Assignment

Adding another hard disk to an existing system

Task:

***Description**: You are employed by the company in the position of Junior Administrator. You have been given the following task by your superior:*

- *An additional (virtual) hard disk with a capacity of 20GB should be added to the existing virtual machine (DL-LINUX-01).*
- *On this new hard disk, two partitions of identical capacity should be created.*
- *Format them with the ext4 file system.*

***Note**: The solution must be submitted according to the "step by step" system with accompanying screenshots of each important segment of the solution, with a detailed description and explanation of each step and each decision. The solution should be submitted in the format of a written paper, with screenshots in a Microsoft Word document in the form of a short technical essay. The source code of the script should be provided in the form of a text file.*

CONTENT

INTRODUCTION

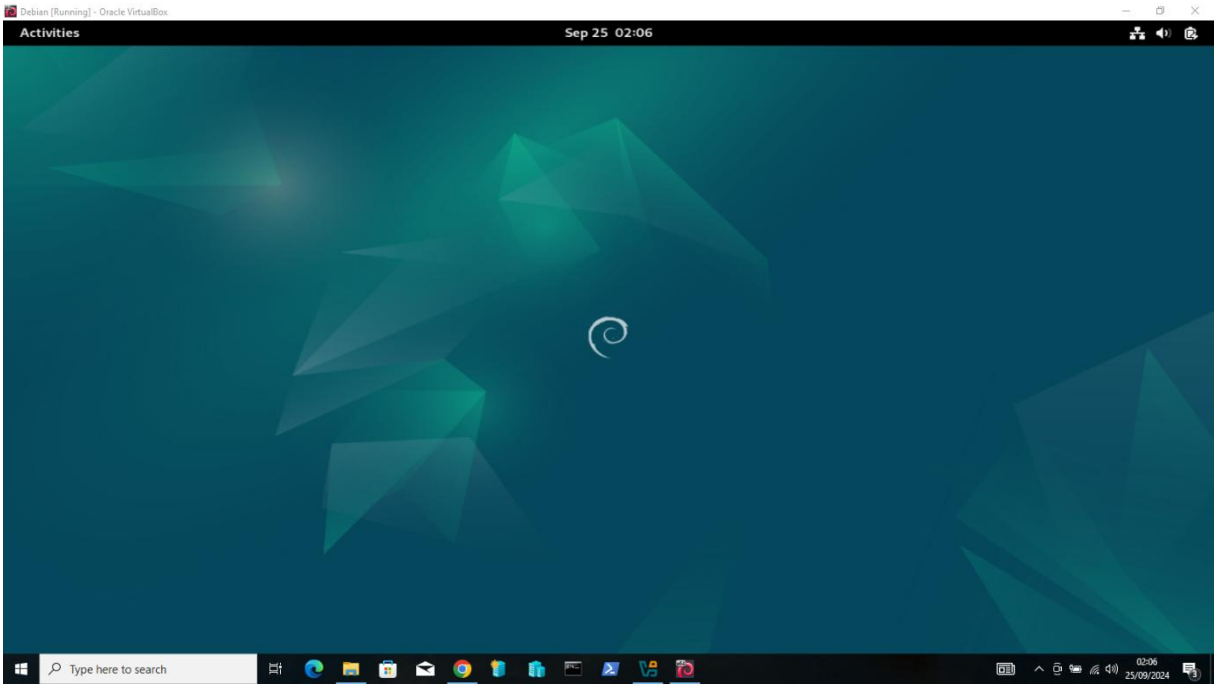
This document presents a step-by-step approach to solving a specific task, outlining the methodology, execution, and expected outcomes. By following the instructions, the reader will gain hands-on experience in applying technical concepts to practical situations, reinforcing both theoretical knowledge and problem-solving abilities.

The structured approach ensures that each step is clearly defined, making the process easy to follow and implement in professional environments.

This task is based on the Linux Debian operating system with the KDE desktop environment. The virtualization platform is Oracle Virtual Box, and the task guidelines require that another 20 GB disk be added to the machine and formatted with the ext4 file system. All steps of this task will be accompanied by screenshots and a text display of the commands used.

