

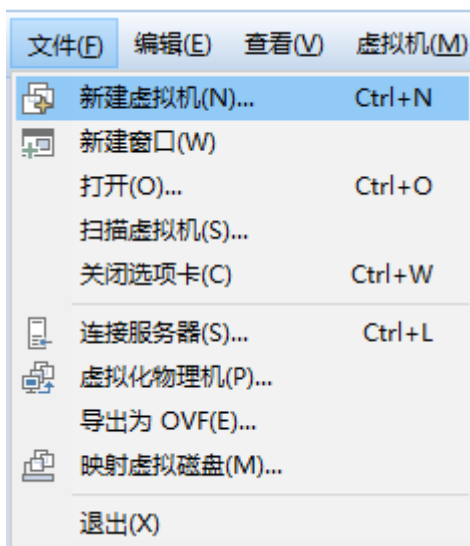
Homework 2

Name	ID	Class
Qing Liu	6130116184	Class 164 in Computer Science and Technology

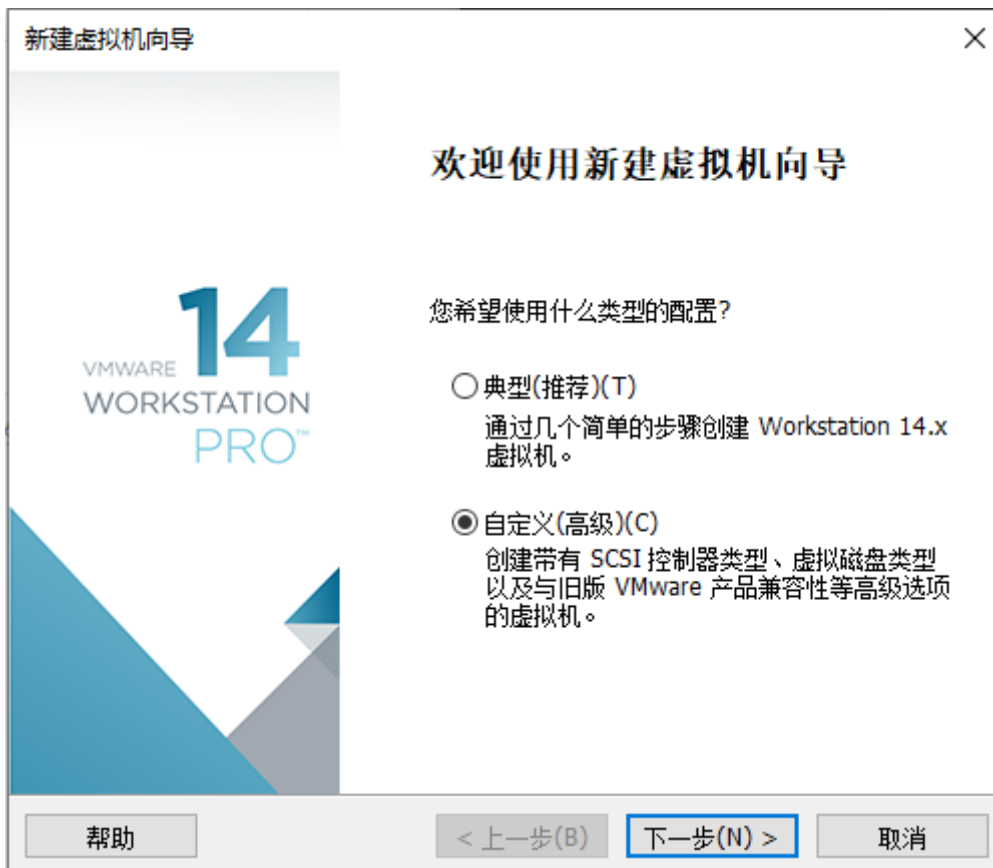
Install Linux/KVM in a VMware

I installed the [Ubuntu 18.04LTS](#) on VMware 14 PRO

1. Create a New Virtual Machine



2. Select "Custom(advanced)" and click Next



3. Click next until you reach the page "Guest Operating System Installation"



新建虚拟机向导

×

安装客户机操作系统

虚拟机如同物理机，需要操作系统。您将如何安装客户机操作系统？

安装来源：

☐ 安装程序光盘(D):

无可用驱动器

☐ 安装程序光盘映像文件(iso)(M):

E:\Download\ubuntu-18.04.2-desktop-amd64.iso

浏览(R)...

☒ 稍后安装操作系统(S)。

创建的虚拟机将包含一个空白硬盘。

帮助

< 上一步(B)

下一步(N) >

取消

4. Download the iso image for Ubuntu 18.04 LTS

Ubuntu 18.04.2 LTS

Download the latest LTS version of Ubuntu, for desktop PCs and laptops. LTS stands for long-term support — which means five years, until April 2023, of free security and maintenance updates, guaranteed.
[Ubuntu 18.04 LTS release notes](#)

Recommended system requirements:

☒ 2 GHz dual core processor or better

☒ 2 GB system memory

☒ 25 GB of free hard drive space

☒ Either a DVD drive or a USB port for the installer media

☒ Internet access is helpful

Download

For other versions of Ubuntu Desktop including torrents, the network installer, a list of local mirrors, and past releases [see our alternative downloads](#).

5. Continue to setup your VM spec.

新建虚拟机向导

选择客户机操作系统

此虚拟机中将安装哪种操作系统?

客户机操作系统

☐ Microsoft Windows(W)

☒ Linux(L)

☐ Novell NetWare(E)

☐ Solaris(S)

☐ VMware ESX(X)

☐ 其他(O)

版本(V)

Ubuntu 64 位

帮助

< 上一步(B)

下一步(N) >

取消

新建虚拟机向导

命名虚拟机

您希望该虚拟机使用什么名称?

虚拟机名称(V):

Ubuntu 64 位

位置(L):

G:\Ubuntu 18.04 LTS

浏览(R)...

在“编辑”>“首选项”中可更改默认位置。

< 上一步(B)

下一步(N) >

取消

At least 4 VCPU

新建虚拟机向导

处理器配置

为此虚拟机指定处理器数量。

处理器

处理器数量(P):

2

每个处理器的内核数量(C):

2

处理器内核总数:

4

帮助

< 上一步(B)

下一步(N) >

取消

At least 2GB RAM

新建虚拟机向导

此虚拟机的内存

您要为此虚拟机使用多少内存？

指定分配给此虚拟机的内存量。内存大小必须为 4 MB 的倍数。

64 GB -

32 GB -

16 GB -

8 GB -

4 GB -

2 GB -

1 GB -

512 MB -

256 MB -

128 MB -

64 MB -

32 MB -

16 MB -

8 MB -

4 MB -

此虚拟机的内存(M):

2048

MB

最大推荐内存:

13.3 GB

推荐内存:

1 GB

客户机操作系统最低推荐内存:

512 MB

帮助

< 上一步(B)

下一步(N) >

取消

file:///F:/Blogs/Homework/homework2.html

5/35

新建虚拟机向导

网络类型

要添加哪类网络?

网络连接

☐ 使用桥接网络(R)
为客户机操作系统提供直接访问外部以太网网络的权限。客户机在外部网络上必须有自己的 IP 地址。

☒ 使用网络地址转换(NAT)(E)
为客户机操作系统提供使用主机 IP 地址访问主机拨号连接或外部以太网网络连接的权限。

☐ 使用仅主机模式网络(H)
将客户机操作系统连接到主机上的专用虚拟网络。

☐ 不使用网络连接(T)

帮助

< 上一步(B)

下一步(N) >

取消

新建虚拟机向导

选择 I/O 控制器类型

您要使用何种类型的 SCSI 控制器?

I/O 控制器类型

SCSI 控制器:

☐ BusLogic(U) (不适用于 64 位客户机)

☒ LSI Logic(L) (推荐)

☐ LSI Logic SAS(S)

帮助

< 上一步(B)

下一步(N) >

取消

新建虚拟机向导

选择磁盘类型

您要创建何种磁盘?

虚拟磁盘类型

☐ IDE(I)

☒ SCSI(S) (推荐)

☐ SATA(A)

☐ NVMe(V)

帮助

< 上一步(B)

下一步(N) >

取消

新建虚拟机向导

选择磁盘

您要使用哪个磁盘?

磁盘

☒ 创建新虚拟磁盘(V)

虚拟磁盘由主机文件系统上的一个或多个文件组成，客户机操作系统会将其视为单个硬盘。虚拟磁盘可在一台主机上或多台主机之间轻松复制或移动。

☐ 使用现有虚拟磁盘(E)

选择此选项可重新使用以前配置的磁盘。

☐ 使用物理磁盘 (适用于高级用户)(P)

选择此选项可为虚拟机提供直接访问本地硬盘的权限。需要具有管理员特权。

帮助

< 上一步(B)

下一步(N) >

取消

At least 50GB virtual disk

新建虚拟机向导

指定磁盘容量
磁盘大小为多少?

最大磁盘大小 (GB)(S):

针对 Ubuntu 64 位 的建议大小: 20 GB

☐ 立即分配所有磁盘空间(A)。
分配所有容量可以提高性能，但要求所有物理磁盘空间立即可用。如果不立即分配所有空间，虚拟磁盘的空间最初很小，会随着您向其中添加数据而不断变大。

☐ 将虚拟磁盘存储为单个文件(O)

☒ 将虚拟磁盘拆分成多个文件(M)
拆分磁盘后，可以更轻松地在计算机之间移动虚拟机，但可能会降低大容量磁盘的性能。

帮助

< 上一步(B)

下一步(N) >

取消

新建虚拟机向导

指定磁盘文件
您要在何处存储磁盘文件?

磁盘文件(F)
将使用多个磁盘文件创建一个 50 GB 虚拟磁盘。将根据此文件名自动命名这些磁盘文件。

浏览(R)...

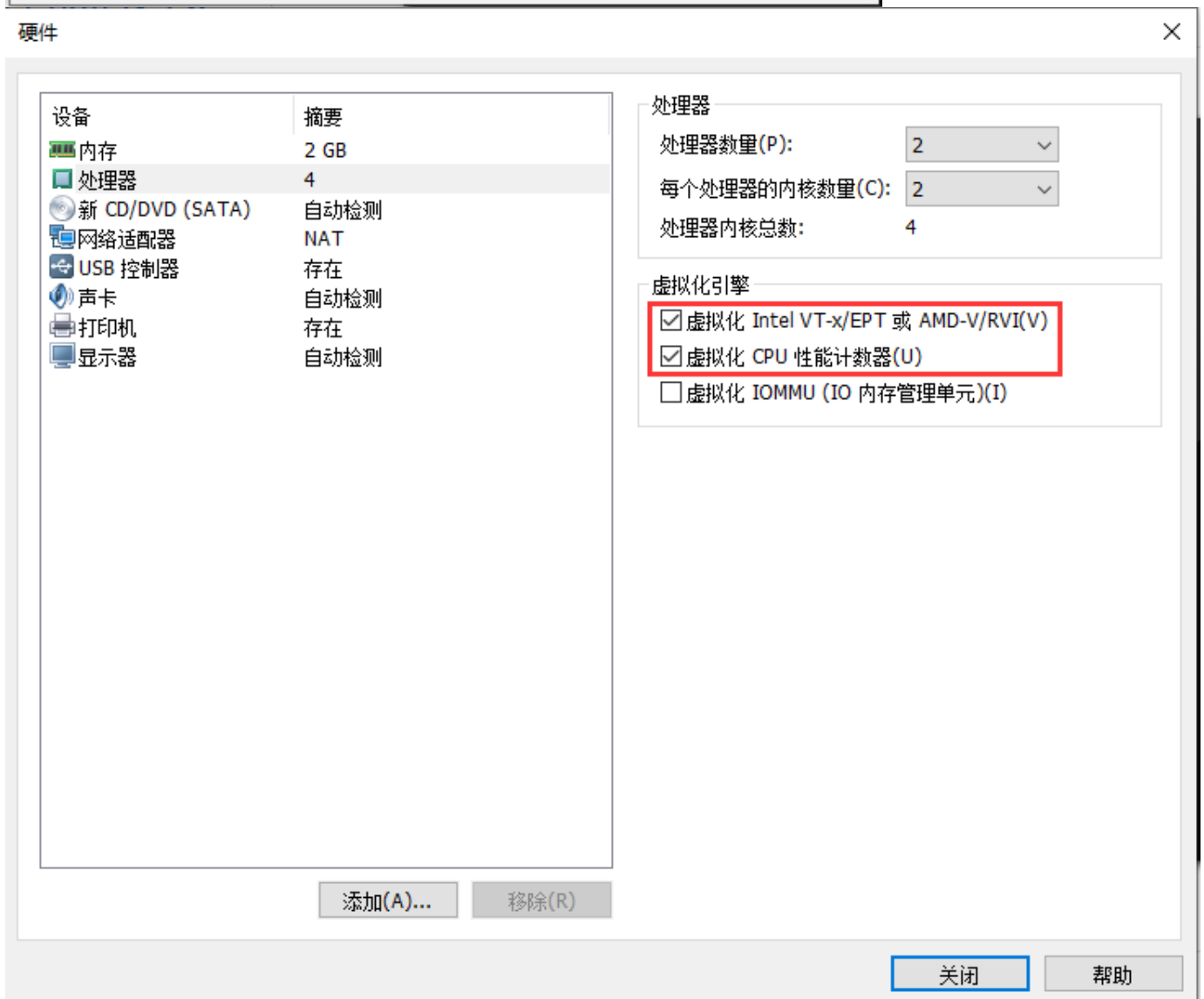
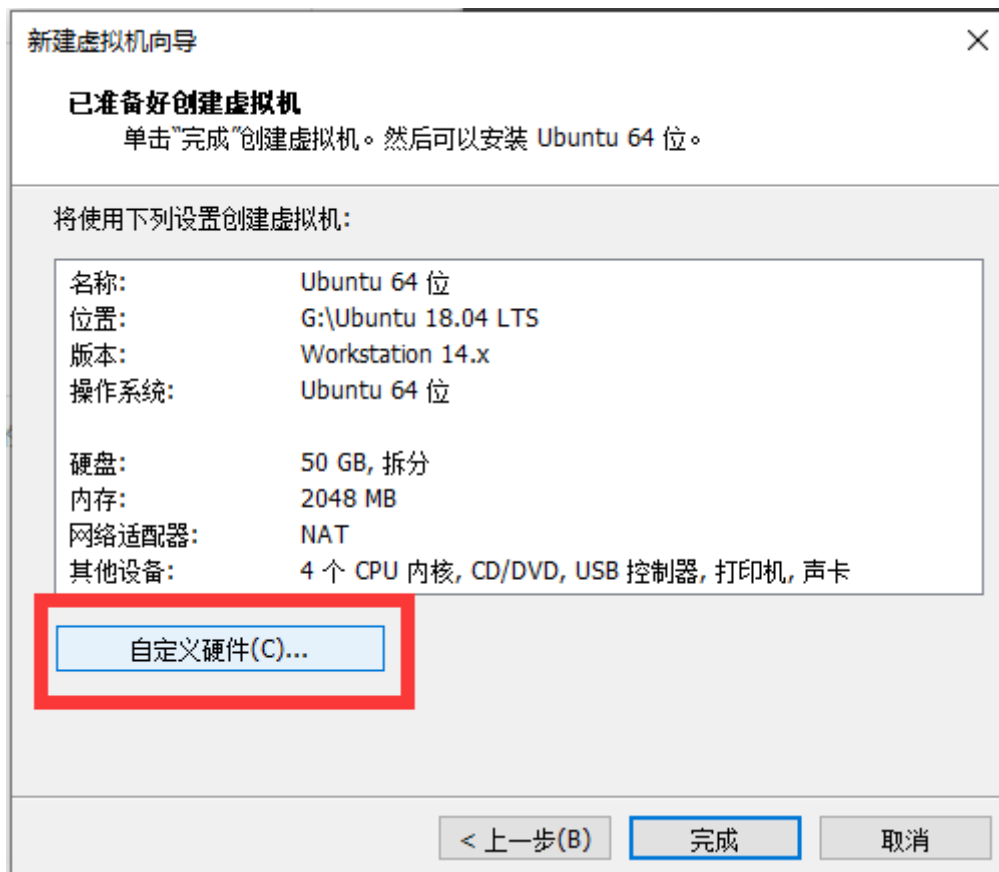
帮助

