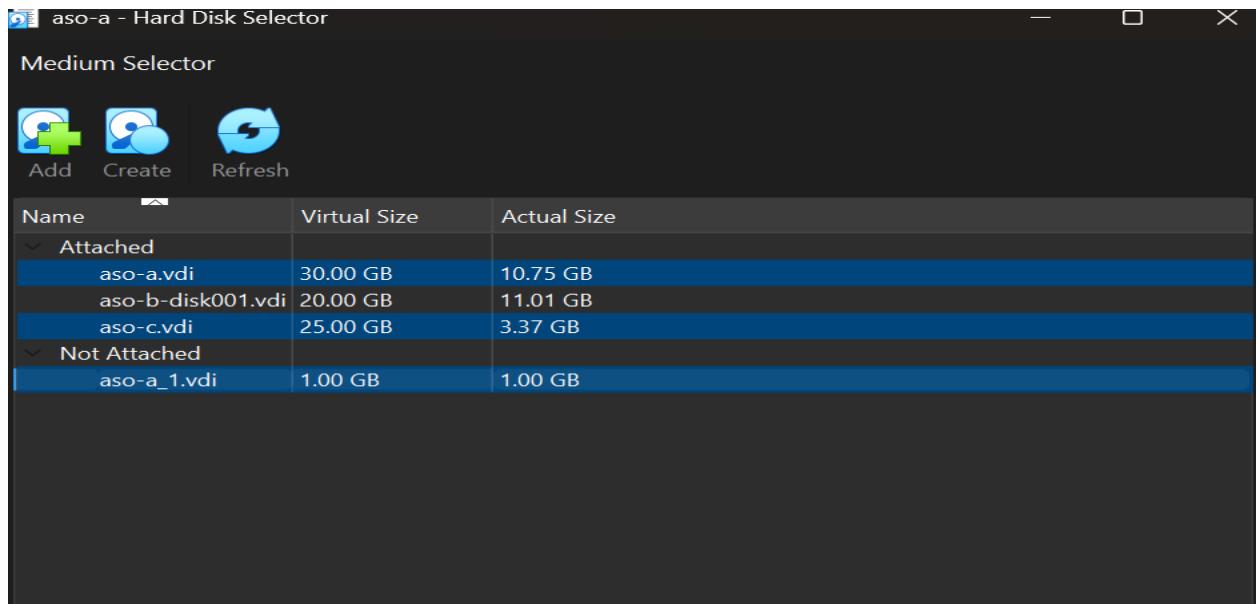


Partea 1:

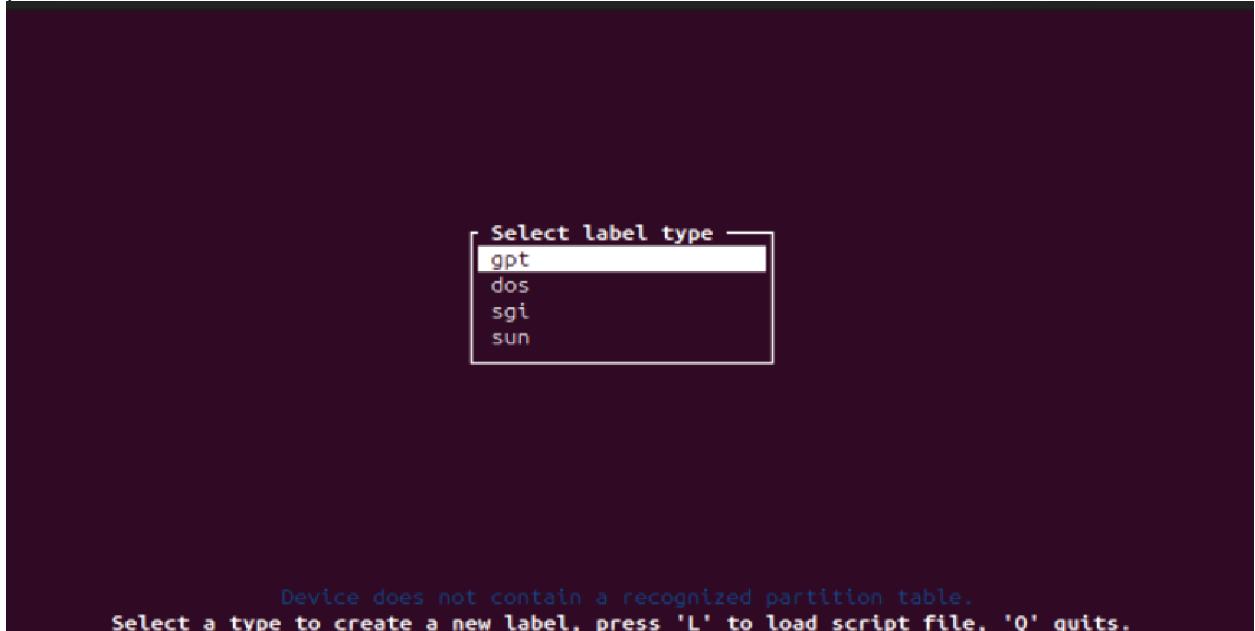
1. se creează un nou HDD de 1GB (vezi "Settings / Storage / Controller (SATA) / Adds hard disk")



