



LINUX+ LAB SERIES (LX0-101)

Lab 1b: Ubuntu Desktop Linux Installation

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Introduction

This lab provides guidance on performing *Lab 1b: Ubuntu Desktop Linux* Installation of the *Linux+ LX0-101* course, using a NETLAB+ system. By performing this lab, students will learn how to install Ubuntu 12.04 LTS.

Objectives:

In this lab, we will install Ubuntu. The following tasks will be performed.

1. Install Ubuntu using a custom hard disk layout.
2. Make configuration changes to modify the Ubuntu GRUB 2 menu.

Linux+ LX0-101 Objectives

This lab will cover the topics for the following LX0-101 objectives that are listed in ***bold italics*** (the remaining topics will be covered in other labs):

102.1 Design hard disk layout

1. ***Allocate filesystems and swap space to separate partitions or disks.***
2. ***Tailor the design to the intended use of the system.***
3. ***Ensure the /boot partition conforms to the hardware architecture requirements for booting.***
4. Knowledge of basic features of LVM.

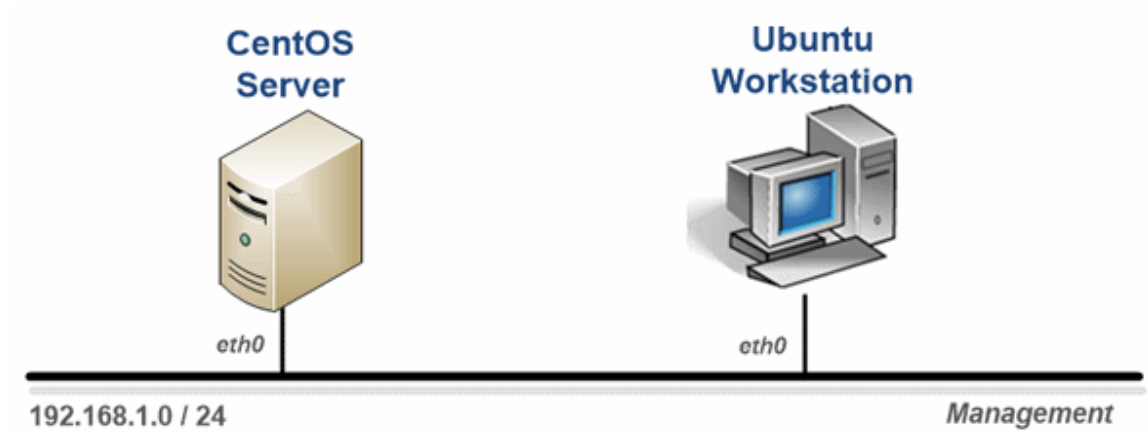
The following is a partial list of the used files, terms and utilities:

- a. ***/ (root) filesystem***
- b. /var filesystem
- c. ***/home filesystem***
- d. ***swap space***
- e. ***mount points***
- f. ***partitions***

102.2 Install a boot manager

1. Providing alternative boot locations and backup boot options.
2. Install and configure a boot loader such as GRUB Legacy.
3. ***Perform basic configuration changes for GRUB 2.***
4. Interact with the boot loader.
5. The following is a partial list of the used files, terms, and utilities
 - a. /boot/grub/menu.lst, ***grub.cfg*** and other variations.
 - b. grub-install
 - c. MBR
 - d. superblock

Lab Topology



Lab Settings

The information in the table below will be used to complete the lab. Additional details will be provided in the tasks sections of the lab as required.

