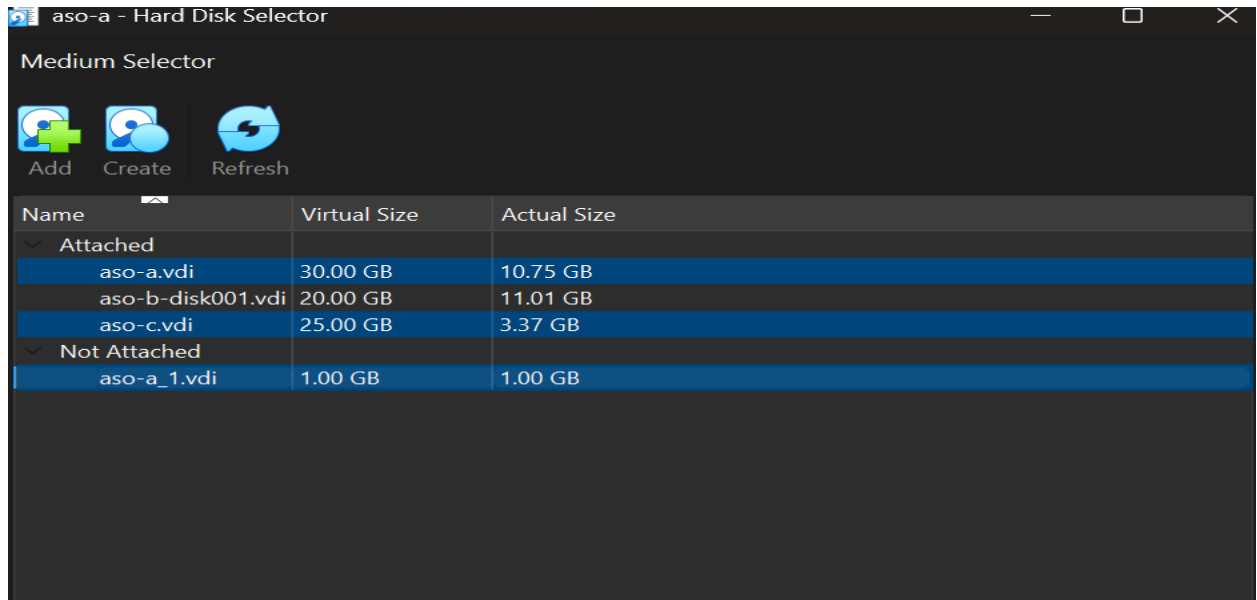


Partea 1:

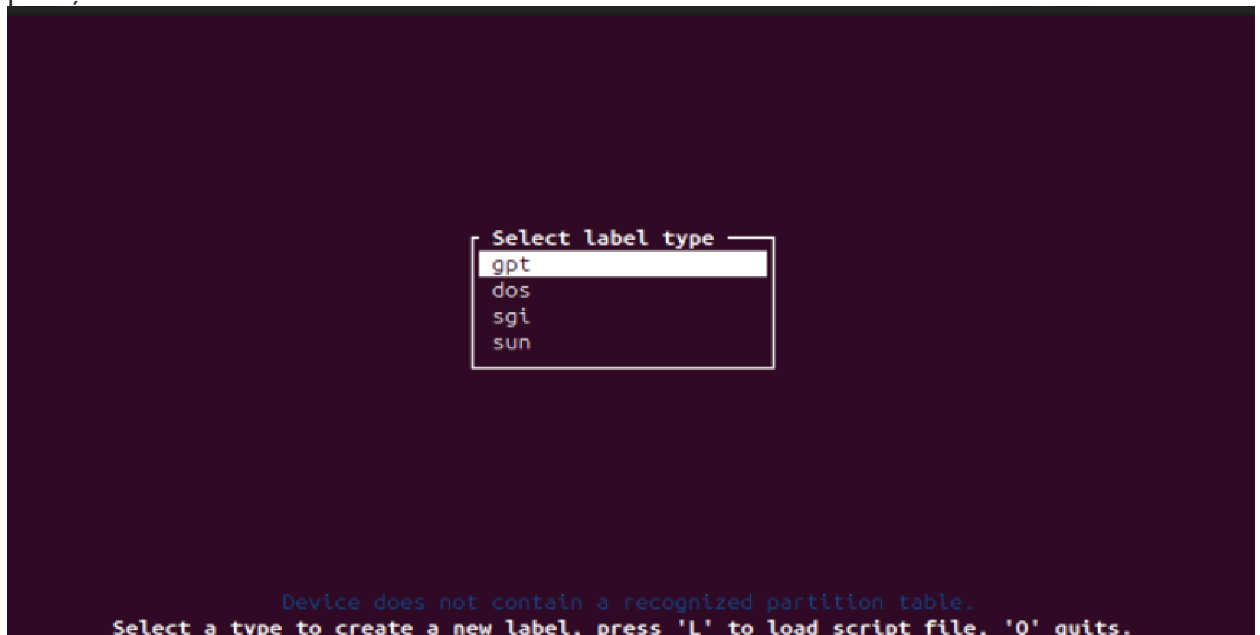
1. se creează un nou HDD de 1GB (vezi "Settings / Storage / Controller (SATA) / Adds hard disk")



