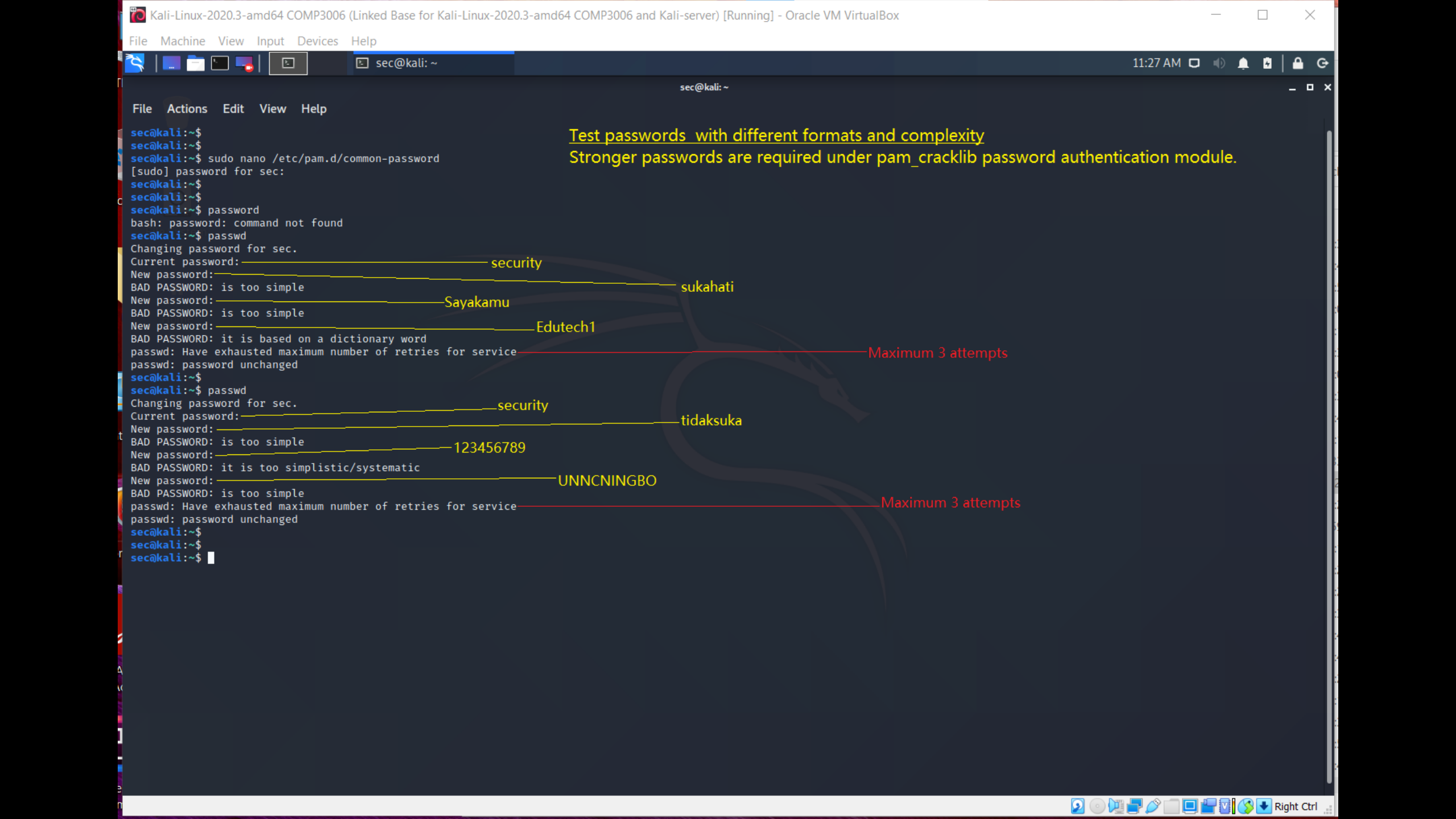

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
01:14 AM
sec@kali: ~
File Actions Edit View Help
Unpacking libpam-cracklib:amd64 (1.1.3-7.1) ...
Unpacking
Setting up libc-l10n (2.36-8) ...
Setting up liblerc4:amd64 (4.0.0+ds-2) ...
Setting up libtirpc-common (1.3.3+ds-1) ...
Setting up libgdk-pixbuf2.0-common (2.42.10+dfsg-1) ...
Setting up binutils-common:amd64 (2.40-2) ...
Setting up libdeflate0:amd64 (1.14-1) ...
Setting up libctf-nobfd0:amd64 (2.40-2) ...
Setting up locales (2.36-8) ...
Installing new version of config file /etc/locale.alias ...
Generating locales (this might take a while)...
en_US.UTF-8... done
Generation complete.
Setting up libjansson4:amd64 (2.14-2) ...
Setting up rpcsvc-proto (1.4.3-1) ...
Setting up libnspr4:amd64 (2:4.35-1) ...
Setting up wamerican (2020.12.07-2) ...
Setting up libcrack2:amd64 (2.9.6-5) ...
Setting up libwebp7:amd64 (1.2.4-0.1) ...
Setting up libffi8:amd64 (3.4.4-1) ...
Setting up libtiff6:amd64 (4.5.0-3) ...
Setting up libc6-i386 (2.36-8) ...
Setting up libx11-6:amd64 (2:1.8.3-3) ...
Setting up libgdk-pixbuf-2.0-0:amd64 (2.42.10+dfsg-1+b1) ...
Setting up libvpx7:amd64 (1.12.0-1) ...
Setting up libbinutils:amd64 (2.40-2) ...
Setting up libc-dev-bin (2.36-8) ...
Setting up libctf0:amd64 (2.40-2) ...
Setting up libtirpc3:amd64 (1.3.3+ds-1) ...
Setting up libx11-xcb1:amd64 (2:1.8.3-3) ...
Setting up libgdk-pixbuf-xlib-2.0-0:amd64 (2.40.2-2) ...
Setting up libnss3:amd64 (2:3.87-1) ...
Setting up cracklib-runtime (2.9.6-5) ...
skipping line: 1
Setting up libgprofng0:amd64 (2.40-2) ...
Setting up libtirpc-dev:amd64 (1.3.3+ds-1) ...
Setting up libgdk-pixbuf2.0-0:amd64 (2.40.2-2) ...
Setting up libnsl2:amd64 (1.3.0-2) ...
Setting up firefox-esr (102.6.0esr-1) ...
Setting up binutils-x86-64-linux-gnu (2.40-2) ...
Setting up binutils (2.40-2) ...
Setting up libpam-cracklib:amd64 (1.1.3-7.1) ...
Setting up
Setting up libnsl-dev:amd64 (1.3.0-2) ...
Setting up libc6-dev:amd64 (2.36-8) ...
Processing triggers for desktop-file-utils (0.26-1) ...
Processing triggers for mime-support (3.64) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for libc-bin (2.36-8) ...
Processing triggers for man-db (2.9.3-2) ...
Processing triggers for kali-menu (2020.3.2) ...
Processing triggers for dictionaries-common (1.28.1) ...
root@kali:~#
Complete Installation of Package
(libpam-cracklib)
Right Ctrl