The commands in Terminal (Bash) are:

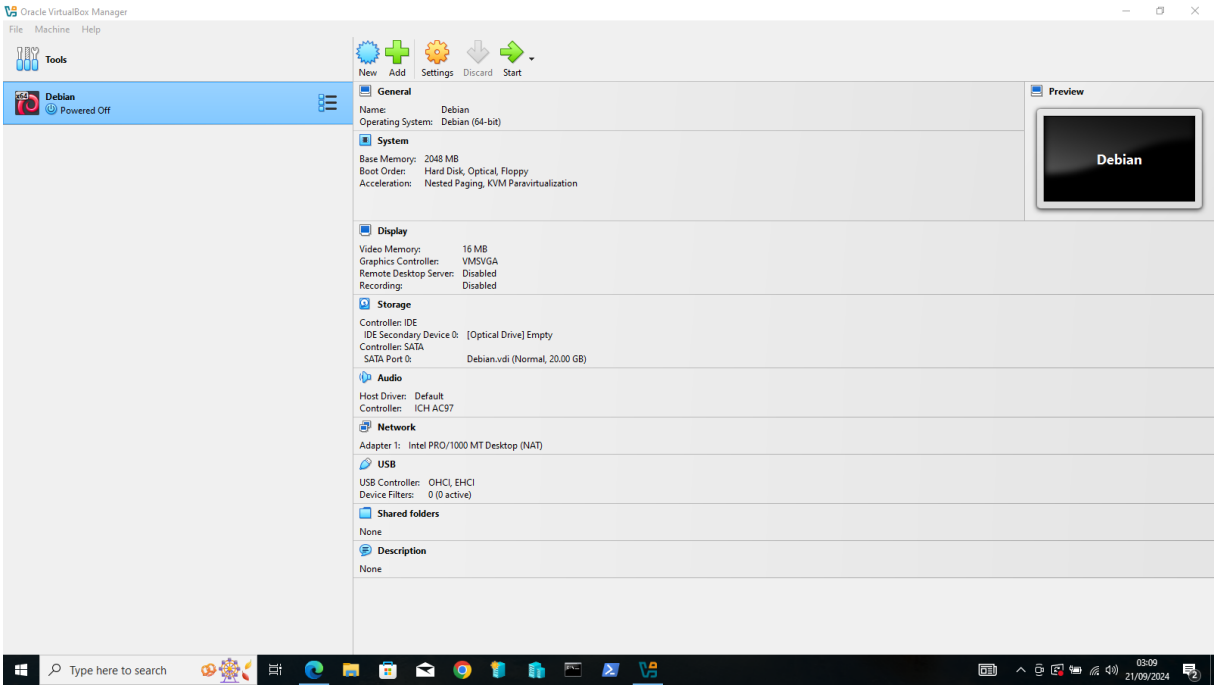
- Lsblk - A command that displays all disks on the system, more precisely all block devices on the system.
- sudo fdisk /dev/sdb - This command starts the partitioning tool
- N - The command that selects the creation of a new partition
- P - Selecting the Primary Partition
- W - Write option or save all changes made when partitioning
- sudo mkfs.ext4 /dev/sdb1 - Formatting the first partition in the ext4 file system
- sudo mkfs.ext4 /dev/sdb2 - Formatting another partition in the ext4 file system
- sudo mkdir /mnt/part1- Setting Mount Point No. 1
- sudo mkdir /mnt/part2 - Setting the Mounting Point 2
- sudo mount /dev/sdb1 /mnt/part1 - Mount partition number 1
- sudo mount /dev/sdb2 /mnt/part2 - Mount partition number 2
- Df -h - Display all disks and partitions

