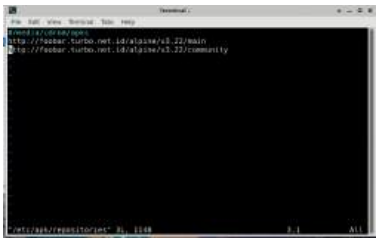
Alpine Tutorial

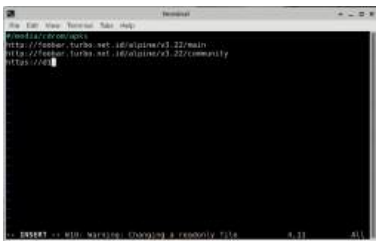
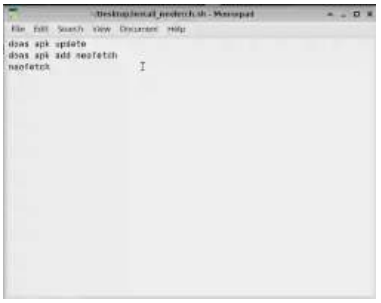
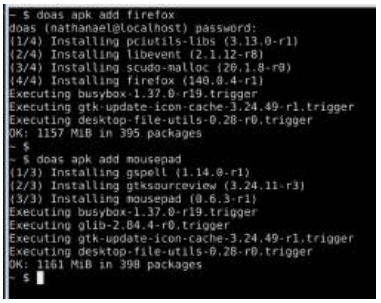
How to Alpine Maxxing with just VirtualBox, unfortunately…

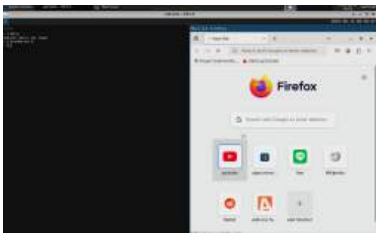
This document is made for Parallel and Distributed Systems Lab Selection purposes from ITB, with love <3

Made by:
Nathanael Rachmat

Summary of Completed Specifications and Proof

Mandatory/Bonus	Specification	Proof
Mandatory	Graphical user interface	
	Kapabilitas audio-visual (grafis serta audio)	 Bukti bersuara: Bukti Audio (No audio recorded when screen recording)
	Kemampuan untuk terhubung ke internet	
	Kemampuan manajemen paket (package management)	 
	Sebuah user unprivileged yang digunakan untuk login dan melakukan mayoritas kegiatan	

		 *sedang mengubah readonly file yang tidak readonly ketika diakses oleh root atau superuser
	Graphical text editor (misal VSCode, Sublime, dan semacamnya)	 *Menggunakan mousepad
	Graphical web browser (misal Chrome, Firefox, dan semacamnya)	 *Firefox
	Wallpaper berupa gambar karakter fiksi/tokoh bersejarah/artis/idola favorit Anda	 
Bonus	Memasang graphical text editor dan web browser yang bersifat open-source	 ~ $ doas apk add firefox doas (nathanael@localhost) password: (1/4) Installing pciutils-libs (3.13.0-r1) (2/4) Installing libevent (2.1.12-r8) (3/4) Installing scudo-malloc (20.1.8-r0) (4/4) Installing firefox (140.0.4-r1) Executing busybox-1.37.0-r19.trigger Executing gtk-update-icon-cache-3.24.49-r1.trigger Executing desktop-file-utils-0.28-r0.trigger OK: 1157 MiB in 395 packages ~ $ ~ $ doas apk add mousepad (1/3) Installing gspell (1.14.0-r1) (2/3) Installing gtksourceview (3.24.11-r3) (3/3) Installing mousepad (0.6.3-r1) Executing busybox-1.37.0-r19.trigger Executing glib-2.84.4-r0.trigger Executing gtk-update-icon-cache-3.24.49-r1.trigger Executing desktop-file-utils-0.28-r0.trigger OK: 1161 MiB in 398 packages ~ $

