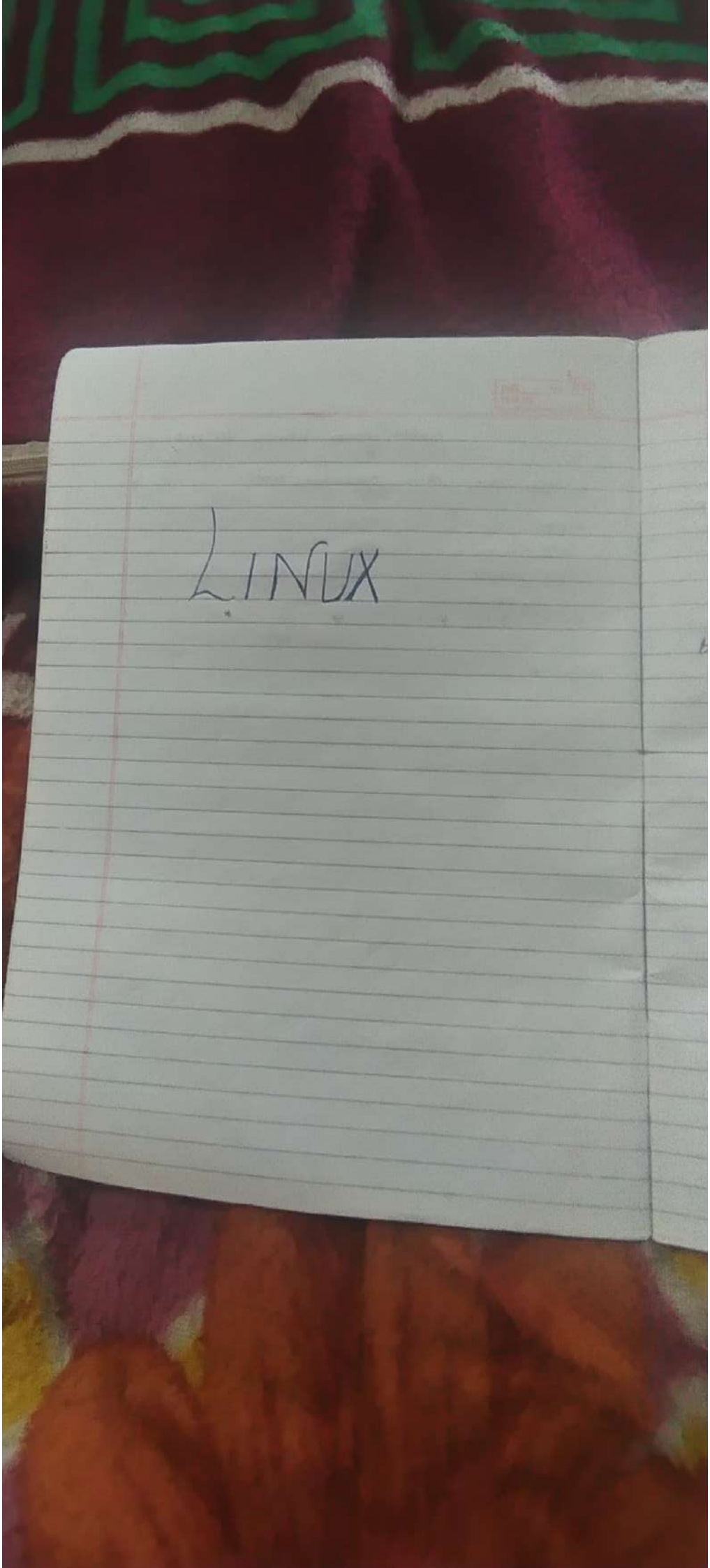
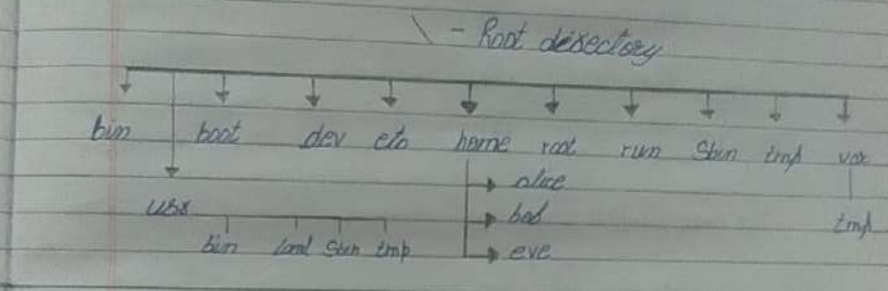