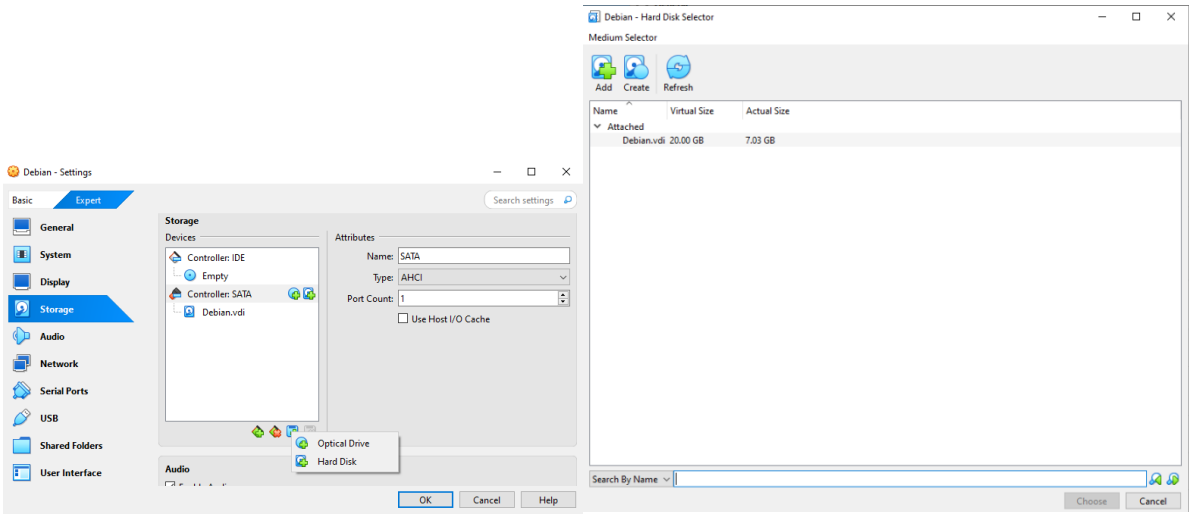


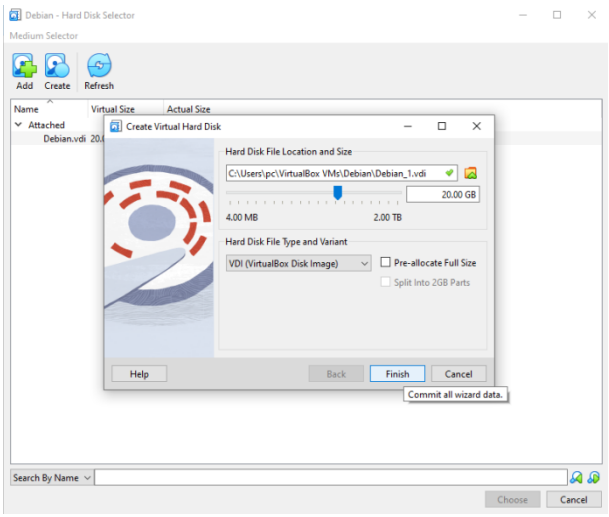
The following title, titled Adding a Disk, follows the action by which a new disk is added in the settings of a virtual machine, the process follows each screenshot step by step.

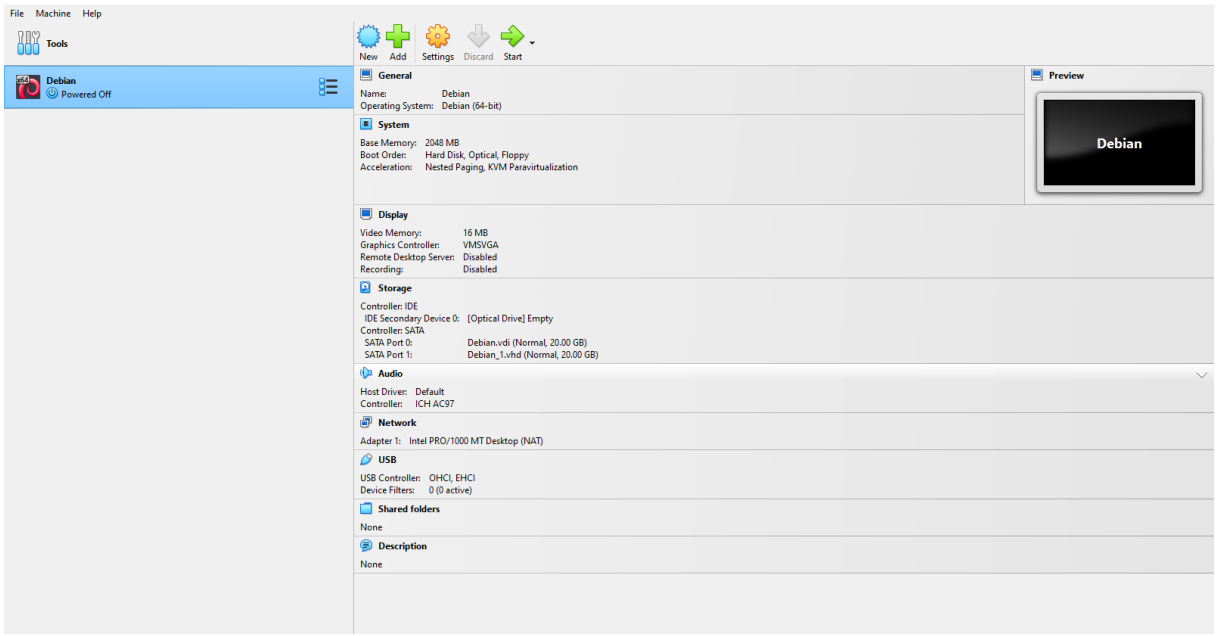
In the Machine Management Console, the Settings option is first selected for the selected machine on which the disk is added. After that, selecting the Storage icon selects the option to add a new disk or Create new disk. The disk size provided for this machine is 20 GB, which we specify in the settings and after that we start the virtual machine and the action follows the following.