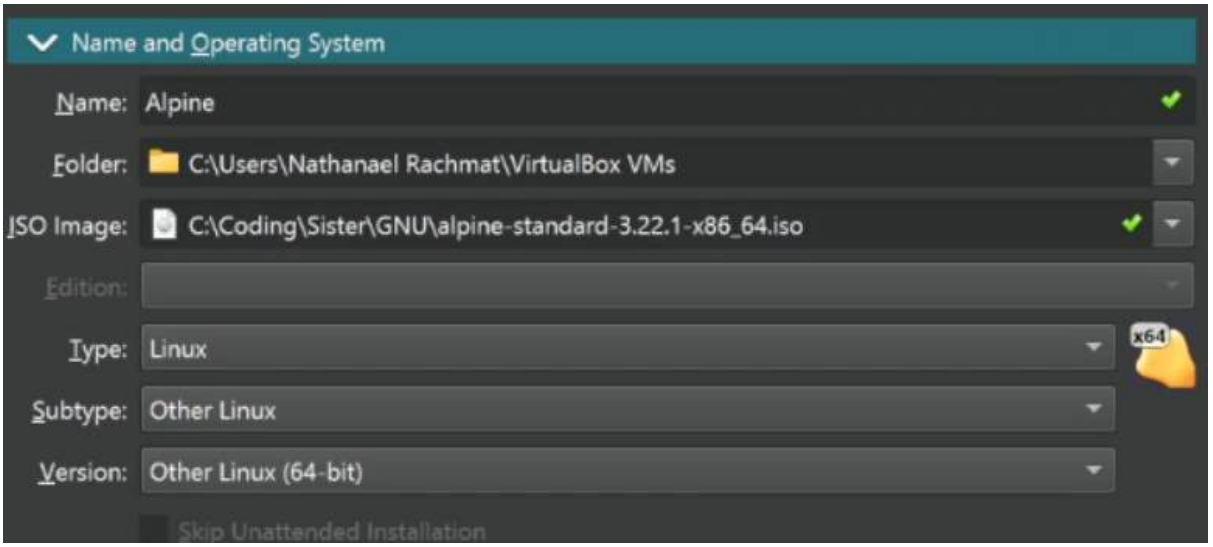
	Melakukan kustomisasi tampilan terhadap bootloader	
	Menginstal wine untuk menjalankan program Windows, lalu menginstal dan menjalankan LINE for PC di atasnya	
	Menggunakan Sway (tiling window manager berbasis Wayland) yang dijalankan di atas lingkungan desktop XFCE4.	
	Menonton anime dari command line	  *Menggunakan ani-cli
	Menginstal dan memainkan Doom di terminal	 *Menggunakan doom-ascii dan freedoom

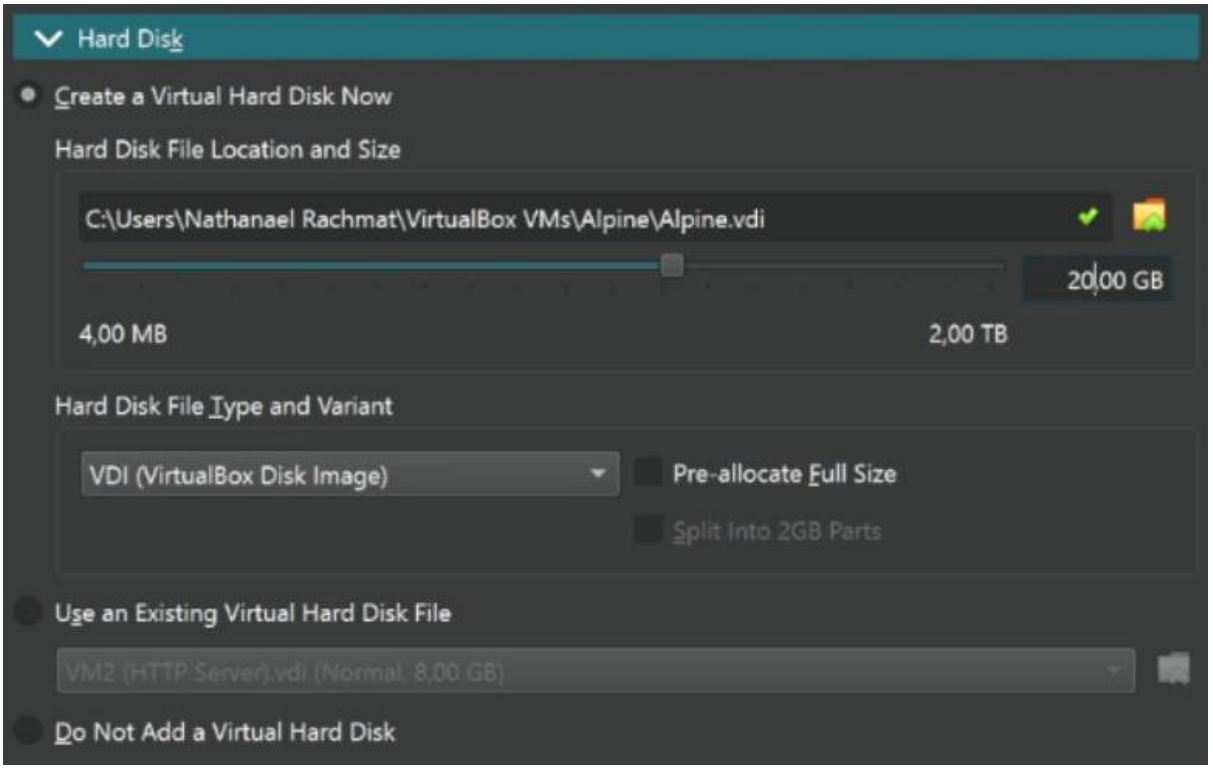
Tutorial video link: [How to Alpine on VirtualBox]