LINUX

Overview of File System Hierarchy Standard (F.H.S)

Structure of File System



/root — Home directory of root user [Admin]

/home — Home directory of normal user

/ — It is the root directory at the top of the top of the file hierarchy system. The / Character is used as a directory Separator in file name as "/ directory Name" (Means inside root)

/boot — Static files of the boot Loader
/boot Stores data that is used before the Kernel begins executing user-mode programs. Files needed in order to start the boot process

/bin Essential user Command Commands binaries
/bin directory Contains Commands that may be used by the System administrator and by users.

/Sbin Essential System binaries
/Sbin directory Contains the command used by the root user.

/Lib and /Lib64 Essential Shared Libraries and Kernel modules
The /Lib directory Contains those Shared library images needed to boot the System and run the Commands in the root filesystem i.e by binaries in /bin and /sbin.

/dev Device files
The /dev directory Contains special device that are used by the System to access hardware. (All the particans like CD, DVD, Pendrive and Particans etc.)

/etc Host-Specific System Configuration
The /etc Directory is reserved for configuration files that are local to the machine.

/mnt Mount point for mounting a filesystem temporarily
The /mnt directory is reserved for temporarily mounted file System, such as NFS File System mounts.

/media Mount point for removable media
For all removable storage media, use the /d/media directory Automatically detected removable media is mounted in the /media directory

/Srv - Data for Services provided by this System
The /Srv directory contains site - Specific data Served by a Red Hat Enterprise Linux System The directory gives users the location of data files for a Particular Service, such as FTP, WWW.

/@var Variable data
/Var/ is for variable data, which includes directories and files that dynamically change, such as databases, Cache directories, Log files, Printer - Spooled documents and Websites Content to found under /var.

/run Runtime data for processes Started Since the last boot
Runtime data for processes Started Since the last boot The includes process

ID files and lock files, among other things. The contents of /var directory are persistent across reboot the directory consolidates /var/run and /var/lock from earlier versions of Red hat Enterprise Linux.

/tmp Temporary files
A world-writable space for temporary files. Files which are more than 10 days old are deleted from the directory automatically.

/proc Kernal and process information Virtual Filesystem
The /proc directory contains special files that either extract information from or send information to the kernal. Examples include system memory, CPU information hardware configuration etc.

/sys - Kernal and system information Virtual filesystem
The /sys directory utilizes the new sysfs virtual file system specific to the kernal. With the increased support for hot plug hardware devices in the kernal.
The /sys directory contains information similar to that held by /proc but displays a hierarchical view of device information specific to hot plug devices.

/usr Installed Software, Shared libraries, include files, and static read-only program data
/usr/bin User Commands
/usr/sbin System administration Commands
/usr/local locally customized Software

/opt Add on application Software packages
The /opt directory is normally reserved for Software and add-on packages that are not part of the default installation.

* IMPORTANT *

In Red Hat Enterprise Linux 7 and later, these older directories in /root have identical contents as their counterparts located in /usr:

/bin and /usr/bin
/sbin and /usr/sbin
/lib and /usr/lib
/lib64 and /usr/lib64

In older versions of Red Hat Enterprise Linux, these were distinct directories containing different sets of files.

In Red Hat Enterprise Linux 7 and later, the directories in /root are symbolic linked links to the matching directories in /usr.

Directory	Description
/	Root directory
/home	Home directory of normal user
/root	Home directory of root user (Super user)
/bin	Essential Command binaries
/sbin	Essential System binaries
/boot	Static files of the boot loader
/dev	device files
/etc	Host-Specific System Configuration
/lib and /lib64	Essential Shared libraries and Kernal modules.