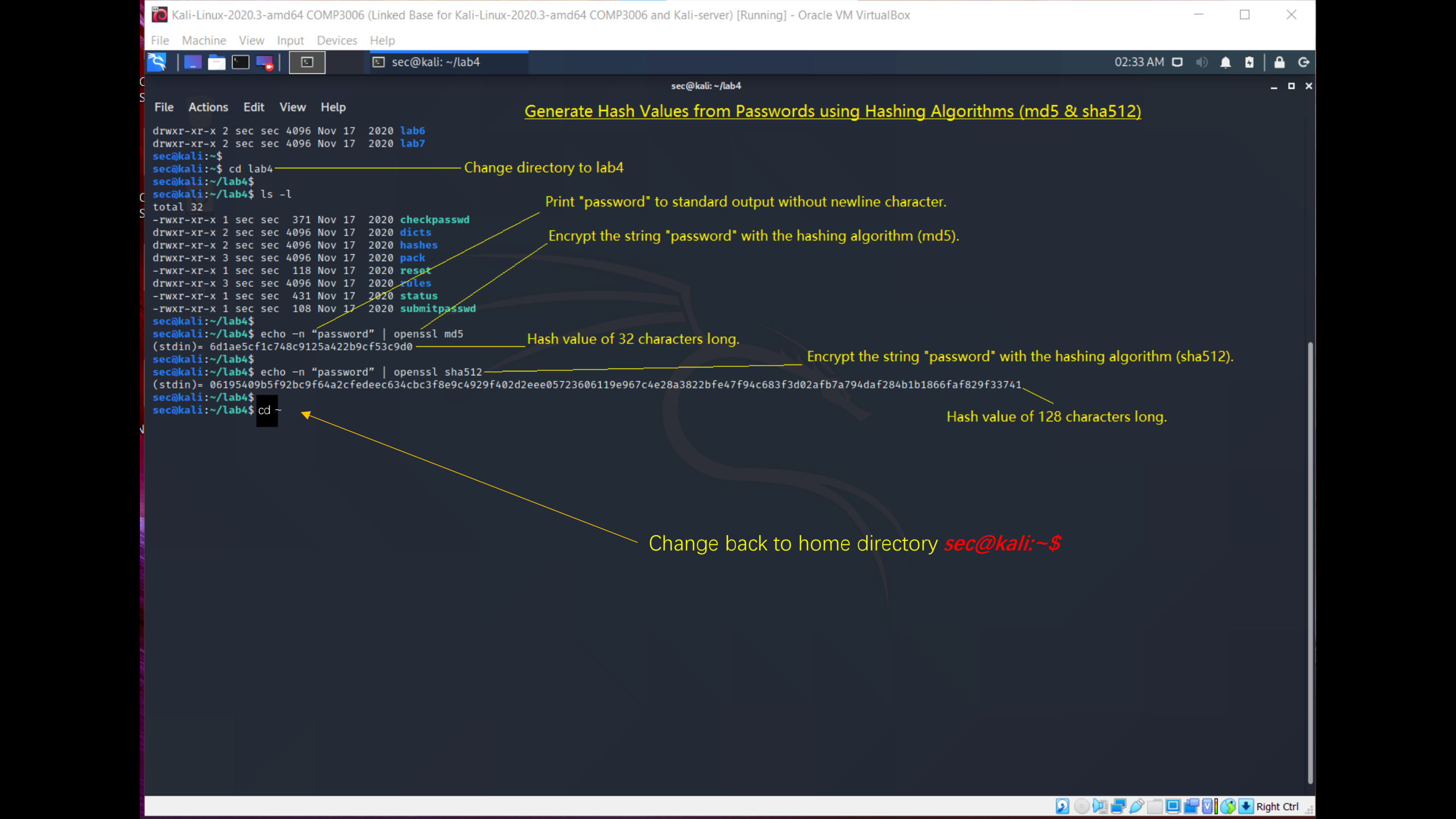

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
01:32 AM
sec@kali: ~
File Actions Edit View Help
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for libc-bin (2.36-8) ...
Processing triggers for man-db (2.9.3-2) ...
Processing triggers for kali-menu (2020.3.2) ...
Processing triggers for dictionaries-common (1.28.1) ...
root@kali:~#
root@kali:~# ls -l
total 0
root@kali:~# exit
Exit root privilege
logout
sec@kali:~$ ls -l
total 40
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Nov 17 2020 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ sudo nano /etc/pam.d/common-password
Open password policy file (common-password) using editor (nano)
[sudo] password for sec:
Password = security
Exit Root Privilege & Open Password Policy File (common-password) Using Editor (nano)
Right Ctrl

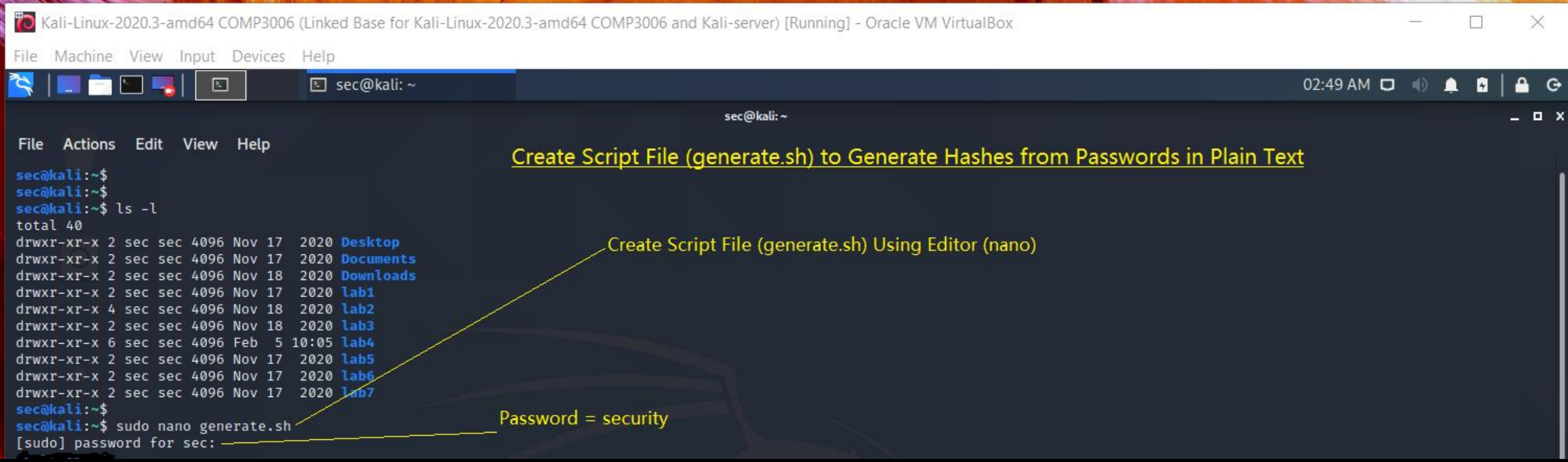
# Observe Change of Content in Password Policy File (common-password)