Part 0. VirtualBox Configuration

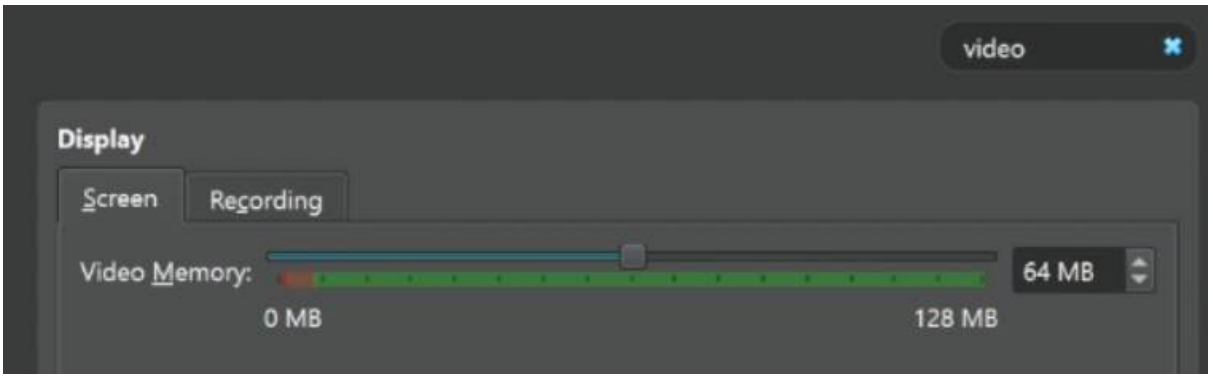
Download alpine's iso image from this link [downloads | Alpine Linux](). Select the standard version and match your machine's spec.

Once you open virtual box, click the new button on the top and configure as the following:





Set the hard disk's size as preferred with at least 16 GB. Click the finish button, then open the settings of the newly made image and search for video



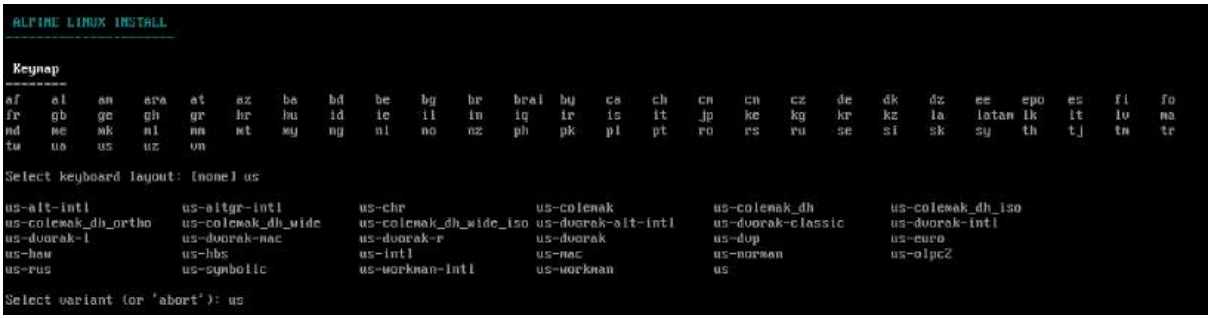
Set it to 64 MB. Now you're set to go and click the start button.

Part 1. Base System Installation and Configuration

```
Welcome to Alpine Linux 3.22
Kernel 6.12.38-0-lts on x86_64 (/dev/tty1)

localhost login: root
Welcome to Alpine!

The Alpine Wiki contains a large amount of how-to guides and general
information about administrating Alpine systems.
See <https://wiki.alpinelinux.org/>.

You can setup the system with the command: setup-alpine

You may change this message by editing /etc/motd.

localhost:~# setup-alpine
```