ADDING A DISC



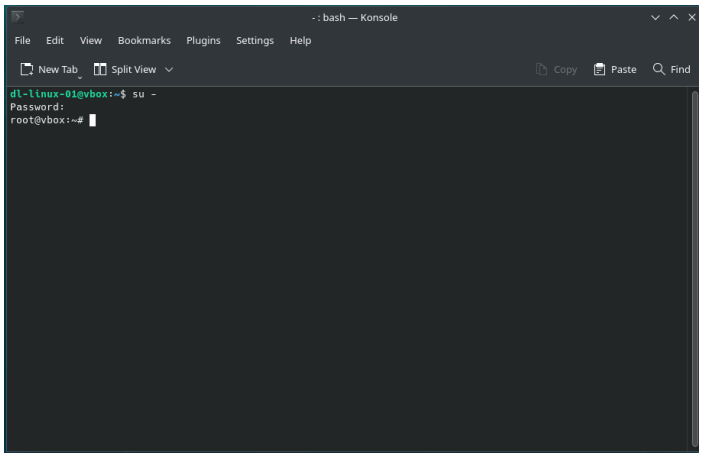




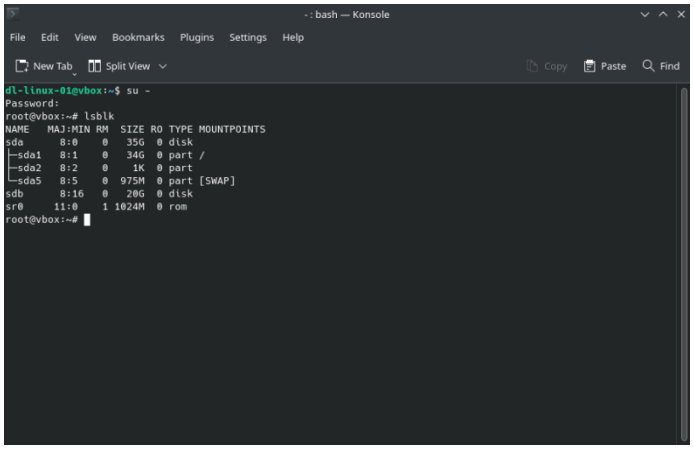


ADDITIONAL SETTINGS OF THE ADDED DISK

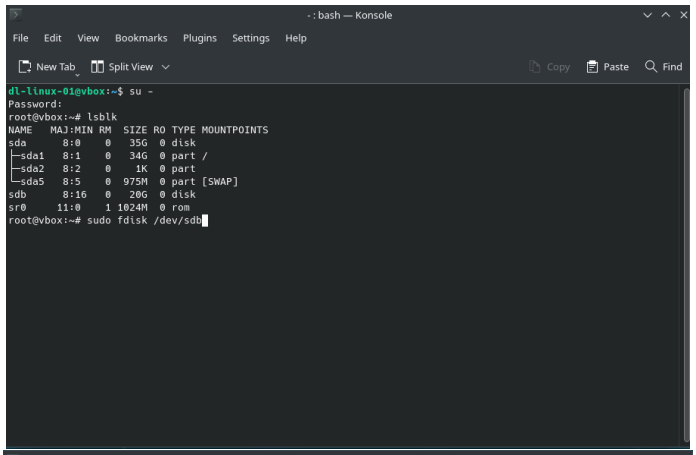
Through this heading, the process of partitioning disks will be shown, the first step involves the Su - command, which provides access to additional privileges when working in the terminal.