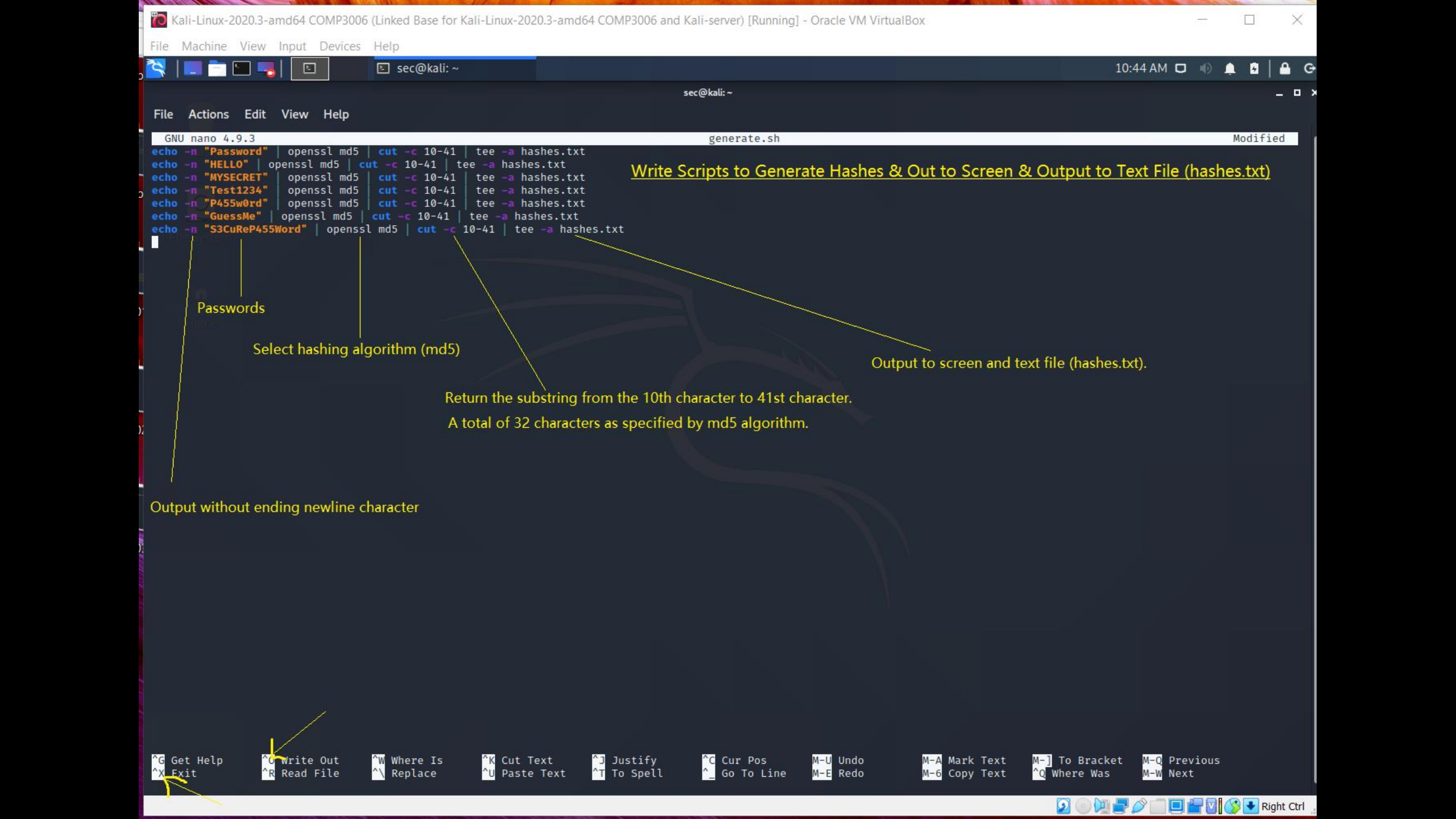


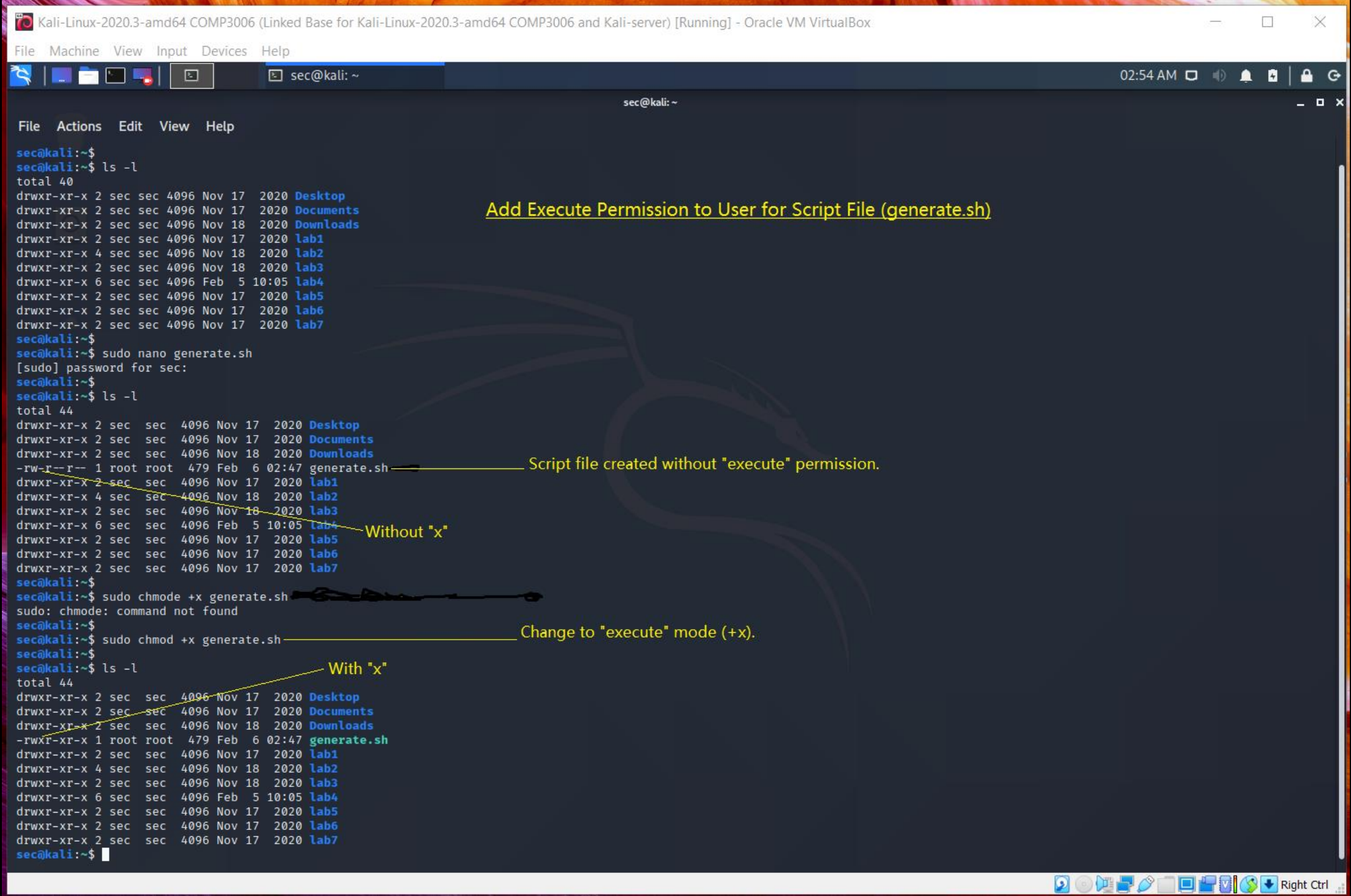

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
10:58 AM
sec@kali: ~
File Actions Edit View Help
GNU nano 4.9.3 /etc/pam.d/common-password
# /etc/pam.d/common-password - password-related modules common to all services
# This file is included from other service-specific PAM config files,
# and should contain a list of modules that define the services to be
# used to change user passwords. The default is pam_unix.
# Explanation of pam_unix options:
# The "sha512" option enables salted SHA512 passwords. Without this option,
# the default is Unix crypt. Prior releases used the option "md5".
# The "obscure" option replaces the old `OBSCURE_CHECKS_ENAB' option in
# login.defs.
# See the pam_unix manpage for other options.
# As of pam 1.0.1-6, this file is managed by pam-auth-update by default.
# To take advantage of this, it is recommended that you configure any
# local modules either before or after the default block, and use
# pam-auth-update to manage selection of other modules. See
# pam-auth-update(8) for details.
# here are the per-package modules (the "Primary" block)
password requisite pam_cracklib.so retry=3 minlen=8 difok=3 lcredit=-1 ucredit=-1 dcredit=-1 ocredit=-1
password [success=1 default=ignore] pam_unix.so obscure use_authtok try_first_pass sha512
# here's the fallback if no module succeeds
password requisite pam_deny.so
# prime the stack with a positive return value if there isn't one already;
# this avoids us returning an error just because nothing sets a success code
# since the modules above will each just jump around
password required pam_permit.so
# and here are more per-package modules (the "Additional" block)
password optional pam_gnome_keyring.so
# end of pam-auth-update config
At least one lowercase character
At least one uppercase character
At least one numeric character
At least one other/special character
Add Four More Parameters for Stronger Passwords & Save (CTRL O) & Exit (CTRL X)
[ Read 35 lines ]
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo M-A Mark Text M-] To Bracket M-Q Previous ^B Back
^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell ^_ Go To Line M-E Redo M-6 Copy Text ^Q Where Was M-W Next ^F Forward
Right Ctrl

