

# Linux Installation and Training Guide

Micah L. Martinez

CMIT 391 6392

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## Introduction

Before migrating to a Linux distribution, it is good to train personnel on the chosen distribution. Using VirtualBox, a virtualization software, personnel can experiment with the new operating system and train on the new environment's essential functions without worrying about causing a catastrophic error that could crash the system. This tutorial will walk users through installing Linux Mint with VirtualBox and include some common commands used on Linux's command-line interface.

## Part 1

### Install Mint

1. Create a file where you want to install and save the Mint Operating system. The example below is saving it to a removable hard drive, "D:\Mint." Then click "New" to bring up the screen below.

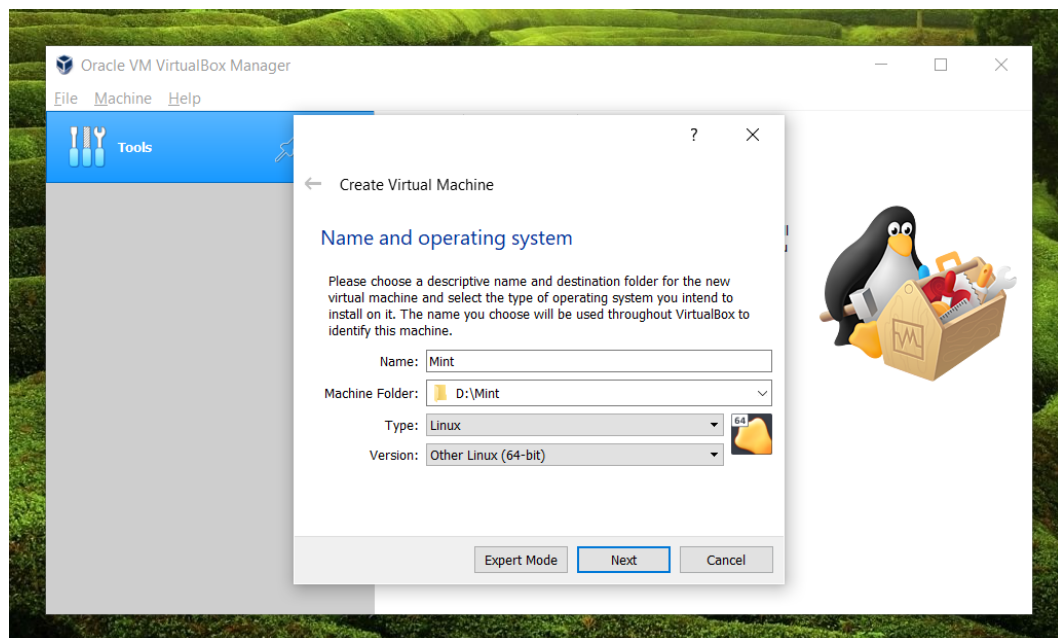


Figure 1: Destination folder for Mint Operating System

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2. Select the amount of Random Access Memory (RAM) you want to be available for Mint.

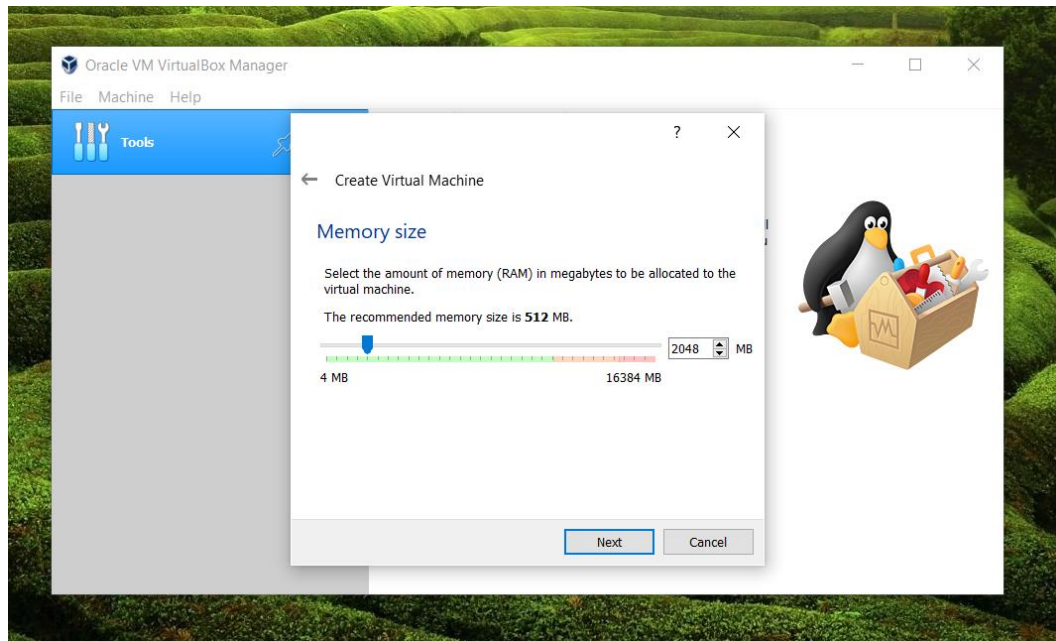


Figure 2: Choosing RAM size

3. Select "Create a virtual hard disk now" to create the hard disk Mint will run on.

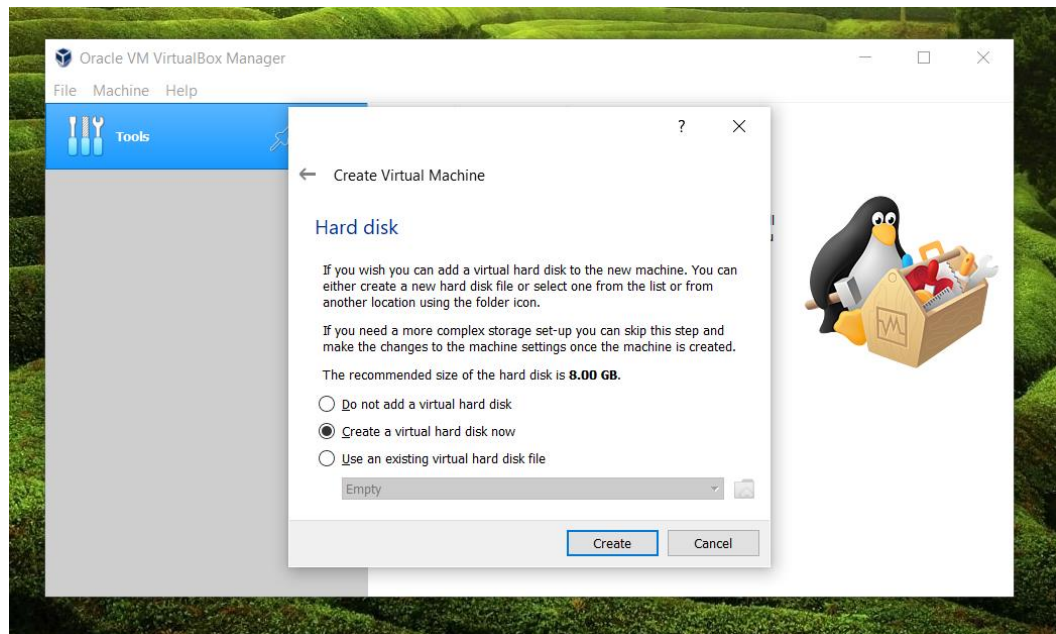


Figure 3: Creating the hard disk

4. Select "VDI (VirtualBox Disk Image)," this will allow you to use the .iso file downloaded from the Mint website.

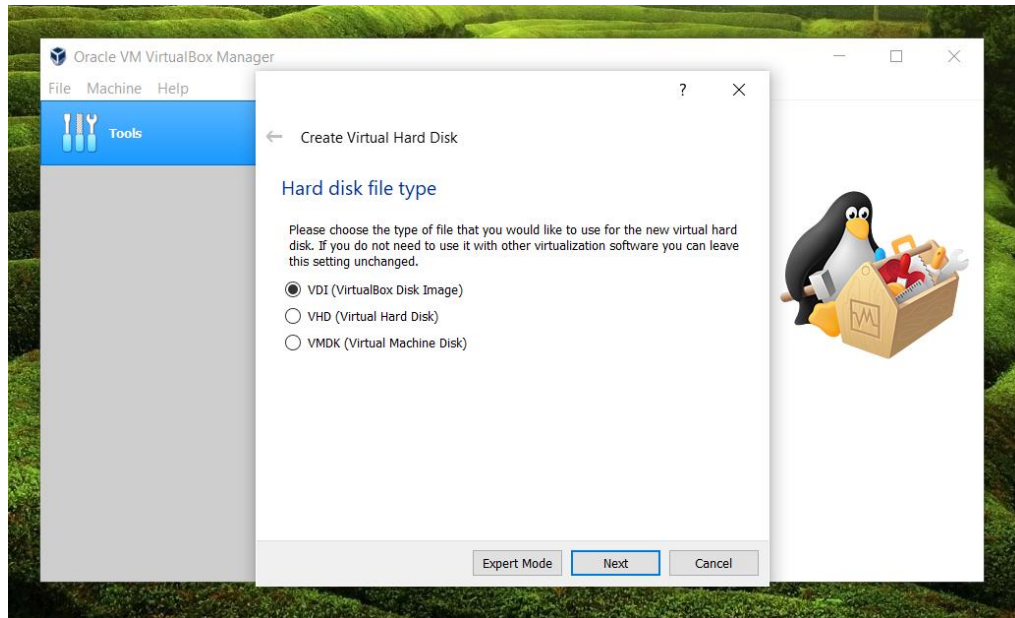


Figure 4: Choosing the type of hard disk

5. Select "Dynamically Allocated."

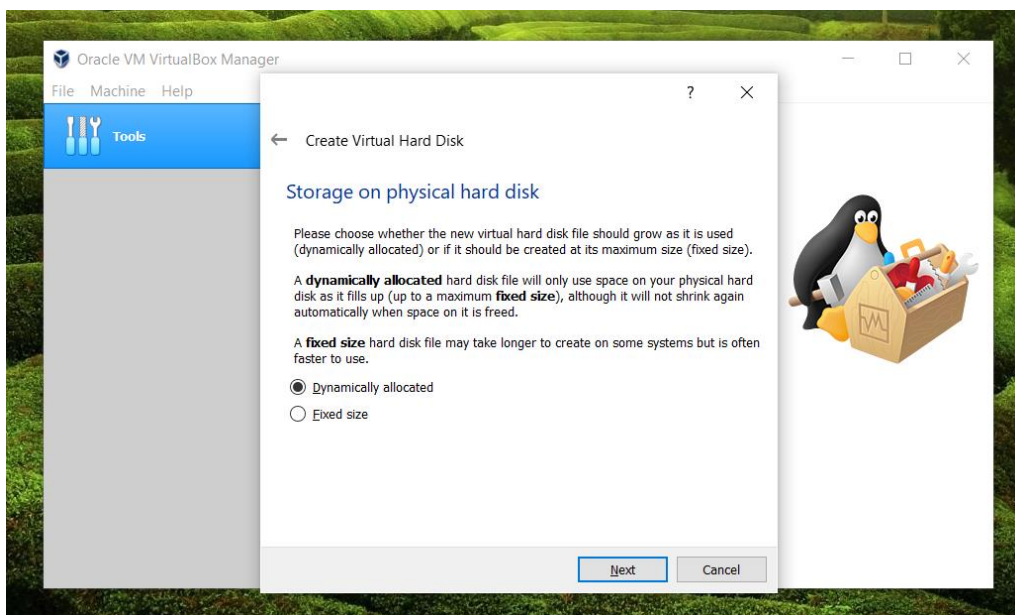


Figure 5: Choosing storage type.

## Linux Installation and Training Guide

6. Choose the default name and choose the size of the virtual disk. A minimum of 12GB is required for a full Mint install.