2. dintr-un terminal, se execută comanda de mai jos pentru identificarea celui de-al doile HDD: `fdisk -l`

```
ubuntu@ubuntu-VirtualBox:~$ fdisk -l
fdisk: cannot open /dev/loop0: Permission denied
fdisk: cannot open /dev/loop1: Permission denied
fdisk: cannot open /dev/loop2: Permission denied
fdisk: cannot open /dev/loop3: Permission denied
fdisk: cannot open /dev/loop4: Permission denied
fdisk: cannot open /dev/loop5: Permission denied
fdisk: cannot open /dev/loop6: Permission denied
fdisk: cannot open /dev/loop7: Permission denied
fdisk: cannot open /dev/sda: Permission denied
fdisk: cannot open /dev/sdb: Permission denied
fdisk: cannot open /dev/loop8: Permission denied
fdisk: cannot open /dev/loop9: Permission denied
fdisk: cannot open /dev/loop10: Permission denied
fdisk: cannot open /dev/loop11: Permission denied
fdisk: cannot open /dev/loop12: Permission denied
fdisk: cannot open /dev/loop13: Permission denied
fdisk: cannot open /dev/loop14: Permission denied
fdisk: cannot open /dev/loop15: Permission denied
ubuntu@ubuntu-VirtualBox:~$
```

- folosind utilitarul *cfdisk* de partiționare în standardul GPT, să se creeze următoarele partiții în următoarele variante



- patru partiții primare, fiecare ocupând câte 25% din HDD

```
ubuntu@ubuntu-VirtualBox:~$ sudo fdisk -l /dev/sdb
Disk /dev/sdb: 1 GiB, 1073741824 bytes, 2097152 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: CB3262FA-2668-4AF3-8A98-B21DEAF62761

Device            Start      End  Sectors  Size Type
/dev/sdb1          2048    524287    522240    255M Linux filesystem
/dev/sdb2        524288   1046527   522240    255M Linux filesystem
/dev/sdb3       1046528   1568767   522240    255M Linux filesystem
/dev/sdb4       1568768   2091007   522240    255M Linux filesystem
```

5. o partiție primară și una logică, fiecare ocupând câte 50% din HDD

```
Syncing disks.
ubuntu@ubuntu-VirtualBox:~$ sudo fdisk -l /dev/sdb
Disk /dev/sdb: 1 GiB, 1073741824 bytes, 2097152 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x21443169

Device      Boot    Start        End    Sectors    Size Id Type
/dev/sdb1                2048    1048575    1046528    511M 83 Linux
/dev/sdb2           1048576    2095103    1046528    511M  5 Extended
ubuntu@ubuntu-VirtualBox:~$
```

6. o partiție primară, una logică și încă două primare, în ordinea menționată, fiecare ocupând câte 25% din HDD

```
ubuntu@ubuntu-VirtualBox:~$ sudo fdisk -l /dev/sdb
Disk /dev/sdb: 1 GiB, 1073741824 bytes, 2097152 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x21443169

Device      Boot    Start        End    Sectors    Size Id Type
/dev/sdb1                2048     524287     522240    255M 83 Linux
/dev/sdb2           524288    1046527     522240    255M  5 Extended
/dev/sdb3           1046528    1568767     522240    255M 83 Linux
/dev/sdb4           1568768    2091007     522240    255M 83 Linux
ubuntu@ubuntu-VirtualBox:~$
```