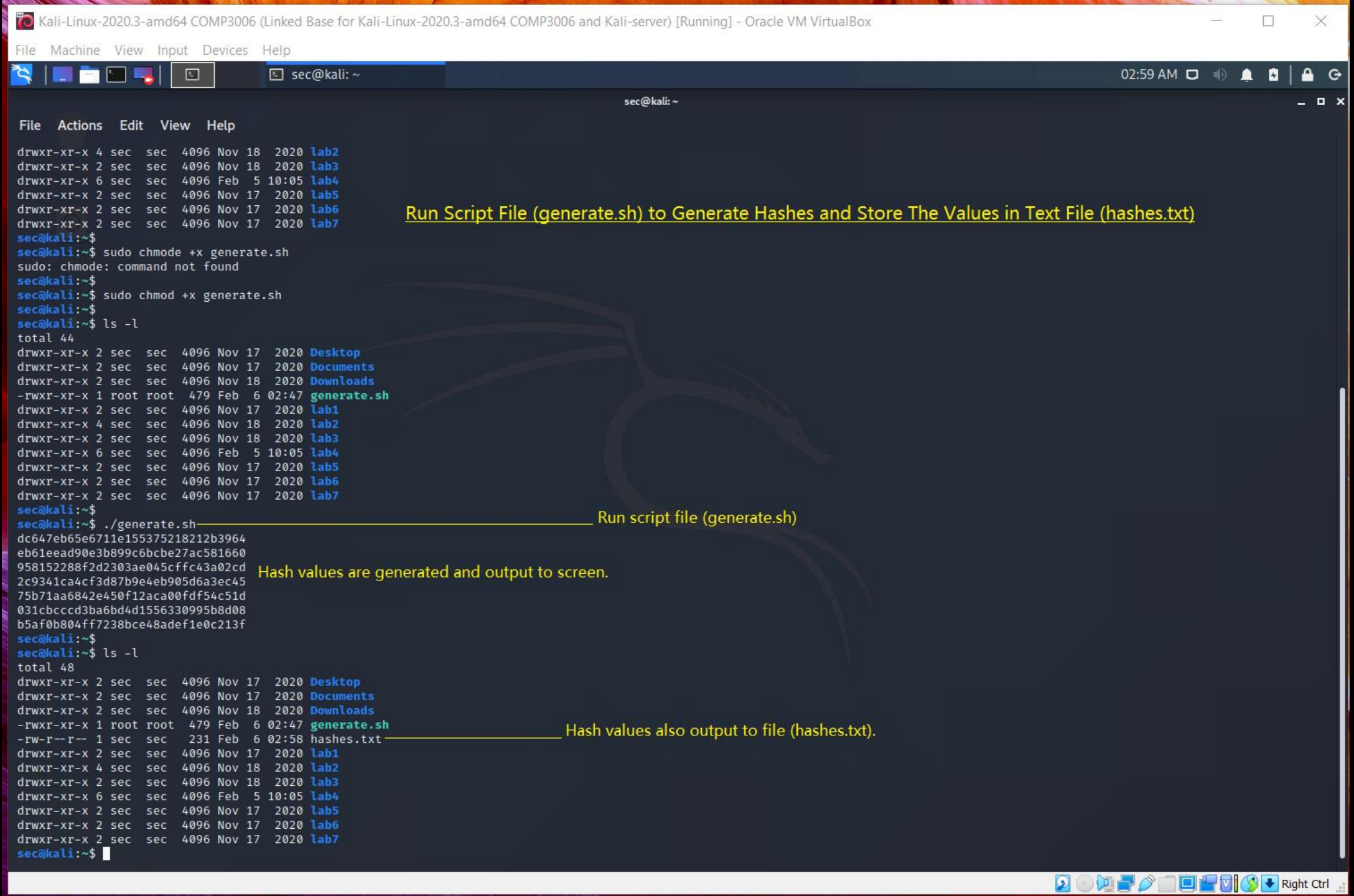

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
11:27 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo nano /etc/pam.d/common-password
[sudo] password for sec:
sec@kali:~$
sec@kali:~$
sec@kali:~$ password
bash: password: command not found
sec@kali:~$ passwd
Changing password for sec.
Current password:
security
New password:
sukahati
BAD PASSWORD: is too simple
New password:
Sayakamu
BAD PASSWORD: is too simple
New password:
Edutech1
BAD PASSWORD: it is based on a dictionary word
passwd: Have exhausted maximum number of retries for service
Maximum 3 attempts
passwd: password unchanged
sec@kali:~$
sec@kali:~$ passwd
Changing password for sec.
Current password:
security
New password:
tidaksuka
BAD PASSWORD: is too simple
New password:
123456789
BAD PASSWORD: it is too simplistic/systematic
New password:
UNNCNINGBO
BAD PASSWORD: is too simple
passwd: Have exhausted maximum number of retries for service
Maximum 3 attempts
passwd: password unchanged
sec@kali:~$
sec@kali:~$
sec@kali:~$
Test passwords with different formats and complexity
Stronger passwords are required under pam_cracklib password authentication module.
Right Ctrl