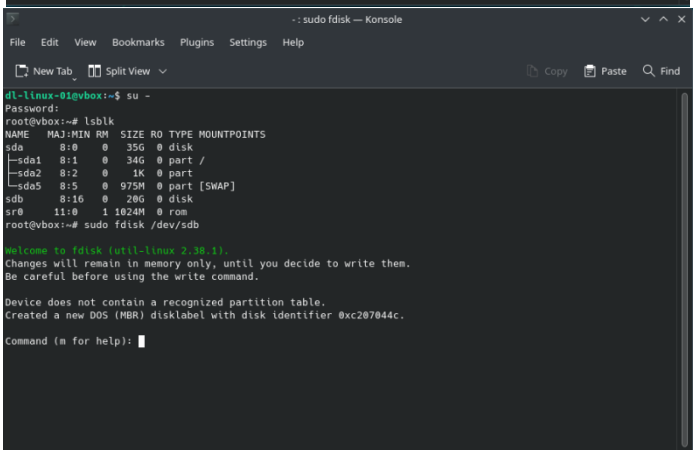


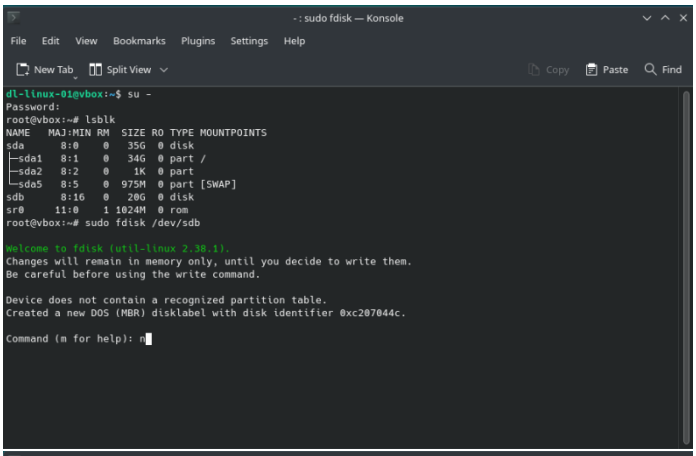
The **Lsblk** command will display all the disks on this system, as shown in the screenshot.

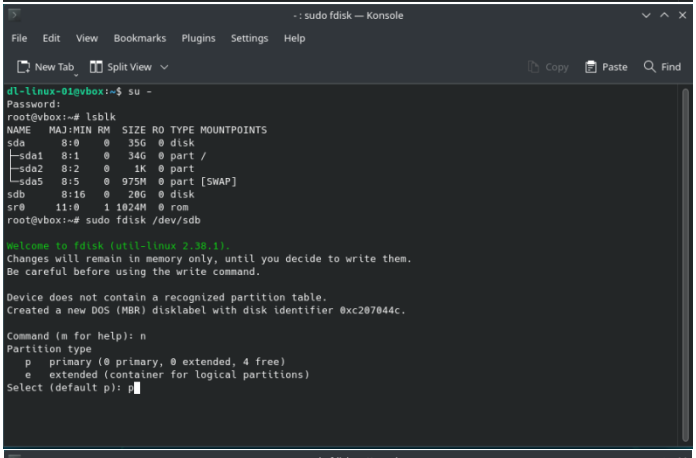


The **sudo fdisk /dev/sdb** command starts the partitioning tool.






- : sudo fdisk — Konsole
File Edit View Bookmarks Plugins Settings Help
New Tab Split View Copy Paste Find
dl-linux-01@vbox:~$ su -
Password:
root@vbox:~# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
sda 8:0 0 35G 0 disk
├─sda1 8:1 0 34G 0 part /
├─sda2 8:2 0 1K 0 part
└─sda5 8:5 0 975M 0 part [SWAP]
sdb 8:16 0 20G 0 disk
sr0 11:0 1 1024M 0 rom
root@vbox:~# sudo fdisk /dev/sdb
Welcome to fdisk (util-linux 2.38.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0xc207044c.
Command (m for help): n