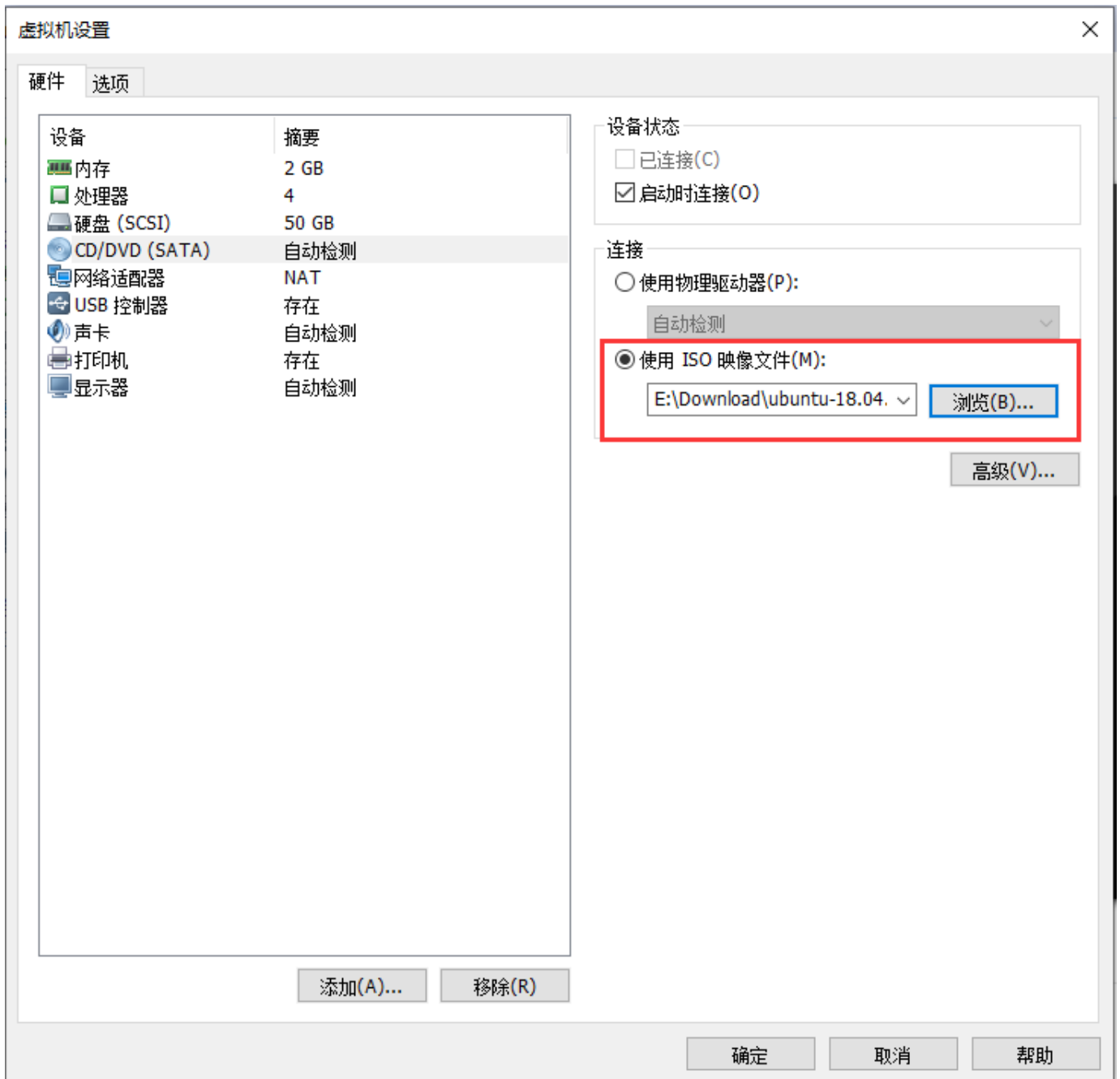
< 上一步(B)

下一步(N) >

取消

6. Then expose the hardware virtualization feature to the KVM running in the VM. On VMware Workstation, go to Processors of your VM configuration, then select both "Virtualize Intel VT-x/EPT and AMD-V/RVI" and "Virtualize CPU performance counters".