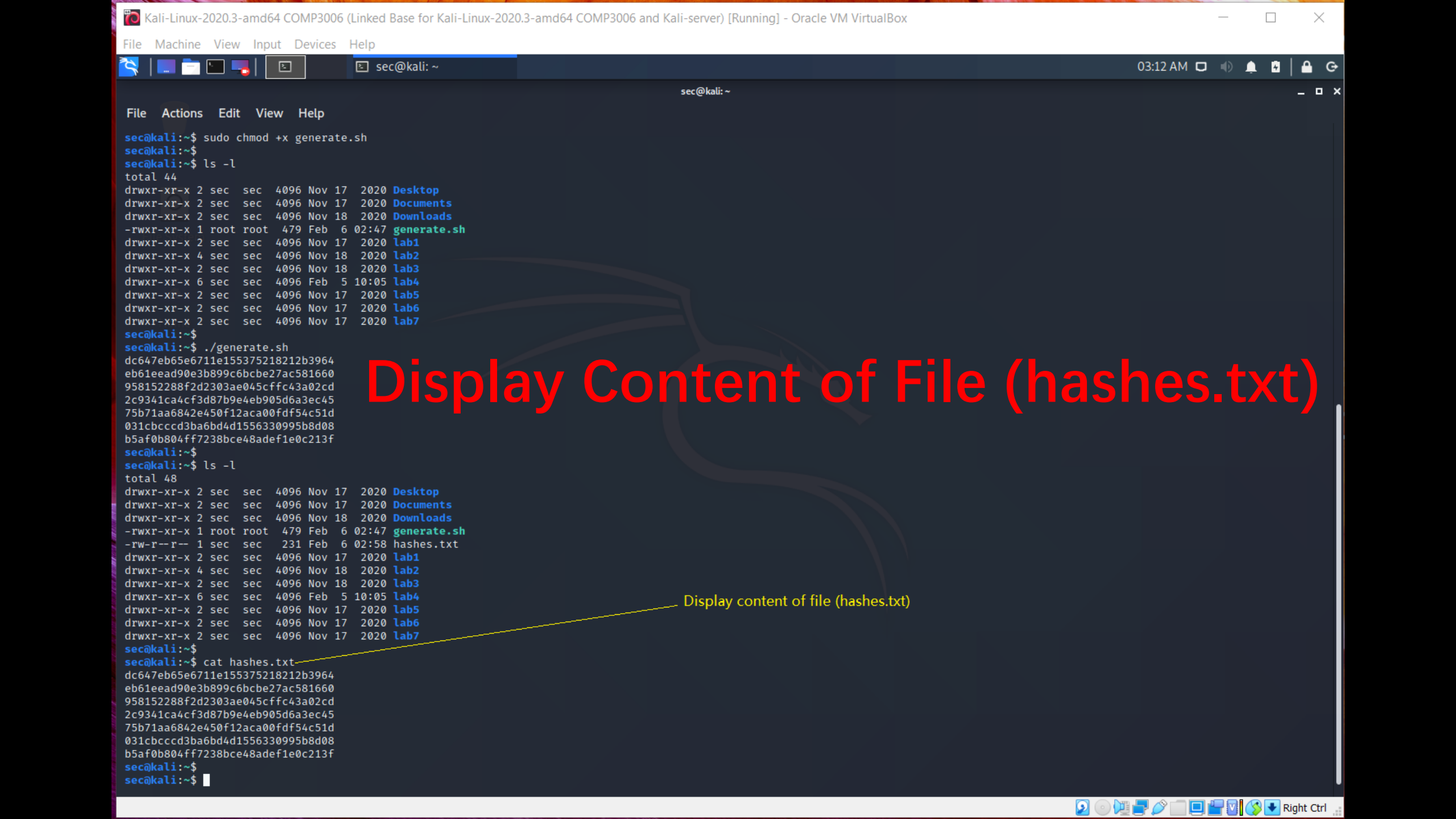

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~/lab4
02:33 AM
sec@kali: ~/lab4
File Actions Edit View Help
Generate Hash Values from Passwords using Hashing Algorithms (md5 & sha512)
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ cd lab4
Change directory to lab4
sec@kali:~/lab4$
sec@kali:~/lab4$ ls -l
total 32
-rwxr-xr-x 1 sec sec 371 Nov 17 2020 checkpasswd
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 dicts
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 hashes
drwxr-xr-x 3 sec sec 4096 Nov 17 2020 pack
-rwxr-xr-x 1 sec sec 118 Nov 17 2020 reset
drwxr-xr-x 3 sec sec 4096 Nov 17 2020 rules
-rwxr-xr-x 1 sec sec 431 Nov 17 2020 status
-rwxr-xr-x 1 sec sec 108 Nov 17 2020 submitpasswd
sec@kali:~/lab4$
Print "password" to standard output without newline character.
Encrypt the string "password" with the hashing algorithm (md5).
sec@kali:~/lab4$ echo -n “password” | openssl md5
(stdin)= 6d1ae5cf1c748c9125a422b9cf53c9d0
Hash value of 32 characters long.
sec@kali:~/lab4$
Encrypt the string "password" with the hashing algorithm (sha512).
sec@kali:~/lab4$ echo -n “password” | openssl sha512
(stdin)= 06195409b5f92bc9f64a2cfedeec634cbc3f8e9c4929f402d2eee05723606119e967c4e28a3822bfe47f94c683f3d02afb7a794daf284b1b1866faf829f33741
Hash value of 128 characters long.
sec@kali:~/lab4$
sec@kali:~/lab4$ cd ~
Change back to home directory sec@kali:~$
Right Ctrl

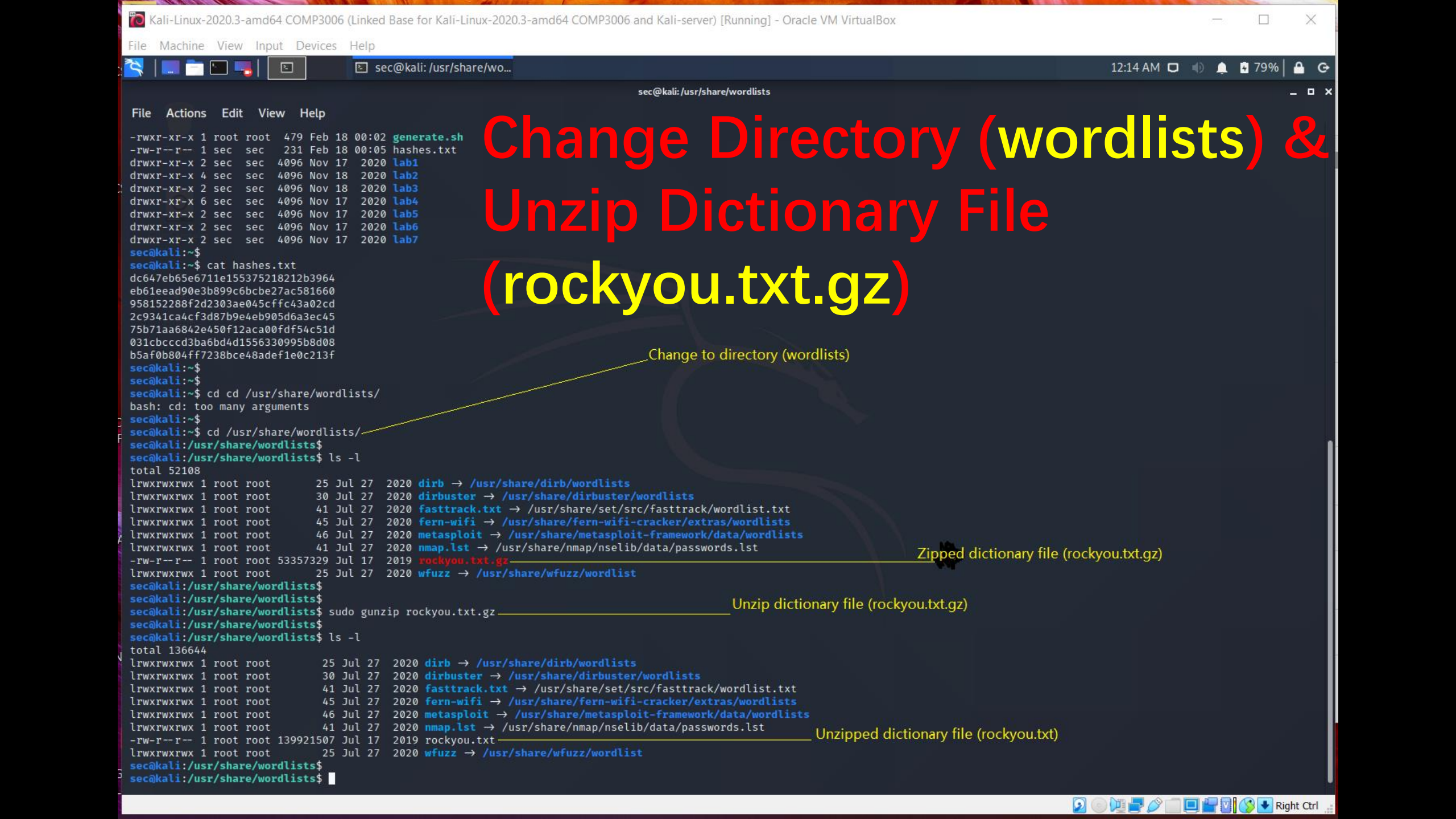

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
02:49 AM
sec@kali: ~
File Actions Edit View Help
Create Script File (generate.sh) to Generate Hashes from Passwords in Plain Text
sec@kali:~$
sec@kali:~$
sec@kali:~$ ls -l
total 40
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ sudo nano generate.sh
[sudo] password for sec:
Create Script File (generate.sh) Using Editor (nano)
Password = security