- : sudo fdisk — Konsole
File Edit View Bookmarks Plugins Settings Help
New Tab Split View Copy Paste Find
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Password:
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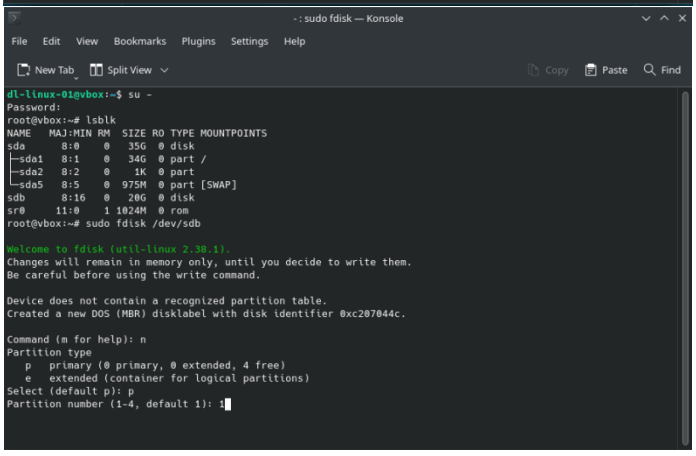
Welcome to fdisk (util-linux 2.38.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0xc207044c.
Command (m for help): n
Partition type
p primary (0 primary, 0 extended, 4 free)
e extended (container for logical partitions)
Select (default p): p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File Edit View Bookmarks Plugins Settings Help
New Tab Split View Copy Paste Find
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root@vbox:~# lsblk
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sdb 8:16 0 20G 0 disk
sr0 11:0 1 1024M 0 rom
root@vbox:~# sudo fdisk /dev/sdb
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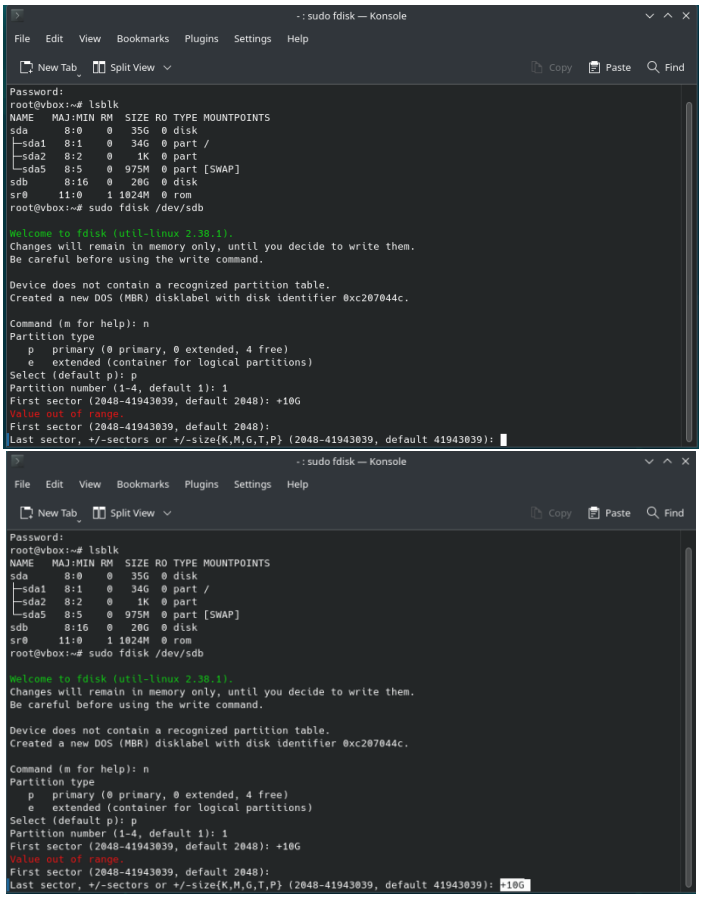
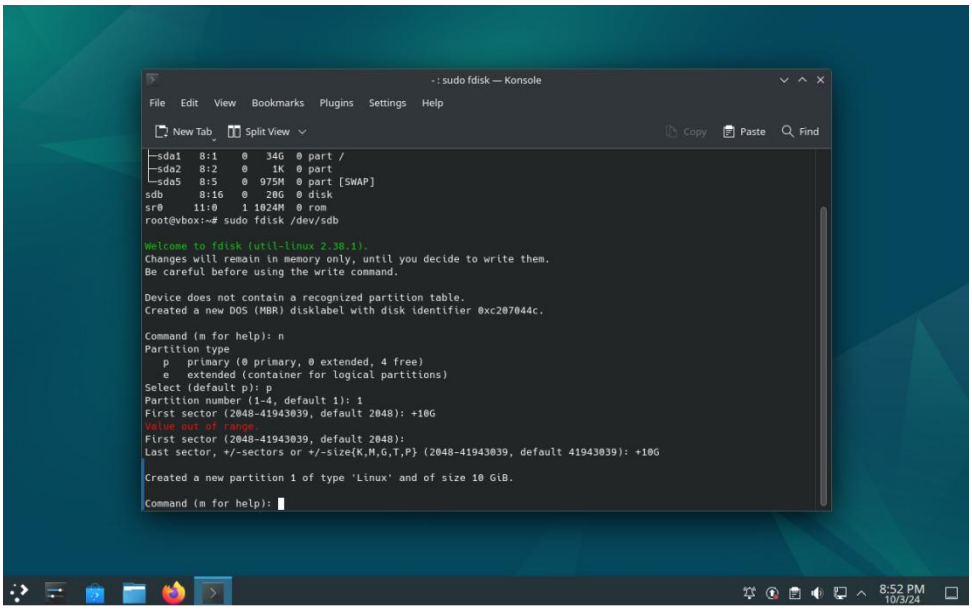
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0xc207044c.
Command (m for help): n
Partition type
p primary (0 primary, 0 extended, 4 free)
e extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1



The first step after entering the piece **sudo fdisk /dev/sdb** is to select the letter **n** to create a new partition, then select the symbol **p** and the number **1** to select the partition to be of the primary type and its ordinal number 1. For the initial sector, usually clicking the **enter key** allows it to be a default number and then we add 10 gigabytes of memory for the partition. The text approach is complemented by the previous screenshots. The end result of this partition is that it has been successfully created.