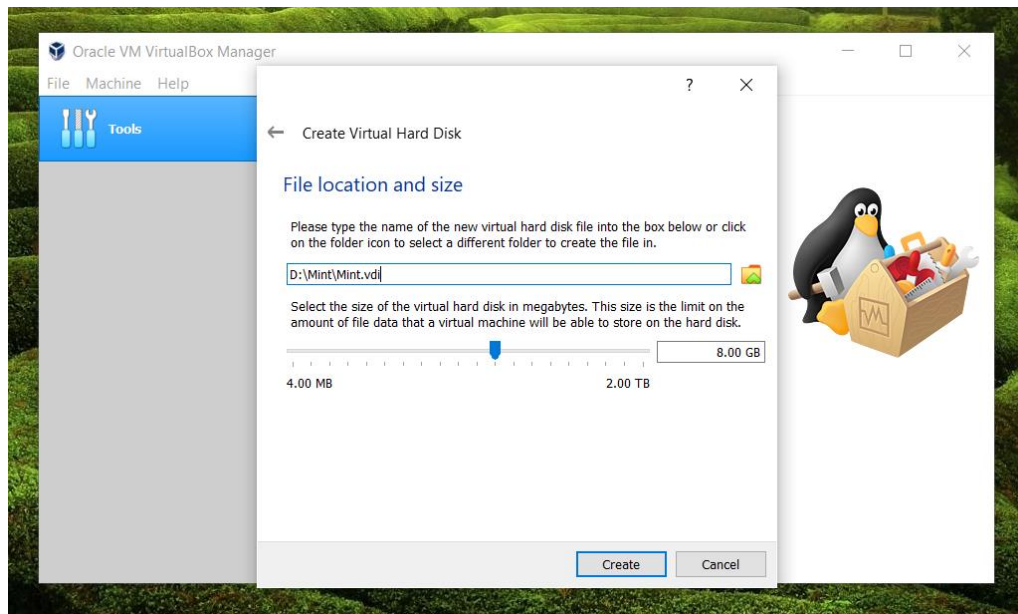


Figure 6: Default hard drive size

7. Right-click on "Optical Drive" and select "Choose/Create a Disk Image."

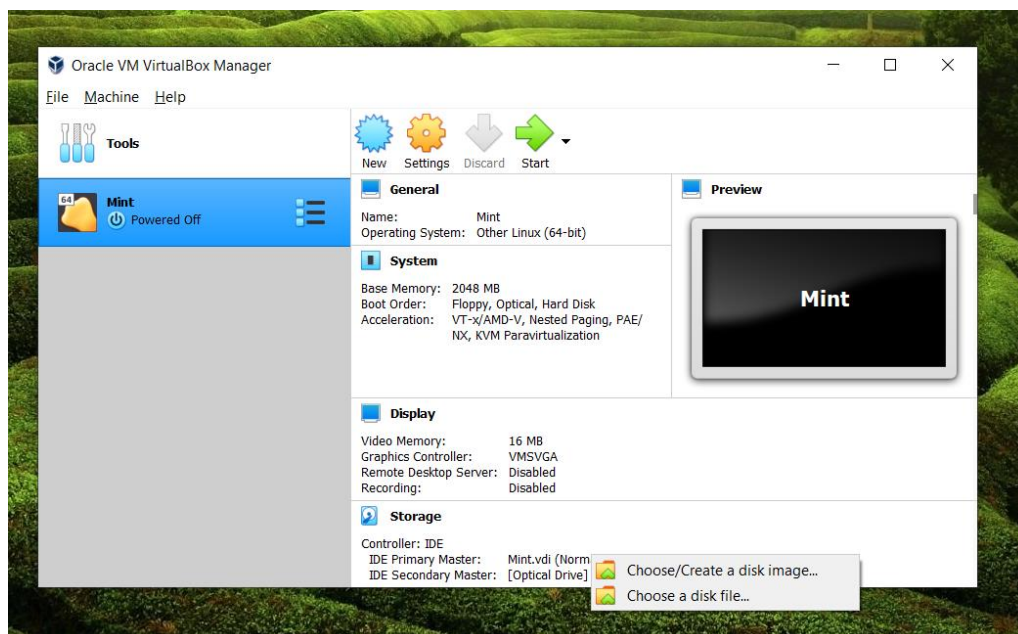


Figure 7: Mount the .iso file to the "Optical Drive."



## Linux Installation and Training Guide

### 8. Click "Create."

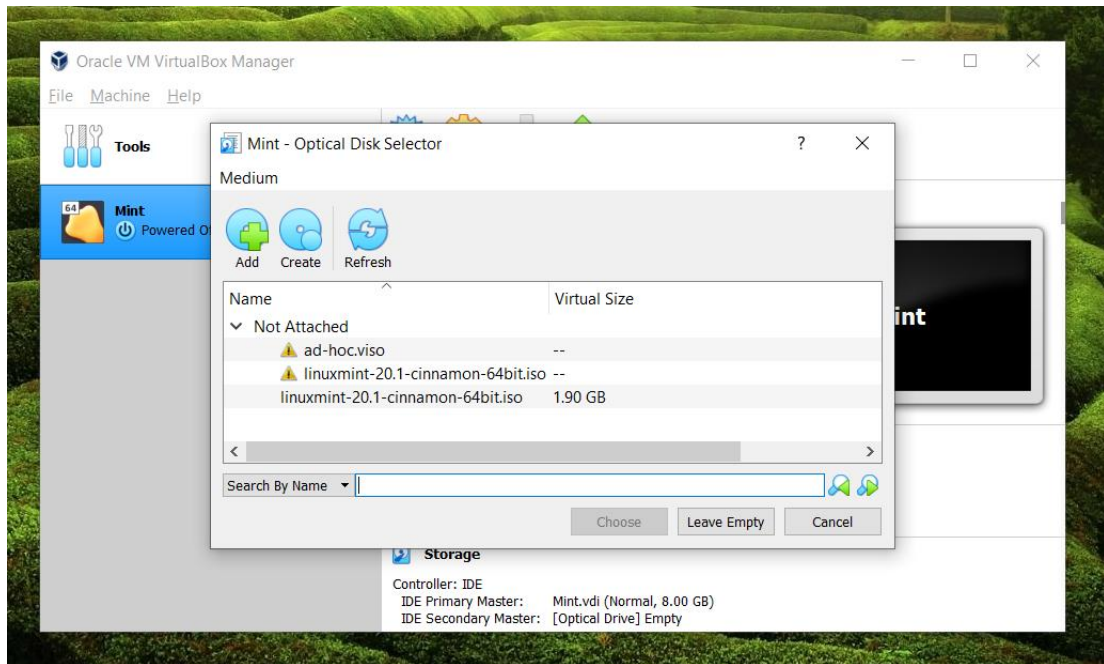


Figure 8: Mount the .iso file to the "Optical Drive."

### 9. Select the Mint disk image file.

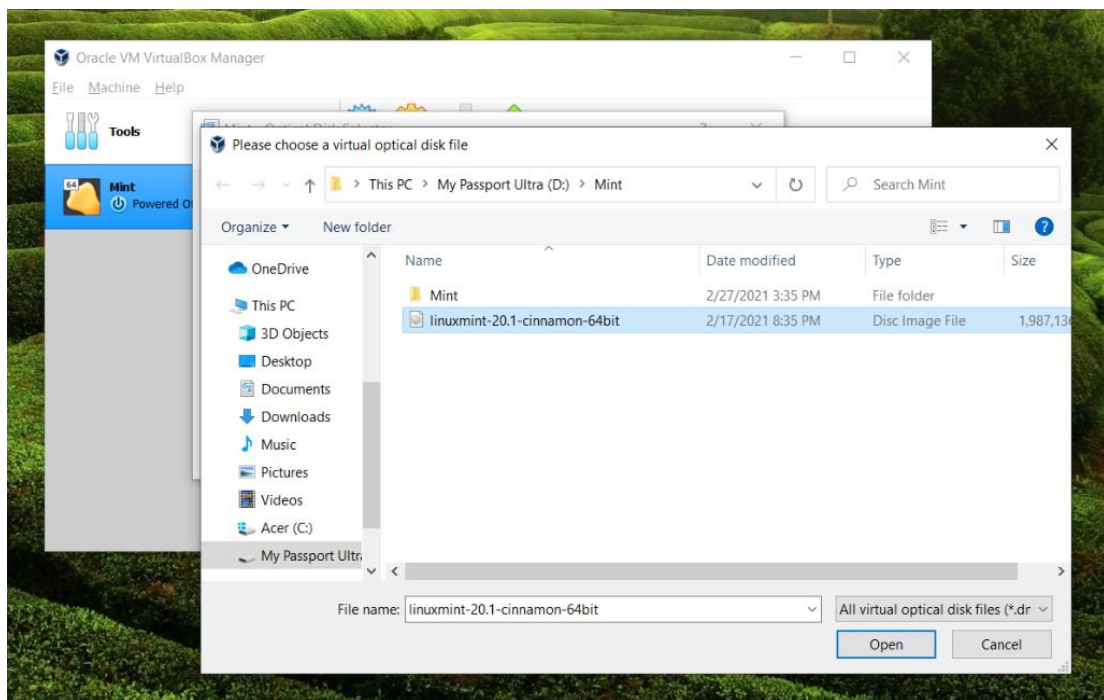


Figure 9: Select the Mint .iso file

10. Select the file again and press "Choose," this will mount it to the "optical drive."

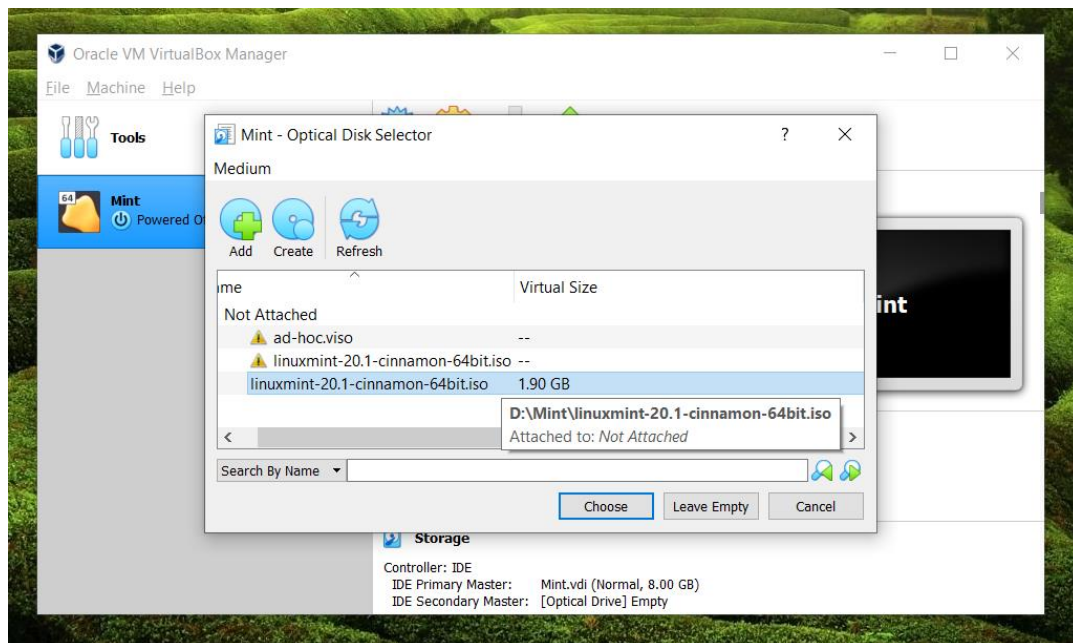


Figure 10: Mount the .iso file to the "Optical Drive."