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:~$ 
```

3. folosind utilitarul *cfdisk* de partitiorare în standarul GPT, să se creeze următoarele partiții în următoarele variante



4. 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 partitie primara si una logica, fiecare ocupand cate 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 partitie primara, una logica si incă două primare, în ordinea menționată, fiecare ocupând cate 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 recuperaze 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  2048        53247     51200
  P Linux filesystem  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
TnVrZSBsYXVuY2ggY29kZXN6IDEyYWEyMmJiMzNjYw==
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 afiseaza pe ecran hostname-ul si username-ul user-ului curent, si face append la "echo Hello world!", la finalul fisierului ~/.bashrc. Astfel la fiecare deschidere a terminalului se va afisa "Hello world!". Problema se remediaza prin stergerea "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 parametrii de boot similari cu cei ai sistemului de operare Linux.

```

GNU nano 7.2
#!/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-4a73e0b3'
    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 grub_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-4a73e0b3
    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 comenzi:

```
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$
```

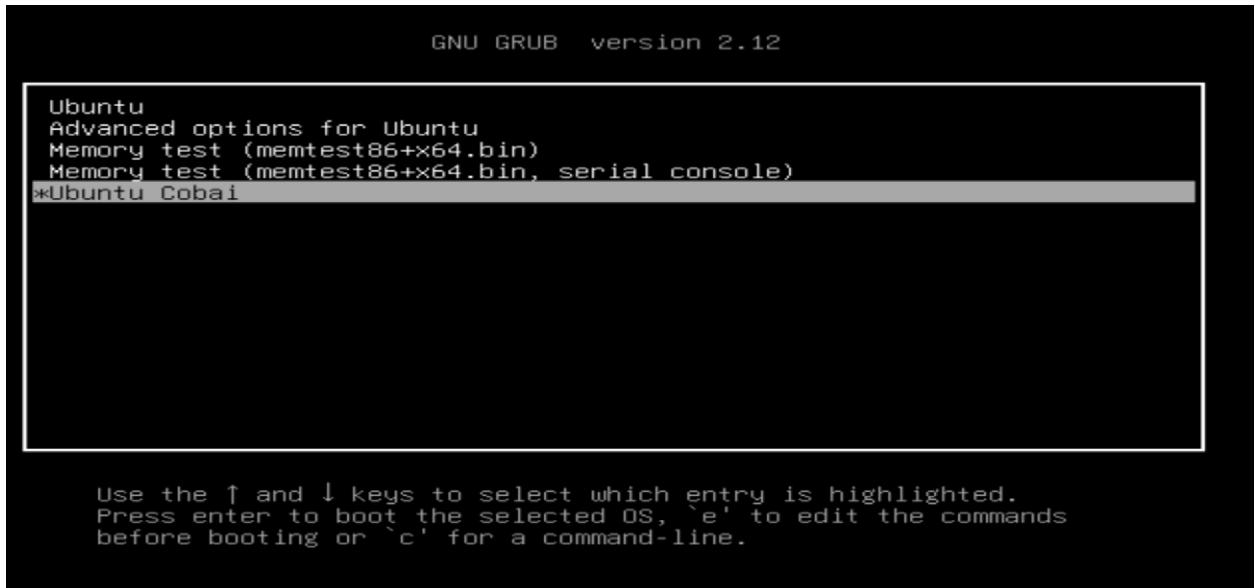
3. Să se boot-eze și să se aleagă opțiunea adăugată. Rezultatul ar trebui sa fie identic cu alegerea primei variante din grub.