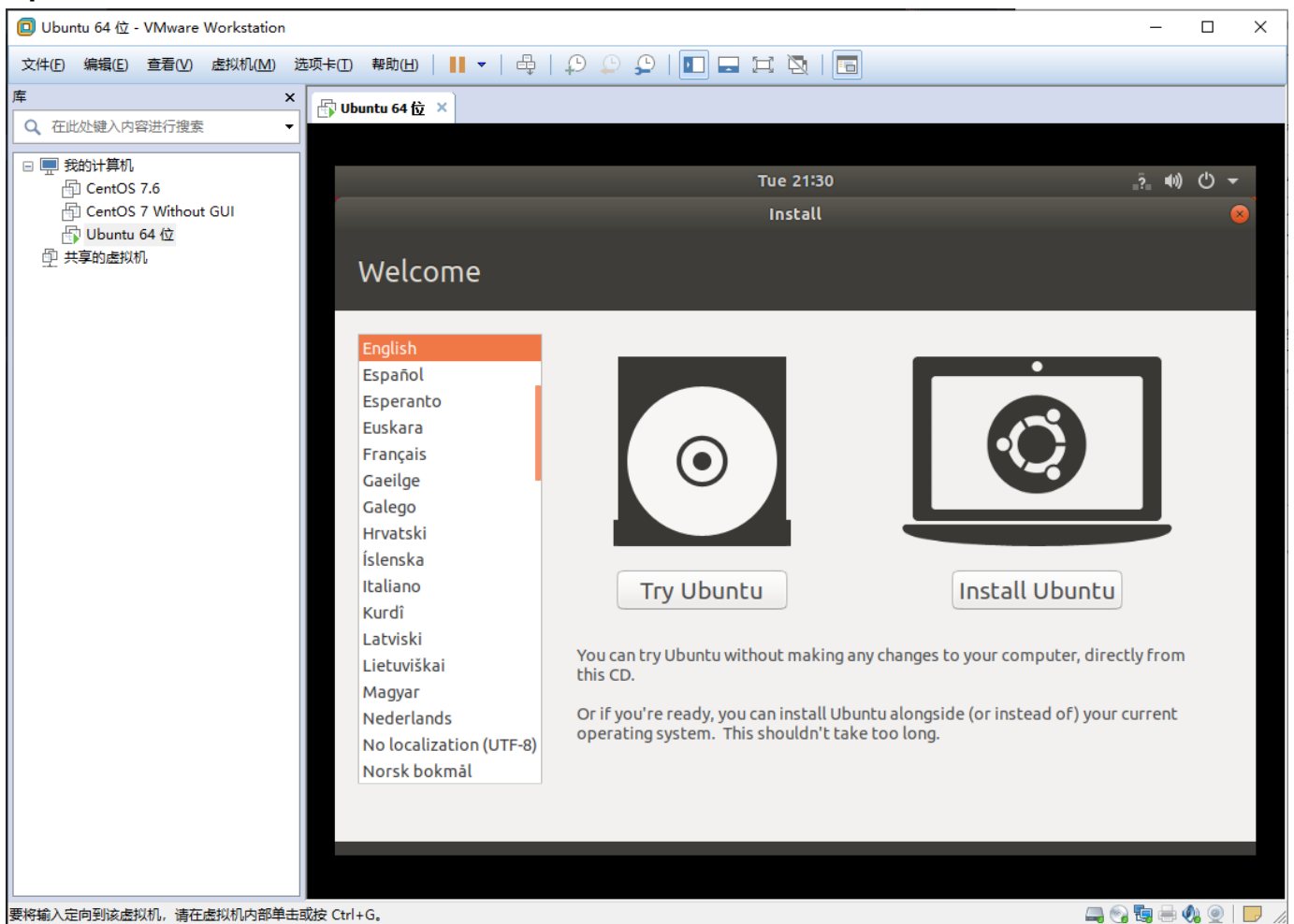


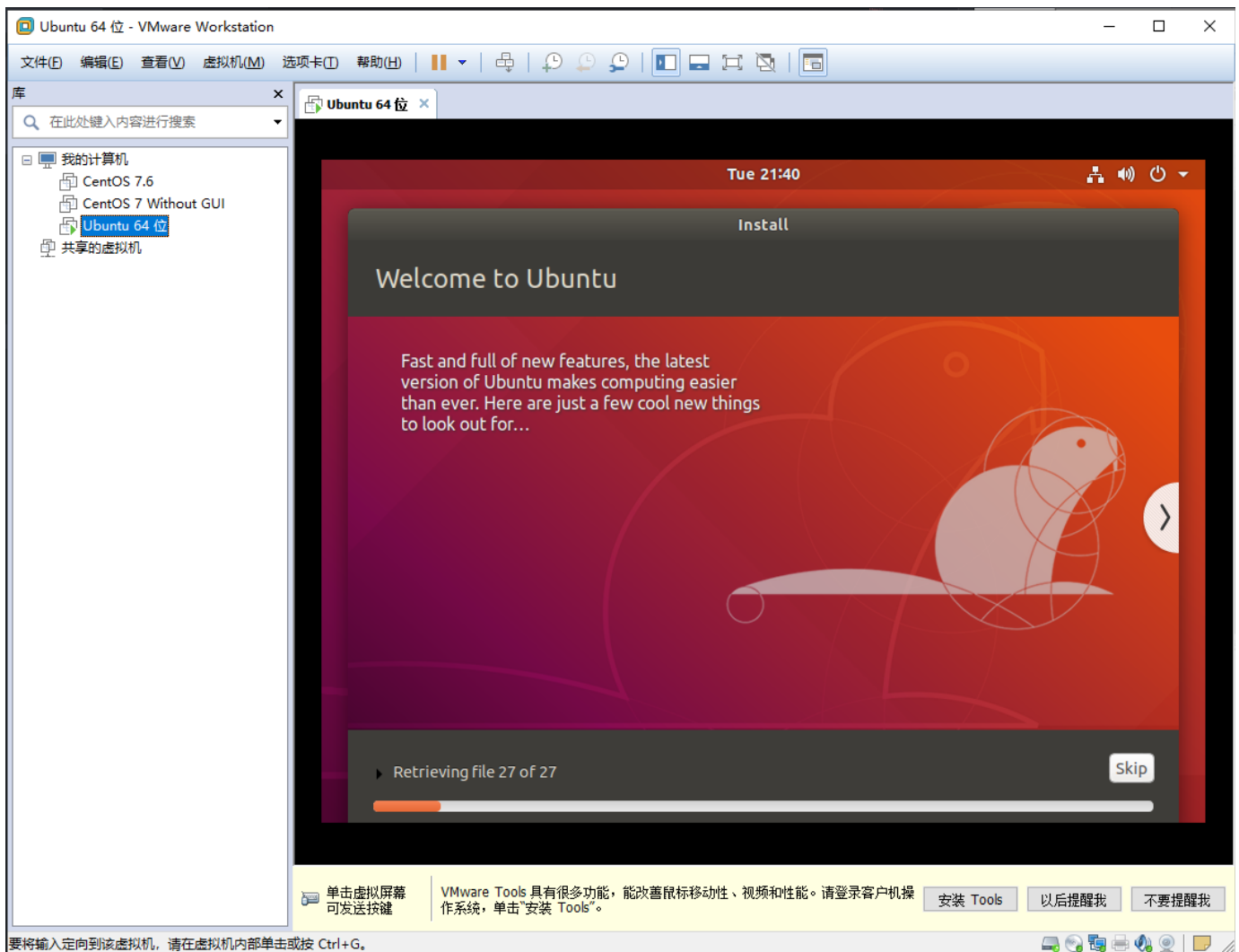


7. Click "Finish" and Install Ubuntu-XX.XX.X on your VM.

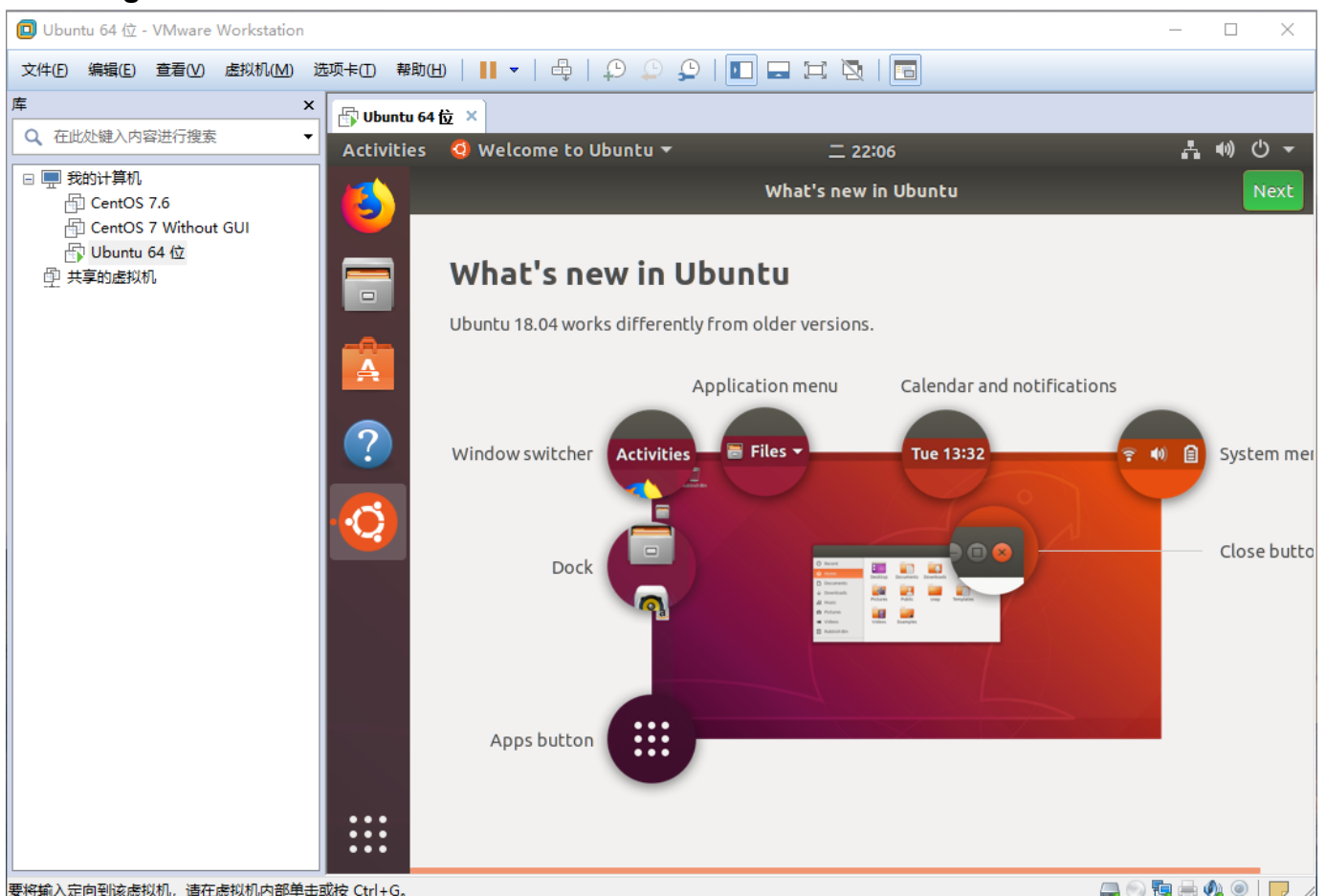


Open the virtual machine to install OS





Finishing Installation

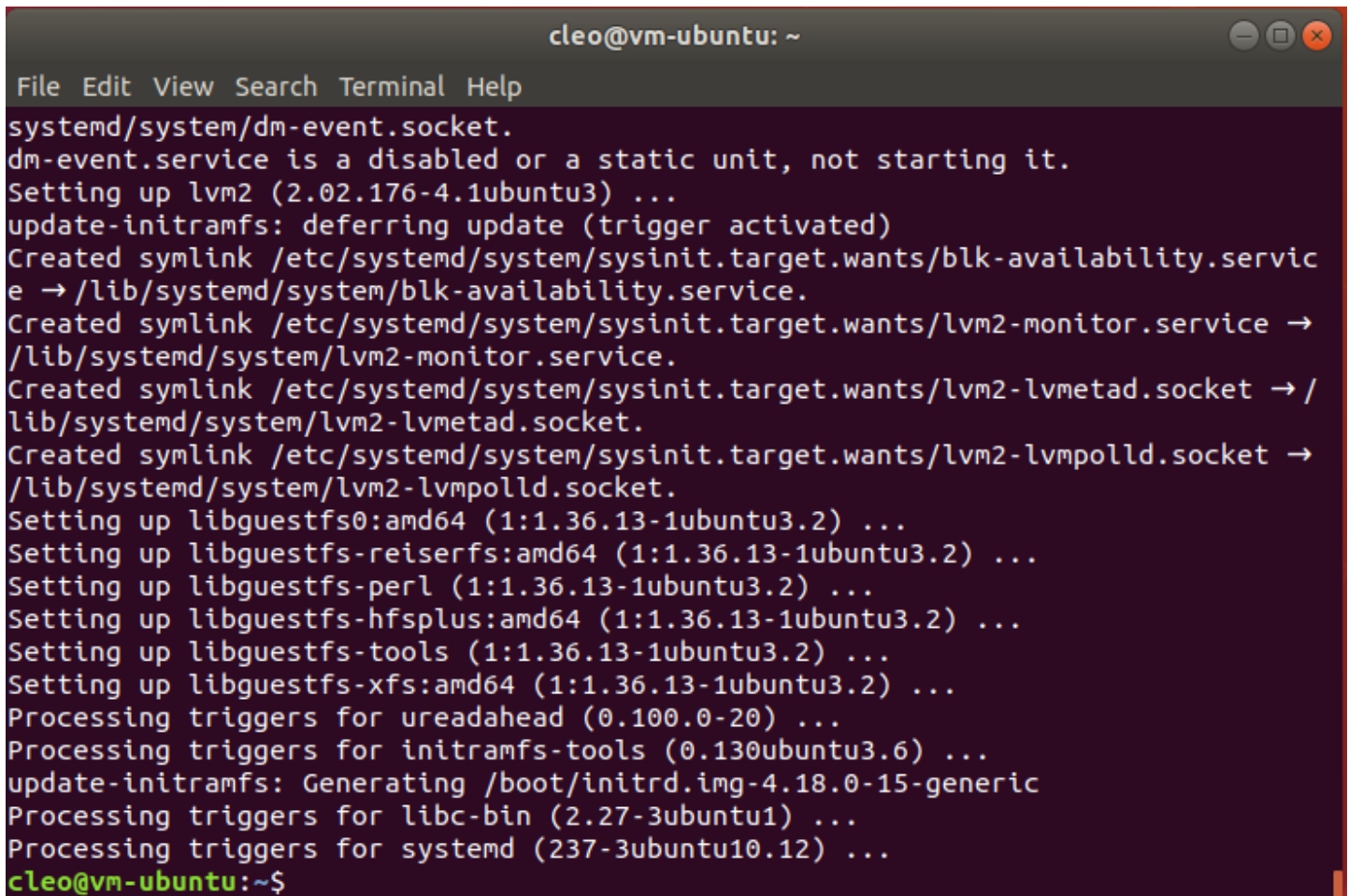


Configure the environment for KVM

```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
cleo@vm-ubuntu:~$ sudo apt-get update  
[sudo] password for cleo:  
Get:1 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]  
Hit:2 http://cn.archive.ubuntu.com/ubuntu bionic InRelease  
Get:3 http://cn.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]  
Get:4 http://cn.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]  
Get:5 http://cn.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [55  
8 kB]  
Get:6 http://cn.archive.ubuntu.com/ubuntu bionic-updates/main i386 Packages [477  
kB]  
Get:7 http://cn.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages  
[746 kB]  
Get:8 http://cn.archive.ubuntu.com/ubuntu bionic-updates/universe i386 Packages  
[736 kB]  
Get:9 http://cn.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en  
[195 kB]  
Fetched 2,963 kB in 38s (77.9 kB/s)  
Reading package lists... Done  
cleo@vm-ubuntu:~$
```

```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
cleo@vm-ubuntu:~$ sudo apt-get install qemu-kvm libvirt-bin ubuntu-vm-builder br  
idge-utils libosinfo-bin libguestfs-tools virt-top virtinst  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
  at attr Augeas-lenses btrfs-progs build-essential cpu-checker cryptsetup  
  cryptsetup-bin curl db-util db5.3-util dctrl-tools debootstrap devscripts  
  dmideventd dpkg-dev dput e2fsprogs exfat-fuse exfat-utils extlinux fakeroot g++  
  g++-7 gawk gcc gcc-7 gir1.2-libosinfo-1.0 git git-man hfsplus  
  ibverbs-providers icoutils ipxe-qemu ipxe-qemu-256k-compat-efi-roms kpartx  
  ldntool libaflib0v5 libaio1 libalgorithm-diff-perl  
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libasan4 libatomic1  
  libaugeas0 libb-hooks-endofscope-perl libb-hooks-op-check-perl libbfio1  
  libbc-dev-bin libbc6-dev libcacard0 libcilkrts5 libclass-method-modifiers-perl  
  libclass-xsaccessor-perl libconfig9 libcurl4 libdata-optlist-perl  
  libdate-manip-perl libdevel-callchecker-perl libdevel-globaldestruction-perl  
  libdevmapper-event1.02.1 libdistro-info-perl libdynaloader-functions-perl  
  liberror-perl libewf2 libfakeroot libfdt1 libfile-chdir-perl  
  libfile-homedir-perl libfile-which-perl libgcc-7-dev  
  libgetopt-long-descriptive-perl libgit-wrapper-perl libgovirt-common  
  libgovirt2 libgtk-vnc-2.0-0 libguestfs-hfsplus libguestfs-perl  
  libguestfs-reiserfs libguestfs-xfs libguestfs0 libgvnc-1.0-0 libhfs0  
  libhivex0 libibverbs1 libimport-into-perl libintl-perl libintl-xs-perl  
The following NEW packages will be installed:  
  at attr Augeas-lenses btrfs-progs build-essential cpu-checker cryptsetup  
  cryptsetup-bin curl db-util db5.3-util dctrl-tools debootstrap devscripts  
  dmideventd dpkg-dev dput e2fsprogs exfat-fuse exfat-utils extlinux fakeroot g++  
  g++-7 gawk gcc gcc-7 gir1.2-libosinfo-1.0 git git-man hfsplus  
  ibverbs-providers icoutils ipxe-qemu ipxe-qemu-256k-compat-efi-roms kpartx  
  ldntool libaflib0v5 libaio1 libalgorithm-diff-perl  
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libasan4 libatomic1  
  libaugeas0 libb-hooks-endofscope-perl libb-hooks-op-check-perl libbfio1  
  libbc-dev-bin libbc6-dev libcacard0 libcilkrts5 libclass-method-modifiers-perl  
  libclass-xsaccessor-perl libconfig9 libcurl4 libdata-optlist-perl  
  libdate-manip-perl libdevel-callchecker-perl libdevel-globaldestruction-perl  
  libdevmapper-event1.02.1 libdistro-info-perl libdynaloader-functions-perl  
  liberror-perl libewf2 libfakeroot libfdt1 libfile-chdir-perl  
  libfile-homedir-perl libfile-which-perl libgcc-7-dev  
  libgetopt-long-descriptive-perl libgit-wrapper-perl libgovirt-common  
  libgovirt2 libgtk-vnc-2.0-0 libguestfs-hfsplus libguestfs-perl  
  libguestfs-reiserfs libguestfs-xfs libguestfs0 libgvnc-1.0-0 libhfs0  
  libhivex0 libibverbs1 libimport-into-perl libintl-perl libintl-xs-perl  
0 upgraded, 100 newly installed, 0 to remove and 0 not upgraded.  
Need to get 100 MB of archives.  
After this operation, 350 MB of additional disk space will be used.  
Do you want to continue? [Y/n]
```

After this operation, 349 MB of additional disk space will be used.
Do you want to continue? [Y/n] y

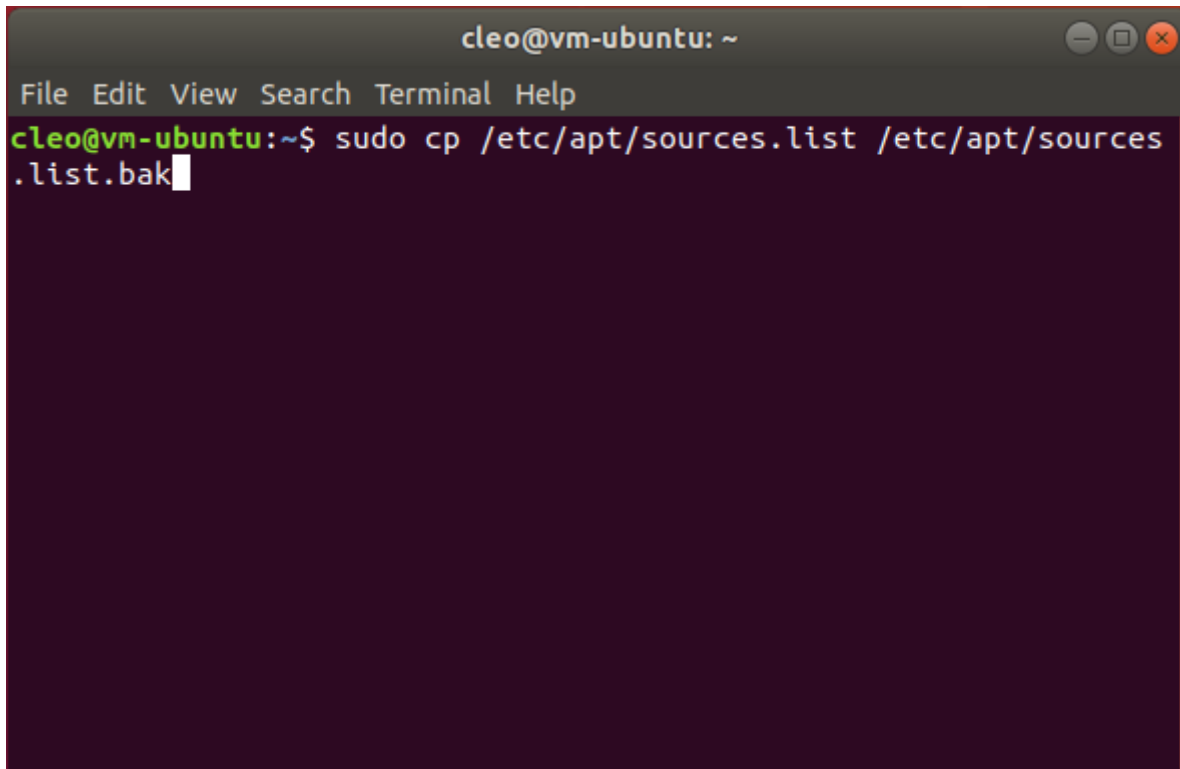
A terminal window titled 'cleo@vm-ubuntu: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal output shows the following commands and their results:

```
systemd/system/dm-event.socket.  
dm-event.service is a disabled or a static unit, not starting it.  
Setting up lvm2 (2.02.176-4.1ubuntu3) ...  
update-initramfs: deferring update (trigger activated)  
Created symlink /etc/systemd/system/sysinit.target.wants/blk-availability.service → /lib/systemd/system/blk-availability.service.  
Created symlink /etc/systemd/system/sysinit.target.wants/lvm2-monitor.service → /lib/systemd/system/lvm2-monitor.service.  
Created symlink /etc/systemd/system/sysinit.target.wants/lvm2-lvmetad.socket → /lib/systemd/system/lvm2-lvmetad.socket.  
Created symlink /etc/systemd/system/sysinit.target.wants/lvm2-lvmpolld.socket → /lib/systemd/system/lvm2-lvmpolld.socket.  
Setting up libguestfs0:amd64 (1:1.36.13-1ubuntu3.2) ...  
Setting up libguestfs-reiserfs:amd64 (1:1.36.13-1ubuntu3.2) ...  
Setting up libguestfs-perl (1:1.36.13-1ubuntu3.2) ...  
Setting up libguestfs-hfsplus:amd64 (1:1.36.13-1ubuntu3.2) ...  
Setting up libguestfs-tools (1:1.36.13-1ubuntu3.2) ...  
Setting up libguestfs-xfs:amd64 (1:1.36.13-1ubuntu3.2) ...  
Processing triggers for ureadahead (0.100.0-20) ...  
Processing triggers for initramfs-tools (0.130ubuntu3.6) ...  
update-initramfs: Generating /boot/initrd.img-4.18.0-15-generic  
Processing triggers for libc-bin (2.27-3ubuntu1) ...  
Processing triggers for systemd (237-3ubuntu10.12) ...  
cleo@vm-ubuntu:~$
```

Install a VM(nested VM) on KVM

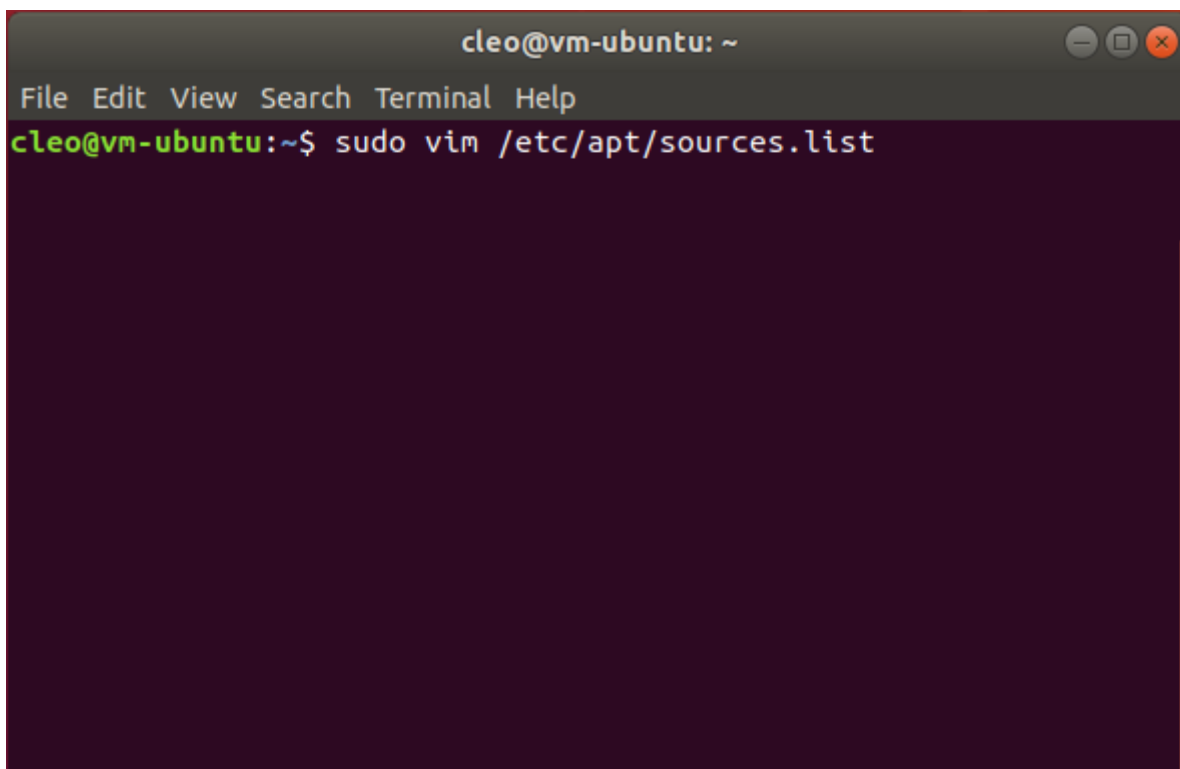
Figure local image site in China

- make a backup for original sources-list

A terminal window titled 'cleo@vm-ubuntu: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'sudo cp /etc/apt/sources.list /etc/apt/sources.list.bak' has been entered and executed, with the cursor at the end of the second line.

```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
cleo@vm-ubuntu:~$ sudo cp /etc/apt/sources.list /etc/apt/sources  
.list.bak
```

- **edit the source file** `/etc/apt/sources.list` , then comment on all statements and change software source into Aliyun software source.

A terminal window titled 'cleo@vm-ubuntu: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'sudo vim /etc/apt/sources.list' has been entered and executed, with the cursor at the end of the line.

```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
cleo@vm-ubuntu:~$ sudo vim /etc/apt/sources.list
```



```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
# deb-src http://security.ubuntu.com/ubuntu bionic-security universe  
#deb http://security.ubuntu.com/ubuntu bionic-security multiverse  
# deb-src http://security.ubuntu.com/ubuntu bionic-security multiverse  
  
deb http://mirrors.aliyun.com/ubuntu/ bionic main restricted universe multiverse  
deb-src http://mirrors.aliyun.com/ubuntu/ bionic main restricted universe multiverse  
deb http://mirrors.aliyun.com/ubuntu/ bionic-security main restricted universe multiverse  
deb-src http://mirrors.aliyun.com/ubuntu/ bionic-security main restricted universe multiv  
erse  
deb http://mirrors.aliyun.com/ubuntu/ bionic-updates main restricted universe multiverse  
deb-src http://mirrors.aliyun.com/ubuntu/ bionic-updates main restricted universe multive  
rse  
deb http://mirrors.aliyun.com/ubuntu/ bionic-backports main restricted universe multivers  
e  
deb-src http://mirrors.aliyun.com/ubuntu/ bionic-backports main restricted universe multi  
verse  
deb http://mirrors.aliyun.com/ubuntu/ bionic-proposed main restricted universe multiverse  
deb-src http://mirrors.aliyun.com/ubuntu/ bionic-proposed main restricted universe multiv  
erse  
-- INSERT -- 71,94 Bot
```