11. Click "Start."

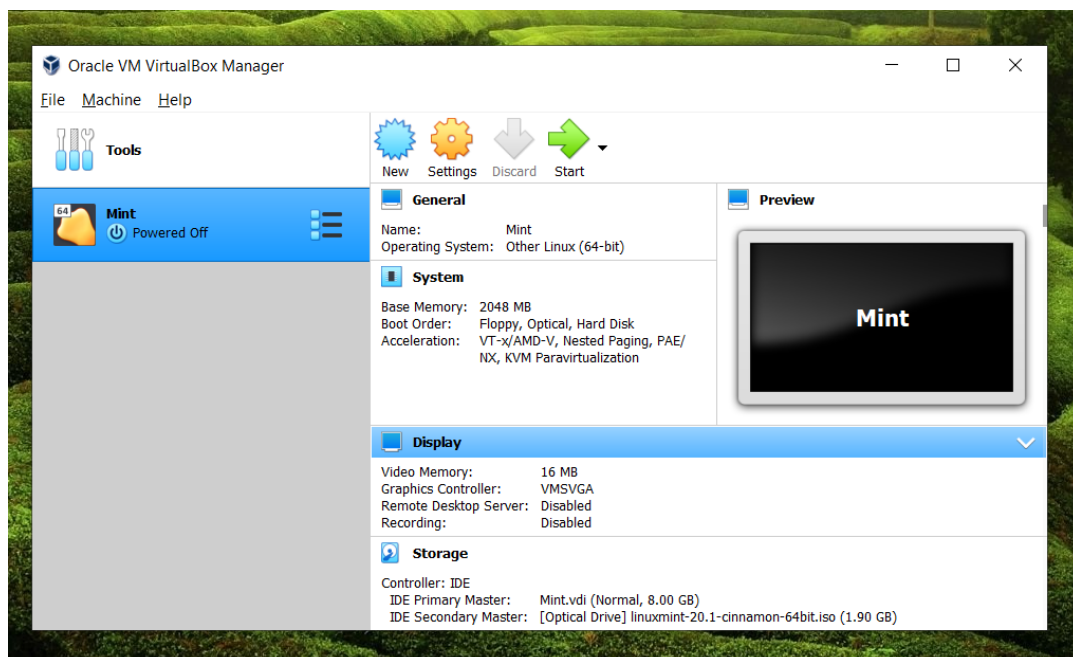


Figure 11: Initial boot



12. You can press "Enter" to boot instantly, or you can wait 10 seconds for Mint to boot automatically.

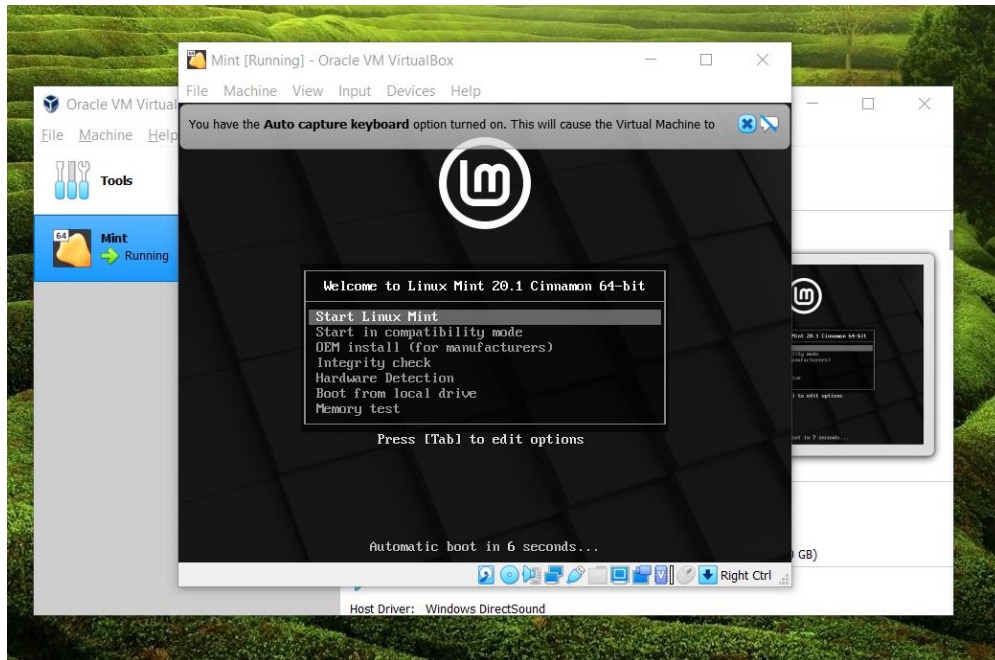


Figure 12: Initial boot

13. Double click "Install Linux Mint."

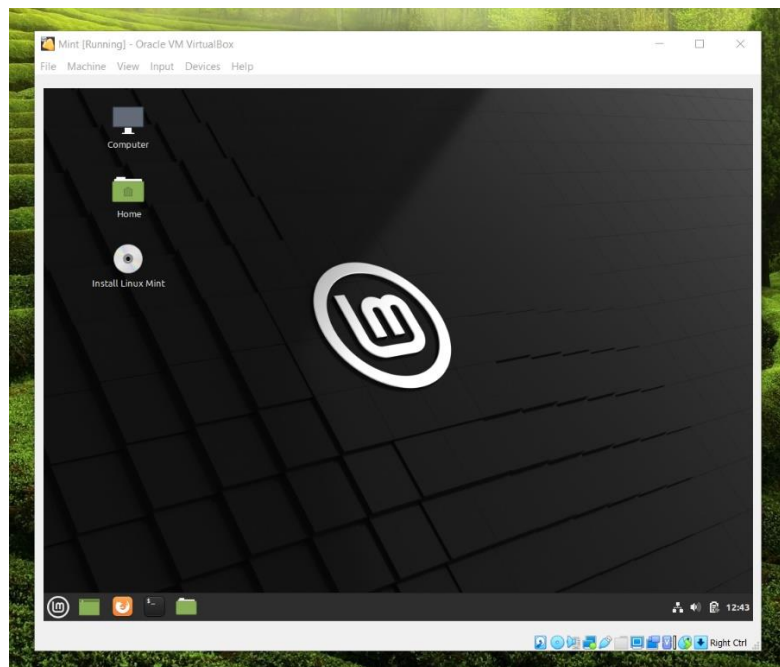


Figure 13: Permanent Install

## 14. Choose your Language.

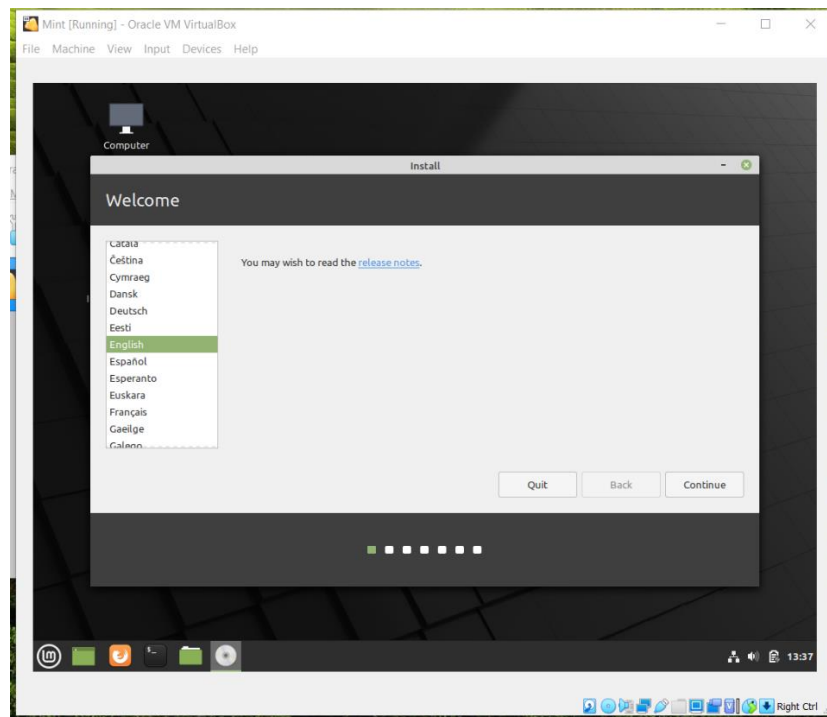


Figure 14: Language Selection

## 15. Choose your Keyboard Layout.

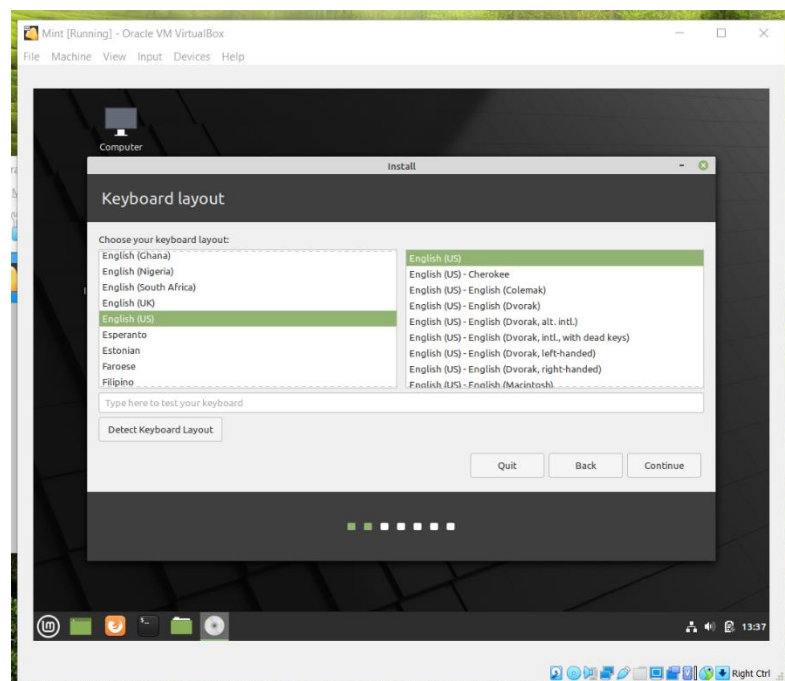


Figure 15: Keyboard Layout

16. Choose to install or not install Multimedia Codecs. Codecs allow for the play of different video formats and proper webpage loading.
17. Double click the virtual hard drive you want to use to install Mint and press continue. There should only be one.