In cazul in care nu apare lista cu optiunile la boot (inainte de aparitia ecranului de Loading pentru Ubuntu), editati fisierul /etc/default/grub si comentati optiunea GRUB\_TIMEOUT=hidden si rulati 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 || 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
```



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

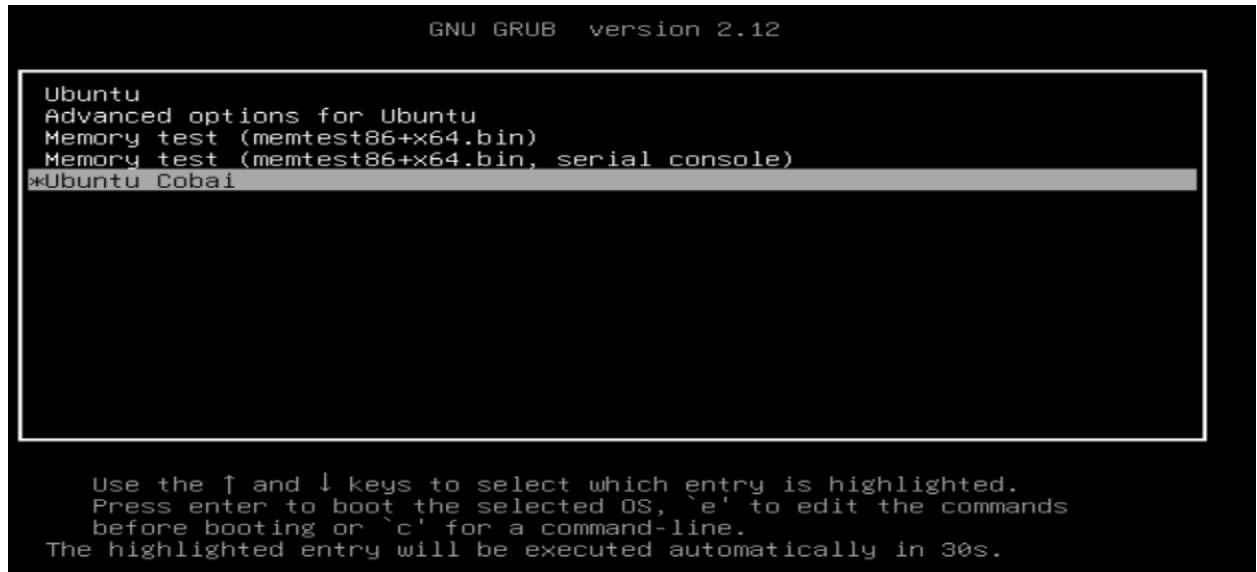
```
GNU nano 7.2          /etc/default/grub
# If you change this file, run 'update-grub' afterwards to update
# /boot/grub/grub.cfg.
# For full documentation of the options in this file, see:
#   info -f grub -n 'Simple configuration'

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



The screenshot shows the GRUB boot menu for Ubuntu. The highlighted entry is "Ubuntu Cobai". Below the menu, instructions are displayed:

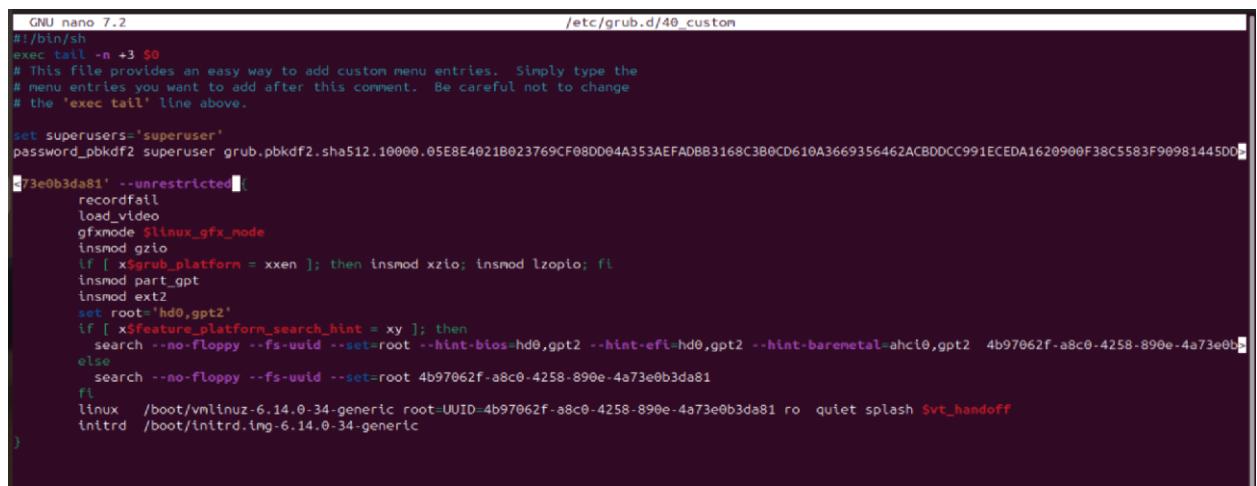
```
Use the ↑ and ↓ keys to select which entry is highlighted.  
Press enter to boot the selected OS, 'e' to edit the commands  
before booting or 'c' for a command-line.  
The highlighted entry will be executed automatically in 30s.
```

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 putin optiunea "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.sha512.10000.05E8E4021B023769CF08DD04A353AEFADBB3168C3B0CD610A3669356462ACBDDCC991ECEDA1620900F38C5583F90981445DD0  
73e0b3da81' --unrestricted [  
    recordfail  
    load_video  
    gfxmode $linux_gfx_mode  
    insmod gzio  
    if [ $grub_platform = xen ]; then insmod xzio; insmod lzopio; fi  
    insmod part_gpt  
    insmod ext2  
    set root='hd0,gpt2'  
    if [ ${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 și parolă:



```
aso-a [Running] - Oracle VirtualBox
Enter username:
superuser
Enter password:
-
```

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