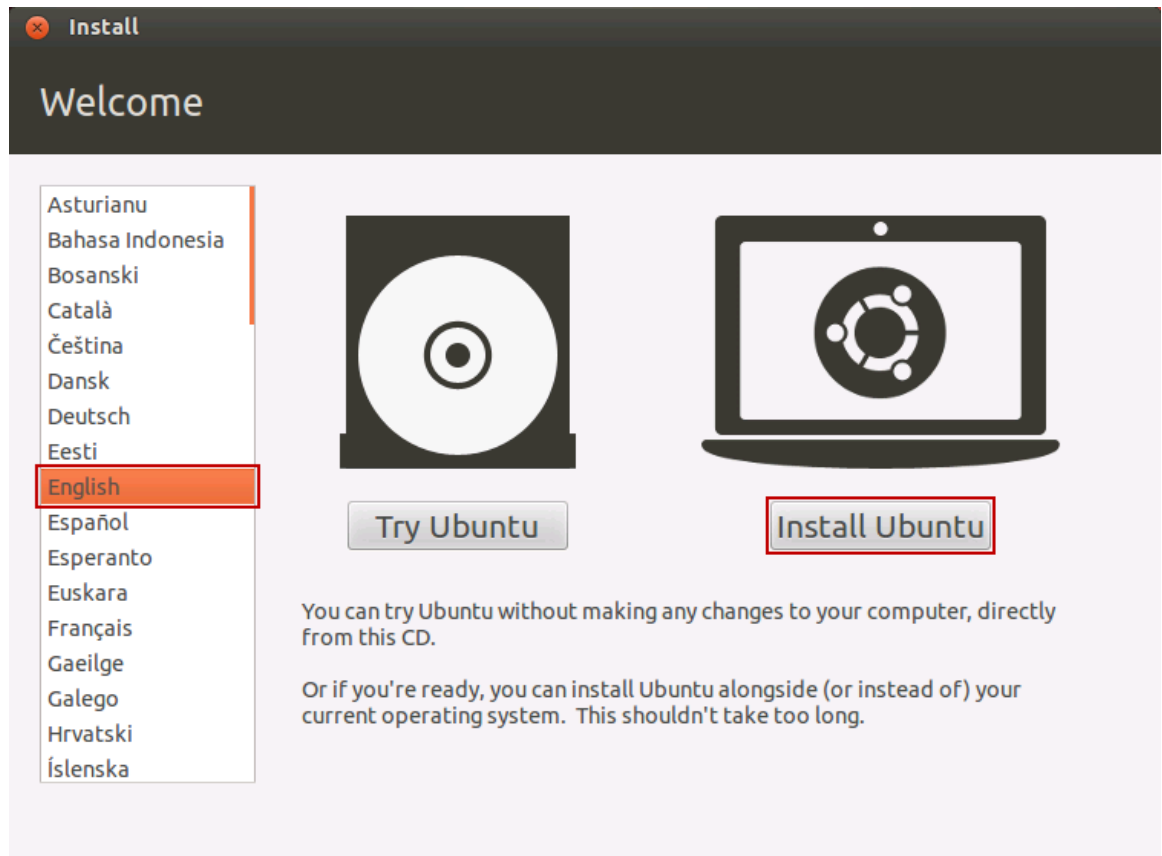
Primary partitions will be specified throughout instead of logical partitions.

System	Password	Partition Type	Mount Point	Partition Size	Comments
Ubuntu	Train1ng	ext2	/boot	250 MB	Typically static data so ext2 is fine
		swap	N/A	2 GB	Virtual Memory
		ext4	/	10 GB	Operating System Files
		ext4	/home	Balance of space ~ 5 GB	User Data