The following screenshots follow a process that is the same as for the first partition, except that the serial number of this partition is 2.

```
Created a new partition 1 of type 'Linux' and of size 10 GiB.

Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p):
```

```
Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (2-4, default 2): 2
```

```
Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (2-4, default 2): 2
First sector (20973568-41943039, default 20973568):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (20973568-41943039, default 41943039): +10G
```

```
Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (2-4, default 2): 2
First sector (20973568-41943039, default 20973568):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (20973568-41943039, default 41943039): +10G
Value out of range.
Last sector, +/-sectors or +/-size{K,M,G,T,P} (20973568-41943039, default 41943039): +9G

Created a new partition 2 of type 'Linux' and of size 9 GiB.

Command (m for help):
```

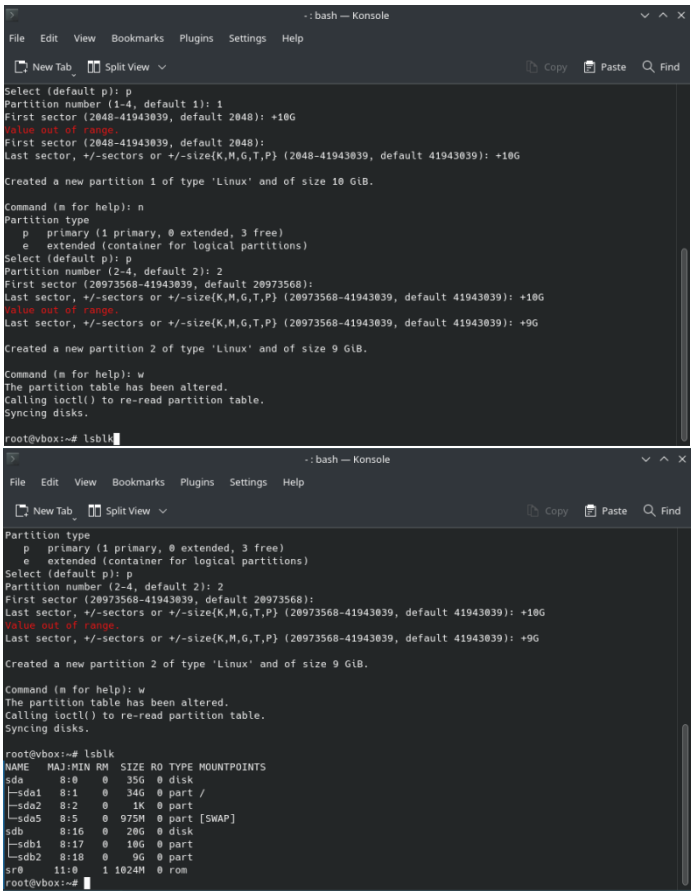
```
Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (2-4, default 2): 2
First sector (20973568-41943039, default 20973568):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (20973568-41943039, default 41943039): +10G
Value out of range.
Last sector, +/-sectors or +/-size{K,M,G,T,P} (20973568-41943039, default 41943039): +9G

Created a new partition 2 of type 'Linux' and of size 9 GiB.

Command (m for help): w
```

The use of the **W** symbol allows all changes made to the discs to be saved and written.

```
- : bash — Konsole
File  Edit  View  Bookmarks  Plugins  Settings  Help
New Tab  Split View                                  Copy  Paste  Find
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-41943039, default 2048): +10G
Value out of range.
First sector (2048-41943039, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-41943039, default 41943039): +10G

Created a new partition 1 of type 'Linux' and of size 10 GiB.

Command (m for help): n
Partition type
   p   primary (1 primary, 0 extended, 3 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (2-4, default 2): 2
First sector (20973568-41943039, default 20973568):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (20973568-41943039, default 41943039): +10G
Value out of range.
Last sector, +/-sectors or +/-size{K,M,G,T,P} (20973568-41943039, default 41943039): +9G

Created a new partition 2 of type 'Linux' and of size 9 GiB.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

root@vbox:~#
```