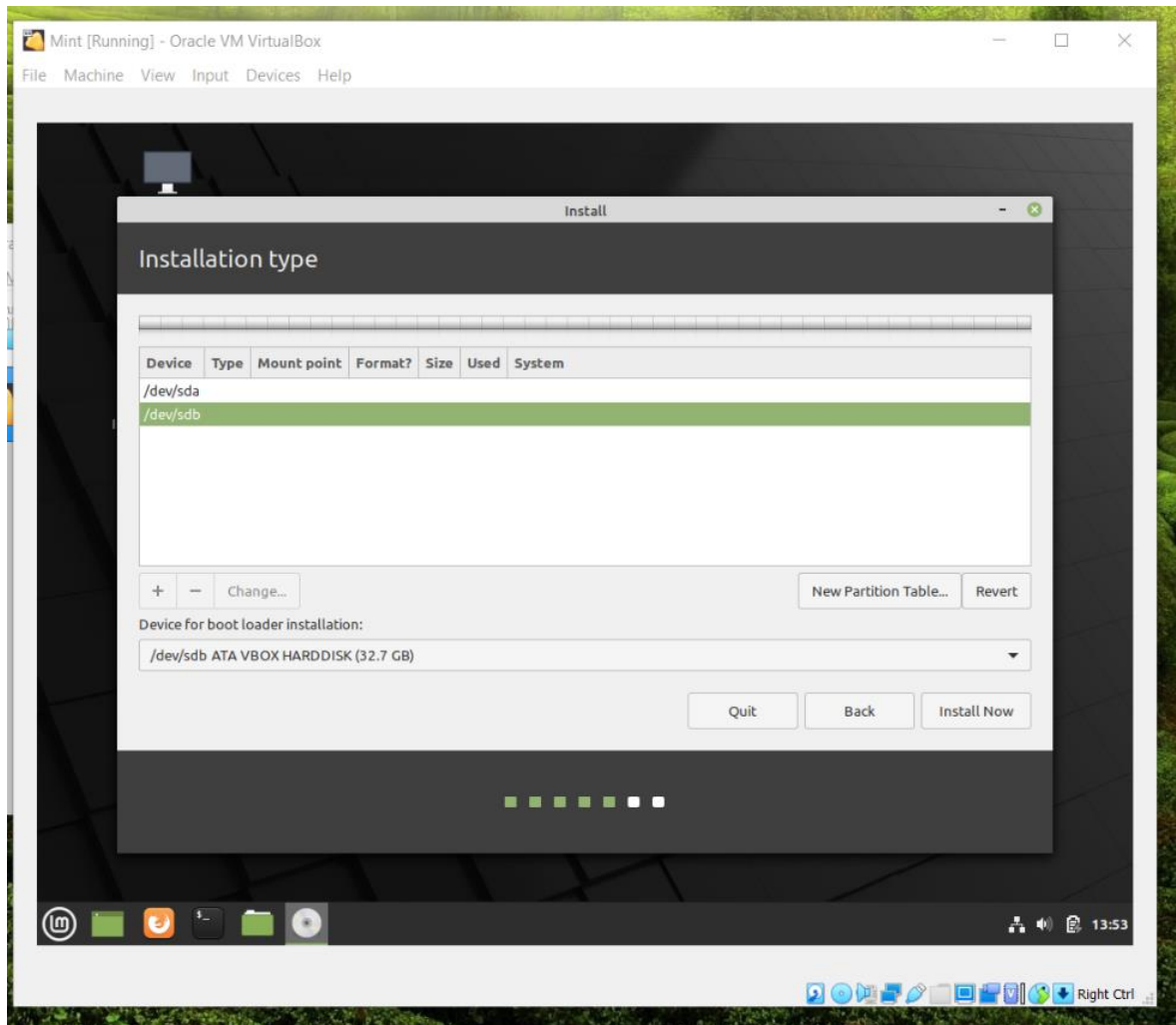


Figure 16: Select hard drive to partition

18. Select the available space and press the plus sign.

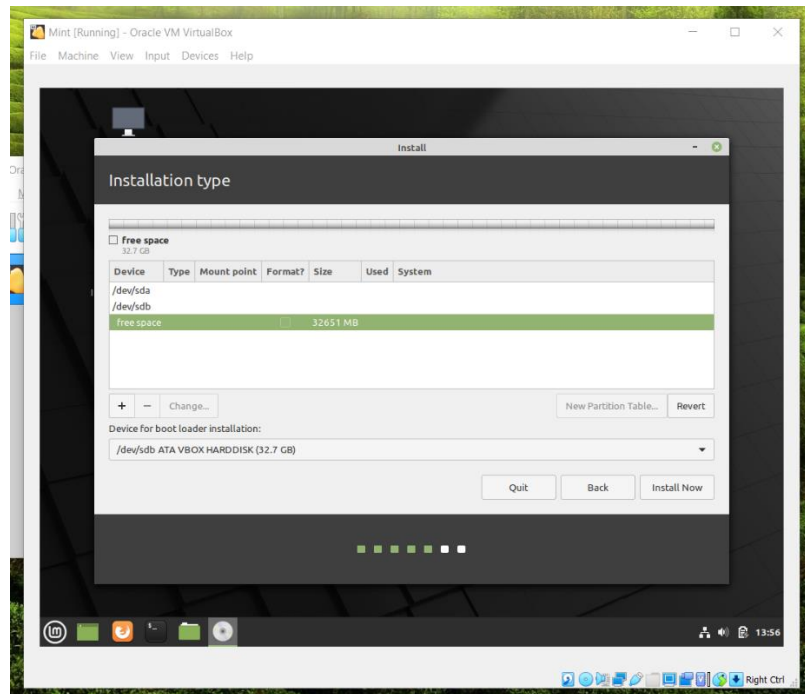


Figure 17: Select hard drive to partition

19. On the "Create Partition" screen. Select "/" as the Mount Point and click "Ok."

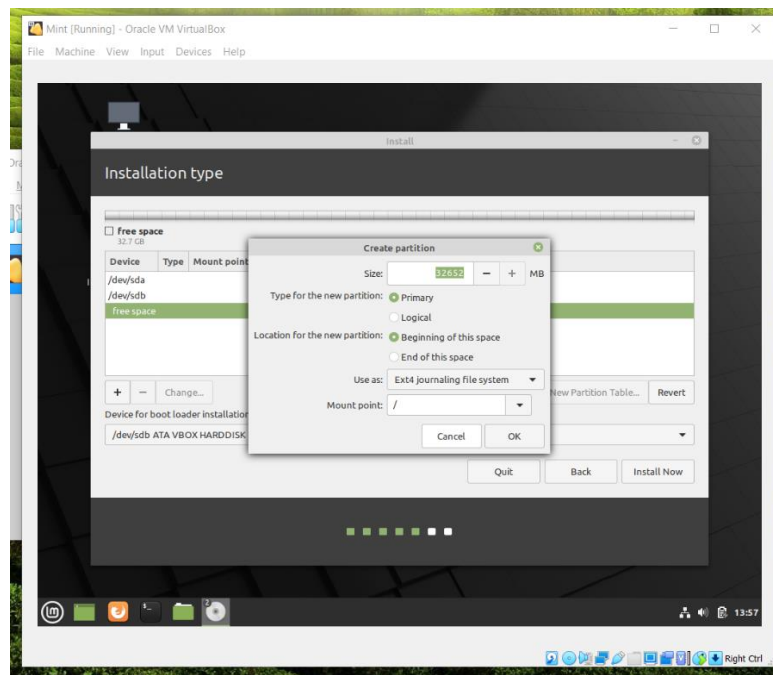
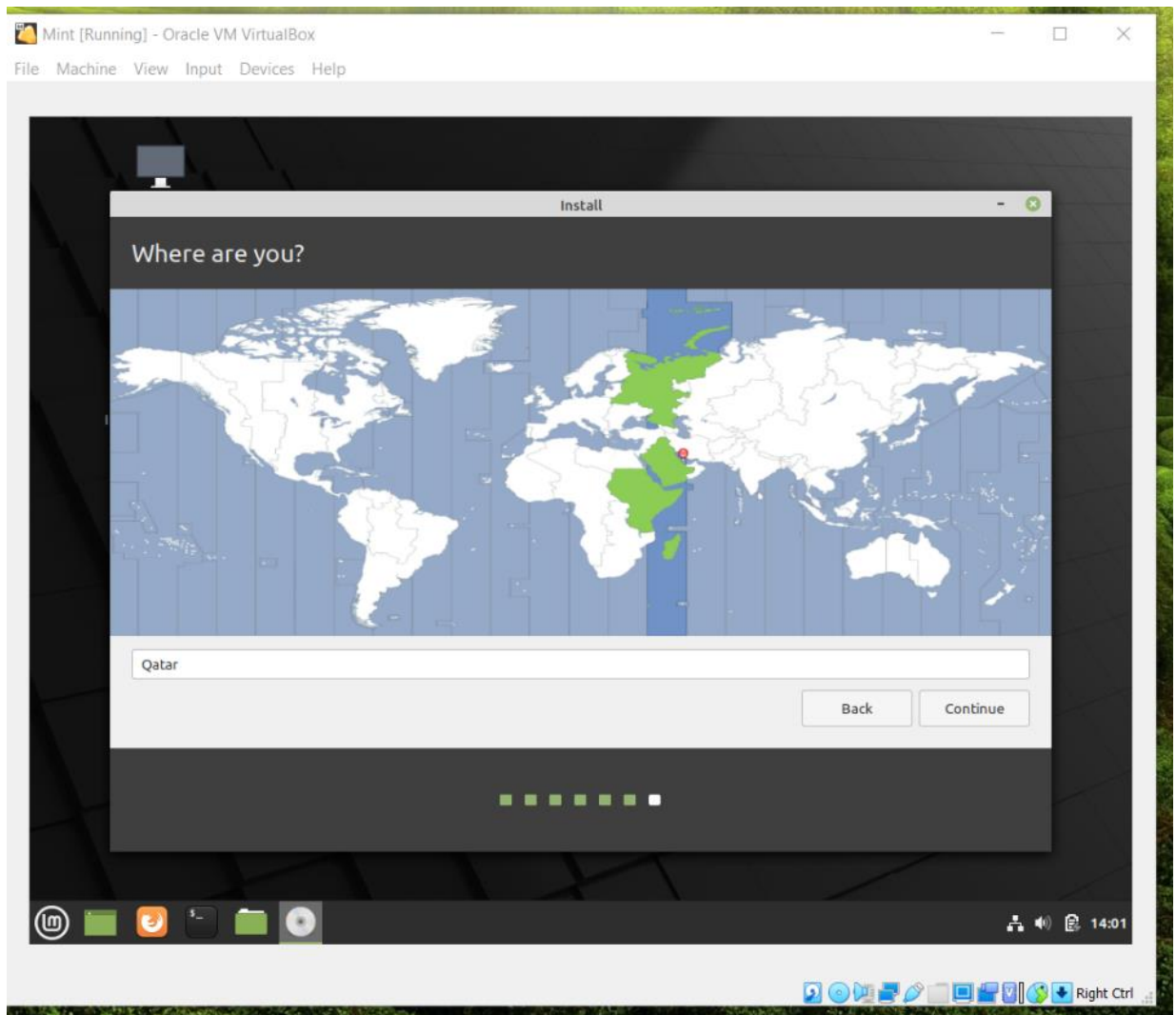


Figure 18: Partitioning the hard drive

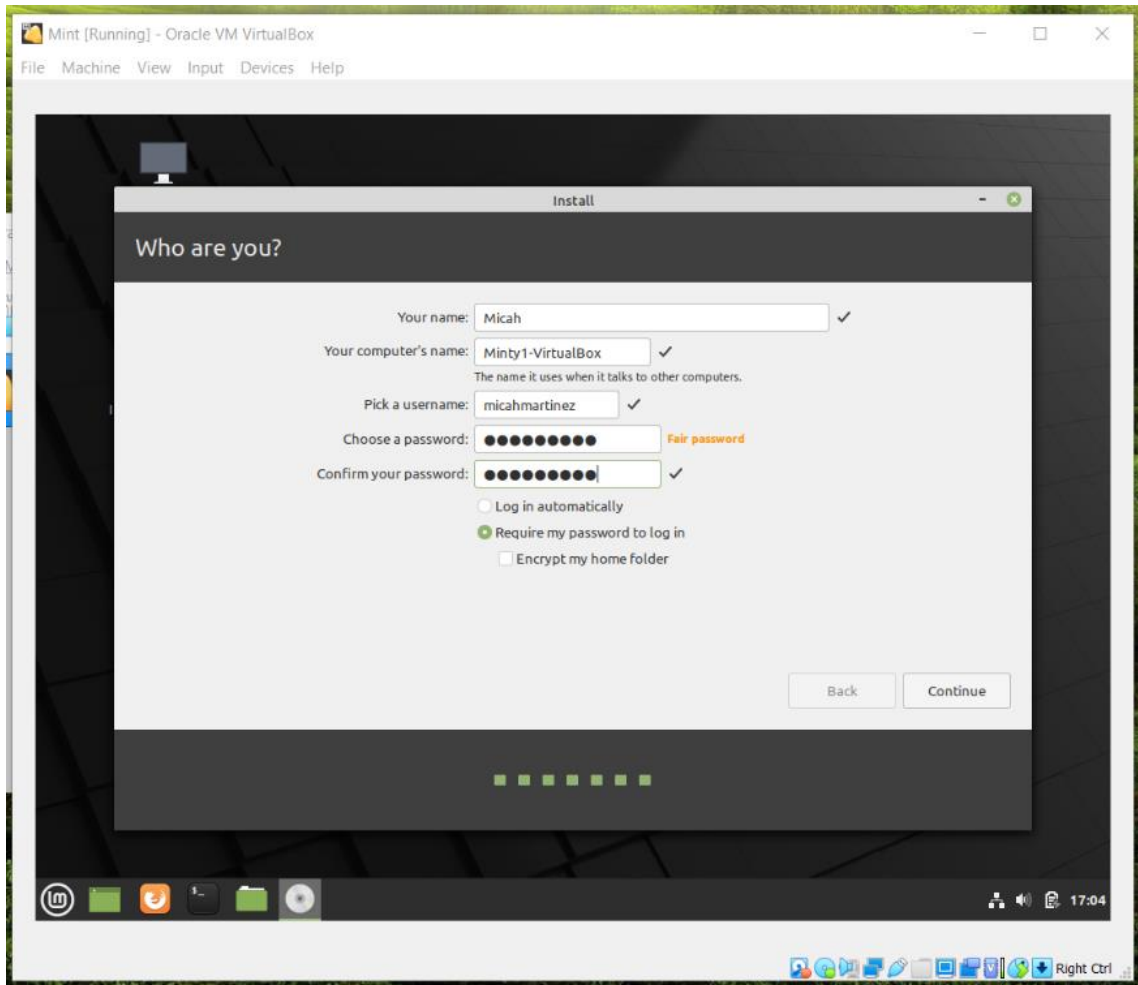
20. Click "Install Now" and "Continue."