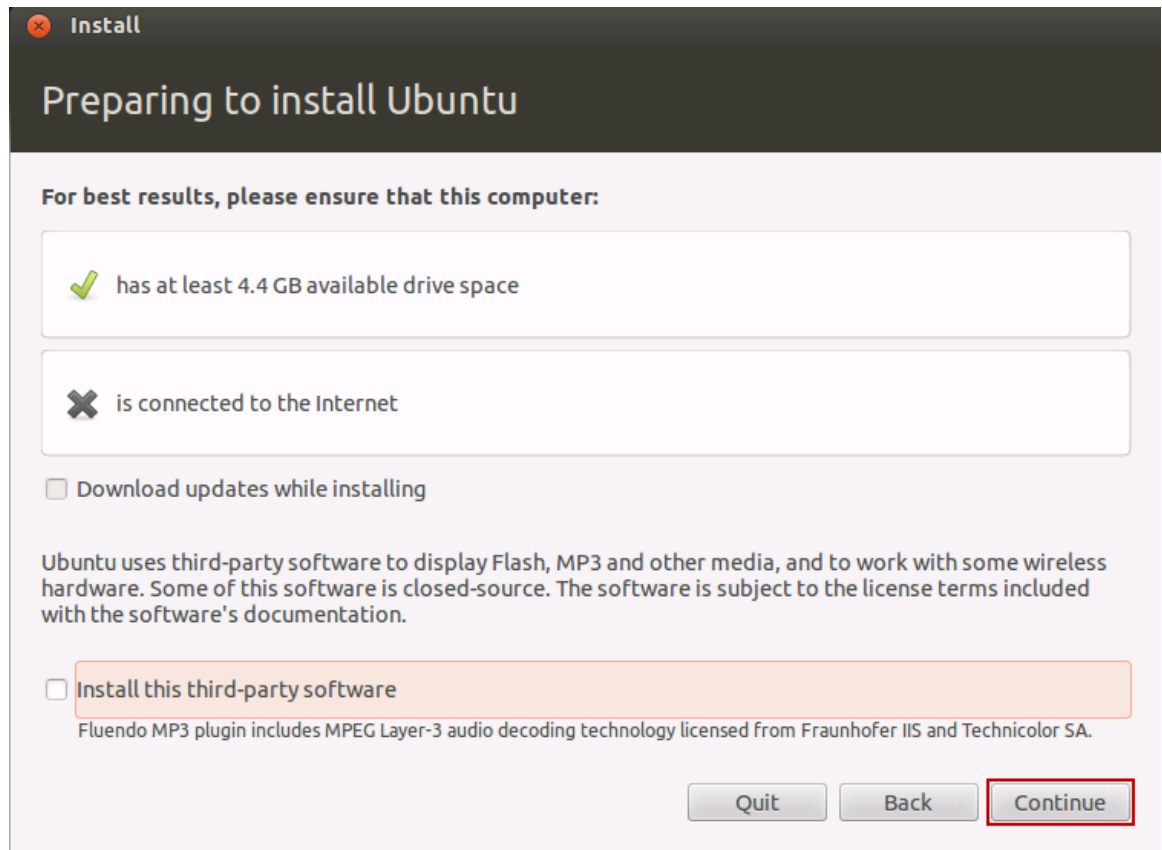
1 Install Ubuntu Using a Custom Hard Disk Layout

In this task, we will install Ubuntu using the custom disk layout specified in the Lab Settings earlier in this document.