When first booting, you can log in as root (no password) and type setup-alpine

1.1 Keymap configuration



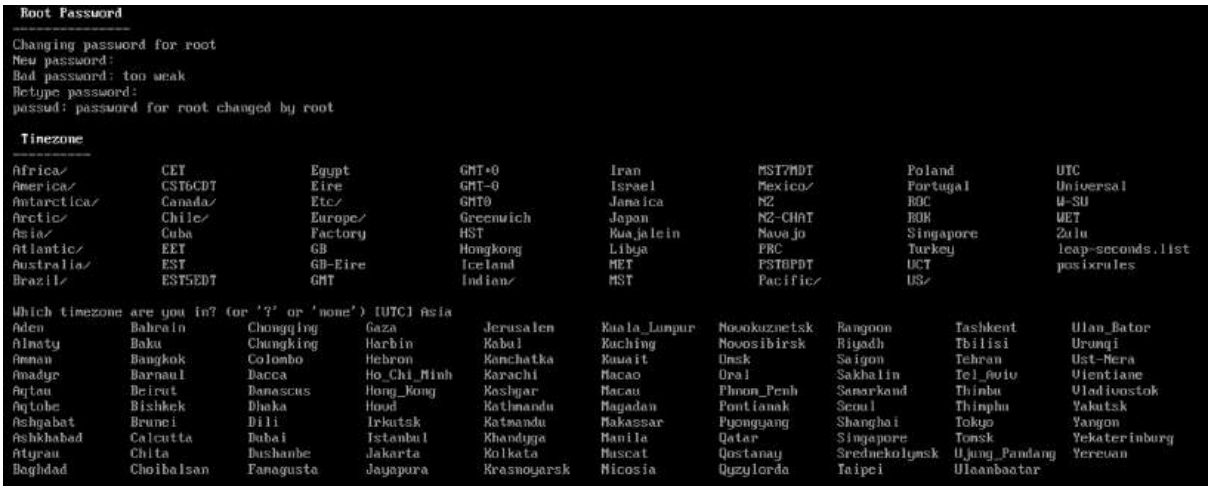
Select the keyboard layout as preference. If you are familiar with English, I recommend typing us twice as it is asking for a variant for the second input.

1.2 Hostname and Interface

```
 Hostname
----------
Enter system hostname (fully qualified form, e.g. 'foo.example.org') [localhost]

 Interface
-----------
Available interfaces are: eth0.
Enter '?' for help on bridges, bonding and vlans.
Which one do you want to initialize? (or '?' or 'done') [eth0]
Ip address for eth0? (or 'dhcp', 'none', '?') [dhcp]
Do you want to do any manual network configuration? (y/n) [n] n
udhcpc: started, v1.37.0
udhcpc: broadcasting discover
udhcpc: broadcasting select for 10.0.2.15, server 10.0.2.2
udhcpc: lease of 10.0.2.15 obtained from 10.0.2.2, lease time 86400
```

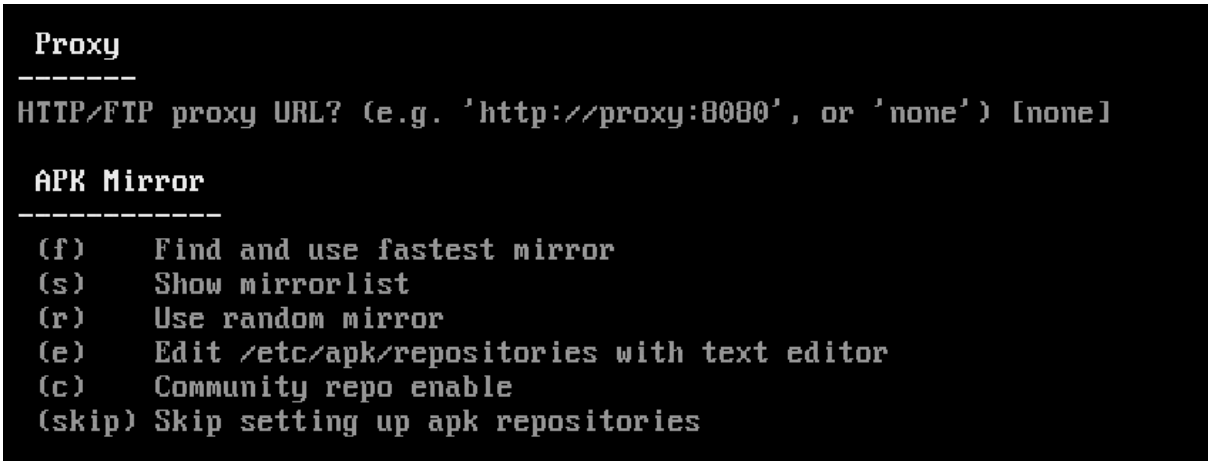
You could customize your hostname (the name of the user that has the privilege to manage the system) by typing the preferred name. For interface, usually use the default answer (in this case is [eth0]) and use dhcp to automatically set your ip address. After this set your root password as preferred.

1.3 Root password and Timezone



Enter root password as preferred and select your timezone.

1.4 Proxy and APK Mirror



Proxy is not needed so just enter with none as the default answer. APK Mirror is needed to manage your packages. Option (f) is recommended because it will automatically find the fastest responding mirror url, however it will take a while.