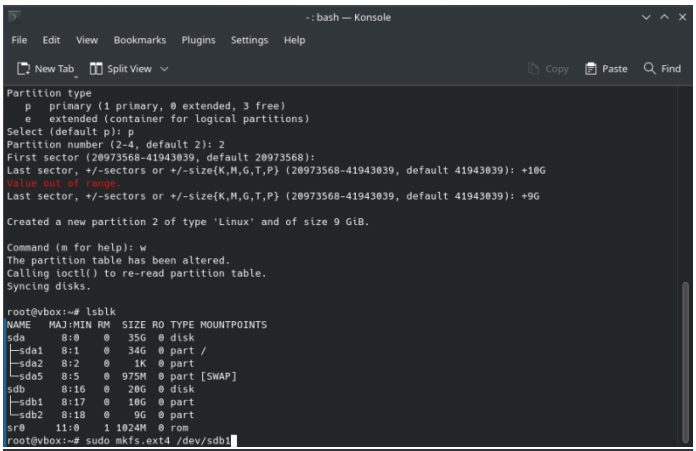
CHECKING PARTITIONS

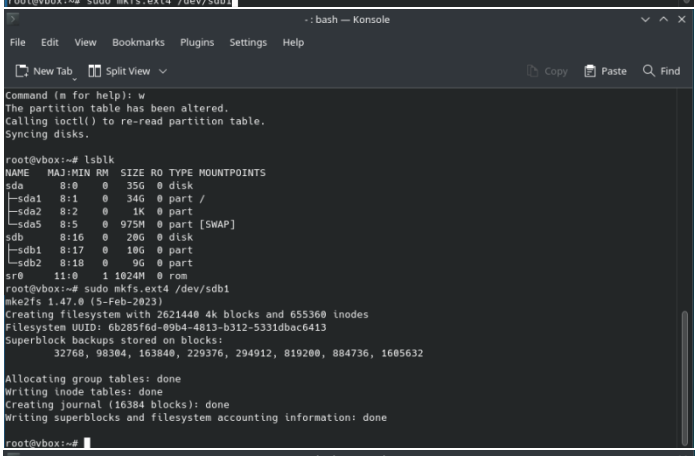
This subtitle shows the use of **the lsblk command** and thus graphically provides an overview of the new partitions that have been created.

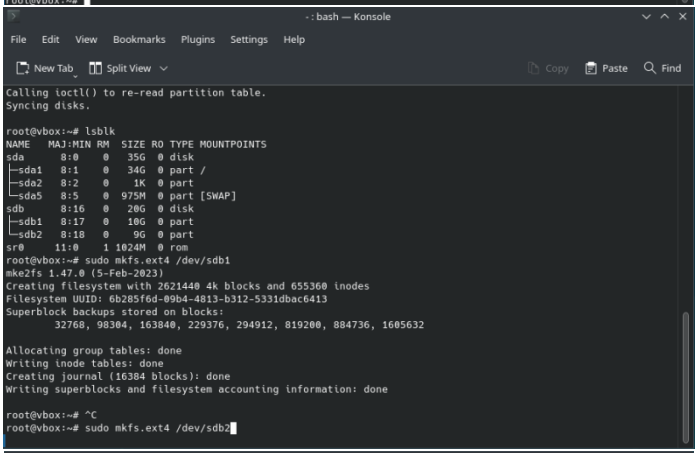


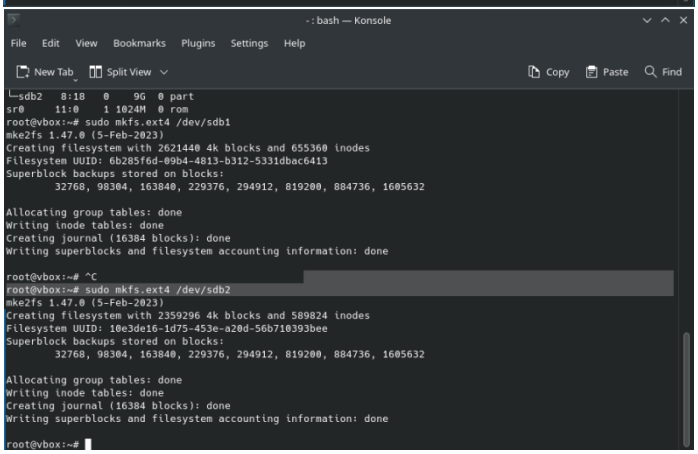
FORMATTING EXT4 FILE SYSTEM

In this subheading, we will show the process that follows the creation of partitions and how to format them using the ext4 system.









MOUNTING PARTITIONS

If it is necessary to mount partitions, then the procedure follows the following actions. Use commands to create mount points, which represent the folders in which they will be mounted, and then use mount commands.