7. se da HDD-ul virtual [CaptureTheFlag](#). Acest HDD a avut 2 partitii care au fost distruse. Sa se importe in masina virtuala si sa se recupereze fisierele pierdute.

```
TestDisk 7.1, Data Recovery Utility, July 2019
Christophe GRENIER <grenier@cgsecurity.org>
https://www.cgsecurity.org

Disk /dev/sdc - 52 MB / 50 MiB - CHS 6 255 63
Partition      Start      End      Size in sectors
>P Linux filesystem data      2048      53247      51200
P Linux filesystem data      53248     100351     47104

Structure: Ok.  Use Up/Down Arrow keys to select partition.
Use Left/Right Arrow keys to CHANGE partition characteristics:
                P=Primary  D=Deleted
Keys A: add partition, L: load backup, T: change type, P: list files,
Enter: to continue
ext4 blocksize=1024 Large_file Sparse_SB Recover, 26 MB / 25 MiB

ubuntu@ubuntu-VirtualBox:/mnt$ sudo fdisk -l /dev/sdc
Disk /dev/sdc: 50 MiB, 52428800 bytes, 102400 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: 0A8A7A5B-AE4B-42D6-BAE2-313EF16DA656

Device      Start      End Sectors Size Type
/dev/sdc1   2048      53247   51200  25M Linux filesystem
/dev/sdc2   53248     100351   47104  23M Linux filesystem
ubuntu@ubuntu-VirtualBox:/mnt$ sudo mount /dev/sdc1 /mnt/partition1
ubuntu@ubuntu-VirtualBox:/mnt$ sudo mount /dev/sdc2 /mnt/partition2
ubuntu@ubuntu-VirtualBox:/mnt$ ls
partition1  partition2
ubuntu@ubuntu-VirtualBox:/mnt$ cd partition1
ubuntu@ubuntu-VirtualBox:/mnt/partition1$ ls
confidential.txt  lost+found
ubuntu@ubuntu-VirtualBox:/mnt/partition1$ cat confidential.txt
FBI pass: 1234567890
NASA pass: abcdefhijkl
ubuntu@ubuntu-VirtualBox:/mnt/partition1$
```

```
ubuntu@ubuntu-VirtualBox:/mnt/partition2$ ls
lost+found  very_confidential.txt
ubuntu@ubuntu-VirtualBox:/mnt/partition2$ cat very_confidential.txt
TnVrZSBsYXVvY2ggY29kZXM6IDExYWYyMmJiMzNjYw==
ubuntu@ubuntu-VirtualBox:/mnt/partition2$
```

8. **OPTIONAL** Se da HDD-ul virtual [HDDmic](#):

Sa se ruleze script-ul de pe el.

Sa se descrie comportamentul acestuia.

Sa se remedieze "problema" creata de script.

Comportament: script-ul afisează pe ecran hostname-ul si username-ul user-ului curent, și face appent la "echo Hello world!", la finalul fișierului ~/.bashrc. Astfel la fiecare deschirese a terminalului se va afisa "Hello world!". Problema se remediază prin ștergerea "echo Hello world!" din ~/.bashrc.

Partea 2:

1. Sa se adauge, editand fisierul "/etc/grub.d/40_custom", o intrare noua intrare cu numele "Ubuntu Cobai", care are parametri de boot similari cu cei ai sistemului de operare Linux.

```
GNU nano 7.2 /etc/grub.d/40_custom
#!/bin/sh
exec tail -n +3 $0
# This file provides an easy way to add custom menu entries.  Simply type the
# menu entries you want to add after this comment.  Be careful not to change
# the 'exec tail' line above.

menuentry 'Ubuntu Cobai' --class ubuntu --class gnu-linux --class gnu --class os $menuentry_id_option 'gnulinux-simple-4b97062f-a8c0-4258-890e-4a73e0b3da81' {
    recordfail
    load_video
    gfxmode $linux_gfx_mode
    insmod gzio
    if [ x$grub_platform = xxen ]; then insmod xzio; insmod lzopio; fi
    insmod part_gpt
    insmod ext2
    set root='hd0,gpt2'
    if [ x$feature_platform_search_hint = xy ]; then
        search --no-floppy --fs-uuid --set=root --hint-bios=hd0,gpt2 --hint-efi=hd0,gpt2 --hint-baremetal=ahci0,gpt2  4b97062f-a8c0-4258-890e-4a73e0b3da81
    else
        search --no-floppy --fs-uuid --set=root 4b97062f-a8c0-4258-890e-4a73e0b3da81
    fi
    linux /boot/vmlinuz-6.14.0-34-generic root=UUID-4b97062f-a8c0-4258-890e-4a73e0b3da81 ro quiet splash $vt_handoff
    initrd /boot/initrd.img-6.14.0-34-generic
}
```