Directory	Description
/media	Mount point for removable media
/mnt	Mount point for mounting a filesystem temporarily
/opt	Add-on application software packages
/Srv	Data for services provided by this system
/tmp	Temporary files
/var	Variable data

Kali Linux

Kali Linux is a Debian-derived Linux distribution that is maintained by Offensive Security. It was developed by Mati Aharoni and Devon Kearns. Kali Linux is a specially designed OS for network analysts, Penetration testers, or in simple words, it is for those who work under the umbrella of cybersecurity and analysis. The official website is Kali.org.

Red Hat Linux

Today, Red Hat Enterprise Linux supports and powers software and technologies for automation, cloud, containers, middleware, storage, application development, microservices, virtualization, management, and more. Linux plays a major role as the core of many Red Hat's offerings.

Kernal :- The Kernal is a computer program that is the core of a Computers Operating System, with complete over everything in the System. It manages following resources of the Linux like file management, Process management, I/O management, Memory Management, Device management

Shell :- A Shell is special user program which provide an interface to user to use Operating System Services. Shell accept human readable commands from user and convert them into something which Kernal can understand. It is a Command language interpreter that executes commands read from input devices such as Keyboards or from files. Shell gets started when the user logs in or start the terminal.

Terminal :- We can say the terminal is a dumb thing so it does not know what to do with the input, so it needs another program to process it the terminal is a program that provide the user a simple command-line interface

Console :- In the case of Windows OS, the "Console" performs the same operations performed by the terminal, so we can say for Windows OS, the console is the alias

name for the Terminal

Shell Scripting :- As Shell can also take commands as input from file we can write these commands in a file and can execute them in Shell to avoid the repetitive work. These files are called Shell Scripting or Shell programms Shell Scripts are similar to the batch files in MS-DOS. Each Shell script is saved with .sh file extension eg. myscript.sh.

OPEN SOURCE

- What is Open Source?

→ Open Source is something which you can modify as per your needs, share with others without any licencing violation burden

Examples : Linux, phonIndiana, React OS etc

What Is LINUX?

- Linux is a Kernal. People have a misconception that it is an Operating System but it actually is a part of the OS and not a Complete OS (you can search for the difference over the internet).
- The Linux Kernal was developed Linus Torvalds
- It is an open source software which means that the code is freely available and anyone can make changes to it as per their choice.

WHAT Is KALI LINUX?

- Kali Linux is a Debian-derived Linux distribution and a member of Unix OS family
- Maintained and Funded by Offensive Security Limited
- Primarily designed for penetration Testing and Digital Forensics.

→ Developed by Mati Aharoni and Devon Kearns of offensive Security.

→ Rewrite of backtrack.

HISTORY

- Knoppix, ancestor of Kali Linux was the first ever bootable live Linux operating system, which is still in existence.
- Knoppix project was the forked into WHAX and then re-forked into WHAX.
- WHAX was the re-branded and streamlined into the Backtrack, the predecessor of Kali Kali linux
- BACKTRACK had a long reign of almost seven years as the pentesters and hackers choice.
- Backtrack is a customized native environment dedicated to hacking. As of 2011 it was used by more than four million amateur and professional security researchers

WHAT IS PENETRATION TESTING

The process of evaluation systems, applications, and protocols with the intent of identifying vulnerabilities usually from the perspective of an unprivileged or anonymous user to for determine potential real world impacts

Or in other words
we try to break into stuff before the bad guys do

KALI LINUX PENETRATION - TESTING PROGRAMS

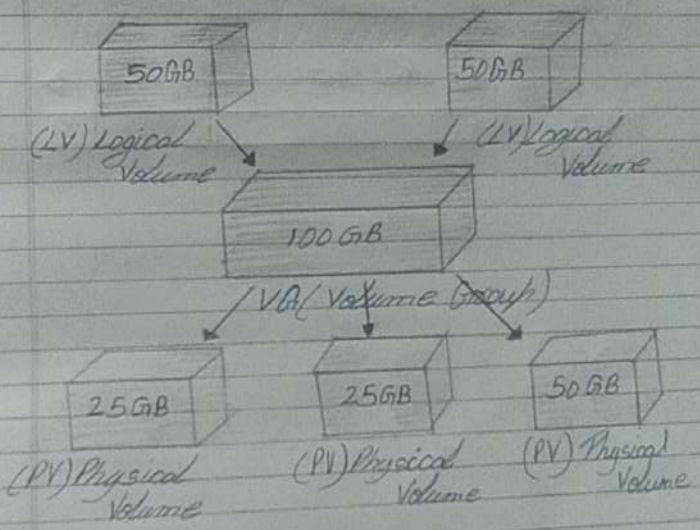
Kali Linux is preinstalled with numerous Penetration Testing programs :-