1.5 Creating a user (unpriviledged)

```
 User
------
Setup a user? (enter a lower-case loginname, or 'no') [no] nathanael
Full name for user nathanael [nathanael] rachmat
Changing password for nathanael
New password:
Bad password: too weak
Retype password:
passwd: password for nathanael changed by root
Enter ssh key or URL for nathanael (or 'none') [none]
(1/1) Installing doas (6.8.2-r8)
Executing busybox-1.37.0-r18.trigger
OK: 10 MiB in 29 packages
Which ssh server? ('openssh', 'dropbear' or 'none') [openssh] none
```

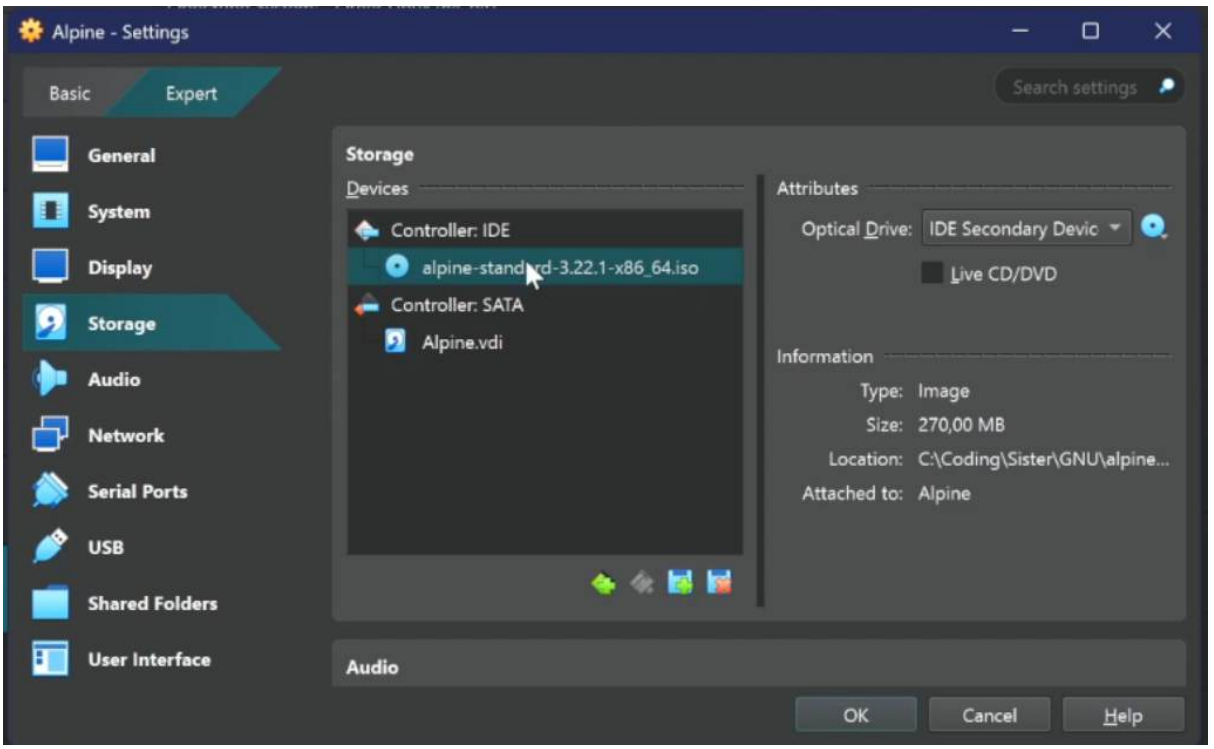
Setup your user by entering the login name and provide the user's password. Ssh key is not needed.

1.6 Disk and Install

```
Disk & Install
--------------
Available disks are:
  sda   (21.5 GB ATA      VBOX HARDDISK   )

Which disk(s) would you like to use? (or '?' for help or 'none') [none] sda

The following disk is selected:
  sda   (21.5 GB ATA      VBOX HARDDISK   )

How would you like to use it? ('sys', 'data', 'crypt', 'lvm' or '?' for help) [?] sys

WARNING: The following disk(s) will be erased:
  sda   (21.5 GB ATA      VBOX HARDDISK   )

WARNING: Erase the above disk(s) and continue? (y/n) [n] y
Creating file systems...
mkfs.fat 4.2 (2021-01-31)
Installing system on /dev/sda3:
Installing for x86_64-efi platform.
Installation finished. No error reported.
100%
=> initramfs: creating /boot/initramfs-lts for 6.12.41-0-lts
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-lts
Found initrd image: /boot/initramfs-lts
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

Installation is complete. Please reboot.
```

Enter the showed option (in the screen is sda) and use it as 'sys'. Then, enter y to allow the chosen disk to be erased. After this you're supposed to reboot but I recommend powering off your VM as VirtualBox have a weird bug