21. Select your Location and click "Continue."



*Figure 19: Choose Time Zone and Location*

22. Fill in your information to create your user account and password. Click continue to install.



*Figure 20: User name and password creation*

23. Click "Restart Now."

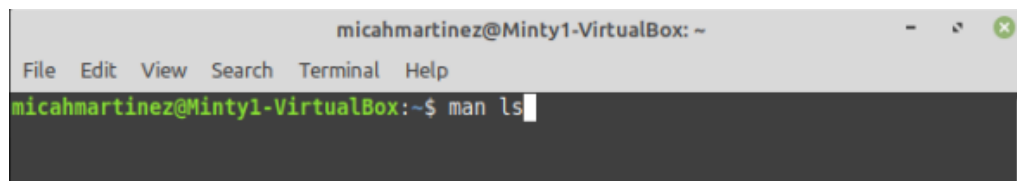


## Part 2

### Common Linux Commands

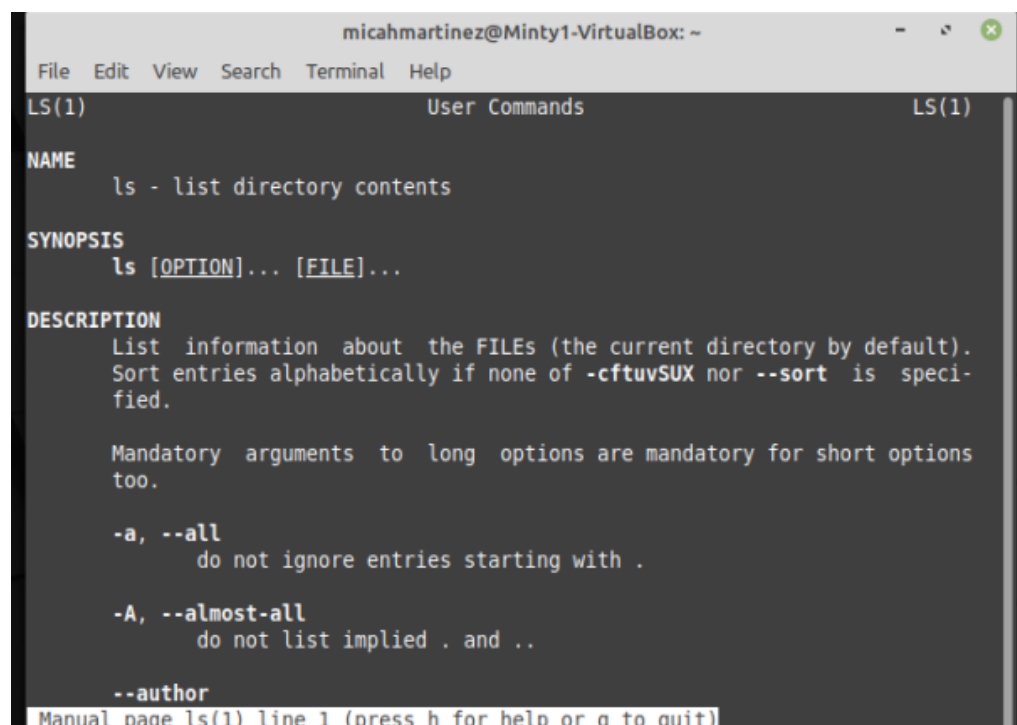
Although Mint has a graphical user interface, it is good to know common Command Line Interface (CLI) commands. This next section will go over commonly used commands [1].

- To see the manual for any command, type `man [command]` in the CLI. The manual gives you a brief description of the command and any parameters that you can add to the command. You can scroll through the manual by pressing the down key. For example, `man ls` will bring up the manual page for `ls`. If you want a shortened version of the manual, you can type the command and add `--help | less` and use the down key to read line by line. Press `q` at any time to leave the manual.



```
micahmartinez@Minty1-VirtualBox: ~  
File Edit View Search Terminal Help  
micahmartinez@Minty1-VirtualBox:~$ man ls
```

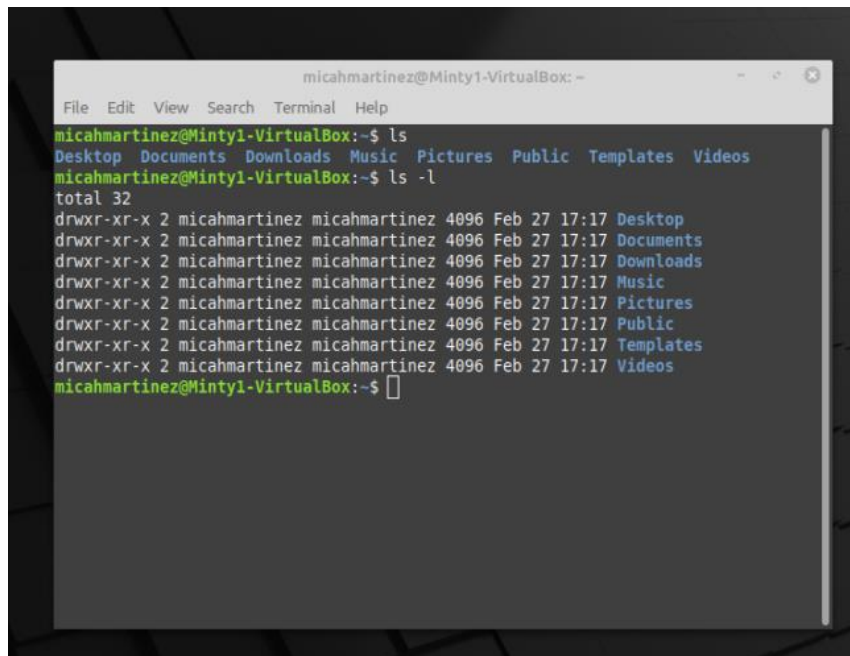
Figure 21: `man ls`



```
micahmartinez@Minty1-VirtualBox: ~  
File Edit View Search Terminal Help  
LS(1) User Commands LS(1)  
  
NAME  
    ls - list directory contents  
  
SYNOPSIS  
    ls [OPTION]... [FILE]...  
  
DESCRIPTION  
    List information about the FILES (the current directory by default).  
    Sort entries alphabetically if none of -cftuvSUX nor --sort is speci-  
    fied.  
  
    Mandatory arguments to long options are mandatory for short options  
    too.  
  
    -a, --all  
        do not ignore entries starting with .  
  
    -A, --almost-all  
        do not list implied . and ..  
  
    --author  
  
Manual page ls(1) line 1 (press h for help or q to quit)
```

Figure 22: `man ls` output

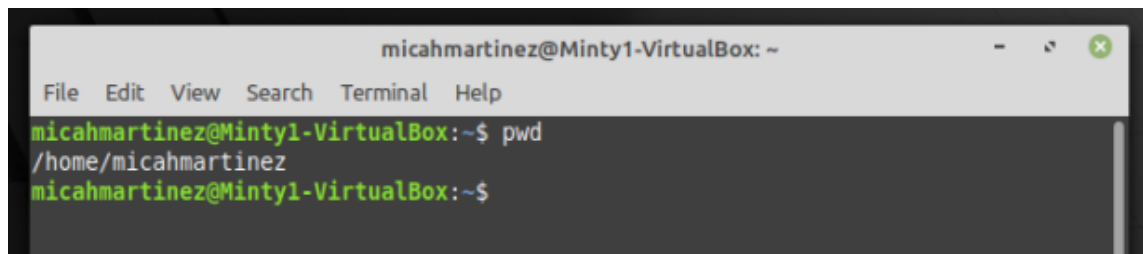
- To show a list of files in a directory, type `ls` in the command line. If you want to see their attributes, you can type `ls -l`.



```
micahmartinez@Minty1-VirtualBox: ~  
File Edit View Search Terminal Help  
micahmartinez@Minty1-VirtualBox:~$ ls  
Desktop Documents Downloads Music Pictures Public Templates Videos  
micahmartinez@Minty1-VirtualBox:~$ ls -l  
total 32  
drwxr-xr-x 2 micahmartinez micahmartinez 4096 Feb 27 17:17 Desktop  
drwxr-xr-x 2 micahmartinez micahmartinez 4096 Feb 27 17:17 Documents  
drwxr-xr-x 2 micahmartinez micahmartinez 4096 Feb 27 17:17 Downloads  
drwxr-xr-x 2 micahmartinez micahmartinez 4096 Feb 27 17:17 Music  
drwxr-xr-x 2 micahmartinez micahmartinez 4096 Feb 27 17:17 Pictures  
drwxr-xr-x 2 micahmartinez micahmartinez 4096 Feb 27 17:17 Public  
drwxr-xr-x 2 micahmartinez micahmartinez 4096 Feb 27 17:17 Templates  
drwxr-xr-x 2 micahmartinez micahmartinez 4096 Feb 27 17:17 Videos  
micahmartinez@Minty1-VirtualBox:~$
```

Figure 23: `ls` and `ls -l` output

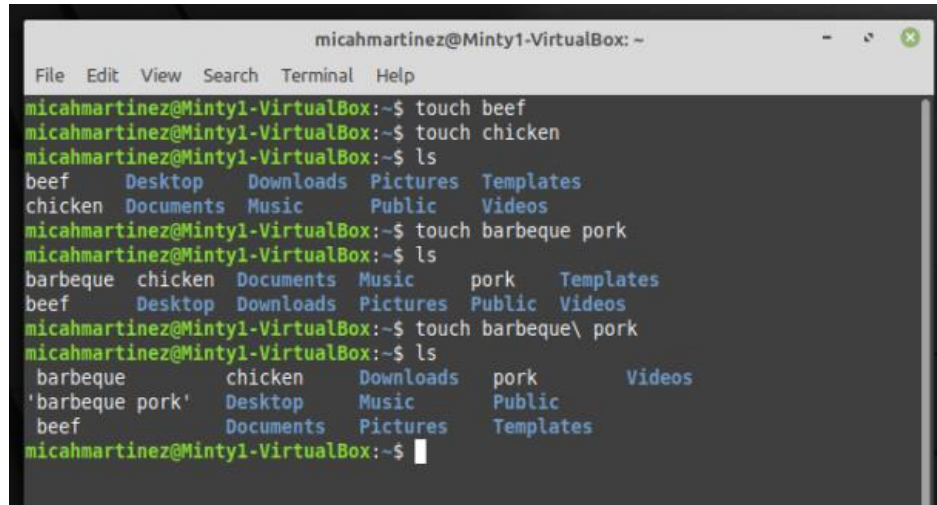
- Type `pwd` if you want to see the directory that you are in currently.



```
micahmartinez@Minty1-VirtualBox: ~  
File Edit View Search Terminal Help  
micahmartinez@Minty1-VirtualBox:~$ pwd  
/home/micahmartinez  
micahmartinez@Minty1-VirtualBox:~$
```