- execute the command `sudo apt-get update`

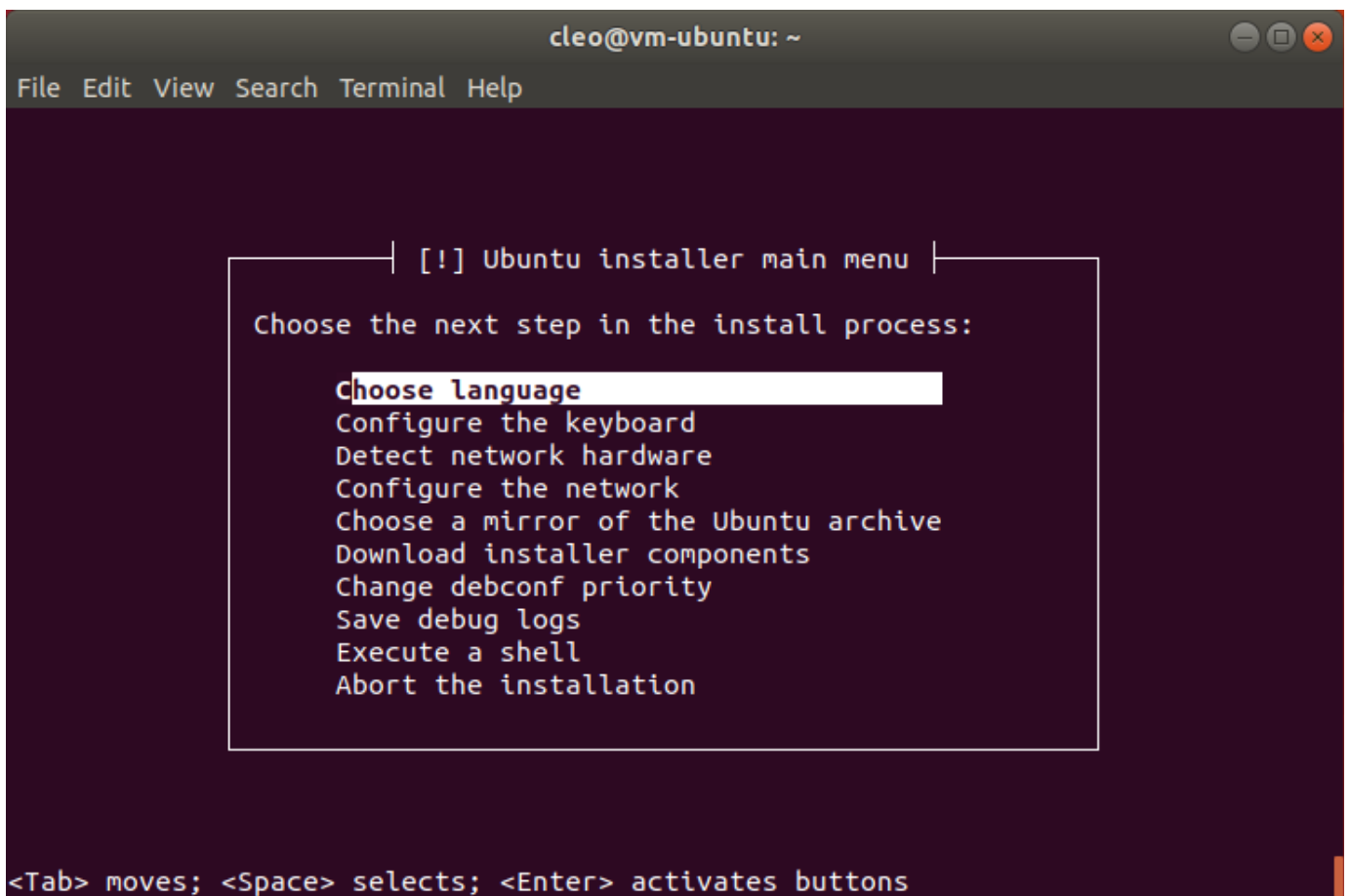
```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
cleo@vm-ubuntu:~$ sudo apt-get update  
Get:1 http://mirrors.aliyun.com/ubuntu bionic InRelease [242 kB]  
Get:2 http://mirrors.aliyun.com/ubuntu bionic-security InRelease [88.7 kB]  
]  
Get:3 http://mirrors.aliyun.com/ubuntu bionic-updates InRelease [88.7 kB]  
Get:4 http://mirrors.aliyun.com/ubuntu bionic-backports InRelease [74.6 k  
B]  
Get:5 http://mirrors.aliyun.com/ubuntu bionic-proposed InRelease [242 kB]  
Get:6 http://mirrors.aliyun.com/ubuntu bionic/universe Sources [9,051 kB]  
Get:7 http://mirrors.aliyun.com/ubuntu bionic/multiverse Sources [181 kB]  
Get:8 http://mirrors.aliyun.com/ubuntu bionic/main Sources [829 kB]  
Get:9 http://mirrors.aliyun.com/ubuntu bionic/restricted Sources [5,324 B  
]  
Get:10 http://mirrors.aliyun.com/ubuntu bionic/main amd64 Packages [1,019  
kB]  
Get:11 http://mirrors.aliyun.com/ubuntu bionic/main i386 Packages [1,007  
kB]  
Get:12 http://mirrors.aliyun.com/ubuntu bionic/main Translation-en [516 k  
B]  
Get:13 http://mirrors.aliyun.com/ubuntu bionic/main amd64 DEP-11 Metadata  
[477 kB]  
Get:14 http://mirrors.aliyun.com/ubuntu bionic/main DEP-11 48x48 Icons [1  
18 kB]
```


Install a kvm

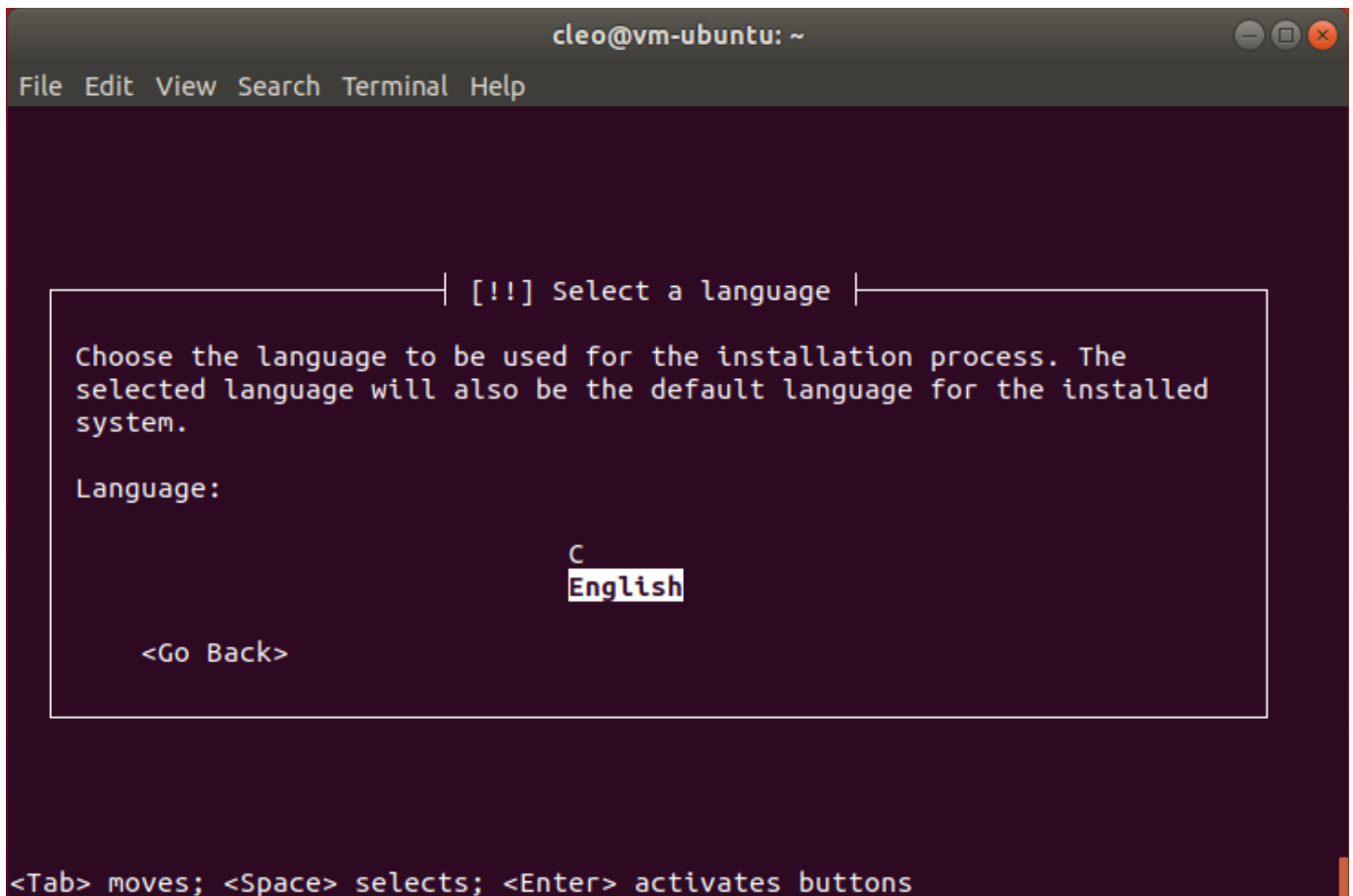
- execute the command in terminal

```
virt-install \  
--name guest0 \  
--virt-type=kvm --ram 1024 \  
--disk path=guest0.img,size=25 \  
--vcpus 2 \  
--os-type linux \  
--graphics none \  
--console pty,target_type=serial \  
--location 'http://mirrors.aliyun.com/ubuntu/dists/trusty/main/installer-amd64/' \  
--extra-args 'console=ttyS0,115200n8 serial'
```

- Installer Main Menu

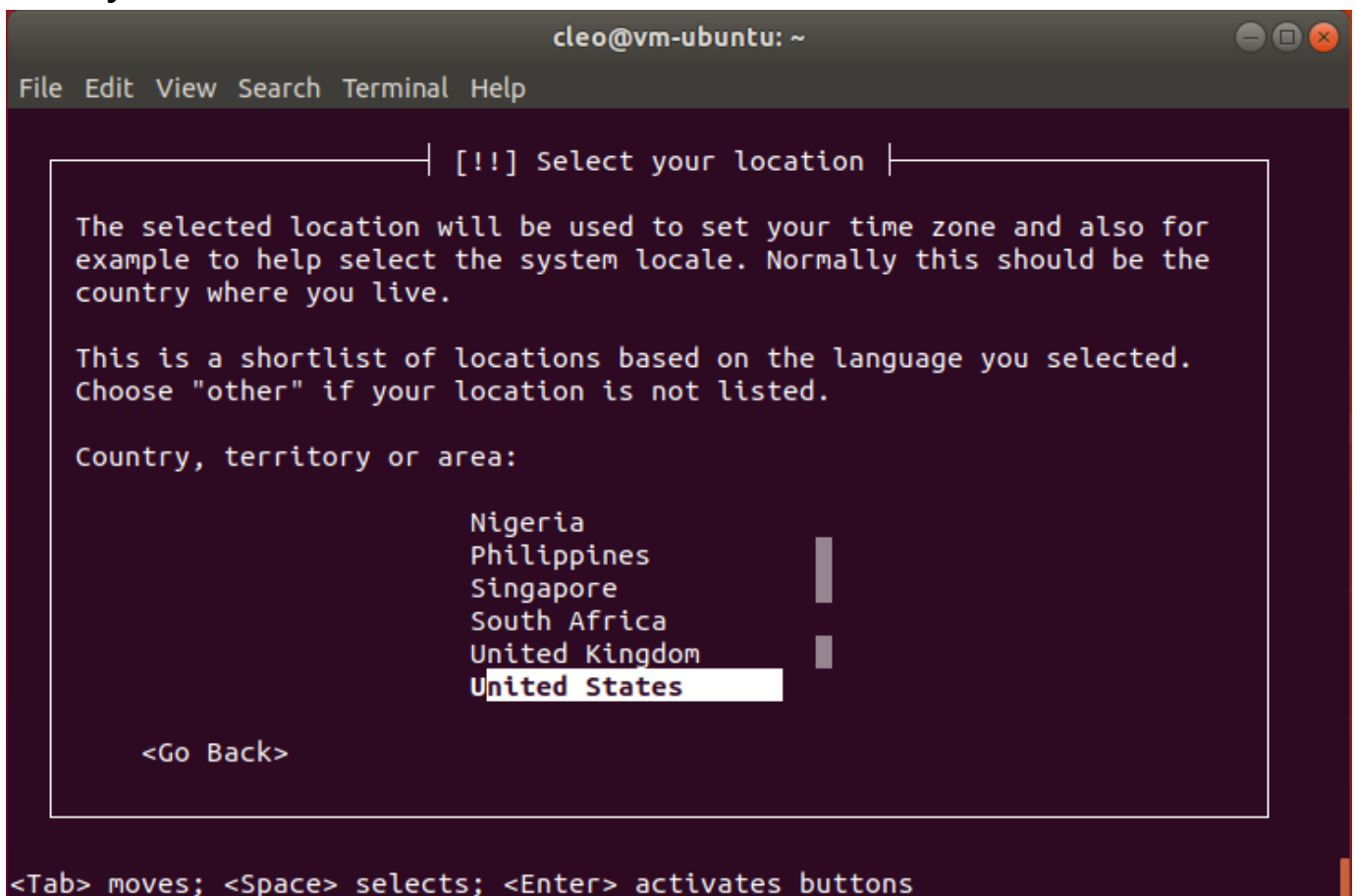


- Select a language



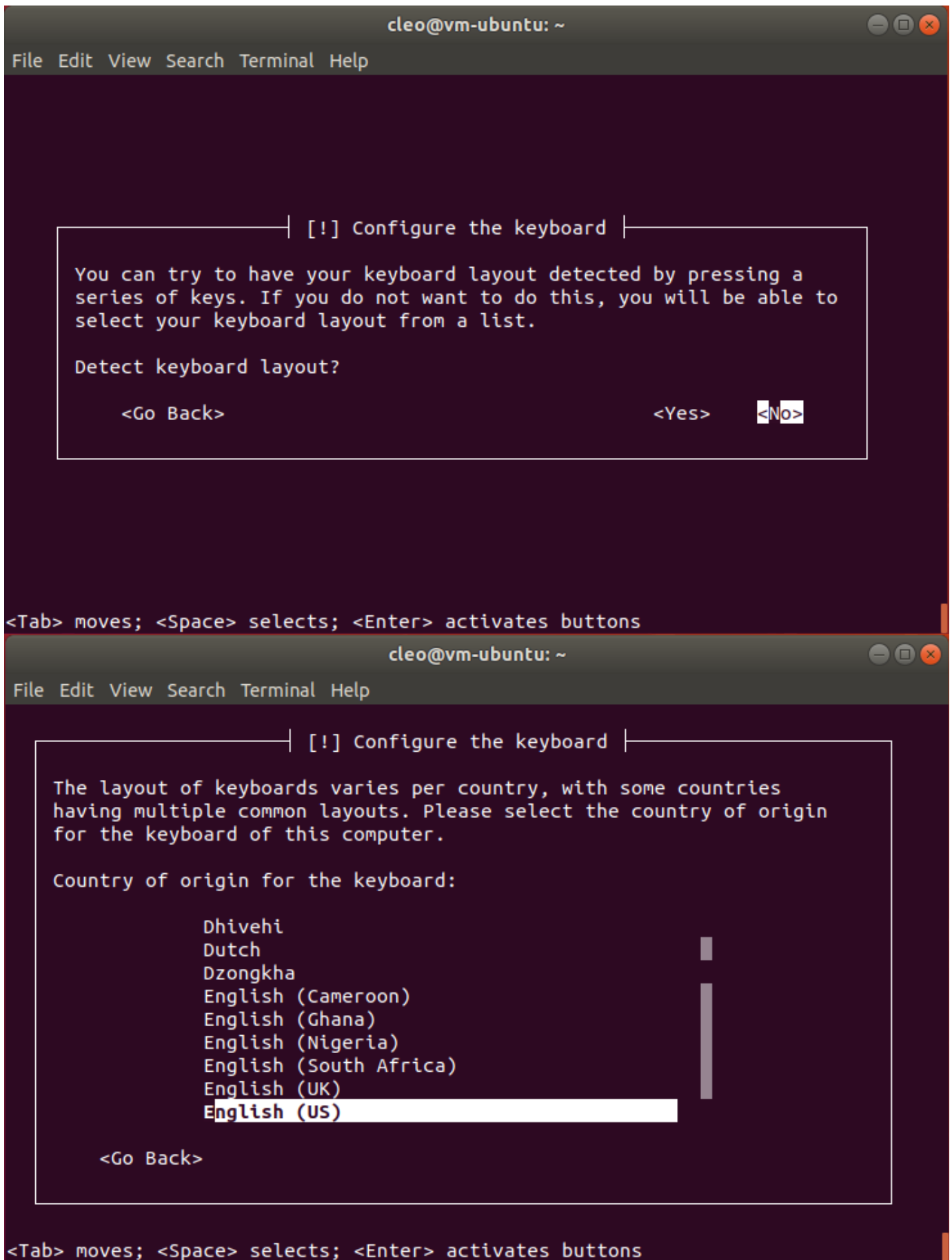
The screenshot shows a terminal window titled 'cleo@vm-ubuntu: ~'. The menu bar includes 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The main content is a box titled '[!!] Select a language'. Inside, it says: 'Choose the language to be used for the installation process. The selected language will also be the default language for the installed system.' Below this, it says 'Language:' followed by a list with 'C' at the top and 'English' selected and highlighted. At the bottom left of the box is the option '<Go Back>'. Below the box, a note states: '<Tab> moves; <Space> selects; <Enter> activates buttons'.