1.7 Last configuration on VirtualBox

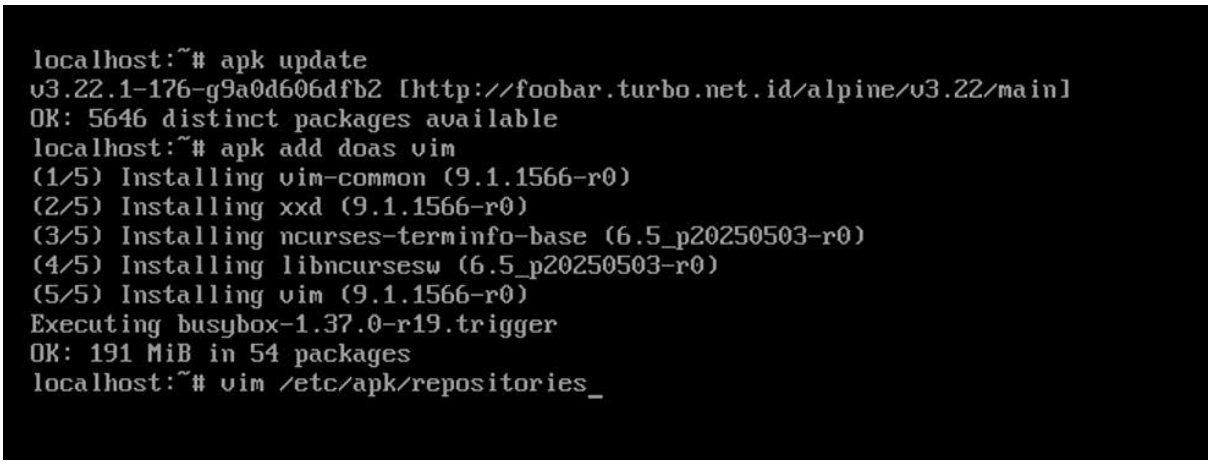


Open the settings, and search for storage on the sidebar. Select the .iso file in the controller IDE, and remove it’s attachment. Now, if you start your virtual machine, the system will use your newly configured alpine applied using setup-alpine.

Part 2. Desktop Environment Configuration

Once you start your virtual machine, you should see your hostname on the terminal. If you don't remember entering the same hostname, you might need to check the previous step. Log in as root and enter the password. Now if everything is going as intended, try typing "apk update". If you cannot connect to the internet, that means something went wrong. Once the apk update succeeded, enter "apk add doas vim". Doas is a command that allows a permitted user to run commands as another user, typically the superuser. Vim is a text editor that you can use to edit configuration files and other text documents directly from the terminal.

Then open /etc/apk/repositories using vim:



This will display the mirror URL selected during the previous configuration. Uncomment the community URL by removing the '#' at the beginning of the community line.

If you are using vim for the first time, when you first open the file you are in command mode. To change the file press 'i' on keyboard to enter the insert mode and navigate the part you want to edit using arrow keys. Press esc to go back to command mode and press ':x' to save and exit.

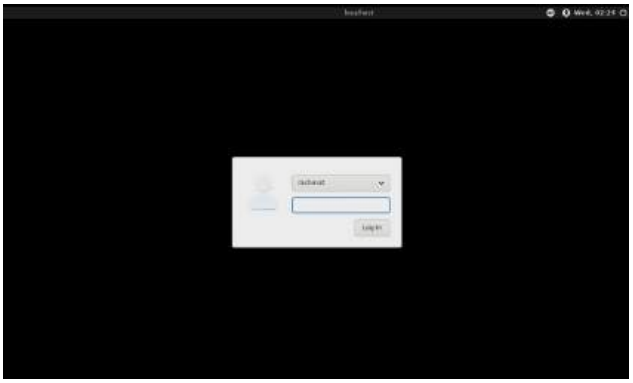
At the terminal run these commands in order

```
hostname:~# apk add xfce4 xfce4-terminal xfce4-screensaver
lightdm-gtk-greeter dbus adwaita-icon-theme elogind
polkit-elogind
hostname:~# setup-xorg-base
hostname:~# rc-update add dbus
hostname:~# rc-update add elogind
hostname:~# rc-update add lightdm
hostname:~# reboot
```

Part 3. Browser, Text Editor, Wallpaper

3.1 APK Add browser and text editor

If things went perfectly from the previous part, you should get this display on your screen.



Try logging in using your password and you should see this display

Open your terminal by selecting at the bottom bar or right click and selecting the terminal. Run this command:

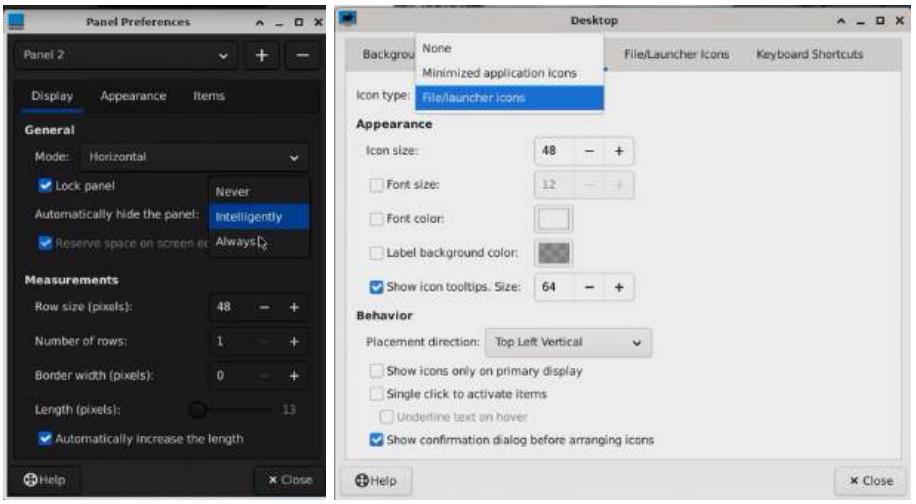
```
doas apk add firefox mousepad
```

This command will install a text editor called mousepad and firefox browser. You can try selecting the browser icon at the desktop to see if firefox browser works. To check if mousepad works you could select the search icon at the bottom bar and type mousepad. You should see the mousepad program and you could select it to open it.

3.2 Wallpaper configuration

This part is fairly easy, find the preferred background image on the browser and download it. Then navigate to the downloaded picture with the file manager, right click it, and select “set as wallpaper” option. Your wallpaper should change to your selected image.

If you want no icons to be seen as you are gracefully enjoying your wallpaper, you could right click at the desktop and select settings, desktop settings. Choose the Desktop Icons tab and choose “None” at the Icon type selection. Close the window and right click at the bottom bar and select Panel > Panel Preferences. Choose “Always” at the Automatically hide the panel selection (Default: “Intelligently”).



3.3 (Bonus) Bootloader configuration

Here we want to customize our booting screen by adding an image. Edit /etc/default/grub by using vim and add these lines below:

```
… (your existing configuration)
GRUB_BACKGROUND="/boot/grub/grub-bg.tga"
GRUB_TERMINAL_OUTPUT=gfxterm
GRUB_GFXMODE=1024x768
GRUB_GFXPAYLOAD_LINUX=keep
```

Download your preferred image, and then run these commands at the terminal in order:

```
cd ~/Downloads
doas apk add imagemagick
magick image.jpg -resize x600 -background "bg-color" -gravity
center -extent 1024x768 grub-bg.tga
doas cp grub-bg.tga /boot/grub/
```

```
doas grub-mkconfig -o /boot/grub/grub.cfg
doas reboot
```

Replace bg-color with the background color of your choice like “#1alala” and image.jpg with your preferred image existing in the download folder. After rebooting, your bootloader screen will look something like this:

I matched the color of the image with the background color so it looked seamless, you could do that too.

Part 4. Wine Line, And Sway from TTY

4.1 Wine line

Run this command on the terminal:

```
~ $ doas apk add wine
(1/7) Installing opencl (2024.05.08-r0)
(2/7) Installing libgphoto2 (2.5.32-r0)
Executing libgphoto2-2.5.32-r0.pre-install
(3/7) Installing libpcap (1.10.5-r1)
(4/7) Installing pcsc-lite-libs (2.3.3-r0)
(5/7) Installing sane (1.4.0-r2)
Executing sane-1.4.0-r2.pre-install
(6/7) Installing sane-udev (1.4.0-r2)
(7/7) Installing wine (10.7-r0)
Executing busybox-1.37.0-r19.trigger
Executing eudev-3.2.14-r5.trigger
Executing desktop-file-utils-0.28-r0.trigger
OK: 1755 MiB in 427 packages
~ $ wineboot --init
```

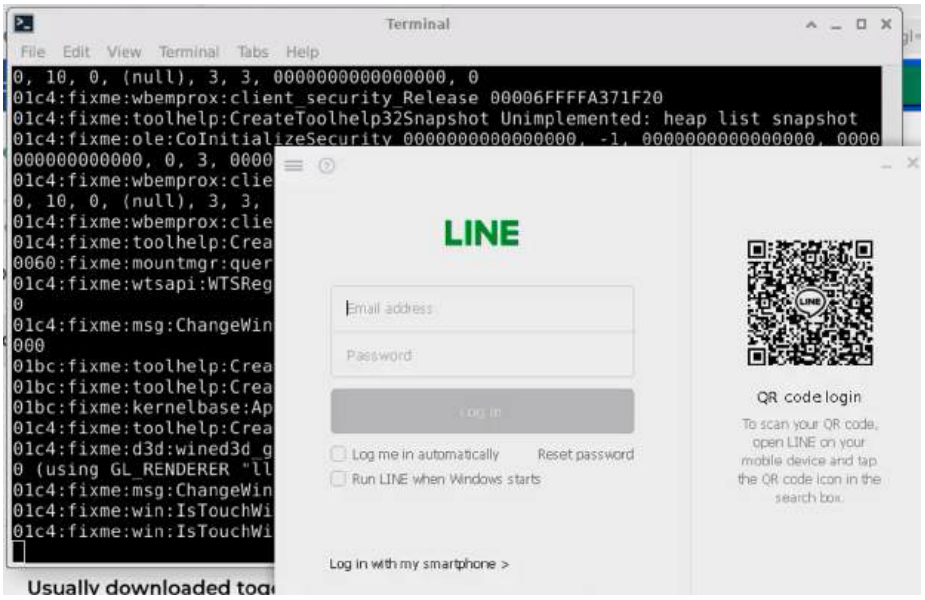
Make sure to not run wineboot as the root user.