Figure 24: `pwd` output

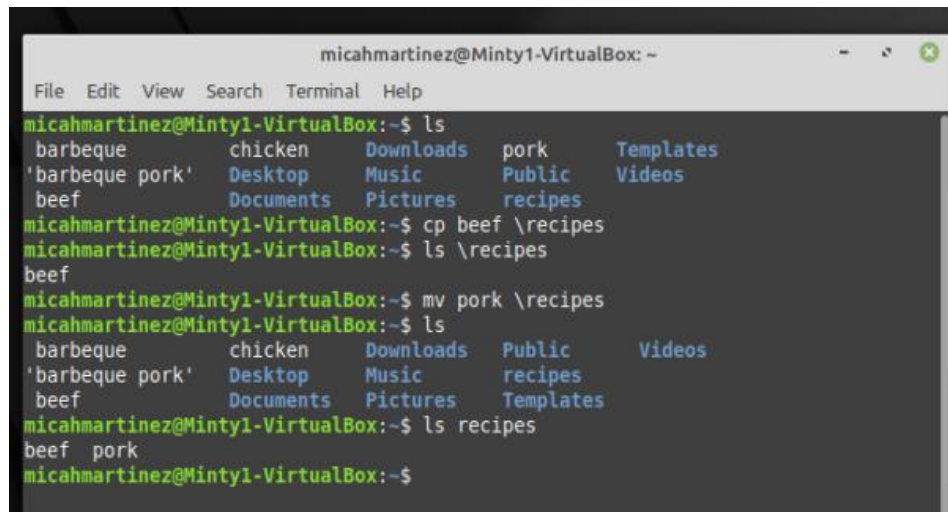
- To create a file, use the command `touch`. For example, `touch beef` and `touch chicken`. Two files will be made if you separate the words; `touch barbeque pork` will create a barbeque file and a file called beef. If you want a space in the name, you must include single quotes around the filename, `touch 'barbeque pork'`. Most special characters can be used in file names, but a few require special formatting [2].



```
micahmartinez@Minty1-VirtualBox: ~  
File Edit View Search Terminal Help  
micahmartinez@Minty1-VirtualBox:~$ touch beef  
micahmartinez@Minty1-VirtualBox:~$ touch chicken  
micahmartinez@Minty1-VirtualBox:~$ ls  
beef Desktop Downloads Pictures Templates  
chicken Documents Music Public Videos  
micahmartinez@Minty1-VirtualBox:~$ touch barbeque pork  
micahmartinez@Minty1-VirtualBox:~$ ls  
barbeque chicken Documents Music pork Templates  
beef Desktop Downloads Pictures Public Videos  
micahmartinez@Minty1-VirtualBox:~$ touch 'barbeque pork'  
micahmartinez@Minty1-VirtualBox:~$ ls  
barbeque chicken Downloads pork Videos  
'barbeque pork' Desktop Music Public  
beef Documents Pictures Templates  
micahmartinez@Minty1-VirtualBox:~$
```

Figure 25: File Creation

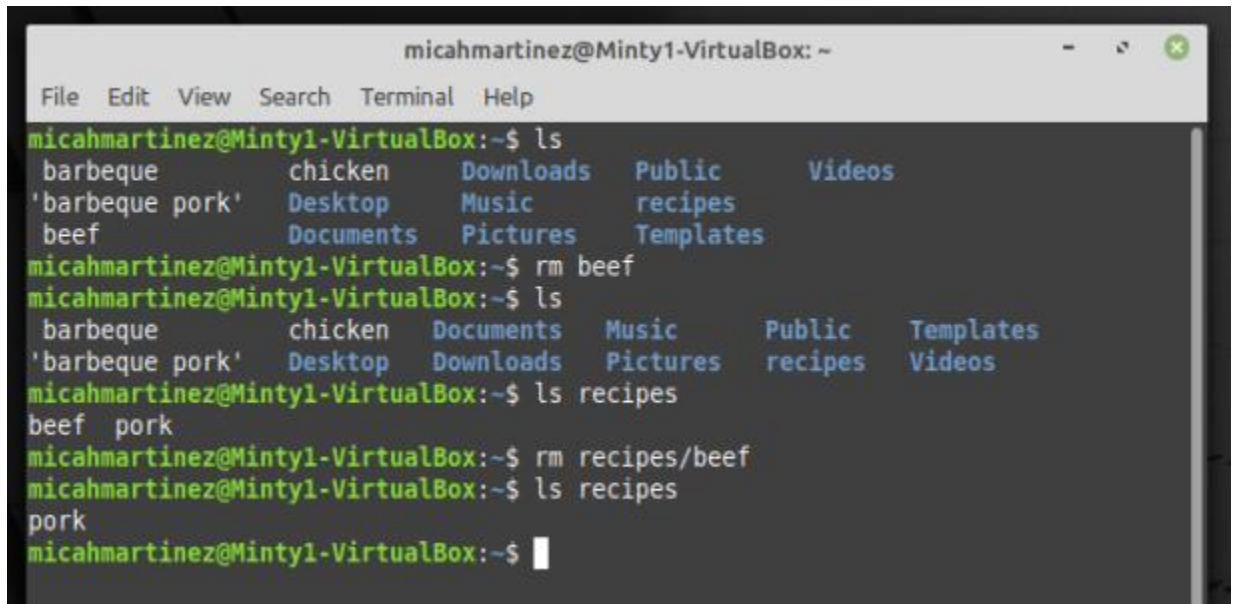
- To copy a file using the CLI, enter `cp [filepath] [destination]`. Moving the file uses the same format, but the command is `mv` instead of `cp`. For example, `cp beef \recipes` will copy the beef file to the recipes directory, and `mv pork \recipes` will move the file to the recipes directory.



```
micahmartinez@Minty1-VirtualBox: ~  
File Edit View Search Terminal Help  
micahmartinez@Minty1-VirtualBox:~$ ls  
barbeque chicken Downloads pork Templates  
'barbeque pork' Desktop Music Public Videos  
beef Documents Pictures recipes  
micahmartinez@Minty1-VirtualBox:~$ cp beef \recipes  
micahmartinez@Minty1-VirtualBox:~$ ls \recipes  
beef  
micahmartinez@Minty1-VirtualBox:~$ mv pork \recipes  
micahmartinez@Minty1-VirtualBox:~$ ls  
barbeque chicken Downloads Public Videos  
'barbeque pork' Desktop Music recipes  
beef Documents Pictures Templates  
micahmartinez@Minty1-VirtualBox:~$ ls recipes  
beef pork  
micahmartinez@Minty1-VirtualBox:~$
```

Figure 26: Copy and move files

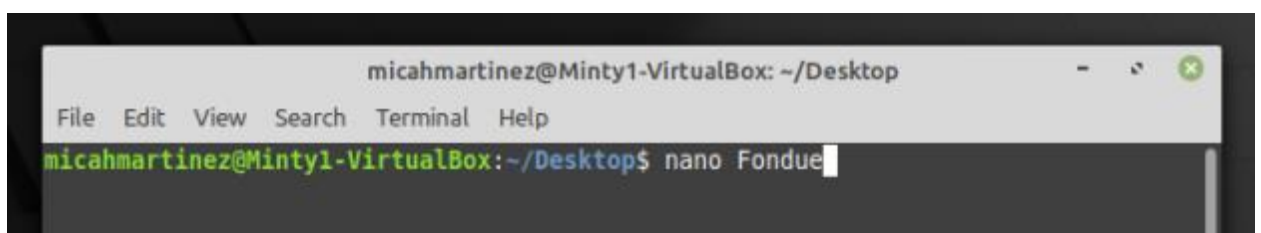
- If you want to remove a file, the command is `rm [filepath]`. If you want to remove multiple files, separate the file names with a space. For example, `rm beef` removes the beef file from your current directory, and `rm recipes/beef` removes the beef file from the recipe directory.



```
micahmartinez@Minty1-VirtualBox: ~  
File Edit View Search Terminal Help  
micahmartinez@Minty1-VirtualBox:~$ ls  
barbeque      chicken      Downloads    Public        Videos  
'barbeque pork' Desktop      Music        recipes  
beef          Documents    Pictures      Templates  
micahmartinez@Minty1-VirtualBox:~$ rm beef  
micahmartinez@Minty1-VirtualBox:~$ ls  
barbeque      chicken      Documents    Music        Public        Templates  
'barbeque pork' Desktop      Downloads    Pictures      recipes      Videos  
micahmartinez@Minty1-VirtualBox:~$ ls recipes  
beef pork  
micahmartinez@Minty1-VirtualBox:~$ rm recipes/beef  
micahmartinez@Minty1-VirtualBox:~$ ls recipes  
pork  
micahmartinez@Minty1-VirtualBox:~$
```

Figure 27: File deletion

- Making a text file is simple. Type `nano [filename]` to open the nano editor. Type in the text. When you want to exit, press `CTRL + X`, then press `y`, then `ENTER` to save and exit or `n` then `ENTER` to exit without saving. To display the contents of the text file, type `cat [filename]`. `nano Fondue` creates a text file named Fondue. The current directory is "Desktop," so the text file will show up on the desktop. Using `cat [filename]` will display the contents of a text file in the command line



```
micahmartinez@Minty1-VirtualBox: ~/Desktop  
File Edit View Search Terminal Help  
micahmartinez@Minty1-VirtualBox:~/Desktop$ nano Fondue
```