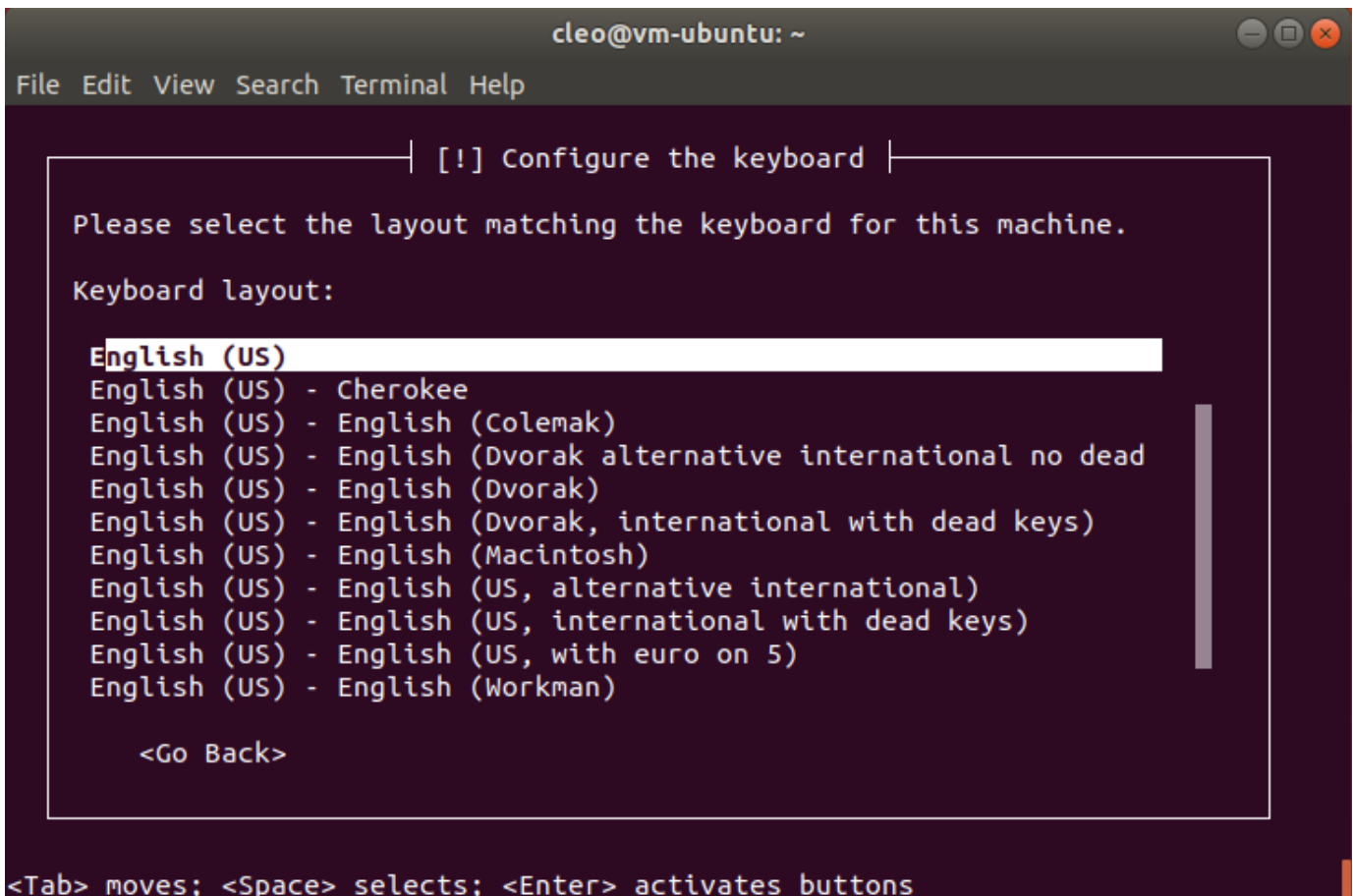
- **Select your location**



The screenshot shows a terminal window titled 'cleo@vm-ubuntu: ~'. The menu bar includes 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The main content is a box titled '[!!] Select your location'. Inside, it says: 'The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live.' Below this, it says: 'This is a shortlist of locations based on the language you selected. Choose "other" if your location is not listed.' Then it says 'Country, territory or area:' followed by a list: 'Nigeria', 'Philippines', 'Singapore', 'South Africa', 'United Kingdom', and 'United States' which is selected and highlighted. At the bottom left of the box is the option '<Go Back>'. Below the box, a note states: '<Tab> moves; <Space> selects; <Enter> activates buttons'.

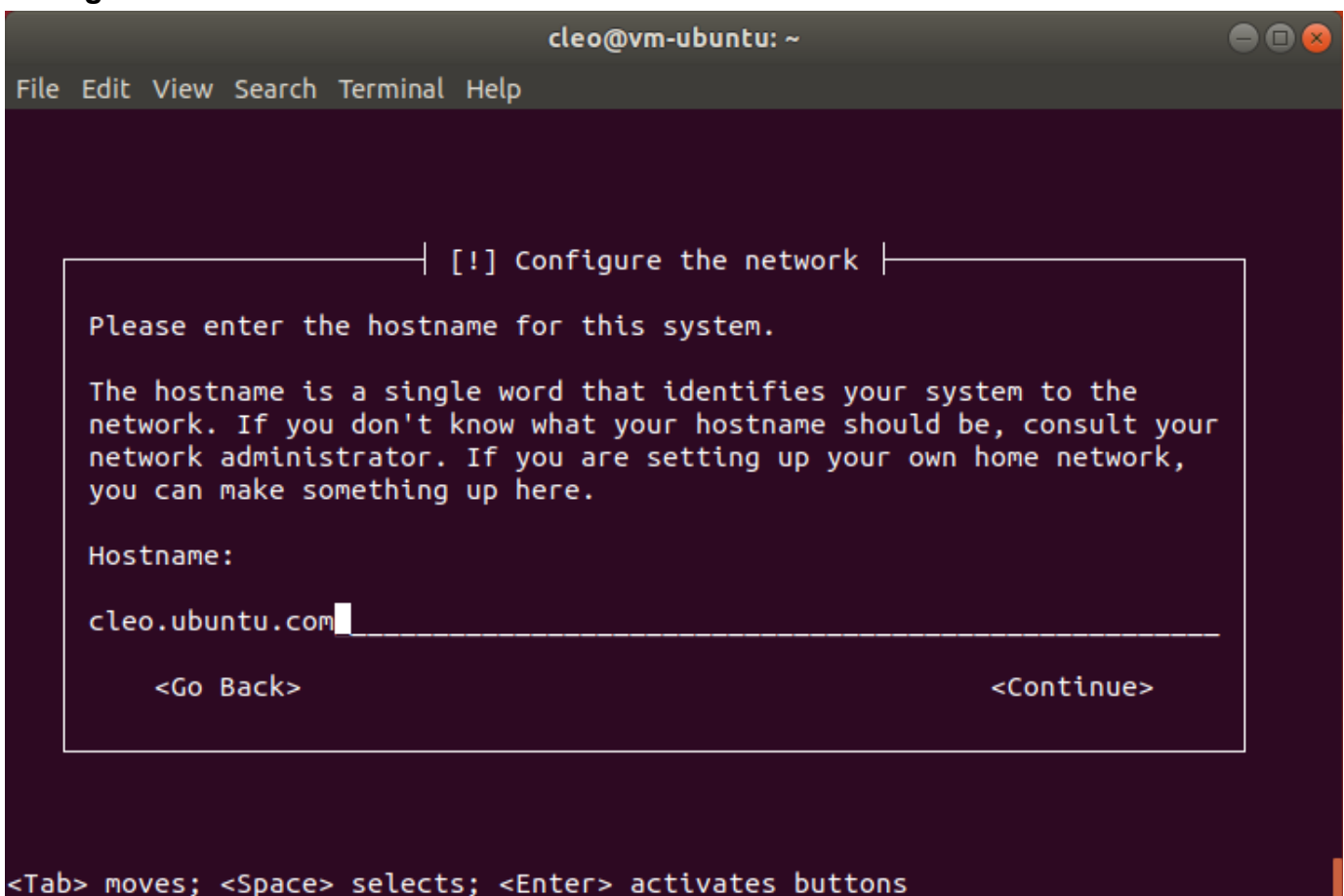
- **Configure the keyboard**





```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
[!] Configure the keyboard  
Please select the layout matching the keyboard for this machine.  
Keyboard layout:  
English (US)  
English (US) - Cherokee  
English (US) - English (Colemak)  
English (US) - English (Dvorak alternative international no dead  
English (US) - English (Dvorak)  
English (US) - English (Dvorak, international with dead keys)  
English (US) - English (Macintosh)  
English (US) - English (US, alternative international)  
English (US) - English (US, international with dead keys)  
English (US) - English (US, with euro on 5)  
English (US) - English (Workman)  
<Go Back>  
<Tab> moves; <Space> selects; <Enter> activates buttons
```

- **Configure the hostname**

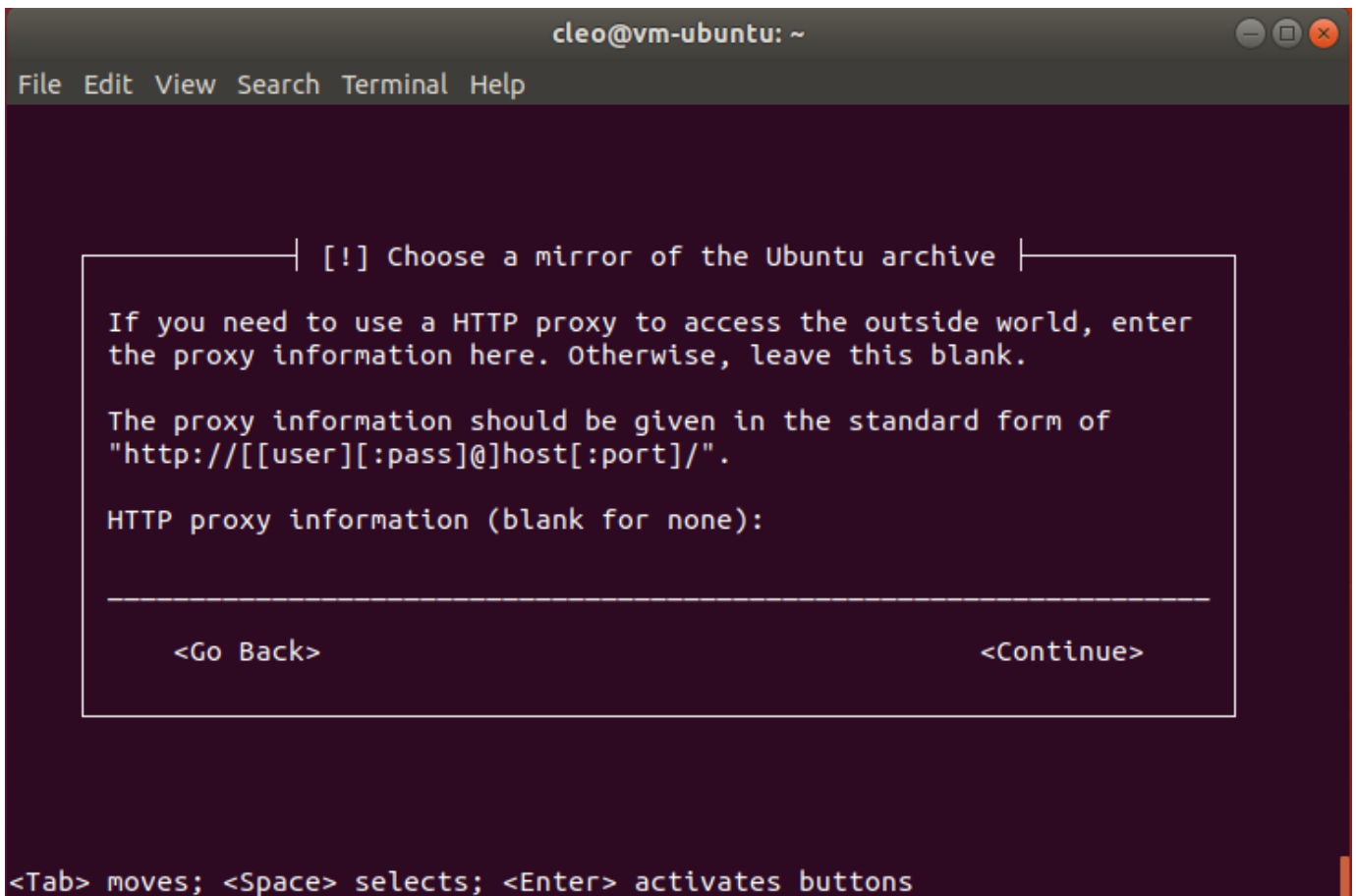


```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
[!] Configure the network  
Please enter the hostname for this system.  
The hostname is a single word that identifies your system to the  
network. If you don't know what your hostname should be, consult your  
network administrator. If you are setting up your own home network,  
you can make something up here.  
Hostname:  
cleo.ubuntu.com  
<Go Back> <Continue>  
<Tab> moves; <Space> selects; <Enter> activates buttons
```

- **Choose a mirror of the Ubuntu archive**

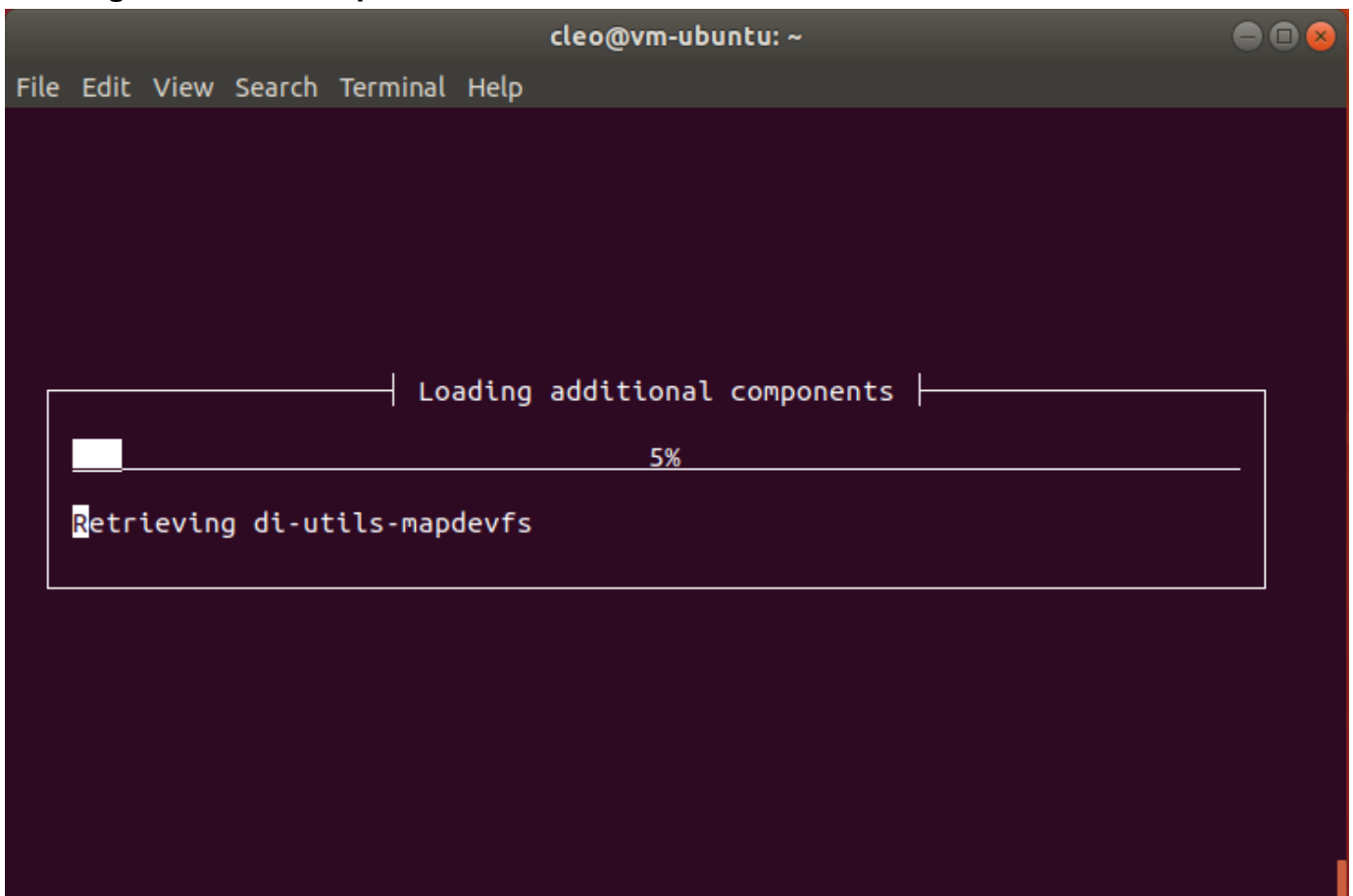
```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
[!] Choose a mirror of the Ubuntu archive  
The goal is to find a mirror of the Ubuntu archive that is close to  
you on the network -- be aware that nearby countries, or even your  
own, may not be the best choice.  
Ubuntu archive mirror country:  
Chile  
China  
Christmas Island  
Cocos (Keeling) Islands  
Colombia  
Comoros  
Congo  
Congo, The Democratic Republic of the  
Cook Islands  
<Go Back>  
<Tab> moves; <Space> selects; <Enter> activates buttons  
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
[!] Choose a mirror of the Ubuntu archive  
Please select an Ubuntu archive mirror. You should use a mirror in  
your country or region if you do not know which mirror has the best  
Internet connection to you.  
Usually, <your country code>.archive.ubuntu.com is a good choice.  
Ubuntu archive mirror:  
cn.archive.ubuntu.com  
<Go Back>  
<Tab> moves; <Space> selects; <Enter> activates buttons
```