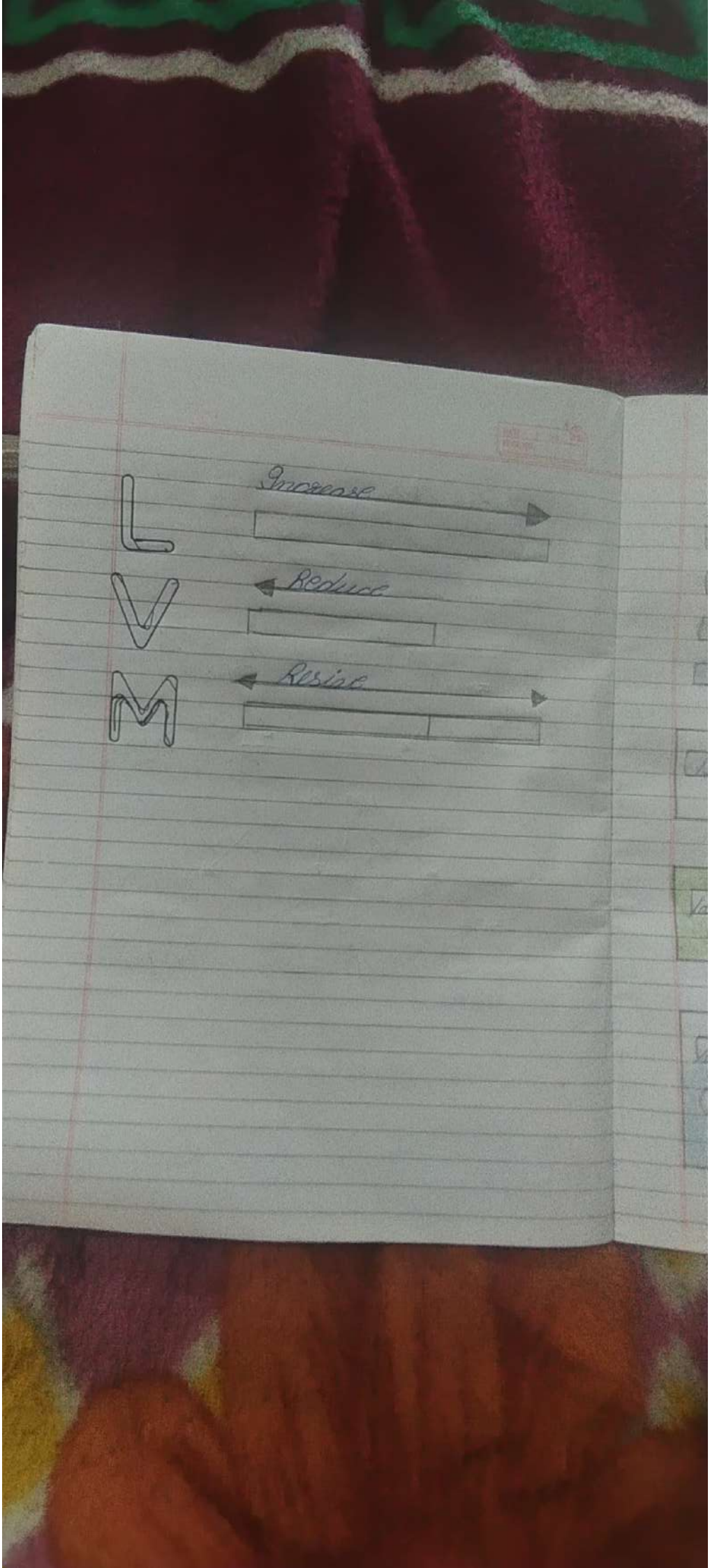
- nmap a port scanner
- Wireshark a packets analyser.
- John the ripper a package cracker
- ikit a hacking tool