Figure 28: nano command

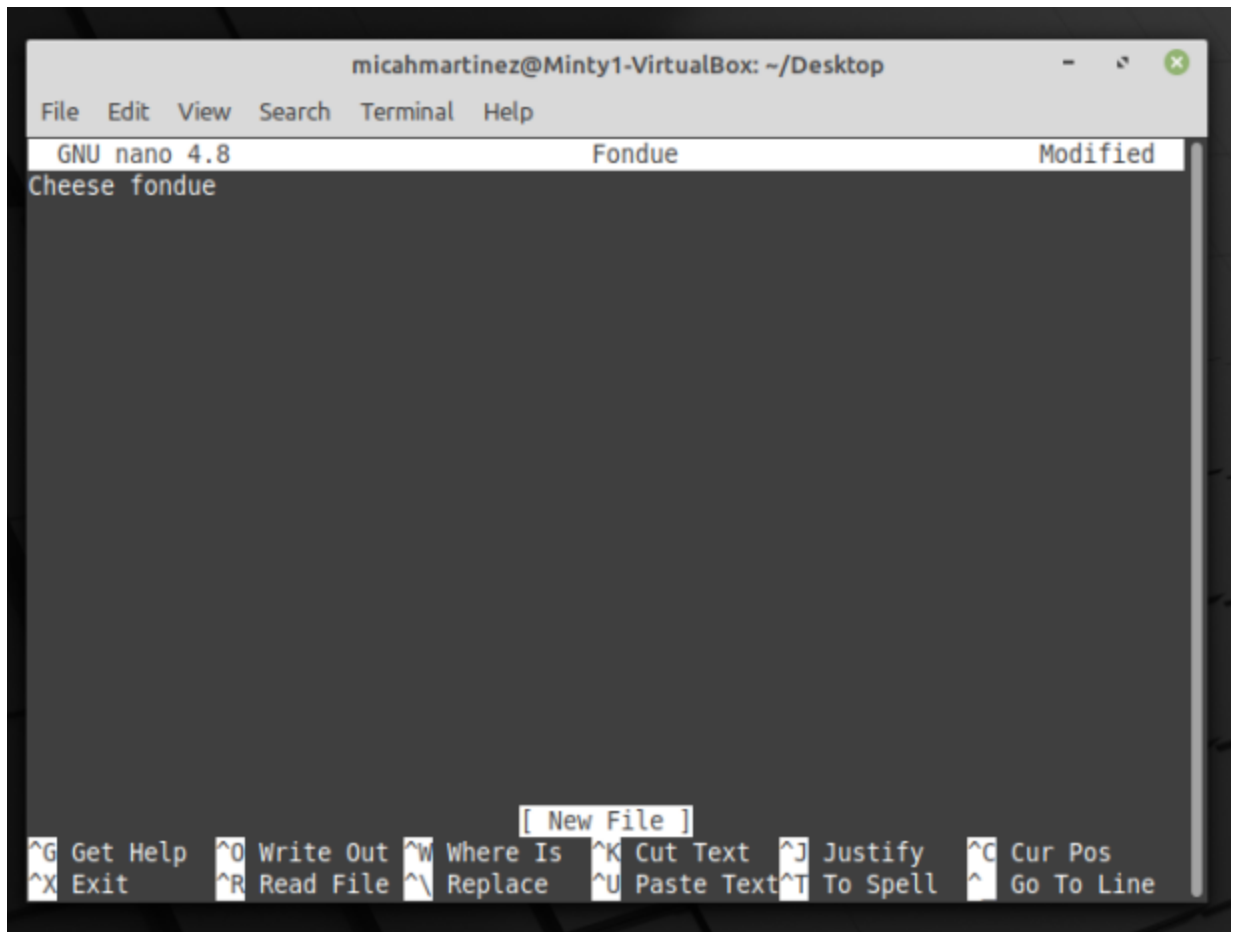


Figure 29: nano output and text editor

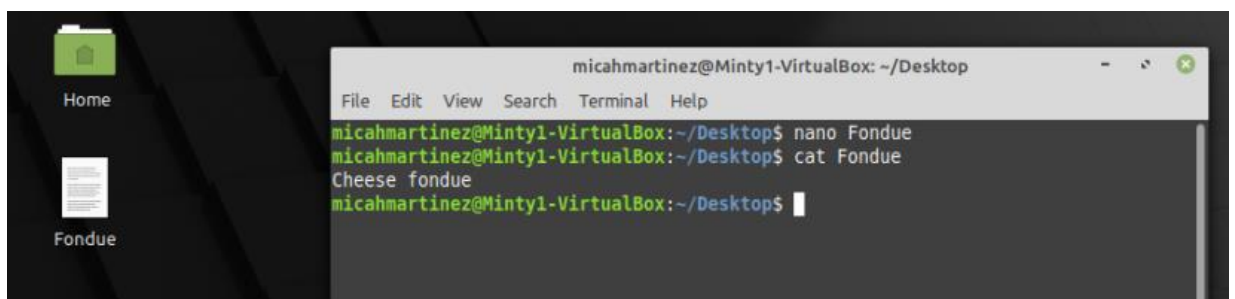
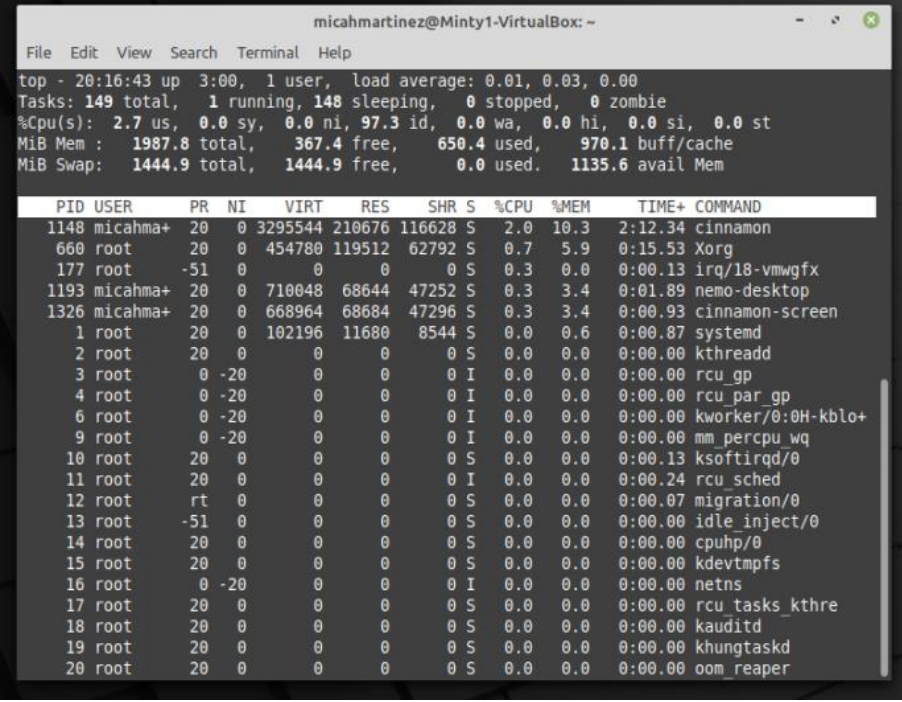


Figure 30: cat command output for the file "Fondue," text file on the desktop

## Linux Installation and Training Guide

- To see all processes, type `top`. To find a specific process, type `pgrep [process name]` or `pidof [process name]`. `pidof` finds all processes associated with Firefox, while `pgrep` will find the main process [3]. For example, `pgrep firefox` and `pidof firefox`.



```
micahmartinez@Minty1-VirtualBox: ~
File Edit View Search Terminal Help
top - 20:16:43 up 3:00, 1 user, load average: 0.01, 0.03, 0.00
Tasks: 149 total, 1 running, 148 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.7 us, 0.0 sy, 0.0 ni, 97.3 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 1987.8 total, 367.4 free, 650.4 used, 970.1 buff/cache
MiB Swap: 1444.9 total, 1444.9 free, 0.0 used. 1135.6 avail Mem

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
 1148 micahma+  20   0 3295544 210676 116628 S   2.0   10.3   2:12.34 cinnamon
   660 root      20   0 454780 119512 62792 S   0.7    5.9   0:15.53 Xorg
   177 root     -51   0      0      0      0 S   0.3    0.0   0:00.13 irq/18-vmwgfx
  1193 micahma+  20   0 710048 68644 47252 S   0.3    3.4   0:01.89 nemo-desktop
  1326 micahma+  20   0 668964 68684 47296 S   0.3    3.4   0:00.93 cinnamon-screen
     1 root      20   0 102196 11680 8544 S   0.0    0.6   0:00.87 systemd
     2 root      20   0      0      0      0 S   0.0    0.0   0:00.00 kthreadd
     3 root      0 -20   0      0      0 I   0.0    0.0   0:00.00 rcu_gp
     4 root      0 -20   0      0      0 I   0.0    0.0   0:00.00 rcu_par_gp
     6 root      0 -20   0      0      0 I   0.0    0.0   0:00.00 kworker/0:0H-kblo+
     9 root      0 -20   0      0      0 I   0.0    0.0   0:00.00 mm_percpu_wq
    10 root      20   0      0      0      0 S   0.0    0.0   0:00.13 ksoftirqd/0
    11 root      20   0      0      0      0 I   0.0    0.0   0:00.24 rcu_sched
    12 root      rt    0      0      0      0 S   0.0    0.0   0:00.07 migration/0
    13 root     -51   0      0      0      0 S   0.0    0.0   0:00.00 idle_inject/0
    14 root      20   0      0      0      0 S   0.0    0.0   0:00.00 cpuhp/0
    15 root      20   0      0      0      0 S   0.0    0.0   0:00.00 kdevtmpfs
    16 root      0 -20   0      0      0 I   0.0    0.0   0:00.00 netns
    17 root      20   0      0      0      0 S   0.0    0.0   0:00.00 rcu_tasks_kthre
    18 root      20   0      0      0      0 S   0.0    0.0   0:00.00 kauditd
    19 root      20   0      0      0      0 S   0.0    0.0   0:00.00 khungtaskd
    20 root      20   0      0      0      0 S   0.0    0.0   0:00.00 oom_reaper
```

Figure 31: top output

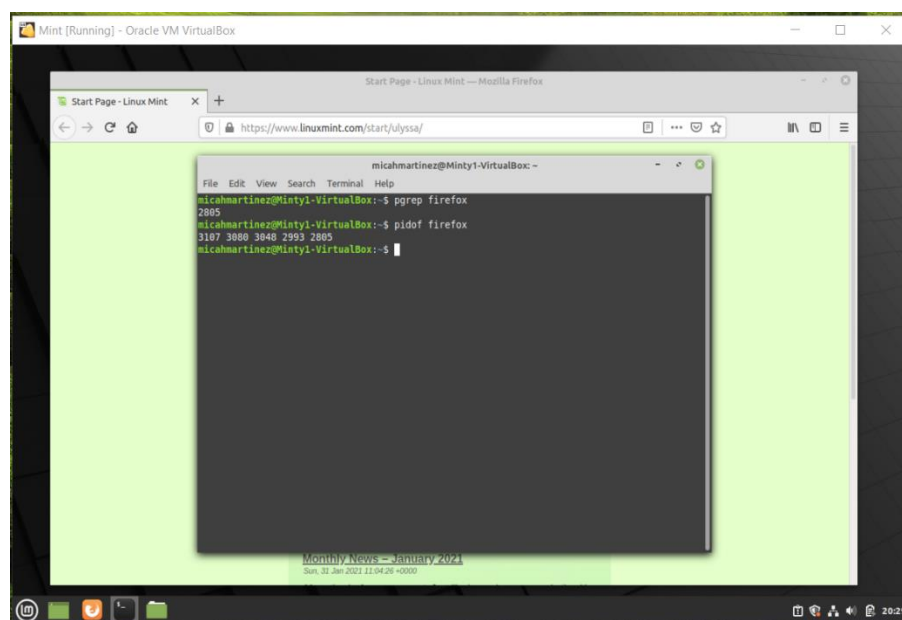
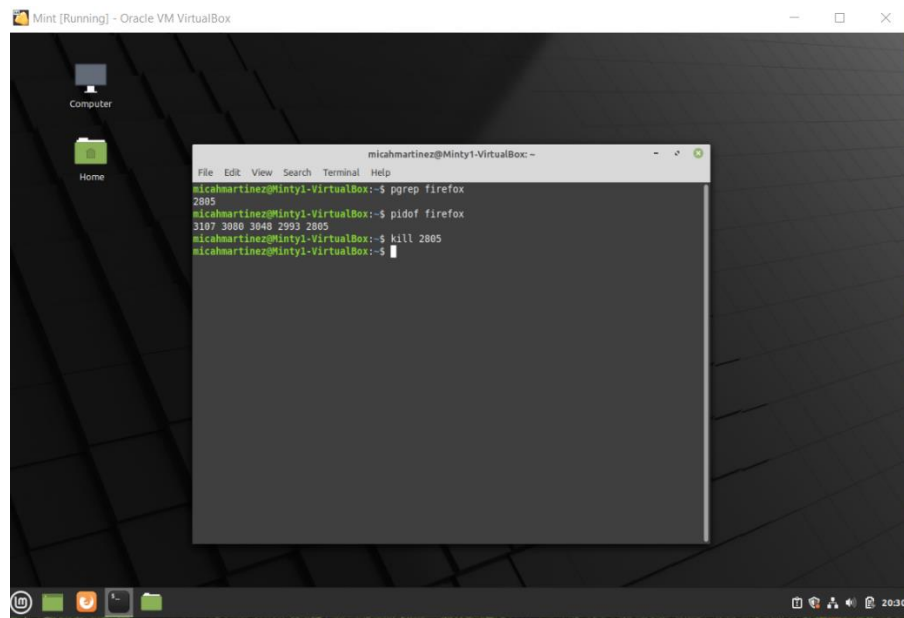


Figure 32: pgrep firefox and pidof firefox output with firefox in the background



## Linux Installation and Training Guide

- To forcibly stop a process type `kill [process name]` In the picture below, we forcibly stop Firefox.

A screenshot of a Linux desktop environment within an Oracle VM VirtualBox window. The desktop has a dark background with a grid pattern. There are icons for 'Computer' and 'Home' on the left. A terminal window is open in the center, titled 'micahmartinez@Minty1-VirtualBox: ~'. The terminal shows the following commands and output:

```
micahmartinez@Minty1-VirtualBox:~$ pgrep firefox
2805
micahmartinez@Minty1-VirtualBox:~$ pidof firefox
3107 3080 3048 2993 2805
micahmartinez@Minty1-VirtualBox:~$ kill 2805
micahmartinez@Minty1-VirtualBox:~$
```

The terminal window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The desktop has a taskbar at the bottom with icons for a terminal, a file manager, and a web browser. The system clock in the bottom right corner shows '20:30'.