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
10:44 AM
sec@kali: ~
File Actions Edit View Help
GNU nano 4.9.3 generate.sh Modified
echo -n "Password" | openssl md5 | cut -c 10-41 | tee -a hashes.txt
echo -n "HELLO" | openssl md5 | cut -c 10-41 | tee -a hashes.txt
echo -n "MYSECRET" | openssl md5 | cut -c 10-41 | tee -a hashes.txt
echo -n "Test1234" | openssl md5 | cut -c 10-41 | tee -a hashes.txt
echo -n "P455w0rd" | openssl md5 | cut -c 10-41 | tee -a hashes.txt
echo -n "GuessMe" | openssl md5 | cut -c 10-41 | tee -a hashes.txt
echo -n "S3CuReP455Word" | openssl md5 | cut -c 10-41 | tee -a hashes.txt
Write Scripts to Generate Hashes & Out to Screen & Output to Text File (hashes.txt)
Passwords
Select hashing algorithm (md5)
Output to screen and text file (hashes.txt).
Return the substring from the 10th character to 41st character.
A total of 32 characters as specified by md5 algorithm.
Output without ending newline character
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo M-A Mark Text M-] To Bracket M-Q Previous
^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell ^_ Go To Line M-E Redo M-6 Copy Text ^Q Where Was M-W Next
Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
02:54 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$
sec@kali:~$ ls -l
total 40
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ sudo nano generate.sh
[sudo] password for sec:
sec@kali:~$
sec@kali:~$ ls -l
total 44
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
-rw-r--r-- 1 root root 479 Feb 6 02:47 generate.sh
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ sudo chmode +x generate.sh
sudo: chmode: command not found
sec@kali:~$
sec@kali:~$ sudo chmod +x generate.sh
sec@kali:~$
sec@kali:~$ ls -l
total 44
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
-rwxr-xr-x 1 root root 479 Feb 6 02:47 generate.sh
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
Add Execute Permission to User for Script File (generate.sh)
Script file created without "execute" permission.
Without "x"
Change to "execute" mode (+x).
With "x"
Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
02:59 AM
sec@kali: ~
File Actions Edit View Help
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ sudo chmode +x generate.sh
sudo: chmode: command not found
sec@kali:~$
sec@kali:~$ sudo chmod +x generate.sh
sec@kali:~$
sec@kali:~$ ls -l
total 44
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
-rwxr-xr-x 1 root root 479 Feb 6 02:47 generate.sh
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ ./generate.sh
dc647eb65e6711e155375218212b3964
eb61eead90e3b899c6bcbe27ac581660
958152288f2d2303ae045cffc43a02cd
2c9341ca4cf3d87b9e4eb905d6a3ec45
75b71aa6842e450f12aca00fdf54c51d
031cbcccd3ba6bd4d1556330995b8d08
b5af0b804ff7238bce48adef1e0c213f
sec@kali:~$
sec@kali:~$ ls -l
total 48
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
-rwxr-xr-x 1 root root 479 Feb 6 02:47 generate.sh
-rw-r--r-- 1 sec sec 231 Feb 6 02:58 hashes.txt
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
Run Script File (generate.sh) to Generate Hashes and Store The Values in Text File (hashes.txt)
Run script file (generate.sh)
Hash values are generated and output to screen.
Hash values also output to file (hashes.txt).
Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
03:12 AM
sec@kali: ~
File Actions Edit View Help
sec@kali:~$ sudo chmod +x generate.sh
sec@kali:~$
sec@kali:~$ ls -l
total 44
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
-rwxr-xr-x 1 root root 479 Feb 6 02:47 generate.sh
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ ./generate.sh
dc647eb65e6711e155375218212b3964
eb61eead90e3b899c6bcbe27ac581660
958152288f2d2303ae045cffc43a02cd
2c9341ca4cf3d87b9e4eb905d6a3ec45
75b71aa6842e450f12aca00fdf54c51d
031cbcccd3ba6bd4d1556330995b8d08
b5af0b804ff7238bce48adef1e0c213f
sec@kali:~$
sec@kali:~$ ls -l
total 48
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
-rwxr-xr-x 1 root root 479 Feb 6 02:47 generate.sh
-rw-r--r-- 1 sec sec 231 Feb 6 02:58 hashes.txt
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ cat hashes.txt
dc647eb65e6711e155375218212b3964
eb61eead90e3b899c6bcbe27ac581660
958152288f2d2303ae045cffc43a02cd
2c9341ca4cf3d87b9e4eb905d6a3ec45
75b71aa6842e450f12aca00fdf54c51d
031cbcccd3ba6bd4d1556330995b8d08
b5af0b804ff7238bce48adef1e0c213f
sec@kali:~$
sec@kali:~$
Display Content of File (hashes.txt)
Display content of file (hashes.txt)
Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: /usr/share/wo...
12:14 AM 79%
sec@kali:/usr/share/wordlists
File Actions Edit View Help
-rwxr-xr-x 1 root root 479 Feb 18 00:02 generate.sh
-rw-r--r-- 1 sec sec 231 Feb 18 00:05 hashes.txt
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Nov 17 2020 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
sec@kali:~$
sec@kali:~$ cat hashes.txt
dc647eb65e6711e155375218212b3964
eb61eead90e3b899c6bcbe27ac581660
958152288f2d2303ae045cffc43a02cd
2c9341ca4cf3d87b9e4eb905d6a3ec45
75b71aa6842e450f12aca00fdf54c51d
031cbcccd3ba6bd4d1556330995b8d08
b5af0b804ff7238bce48adef1e0c213f
sec@kali:~$
sec@kali:~$
sec@kali:~$ cd cd /usr/share/wordlists/
bash: cd: too many arguments
sec@kali:~$
sec@kali:~$ cd /usr/share/wordlists/
sec@kali:/usr/share/wordlists$
sec@kali:/usr/share/wordlists$ ls -l
total 52108
lrwxrwxrwx 1 root root 25 Jul 27 2020 dirb → /usr/share/dirb/wordlists
lrwxrwxrwx 1 root root 30 Jul 27 2020 dirbuster → /usr/share/dirbuster/wordlists
lrwxrwxrwx 1 root root 41 Jul 27 2020 fasttrack.txt → /usr/share/set/src/fasttrack/wordlist.txt
lrwxrwxrwx 1 root root 45 Jul 27 2020 fern-wifi → /usr/share/fern-wifi-cracker/extras/wordlists
lrwxrwxrwx 1 root root 46 Jul 27 2020 metasploit → /usr/share/metasploit-framework/data/wordlists
lrwxrwxrwx 1 root root 41 Jul 27 2020 nmap.lst → /usr/share/nmap/nselib/data/passwords.lst
-rw-r--r-- 1 root root 53357329 Jul 17 2019 rockyou.txt.gz
lrwxrwxrwx 1 root root 25 Jul 27 2020 wfuzz → /usr/share/wfuzz/wordlist
sec@kali:/usr/share/wordlists$
sec@kali:/usr/share/wordlists$
sec@kali:/usr/share/wordlists$ sudo gunzip rockyou.txt.gz
sec@kali:/usr/share/wordlists$
sec@kali:/usr/share/wordlists$ ls -l
total 136644
lrwxrwxrwx 1 root root 25 Jul 27 2020 dirb → /usr/share/dirb/wordlists
lrwxrwxrwx 1 root root 30 Jul 27 2020 dirbuster → /usr/share/dirbuster/wordlists
lrwxrwxrwx 1 root root 41 Jul 27 2020 fasttrack.txt → /usr/share/set/src/fasttrack/wordlist.txt
lrwxrwxrwx 1 root root 45 Jul 27 2020 fern-wifi → /usr/share/fern-wifi-cracker/extras/wordlists
lrwxrwxrwx 1 root root 46 Jul 27 2020 metasploit → /usr/share/metasploit-framework/data/wordlists
lrwxrwxrwx 1 root root 41 Jul 27 2020 nmap.lst → /usr/share/nmap/nselib/data/passwords.lst
-rw-r--r-- 1 root root 139921507 Jul 17 2019 rockyou.txt
lrwxrwxrwx 1 root root 25 Jul 27 2020 wfuzz → /usr/share/wfuzz/wordlist
sec@kali:/usr/share/wordlists$
sec@kali:/usr/share/wordlists$
Change Directory (wordlists) & Unzip Dictionary File (rockyou.txt.gz)
Change to directory (wordlists)
Zipped dictionary file (rockyou.txt.gz)
Unzip dictionary file (rockyou.txt.gz)
Unzipped dictionary file (rockyou.txt)
Right Ctrl