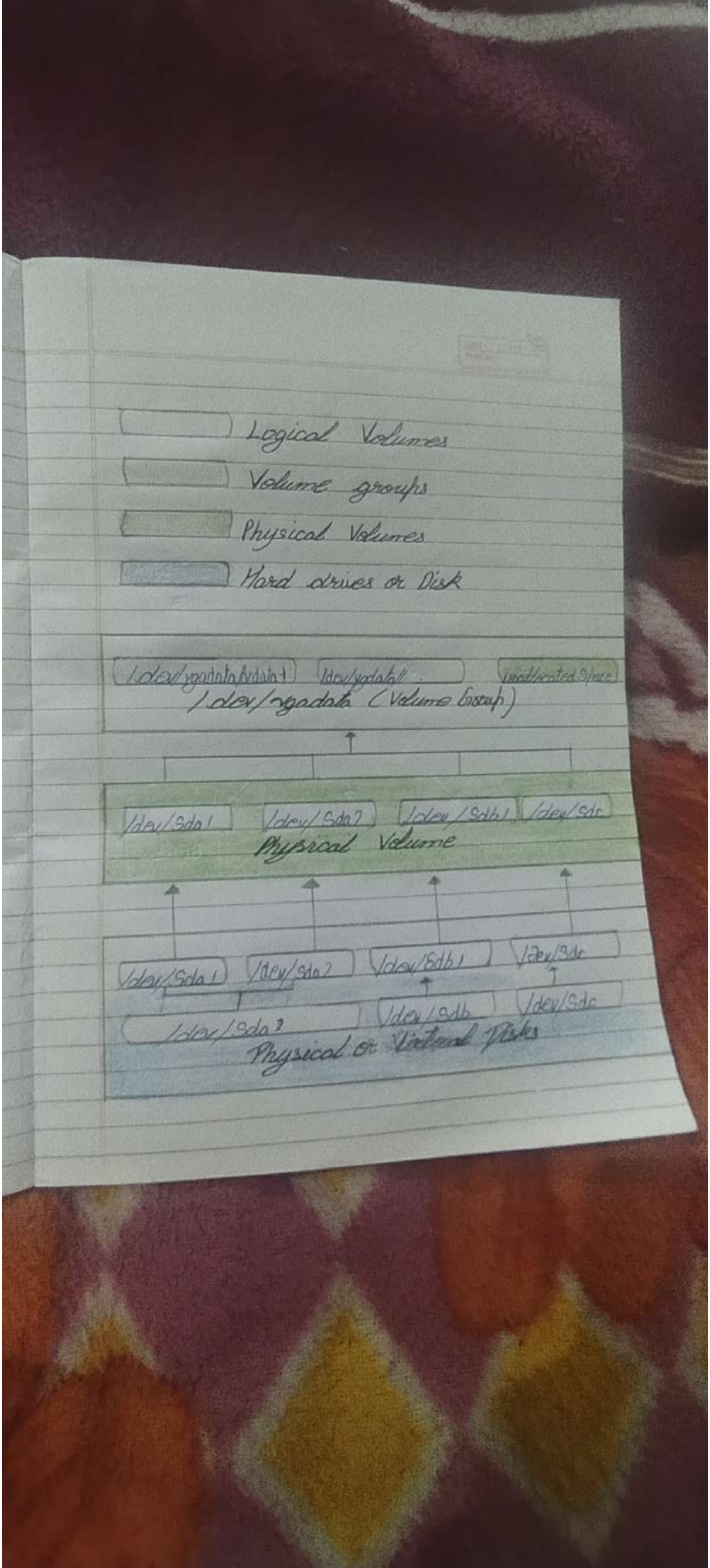
- Aircrack-ng a software suite for penetration testing wireless LANs.

What is LVM

LVM is tool for logical Volume management which includes allocating disks, mirroring and resizing logical Volumes




L
Increase
V
Reduce
M
Resize


Logical Volumes
Volume groups
Physical Volumes
Hard drives or Disk
/dev/xgadata/lvdata1
/dev/xgadata/
unallocated space
/dev/xgadata (Volume Group)
/dev/sda1
/dev/sda2
/dev/sdb1
/dev/sdc
Physical Volume
/dev/sda1
/dev/sda2
/dev/sdb1
/dev/sdc
/dev/sda3
/dev/sdb
/dev/sdc
Physical or Virtual Disks