*Figure 33: kill command to close Firefox forcibly*

## Linux Installation and Training Guide

- I know there were concerns about automatic updates. To enable automatic updates click on the Start Menu > Administration > Update Manager > Edit > Preferences > Automation.

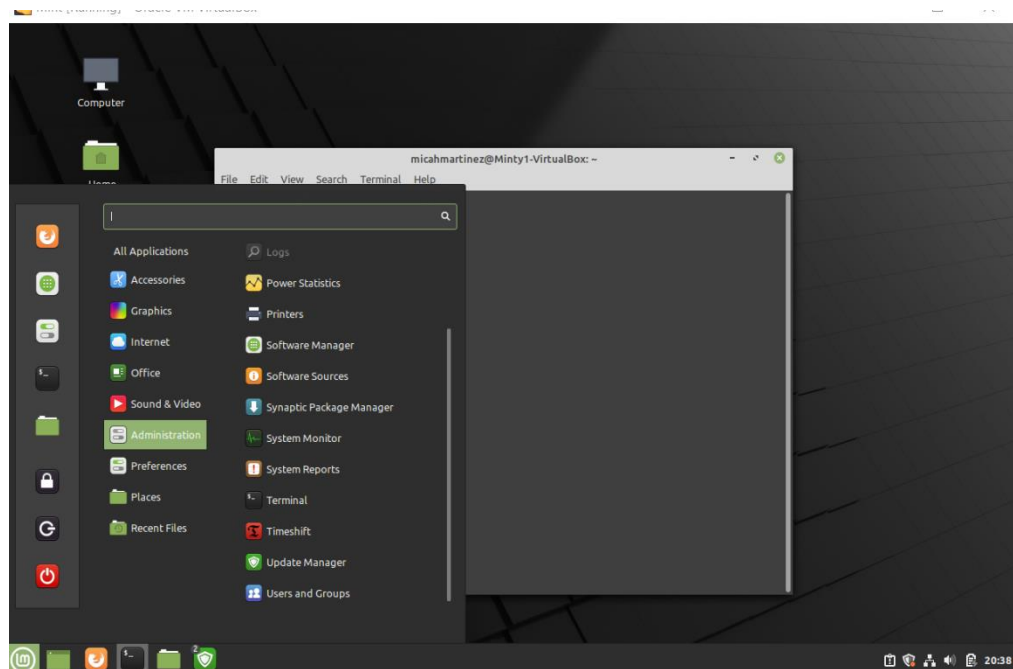


Figure 34: Start menu

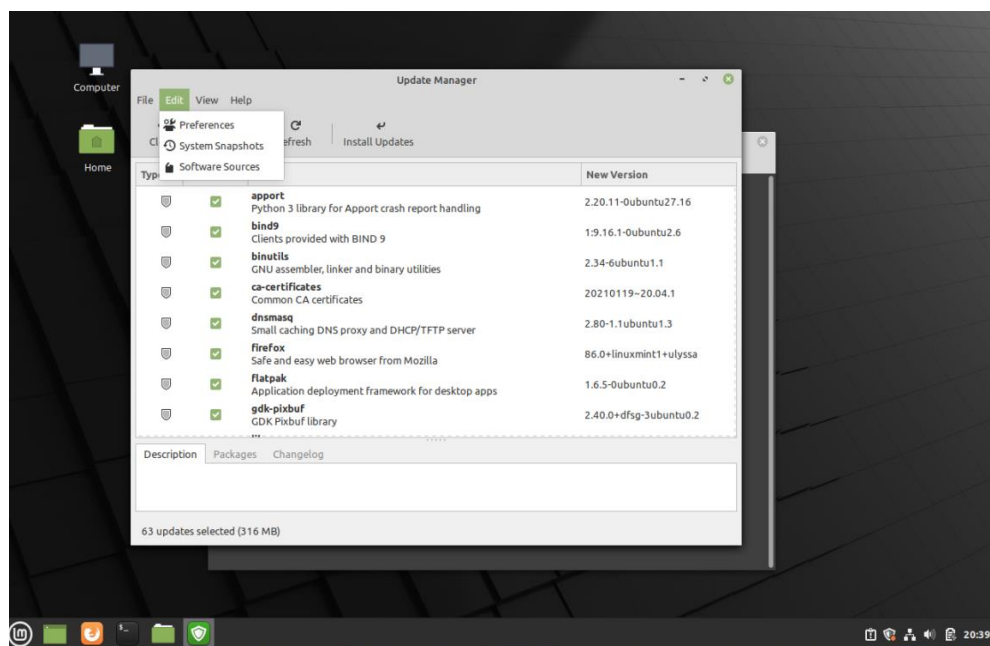


Figure 35: Update Manager

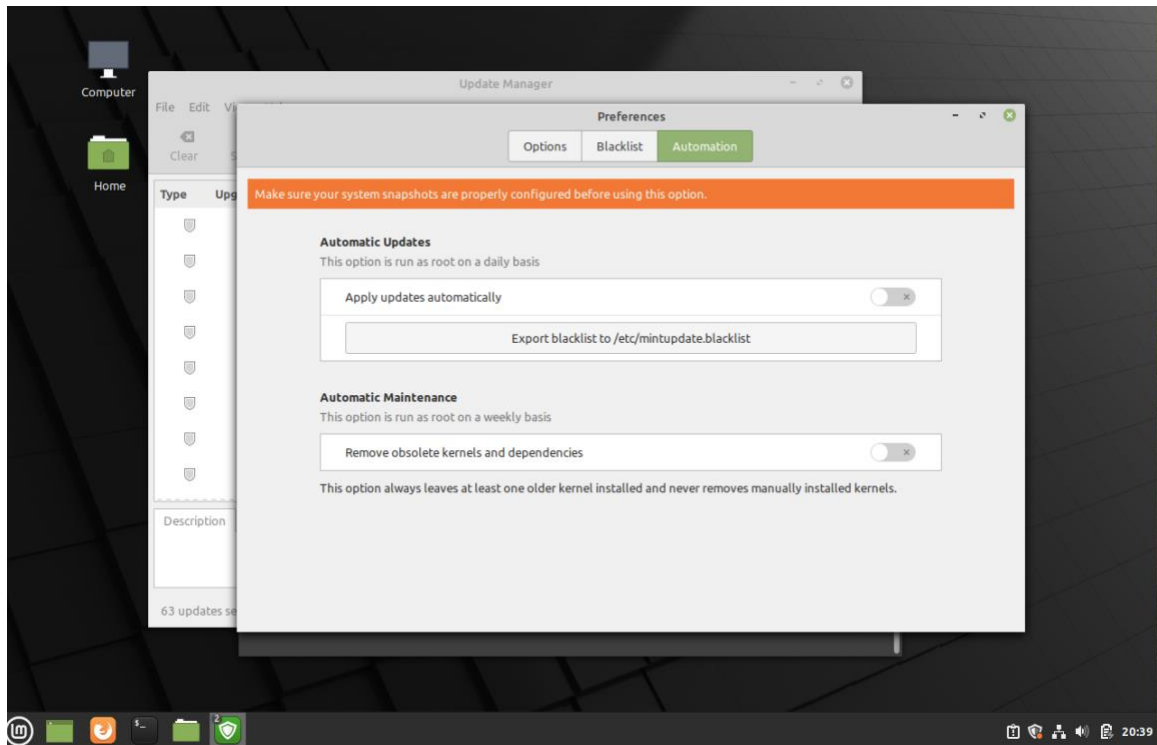
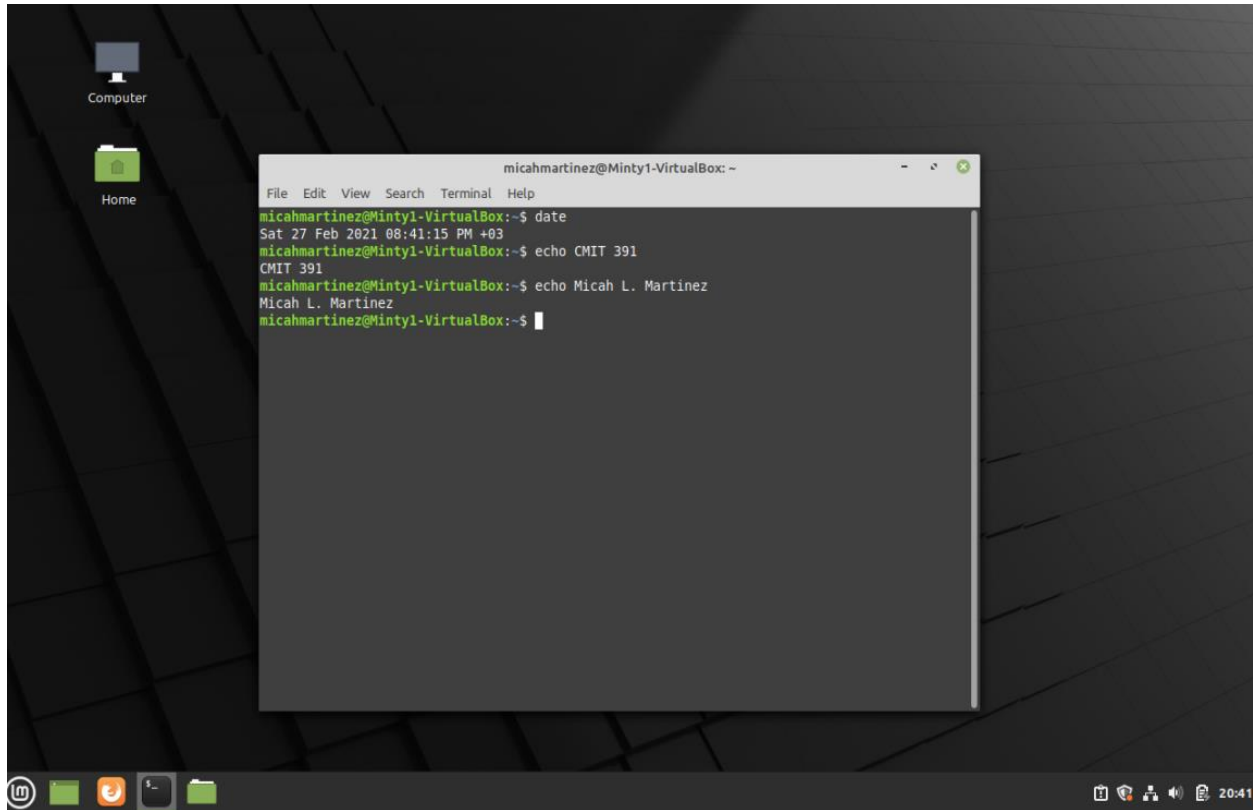


Figure 36: Automatic update manager

## Part 3



*Figure 37: Final Screenshot*

## Conclusion

As you can see, virtualization is a powerful tool. Virtualization allows for troubleshooting and training on multiple operating systems with a single computer without the worry of causing irreparable damage to the system. Allowing you to keep business running while your employees get used to Linux before the migration. Once again, thank you for choosing Go2Linux, and please feel free to contact Go2Linux for any of your Linux needs.

# References

- [1] S. Simic, "Linux Commands Cheat Sheet: With Examples," phoenixNAP, 21 February 2020. [Online]. Available: <https://phoenixnap.com/kb/linux-commands-cheat-sheet#htoc-process-related>. [Accessed 27 February 2021].
- [2] TecMint, "How to Manipulate Filenames Having Spaces and Special Characters in Linux," TecMint, 27 January 2017. [Online]. Available: <https://www.tecmint.com/manage-linux-filenames-with-special-characters/>. [Accessed 27 February 2021].
- [3] V. Gite, "Linux find process by name," NixCraft, 8 January 2018. [Online]. Available: <https://www.cyberciti.biz/faq/linux-find-process-name/>. [Accessed 27 February 2021].