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

sec@kali: ~ 12:28 AM 79%

sec@kali: ~

File Actions Edit View Help

```
lrwxrwxrwx 1 root root        41 Jul 27  2020 nmap.lst → /usr/share/nmap/nselib/data/passwords.lst
-rw-r--r-- 1 root root 139921507 Jul 17  2019 rockyou.txt
lrwxrwxrwx 1 root root        25 Jul 27  2020 wfuzz → /usr/share/wfuzz/wordlist
sec@kali:/usr/share/wordlists$
sec@kali:/usr/share/wordlists$ cd ~
sec@kali:~$
sec@kali:~$ ls -l
total 48
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 Desktop
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 Documents
drwxr-xr-x 2 sec  sec  4096 Nov 18  2020 Downloads
-rwxr-xr-x 1 root root  479 Feb 18 00:02 generate.sh
-rw-r--r-- 1 sec  sec   231 Feb 18 00:05 hashes.txt
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 lab1
drwxr-x--- 4 sec  sec  4096 Nov 18  2020 lab2
drwxr-xr-x 2 sec  sec  4096 Nov 18  2020 lab3
drwxr-xr-x 6 sec  sec  4096 Nov 17  2020 lab4
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 lab5
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 lab6
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 lab7
sec@kali:~$
sec@kali:~$ sudo hashcat -m 0 -a 0 hashes.txt -o passwords.txt /usr/share/wordlists/rockyou.txt
hashcat (v6.0.0) starting...

OpenCL API (OpenCL 1.2 pocl 1.5, None+Asserts, LLVM 9.0.1, RELOC, SLEEF, DISTRO, POCL_DEBUG) - Platform #1 [The pocl project]
* Device #1: pthread-Intel(R) Core(TM) i5-8250U CPU @ 1.60GHz, 1429/1493 MB (512 MB allocatable), 2MCU

Minimum password length supported by kernel: 0
Maximum password length supported by kernel: 256

Hashes: 7 digests; 7 unique digests, 1 unique salts
Bitmaps: 16 bits, 65536 entries, 0x0000ffff mask, 262144 bytes, 5/13 rotates
Rules: 1

Applicable optimizers:
* Zero-Byte
* Early-Skip
* Not-Salted
* Not-Iterated
* Single-Salt
* Raw-Hash

ATTENTION! Pure (unoptimized) backend kernels selected.
Using pure kernels enables cracking longer passwords but for the price of drastically reduced performance.
If you want to switch to optimized backend kernels, append -O to your commandline.
See the above message to find out about the exact limits.

Watchdog: Hardware monitoring interface not found on your system.
Watchdog: Temperature abort trigger disabled.

Host memory required for this attack: 64 MB
```

Dictionary file

Change back to home directory

## Recover Passwords from Hashes Using Hashcat Under Attack Mode 0

## Dictionary Attack

Attack Mode 0 - Straight attack by trying out all the passwords stored in a dictionary

Input File - File containing hash values to be recovered

Output File - File containing recovered passwords in plain text

The dictionary used

Type of hash function (md5)

Reference: How to Crack Hashes with Hashcat — a Practical Pentesting Guide
https://www.freecodecamp.org/news/hacking-with-hashcat-a-practical-guide/

Right Ctrl

Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

sec@kali: ~ 03:53 AM

sec@kali: ~

File Actions Edit View Help

## Observe Password Recovery Results Using Hashcat Under Dictionary Mode (Attack Mode 0)

```
Host memory required for this attack: 64 MB

Dictionary cache hit:
* Filename..: /usr/share/wordlists/rockyou.txt
* Passwords.: 14344385
* Bytes.....: 139921507
* Keyspace..: 14344385

Approaching final keyspace - workload adjusted.

Session..........: hashcat
Status...........: Exhausted
Hash.Name........: MD5
Hash.Target......: hashes.txt
Time.Started.....: Mon Feb  6 03:50:53 2023 (7 secs)
Time.Estimated...: Mon Feb  6 03:51:00 2023 (0 secs)
Guess.Base.......: File (/usr/share/wordlists/rockyou.txt)
Guess.Queue......: 1/1 (100.00%)
Speed.#1.........:  2124.8 kH/s (0.23ms) @ Accel:1024 Loops:1 Thr:1 Vec:8
Recovered........: 5/7 (71.43%) Digests
Progress.........: 14344385/14344385 (100.00%)
Rejected.........: 0/14344385 (0.00%)
Restore.Point....: 14344385/14344385 (100.00%)
Restore.Sub.#1...: Salt:0 Amplifier:0-1 Iteration:0-1
Candidates.#1....: $HEX[206b72697374656e616e6e65] → $HEX[042a0337c2a156616d6f732103]

Started: Mon Feb  6 03:50:50 2023
Stopped: Mon Feb  6 03:51:01 2023
sec@kali:~$
sec@kali:~$ sudo ls -l
total 52
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 Desktop
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 Documents
drwxr-xr-x 2 sec  sec  4096 Nov 18  2020 Downloads
-rwxr-xr-x 1 root root  479 Feb  6 02:47 generate.sh
-rw-r--r-- 1 sec  sec   231 Feb  6 02:58 hashes.txt
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 lab1
drwxr-xr-x 4 sec  sec  4096 Nov 18  2020 lab2
drwxr-xr-x 2 sec  sec  4096 Nov 18  2020 lab3
drwxr-xr-x 6 sec  sec  4096 Feb  5 10:05 lab4
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 lab5
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 lab6
drwxr-xr-x 2 sec  sec  4096 Nov 17  2020 lab7
-rw------- 1 root root  126 Feb  6 03:50 passwords.txt
sec@kali:~$
sec@kali:~$
::1         ff02::1         ff02::2         ip6-allnodes    ip6-allrouters  ip6-localhost   ip6-loopback    kali            localhost
sec@kali:~$
```

Type of hash values stored in the input file (hashes.txt)