2. Să se actualizeze încărcătorul Grub prin rularea comenzii:

```
sudo update-grub
```

Aceasta are ca efect recrearea fișierului `/boot/grub/grub.cfg`, pe baza configurațiilor descrise în `/etc/grub.d/` și `/etc/default/grub`.

```
ubuntu@ubuntu-VirtualBox:~/Desktop$ sudo update-grub
Sourcing file `/etc/default/grub'
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-6.14.0-34-generic
Found initrd image: /boot/initrd.img-6.14.0-34-generic
Found linux image: /boot/vmlinuz-6.14.0-33-generic
Found initrd image: /boot/initrd.img-6.14.0-33-generic
Found memtest86+x64 image: /boot/memtest86+x64.bin
Warning: os-prober will not be executed to detect other bootable partitions.
Systems on them will not be added to the GRUB boot configuration.
Check GRUB_DISABLE_OS_PROBER documentation entry.
Adding boot menu entry for UEFI Firmware Settings ...
done
ubuntu@ubuntu-VirtualBox:~/Desktop$
```

3. Să se boot-eze și să se aleagă opțiunea adăugată. Rezultatul ar trebui să fie identic cu alegerea primei variante din grub.

În cazul în care nu apare lista cu opțiunile la boot (înainte de apariția ecranului de Loading pentru Ubuntu), editați fișierul `/etc/default/grub` și comentați opțiunea `GRUB_TIMEOUT=hidden` și rulați din nou `sudo update-grub`.

```
GNU nano 7.2 /etc/default/grub
# If you change this file, run 'update-grub' afterwards to update
# /boot/grub/grub.cfg.
# For full documentation of the options in this file, see:
#   info -f grub -n 'Simple configuration'

GRUB_DEFAULT=0
#GRUB_TIMEOUT_STYLE=hidden
GRUB_TIMEOUT=10
GRUB_DISTRIBUTOR=`(. /etc/os-release; echo ${NAME:-Ubuntu}) 2>/dev/null || echo`
GRUB_CMDLINE_LINUX_DEFAULT="quiet splash"
GRUB_CMDLINE_LINUX=""

# If your computer has multiple operating systems installed, then you
# probably want to run os-prober. However, if your computer is a host
# for guest OSes installed via LVM or raw disk devices, running
# os-prober can cause damage to those guest OSes as it mounts
# filesystems to look for things.
#GRUB_DISABLE_OS_PROBER=false
```

```
GNU GRUB version 2.12

Ubuntu
Advanced options for Ubuntu
Memory test (memtest86+x64.bin)
Memory test (memtest86+x64.bin, serial console)
*Ubuntu Cobai

Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the commands
before booting or 'c' for a command-line.
```

4. Sa se modifice "/etc/default/grub" astfel incat optiunea implicita sa fie "Ubuntu Cobai" si timpul de asteptare implicit sa fie de 3s.

```
GNU nano 7.2 /etc/default/grub
# If you change this file, run 'update-grub' afterwards to update
# /boot/grub/grub.cfg.
# For full documentation of the options in this file, see:
#   info -f grub -n 'Simple configuration'

GRUB_DEFAULT="Ubuntu Cobai"
#GRUB_TIMEOUT_STYLE=hidden
GRUB_TIMEOUT=3
GRUB_DISTRIBUTOR=`( . /etc/os-release; echo ${NAME:-Ubuntu} ) 2>/dev/null || ec>
GRUB_CMDLINE_LINUX_DEFAULT="quiet splash"
GRUB_CMDLINE_LINUX=""

# If your computer has multiple operating systems installed, then you
# probably want to run os-prober. However, if your computer is a host
# for guest OSes installed via LVM or raw disk devices, running
# os-prober can cause damage to those guest OSes as it mounts
# filesystems to look for things.
#GRUB_DISABLE_OS_PROBER=false

# Uncomment to enable BadRAM filtering, modify to suit your needs
[ Wrote 40 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line
```