- **Configure HTTP PROXY(none)**



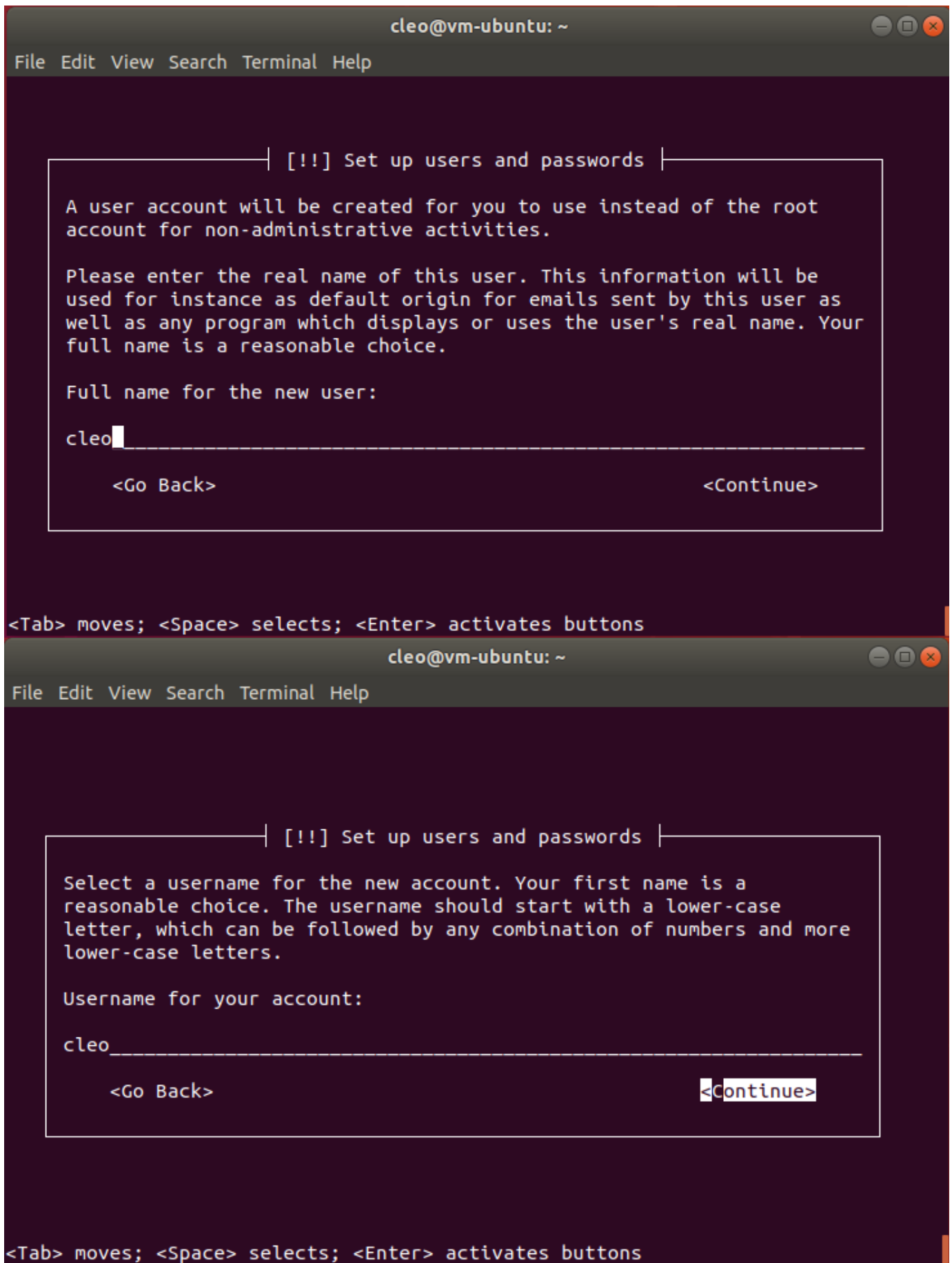
A terminal window titled 'cleo@vm-ubuntu: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The main content is a dialog box titled '[!] Choose a mirror of the Ubuntu archive'. Inside the dialog, it says: 'If you need to use a HTTP proxy to access the outside world, enter the proxy information here. Otherwise, leave this blank.' followed by 'The proxy information should be given in the standard form of "http://[[user][:pass]@]host[:port]/".' and 'HTTP proxy information (blank for none):'. Below this is a dashed line for input. At the bottom of the dialog are two buttons: '<Go Back>' and '<Continue>'. Below the dialog, the text '<Tab> moves; <Space> selects; <Enter> activates buttons' is displayed.

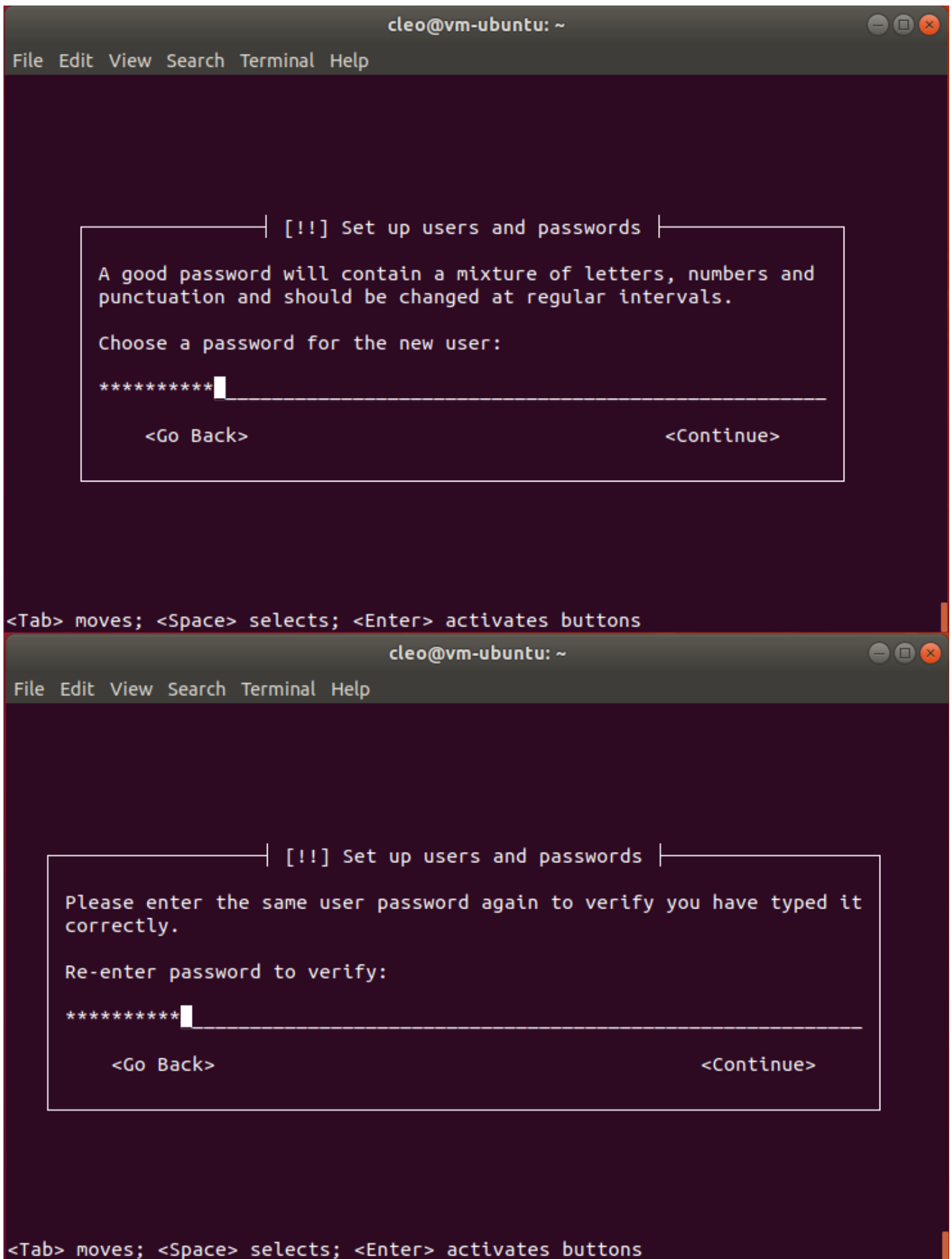
- Loading additional components



A terminal window titled 'cleo@vm-ubuntu: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The main content is a dialog box titled 'Loading additional components'. Inside the dialog, there is a progress bar that is 5% full, with '5%' written to its right. Below the progress bar, the text 'Retrieving di-utils-mapdevfs' is displayed.

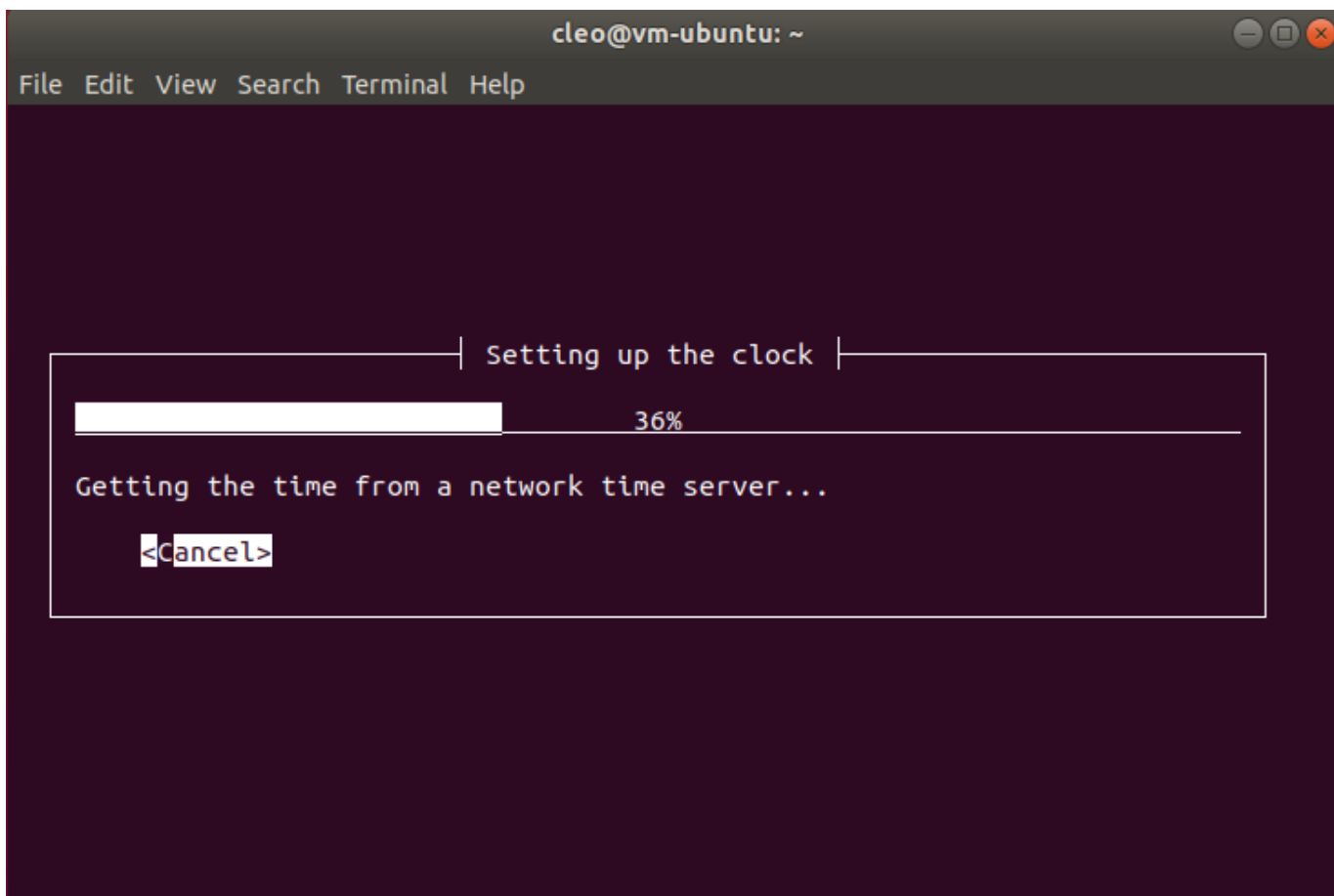
- Set up users and passwords



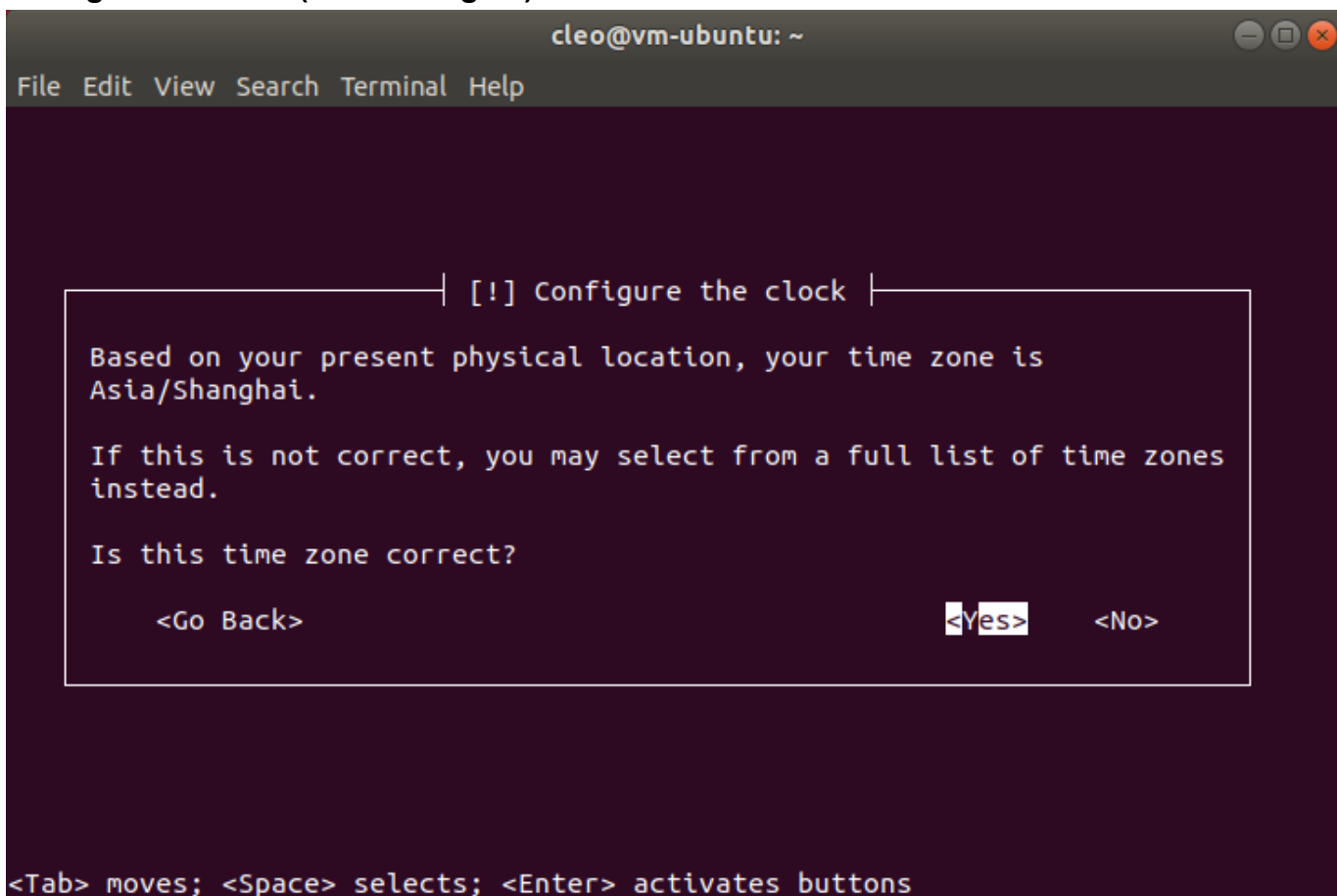


```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
  
[!!] Set up users and passwords  
  
A good password will contain a mixture of letters, numbers and  
punctuation and should be changed at regular intervals.  
  
Choose a password for the new user:  
*****  
  
<Go Back> <Continue>  
  
<Tab> moves; <Space> selects; <Enter> activates buttons  
  
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
  
[!!] Set up users and passwords  
  
Please enter the same user password again to verify you have typed it  
correctly.  
  
Re-enter password to verify:  
*****  
  
<Go Back> <Continue>  
  
<Tab> moves; <Space> selects; <Enter> activates buttons
```

- **Setting up the clock**



- **Configure the clock(Asia/Shanghai)**



- **Partition Disks**

```
cleo@vm-ubuntu: ~
File Edit View Search Terminal Help

| [!!] Partition disks |

The installer can guide you through partitioning a disk (using
different standard schemes) or, if you prefer, you can do it
manually. With guided partitioning you will still have a chance later
to review and customise the results.

If you choose guided partitioning for an entire disk, you will next
be asked which disk should be used.

Partitioning method:

  Guided - use entire disk
  Guided - use entire disk and set up LVM
  Guided - use entire disk and set up encrypted LVM
  Manual

  <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons

cleo@vm-ubuntu: ~
File Edit View Search Terminal Help

| [!!] Partition disks |

Note that all data on the disk you select will be erased, but not
before you have confirmed that you really want to make the changes.

Select disk to partition:

  SCSI1 (0,0,0) (sda) - 26.8 GB ATA QEMU HARDDISK

  <Go Back>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

```
cleo@vm-ubuntu: ~
File Edit View Search Terminal Help

[!!] Partition disks

If you continue, the changes listed below will be written to the
disks. Otherwise, you will be able to make further changes manually.