Dont forget the wineboot –init. To check if wine is working properly, type “winecfg” and a window should pop up as the following:

Download line from: https://line.en.softonic.com/?ex=RAMP-3406.5&rex=true.
Rename the .exe file to line.exe for simplicity.

From the terminal, navigate to downloads and enter wine line.exe. Your line application is now working using wine!

```
~ $ cd ~/Downloads
~/Downloads $ wine
Usage: wine PROGRAM [ARGUMENTS...]   Run the specified program
       wine --help                   Display this help and exit
       wine --version                Output version information and exit
~/Downloads $ wine line.exe
```



4.2 Sway TTY

All you needed to do is Install Sway and needed packages such as:

```
doas apk add sway swaybg swaylock swayidle foot
```

And type sway in the terminal. The display should appear like the picture below.


Places
Devices
SWAY

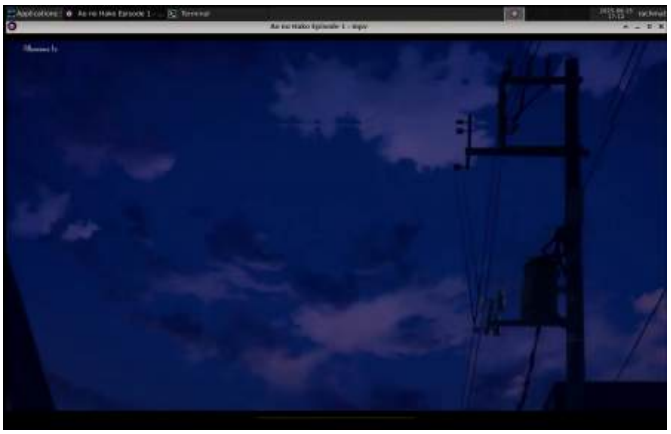
Part 5. Entertainment

5.1 Watch anime from CLI

Run the commands below:

```
doas apk add bash curl jq fzf mpv git ncurses ca-certificates
git clone https://github.com/pystardust/ani-cli ~/ani-cli
doas install -Dm755 ~/ani-cli/ani-cli /usr/local/bin/ani-cli
ani-cli
```

What it does is install the dependencies first. Then clone the ani-cli repository which is public to the VM. Add the command keyword to the Virtual machine and then we can run it. If you are having trouble with playing the video, make sure you downloaded the mpv dependency. Even if you have, try adding it again “doas apk add mpv”.



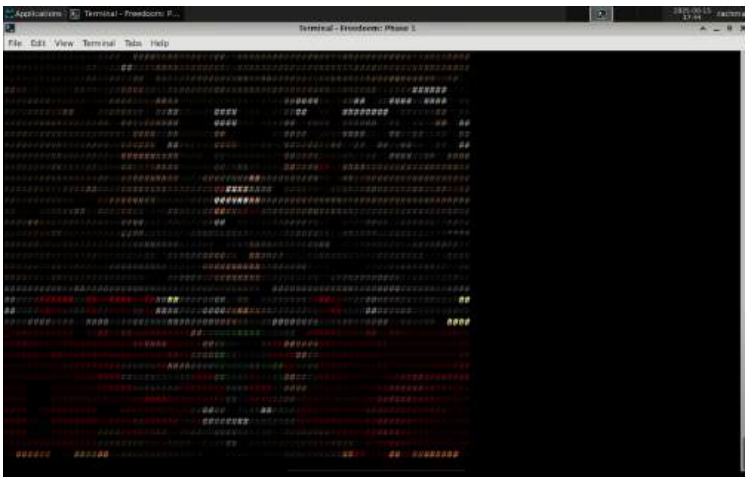
5.2 DOOM ASCII

```
doas apk add build-base
git clone https://github.com/wojciech-graj/doom-ascii
~/doom-ascii
cd ~/doom-ascii
make
doas apk add freedoom
```

Then, locate freedoom1.wad’s location by using the command “apk info -L freedoom” and remember it the next command.

```
cd ~/doom-ascii/_unix/game
./doom-ascii -iwad /usr/share/games/doom/freedoom1.wad -chars
ascii -scaling 8 -nograd
```

Note that /usr/share/games/doom/freedoom1.wad was my location for freedoom1.wad, so adjust the command as needed. The scaling also can be adjusted based on your resolution, with higher numbers representing a smaller resolution of ascii.


Terminal - Freedoom: Phase 1
File Edit View Terminal Tabs Help