5. Să se reincarce fisierul grub (sudo update-grub) si sa se testeze setarile de mai sus.

```
GNU GRUB version 2.12

Ubuntu
Advanced options for Ubuntu
Memory test (memtest86+x64.bin)
Memory test (memtest86+x64.bin, serial console)
*Ubuntu Cobai

Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the commands
before booting or 'c' for a command-line.
The highlighted entry will be executed automatically in 30s.
```

6. Să se genereze o parolă criptată folosind comanda *grub-mkpasswd-pbkdf2*

```
ubuntu@ubuntu-VirtualBox:~/Desktop$ sudo nano /etc/default/grub
[sudo] password for ubuntu:
ubuntu@ubuntu-VirtualBox:~/Desktop$ grub-mkpasswd-pbkdf2
Enter password:
Reenter password:
PBKDF2 hash of your password is grub.pbkdf2.sha512.10000.05E8E4021B023769CF08DD0
4A353AEFADBB3168C3B0CD610A3669356462ACBDDCC991ECEDA1620900F38C5583F90981445DD4F5
9F7E9E3B3AB1FA20869AF65B8.A168F481FB2D9A5AA471ACA2B435B2988E0CB712F196DA597EFB03
DEA87A3816DFB968022A25D8573308B83FFBFA230E24CEE8FA8B7DBAB5CE163E5C3206850F
ubuntu@ubuntu-VirtualBox:~/Desktop$
```

7. Să se protejeze toate opțiunile din grub cu parola creată pentru utilizatorul "superuser", mai puțin opțiunea "Ubuntu Cobai".

```
GNU nano 7.2 /etc/grub.d/40_custom
#!/bin/sh
exec tail -n +3 $0
# This file provides an easy way to add custom menu entries. Simply type the
# menu entries you want to add after this comment. Be careful not to change
# the 'exec tail' line above.

set superusers='superuser'
password_pbkdf2 superuser grub.pbkdf2.sha512.10000.05E8E4021B023769CF08DD04A353AEFADBB3168C3B0CD610A3669356462ACBDDCC991ECEDA1620900F38C5583F90981445DD4F59F7E9E3B3AB1FA20869AF65B8.A168F481FB2D9A5AA471ACA2B435B2988E0CB712F196DA597EFB03DEA87A3816DFB968022A25D8573308B83FFBFA230E24CEE8FA8B7DBAB5CE163E5C3206850F

473e0b3da81' --unrestricted
recordfail
load_video
gfxmode $linux_gfx_mode
insmod gzio
if [ x$grub_platform = xxen ]; then insmod xzio; insmod lzopio; fi
insmod part_gpt
insmod ext2
set root='hd0,gpt2'
if [ x$feature_platform_search_hint = xy ]; then
  search --no-floppy --fs-uuid --set=root --hint-bios=hd0,gpt2 --hint-efi=hd0,gpt2 --hint-baremetal=ahci0,gpt2 4b97062f-a8c0-4258-890e-4a73e0b3da81
else
  search --no-floppy --fs-uuid --set=root 4b97062f-a8c0-4258-890e-4a73e0b3da81
fi
linux /boot/vmlinuz-6.14.0-34-generic root=UUID=4b97062f-a8c0-4258-890e-4a73e0b3da81 ro quiet splash $vt_handoff
initrd /boot/initrd.img-6.14.0-34-generic
)
```


8. Testați efectele setărilor făcute.

Când încerc să intru pe Ubuntu imi cere username si parolă:

A screenshot of a terminal window titled "aso-a [Running] - Oracle VirtualBox". The terminal has a black background with white text. It displays the following text:

```
Enter username:
superuser
Enter password:
_
```

Când încerc să intru pe Ubuntu Cobai, nu cere nimic. Deci funcționează conform așteptărilor.