The partition tables of the following devices are changed:
  SCSI1 (0,0,0) (sda)

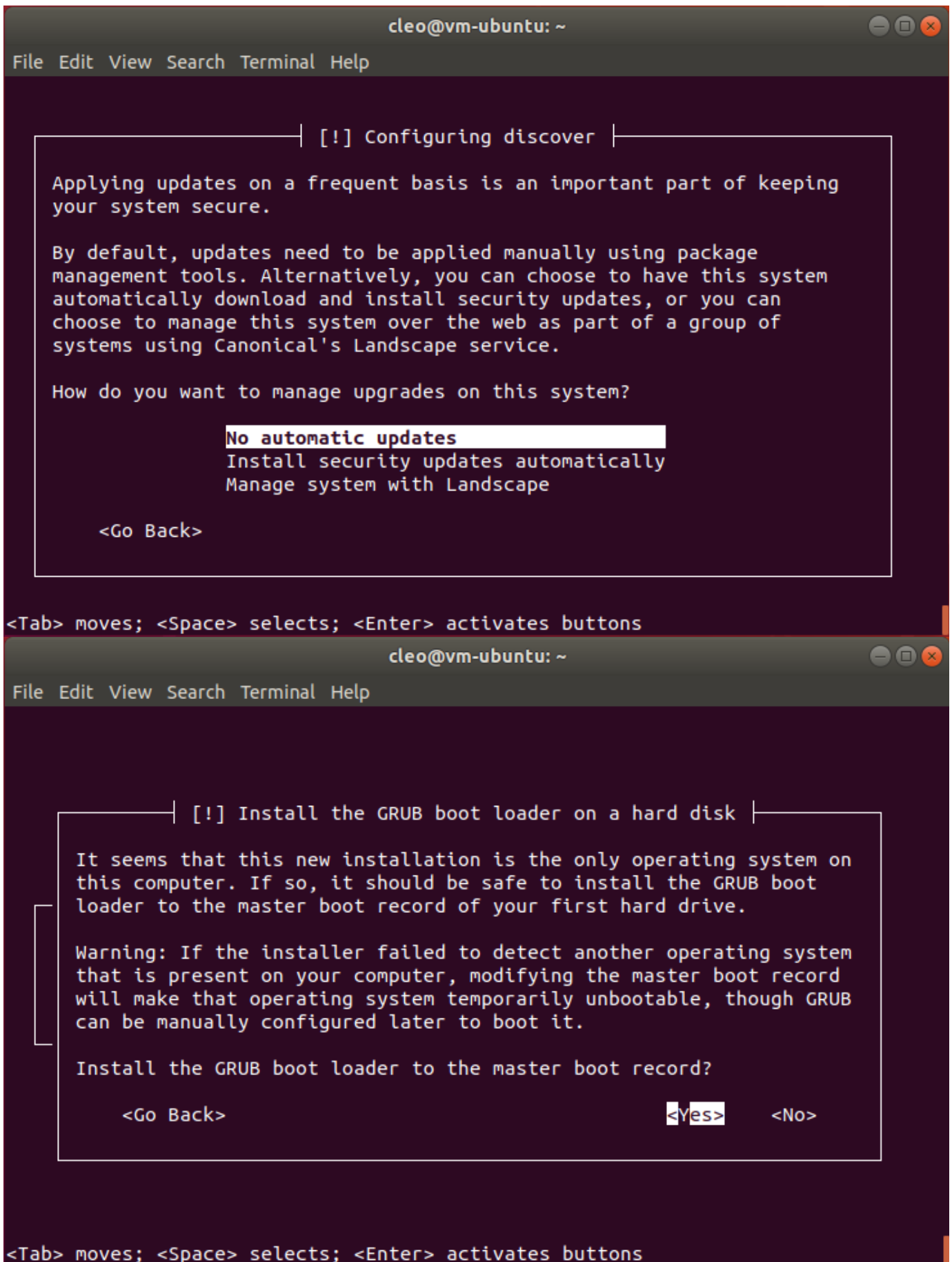
The following partitions are going to be formatted:
  partition #1 of SCSI1 (0,0,0) (sda) as ext4
  partition #5 of SCSI1 (0,0,0) (sda) as swap

Write the changes to disks?
  <Yes>                                     <No>

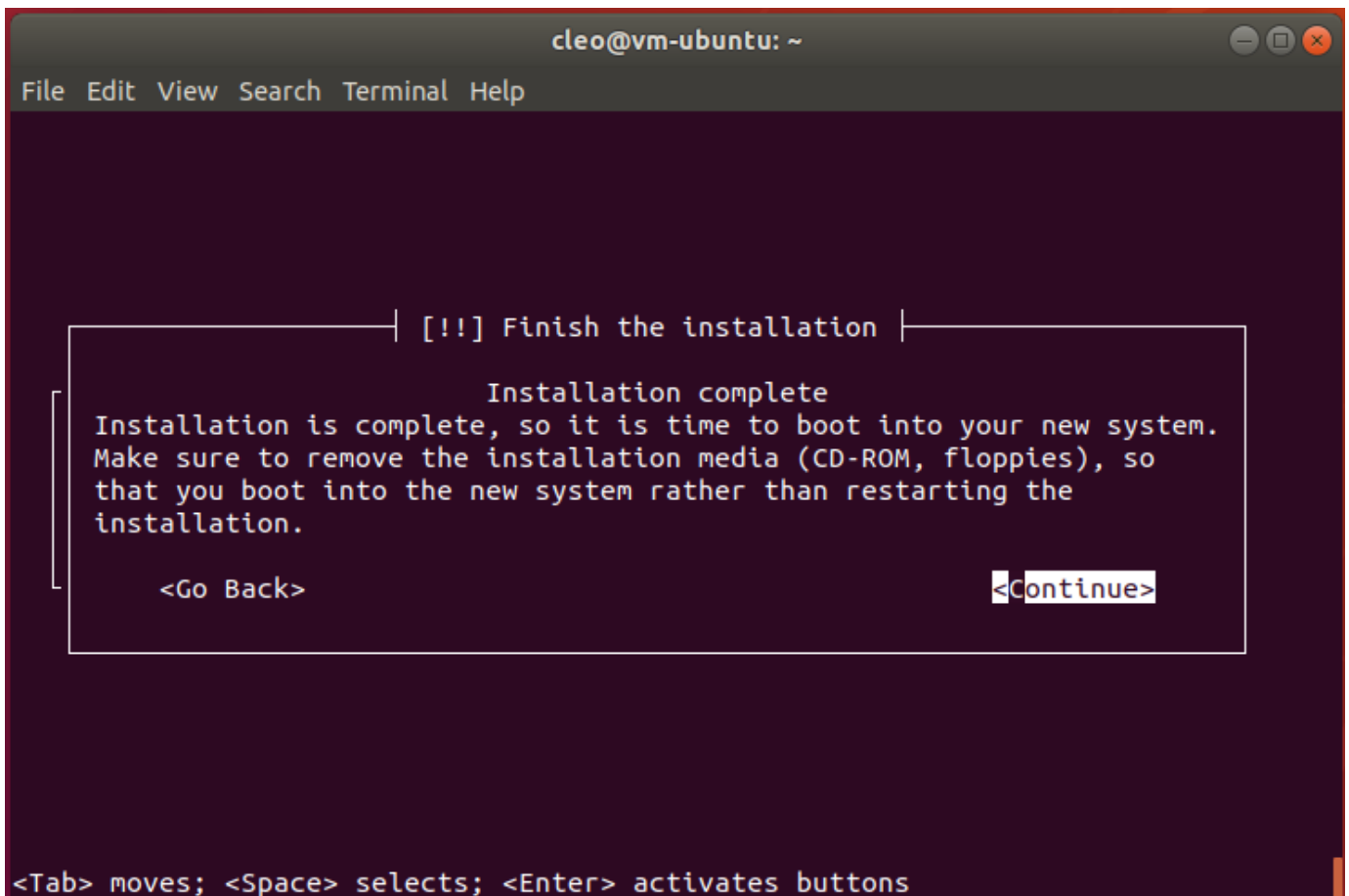
<Tab> moves; <Space> selects; <Enter> activates buttons
```

- **Installing the base System**

```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
  
Installing the base system  
██████████ 6%  
Retrieving libsepol1...
```



- **Finishing the Installation**



```
cleo@vm-ubuntu: ~
File Edit View Search Terminal Help

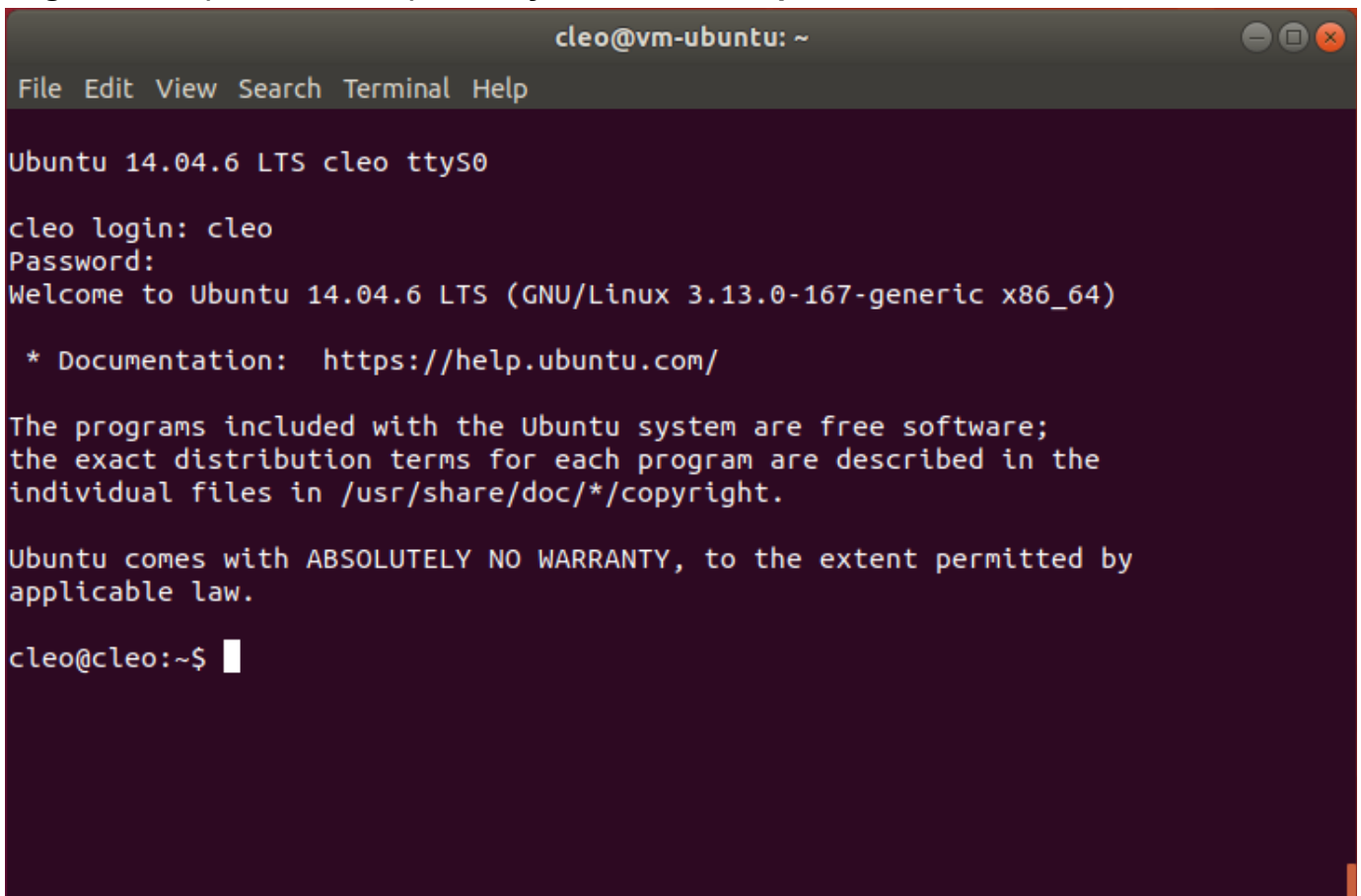
[!!] Finish the installation

Installation complete
Installation is complete, so it is time to boot into your new system.
Make sure to remove the installation media (CD-ROM, floppies), so
that you boot into the new system rather than restarting the
installation.

<Go Back> <Continue>

<Tab> moves; <Space> selects; <Enter> activates buttons
```

- Login the vm(Ubuntu 14.04) with my username and password



```
cleo@vm-ubuntu: ~
File Edit View Search Terminal Help

Ubuntu 14.04.6 LTS cleo ttyS0

cleo login: cleo
Password:
Welcome to Ubuntu 14.04.6 LTS (GNU/Linux 3.13.0-167-generic x86_64)

* Documentation: https://help.ubuntu.com/

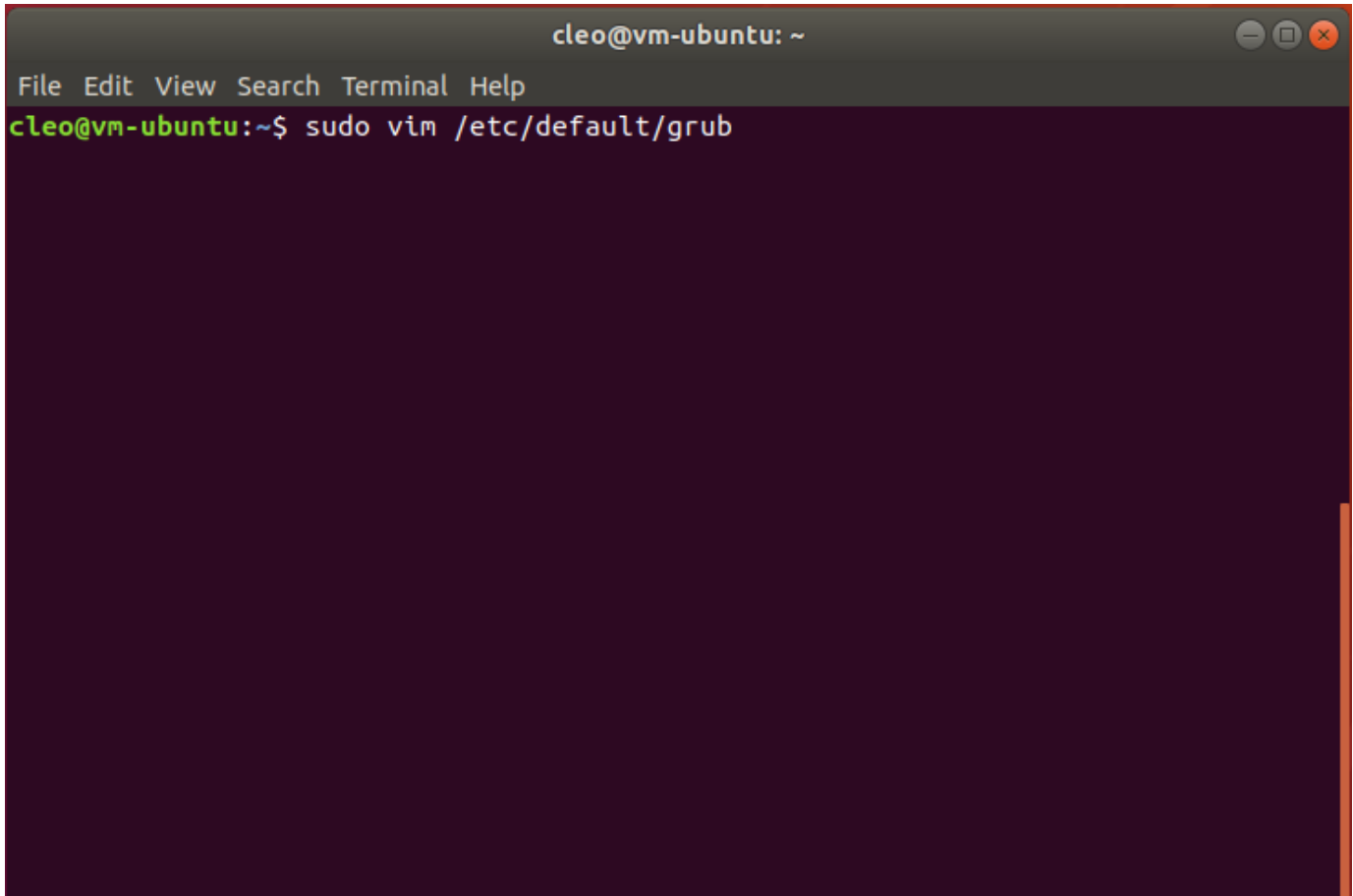
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