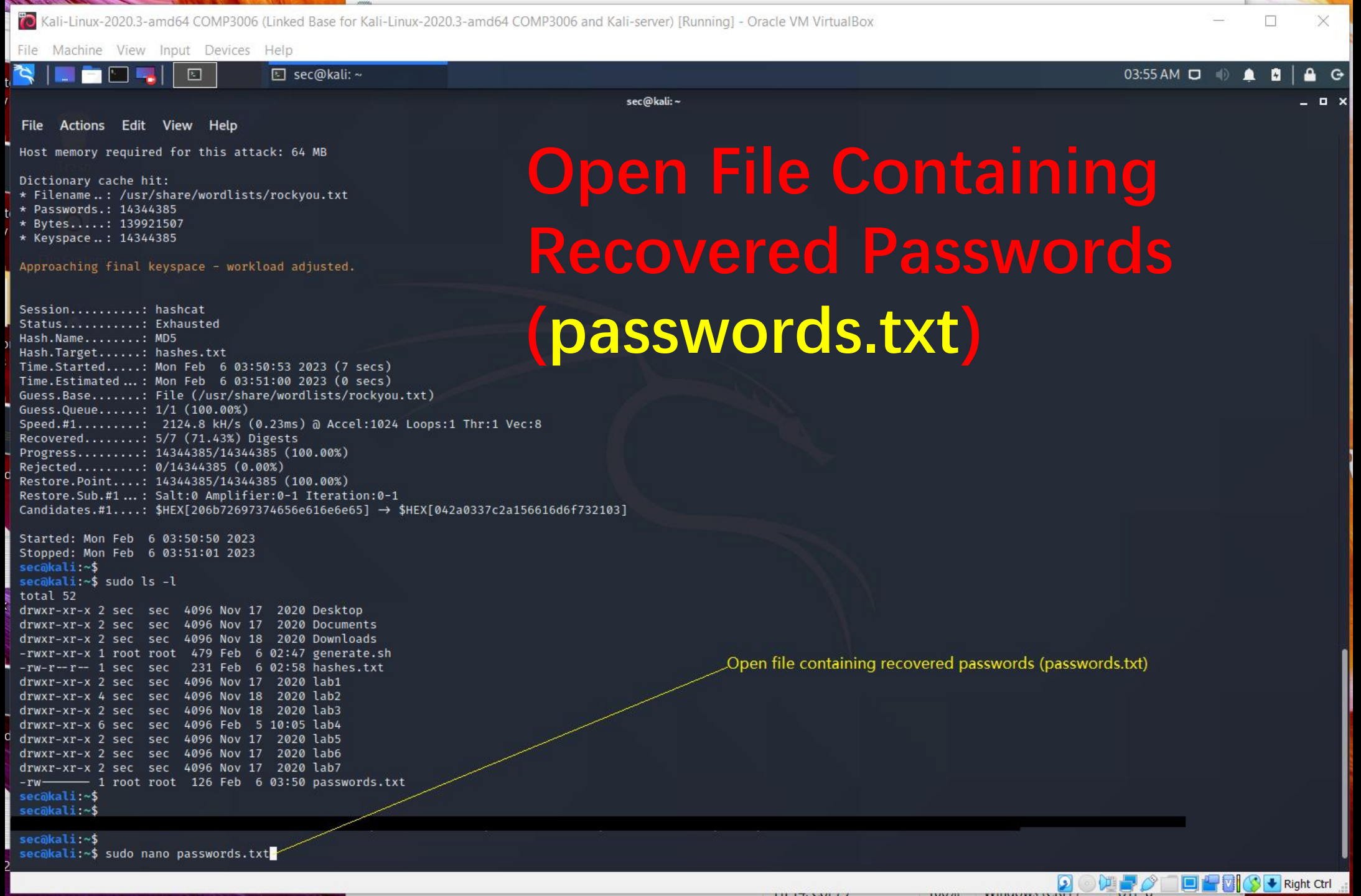
Input file

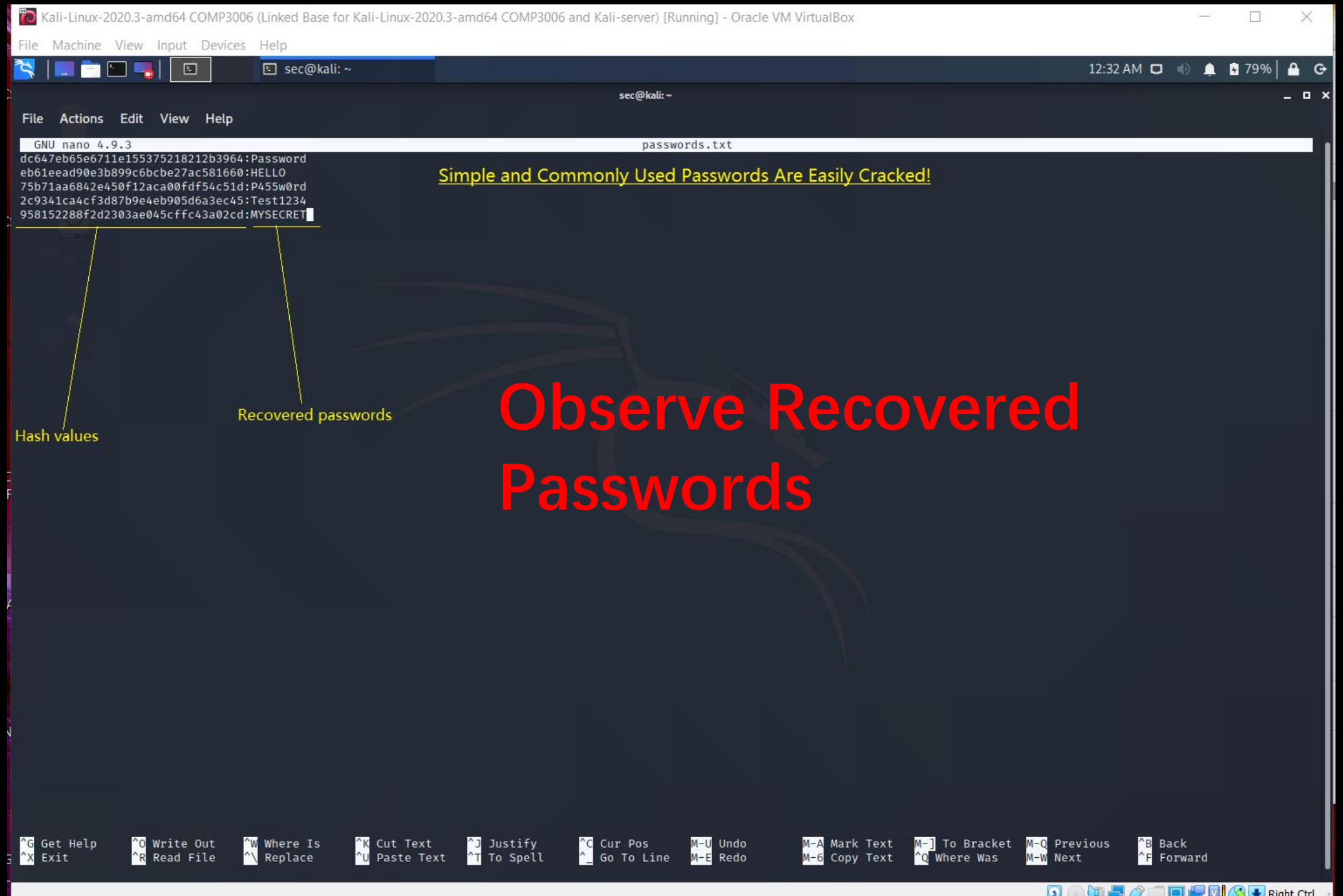
Dictionary used

Successfully recovered 5 out of 7 passwords

Output file containing recovered passwords

Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
03:55 AM
sec@kali: ~
File Actions Edit View Help
Host memory required for this attack: 64 MB
Dictionary cache hit:
* Filename..: /usr/share/wordlists/rockyou.txt
* Passwords.: 14344385
* Bytes.....: 139921507
* Keyspace..: 14344385
Approaching final keyspace - workload adjusted.
Session..........: hashcat
Status...........: Exhausted
Hash.Name........: MD5
Hash.Target......: hashes.txt
Time.Started.....: Mon Feb 6 03:50:53 2023 (7 secs)
Time.Estimated...: Mon Feb 6 03:51:00 2023 (0 secs)
Guess.Base.......: File (/usr/share/wordlists/rockyou.txt)
Guess.Queue......: 1/1 (100.00%)
Speed.#1.........: 2124.8 kH/s (0.23ms) @ Accel:1024 Loops:1 Thr:1 Vec:8
Recovered........: 5/7 (71.43%) Digests
Progress.........: 14344385/14344385 (100.00%)
Rejected.........: 0/14344385 (0.00%)
Restore.Point....: 14344385/14344385 (100.00%)
Restore.Sub.#1...: Salt:0 Amplifier:0-1 Iteration:0-1
Candidates.#1....: $HEX[206b72697374656e616e6e65] → $HEX[042a0337c2a156616d6f732103]
Started: Mon Feb 6 03:50:50 2023
Stopped: Mon Feb 6 03:51:01 2023
sec@kali:~$
sec@kali:~$ sudo ls -l
total 52
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Desktop
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 Documents
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 Downloads
-rwxr-xr-x 1 root root 479 Feb 6 02:47 generate.sh
-rw-r--r-- 1 sec sec 231 Feb 6 02:58 hashes.txt
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab1
drwxr-xr-x 4 sec sec 4096 Nov 18 2020 lab2
drwxr-xr-x 2 sec sec 4096 Nov 18 2020 lab3
drwxr-xr-x 6 sec sec 4096 Feb 5 10:05 lab4
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab5
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab6
drwxr-xr-x 2 sec sec 4096 Nov 17 2020 lab7
-rw------- 1 root root 126 Feb 6 03:50 passwords.txt
sec@kali:~$
sec@kali:~$
sec@kali:~$
sec@kali:~$ sudo nano passwords.txt
Open File Containing Recovered Passwords (passwords.txt)
Open file containing recovered passwords (passwords.txt)
Right Ctrl


Kali-Linux-2020.3-amd64 COMP3006 (Linked Base for Kali-Linux-2020.3-amd64 COMP3006 and Kali-server) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
sec@kali: ~
12:32 AM 79%
sec@kali: ~
File Actions Edit View Help
GNU nano 4.9.3 passwords.txt
dc647eb65e6711e155375218212b3964:Password
eb61eead90e3b899c6bcbe27ac581660:HELLO
75b71aa6842e450f12aca00fdf54c51d:P455w0rd
2c9341ca4cf3d87b9e4eb905d6a3ec45:Test1234
958152288f2d2303ae045cffc43a02cd:MYSECRET
Simple and Commonly Used Passwords Are Easily Cracked!
Hash values
Recovered passwords
Observe Recovered Passwords
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos M-U Undo M-A Mark Text M-] To Bracket M-Q Previous ^B Back
^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell ^_ Go To Line M-E Redo M-6 Copy Text ^Q Where Was M-W Next ^F Forward
Right Ctrl