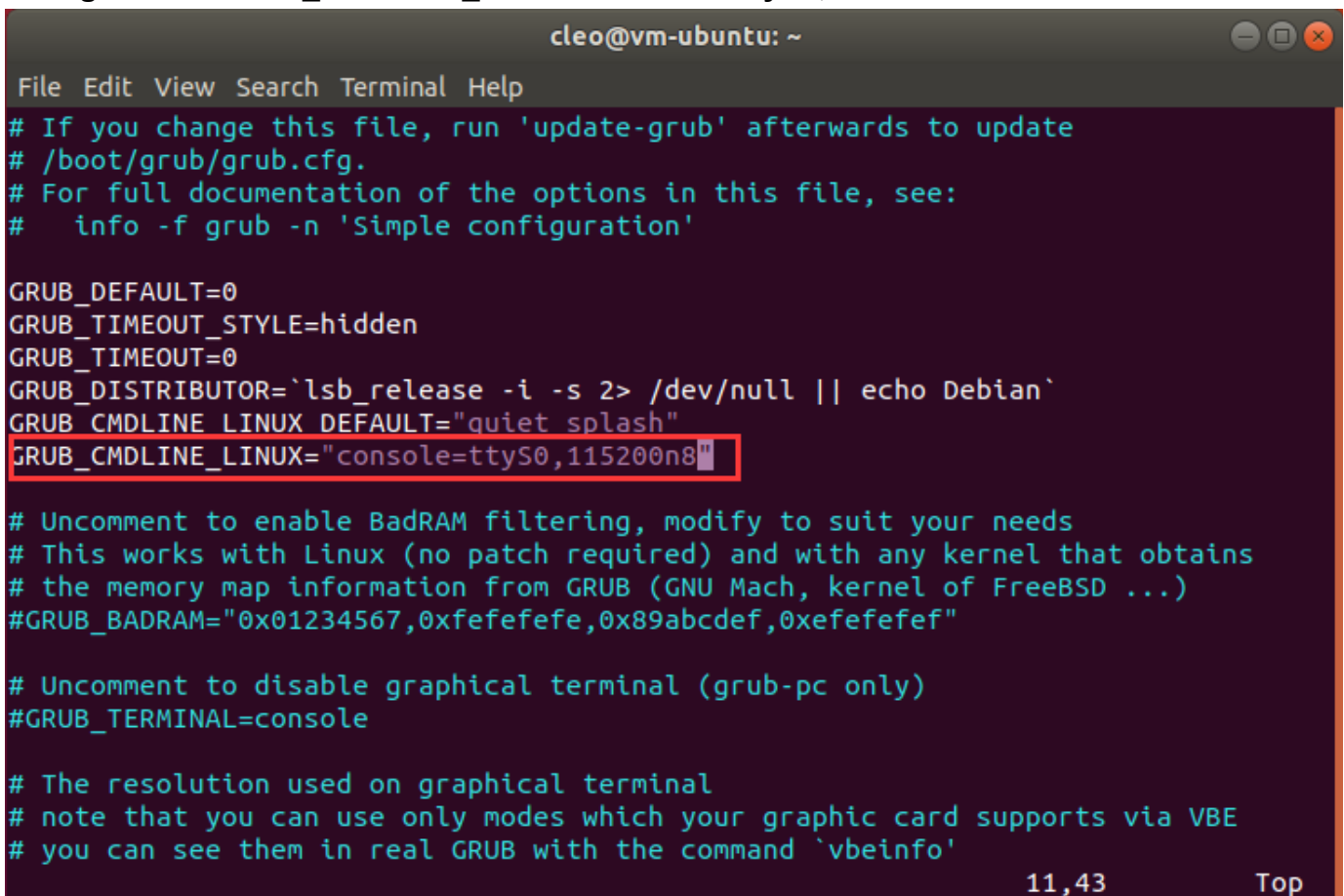
cleo@cleo:~$
```

Modify /etc/default/grub in your VM as below using your favorite editor

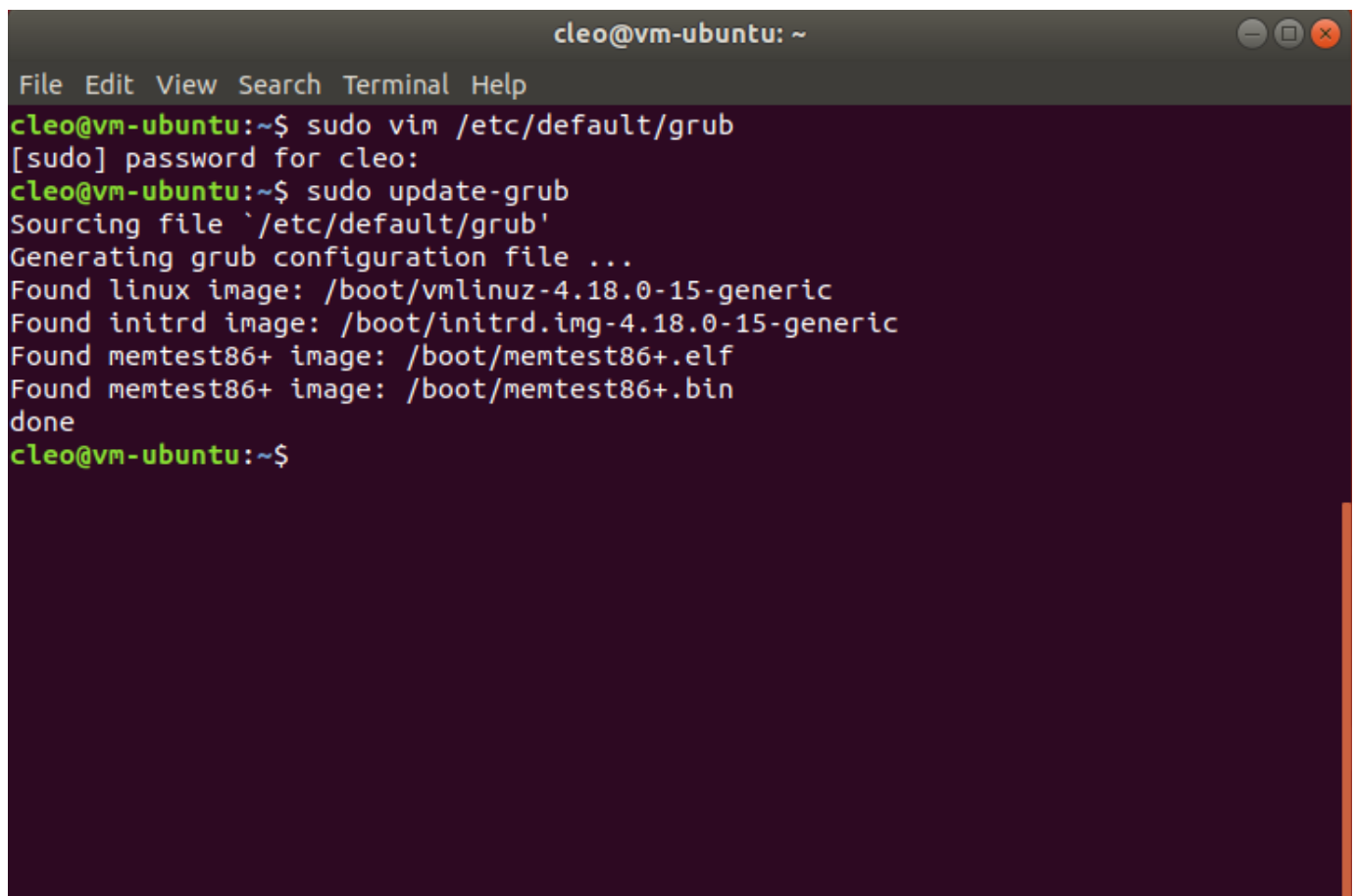
- `sudo vim /etc/default/grub`



- configure the `GRUB_CMDLINE_LINUX="console=ttyS0,115200n8"`



- `sudo update-grub`

A terminal window titled 'cleo@vm-ubuntu: ~' with standard window controls. The terminal shows the execution of 'sudo vim /etc/default/grub', followed by 'sudo update-grub'. It displays the process of sourcing the file and generating the GRUB configuration, listing found kernel and initrd images. The prompt returns to 'cleo@vm-ubuntu:~\$' after the process is complete.

```
cleo@vm-ubuntu: ~
File Edit View Search Terminal Help
cleo@vm-ubuntu:~$ sudo vim /etc/default/grub
[sudo] password for cleo:
cleo@vm-ubuntu:~$ sudo update-grub
Sourcing file `/etc/default/grub'
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-4.18.0-15-generic
Found initrd image: /boot/initrd.img-4.18.0-15-generic
Found memtest86+ image: /boot/memtest86+.elf
Found memtest86+ image: /boot/memtest86+.bin
done
cleo@vm-ubuntu:~$
```

Examples for using

- Showing the running machines and start the guest0

```
virsh list
virsh start guest0
virsh list
```

```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
cleo@vm-ubuntu:~$ virsh list  
Id      Name                                State  
-----  
  
cleo@vm-ubuntu:~$ virsh start guest0  
Domain guest0 started  
  
cleo@vm-ubuntu:~$ virsh list  
Id      Name                                State  
-----  
4       guest0                              running  
  
cleo@vm-ubuntu:~$
```

- **Connect to the console of VM**

```
virsh console guest0
```

```
cleo@vm-ubuntu: ~  
File Edit View Search Terminal Help  
cleo@vm-ubuntu:~$ virsh console guest0  
Connected to domain guest0  
Escape character is ^]  
  
Ubuntu 14.04.6 LTS cleo ttyS0  
  
cleo login: cleo  
Password:  
Last login: Wed Mar 27 11:26:38 CST 2019 on ttyS0  
Welcome to Ubuntu 14.04.6 LTS (GNU/Linux 3.13.0-167-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com/  
New release '16.04.6 LTS' available.  
Run 'do-release-upgrade' to upgrade to it.  
  
cleo@cleo:~$
```

- **use `ctrl +]` to exit from the VM's console**


```

cleo@vm-ubuntu: ~
File Edit View Search Terminal Help
cleo@vm-ubuntu:~$ virsh console guest0
Connected to domain guest0
Escape character is ^]

Ubuntu 14.04.6 LTS cleo ttyS0

cleo login: cleo
Password:
Last login: Wed Mar 27 11:26:38 CST 2019 on ttyS0
Welcome to Ubuntu 14.04.6 LTS (GNU/Linux 3.13.0-167-generic x86_64)

 * Documentation:  https://help.ubuntu.com/
New release '16.04.6 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

cleo@cleo:~$ ls
cleo@cleo:~$ cd / && ls
bin      etc      initrd.img.old  lost+found  opt      run      sys      var
boot     home     lib             media       proc     sbin     tmp      vmlinuz
dev      initrd.img  lib64          mnt         root     srv      usr      vmlinuz.old
cleo@cleo:/$
cleo@vm-ubuntu:~$

```

- Shutdown the vm

```

virsh list
virsh shutdown guest0
virsh list

```

```

cleo@vm-ubuntu: ~
File Edit View Search Terminal Help
cleo@vm-ubuntu:~$ virsh list
Id      Name                                State
-----
4       guest0                             running

cleo@vm-ubuntu:~$ virsh shutdown guest0
Domain guest0 is being shutdown

cleo@vm-ubuntu:~$ virsh list
Id      Name                                State
-----

cleo@vm-ubuntu:~$

```

Understanding for 'console=ttyS0,115200n8 serial'

- **Terminal, Console, tty**
 - **In history**

Console	Terminal
Internal Computer	External Computer
Parallel Port	Serial Prot
Only one per computer	Multiple per computer
System, background and kernel Messages	User need and knowable messages
Native device	Cable, network, keyboard, monitor, etc.

In the early days, computers were precious and expensive. One host, even many terminals, provided man-machine interface for the host. Many people used the resources of the host through the terminal. There are two kinds of terminal: character dumb terminal and graphic terminal.

The console is another kind of man-machine interface. This is the first man-machine interface for man-controlled mainframe.

- **Now**

Modern Terminal

- tty(teletype): all terminal device
- pty(pseudo-tty): other virtual terminals without actual devices
- pts(pseudo-terminal slave) and ptmx(pseudo-terminal master): combine to implement pty

Terminal and tty are synonym now.

	Serial Port Terminal	Pseudo-tty	Control terminal	Console terminal
Filename(/dev/)	ttyS(n)	ptmx, pts/n	tty	ttyn, console
Other interface aliases		pty[p-za-e][0-9a-f],tty[p-za-e][0-9a-f]		
purpose	Connecting Physical Terminal Equipment	Communication between Analog Terminal and Host	Point to the currently used terminal	The terminal of type Linux is simulated

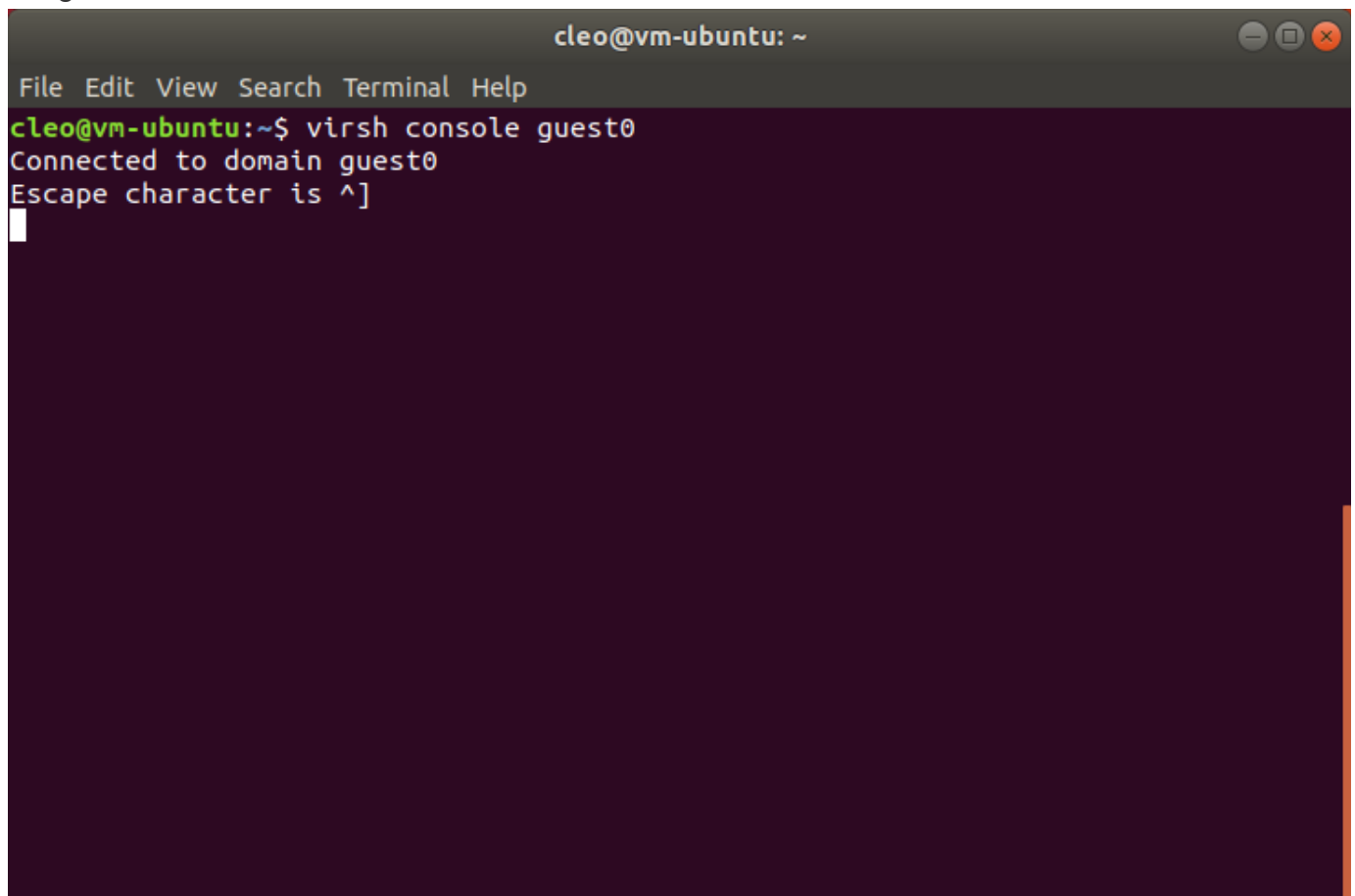
	Serial Port Terminal	Pseudo-tty	Control terminal	Console terminal
Open/View Mode		Terminal simulation software, remote host	Command TTY	alt + Fn

Modern Console

- Console: Physical primary terminal directly connected to the machine
- `/dev/console` is the system console, which must open the physical devices supporting the console; it is essentially a way to access the kernel; it is based on the PC display keyboard and other physical consoles, while facing users. `/dev/console` is similar to a buffer result used to print the kernel, such as the kernel loads the content to be printed into the buffer, and then console decides where to print (such as `tty0` or single-user mode). So `/dev/console` is used for external console.

- **Why configure 'console=ttyS0,115200n8 serial'**

If we don't add it, when we connect to the console of our VM using, it will not work. Just like the image blew:



```

cleo@vm-ubuntu: ~
File Edit View Search Terminal Help
cleo@vm-ubuntu:~$ virsh console guest0
Connected to domain guest0
Escape character is ^]

```

Whatever your input, whichever key you press in keyboard, it won't work. That's equivalent to stuck. We configure that parameter to allow the VM terminal connect to the KVM console.