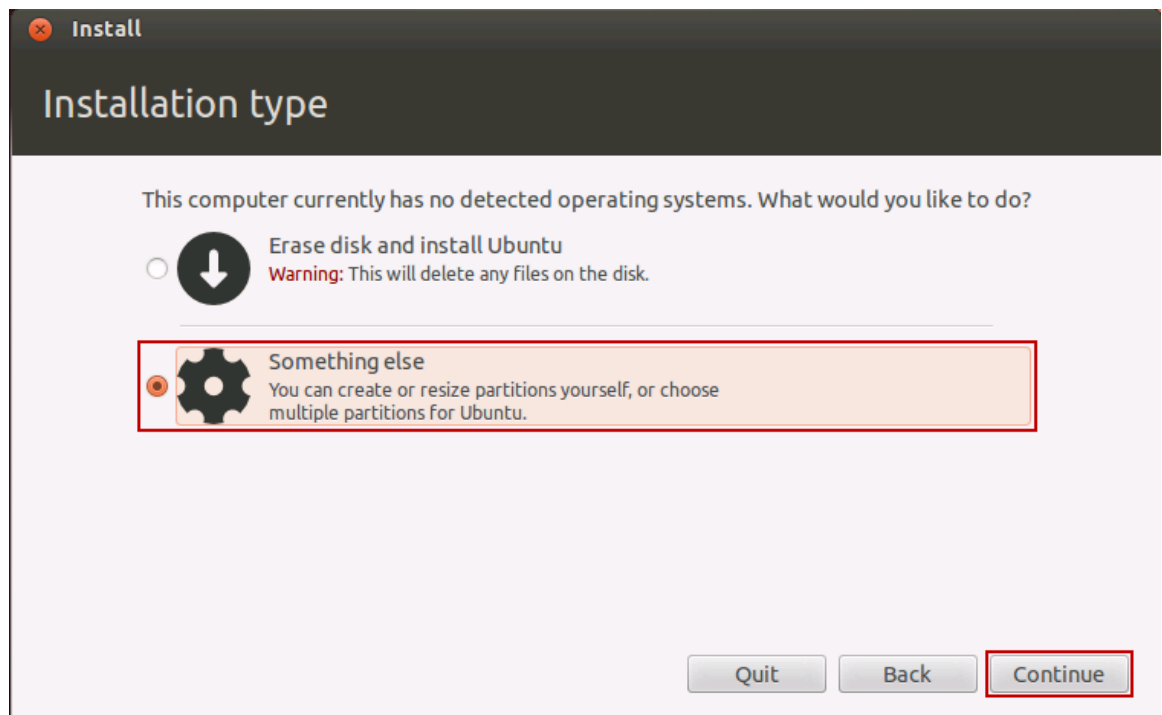
1. Click on the **Ubuntu Workstation** in the topology.
2. Select **English** as the language and then click **Install Ubuntu**:



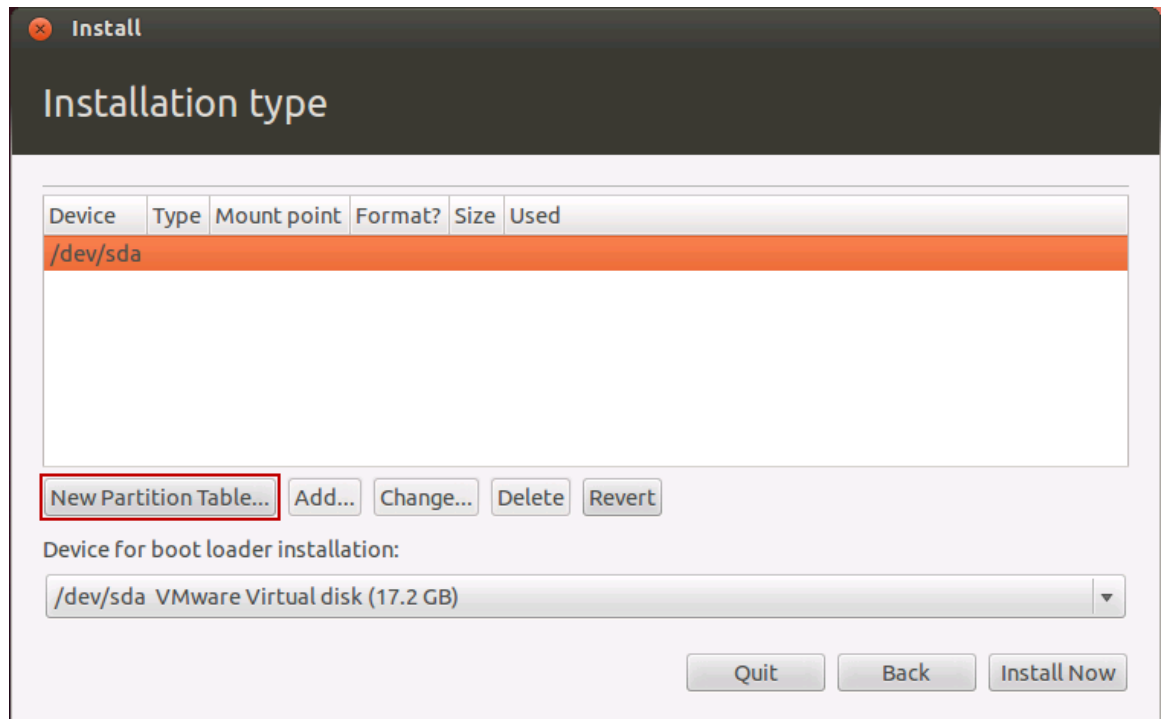
3. Click **Continue**:



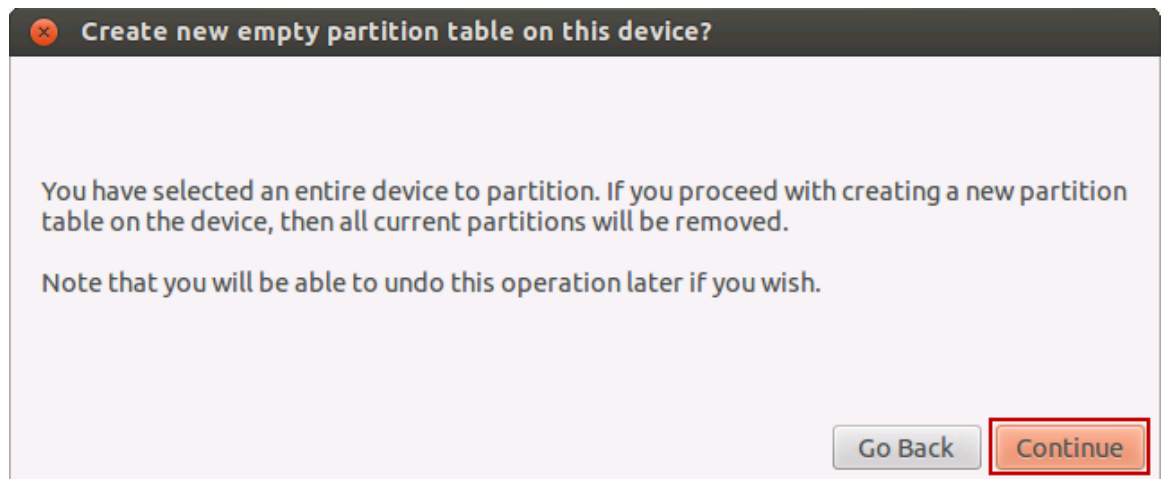
4. Click the radio button for **Something else**, then click **Continue**:



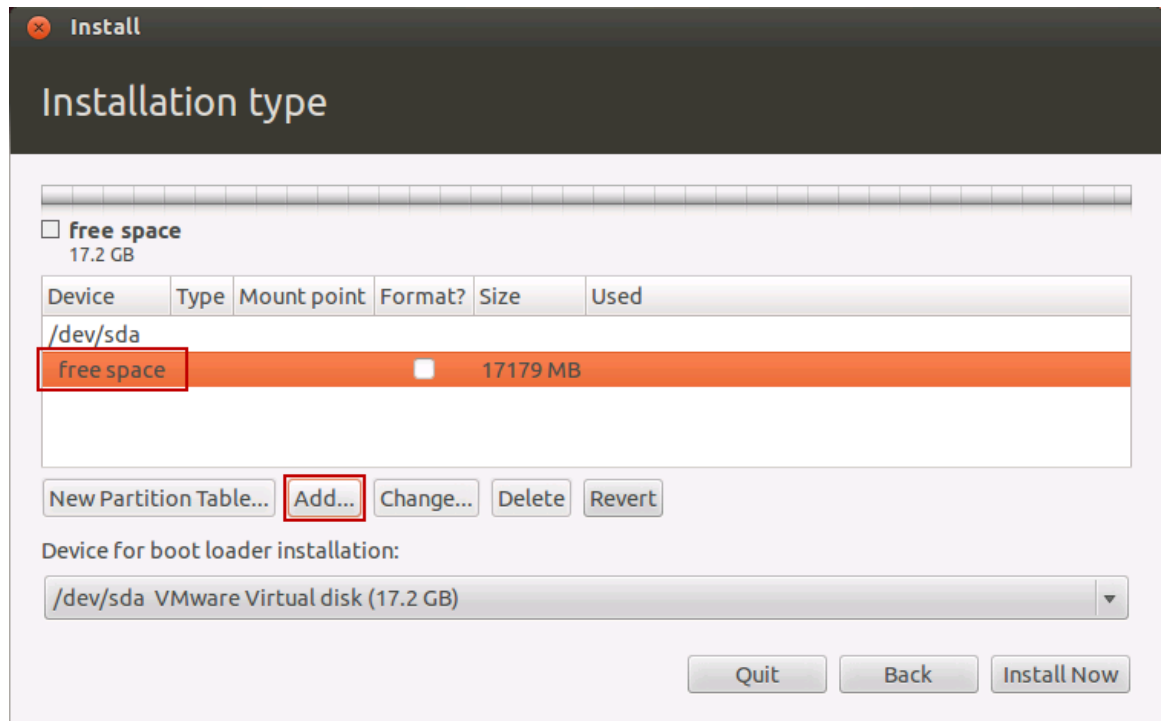
5. Click on **New Partition Table...**



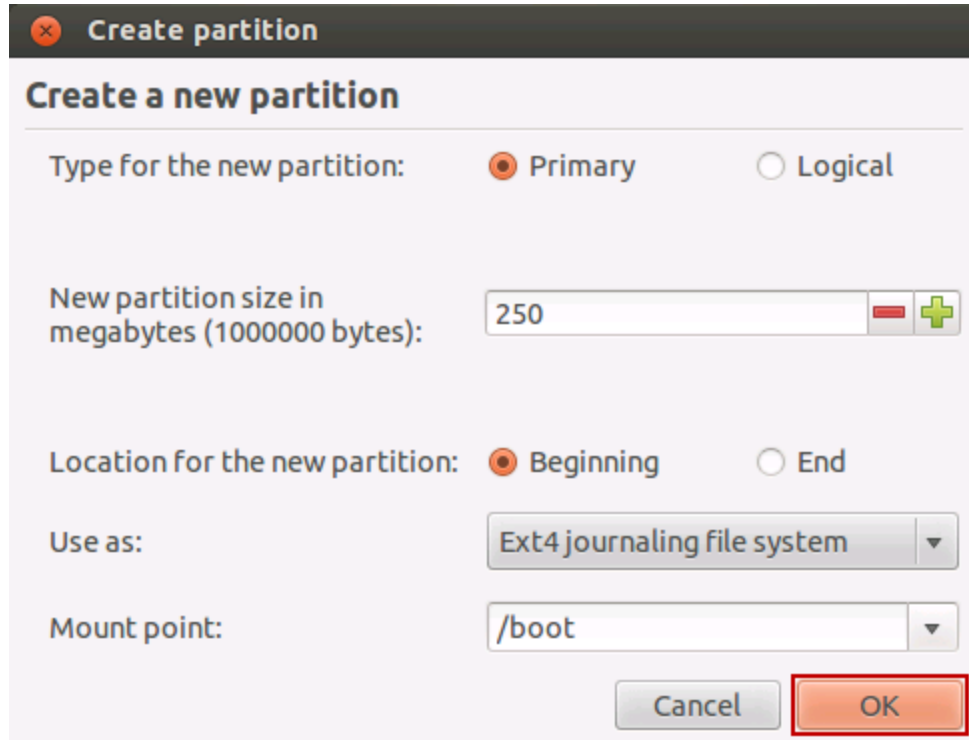
6. Click the **Continue** button.



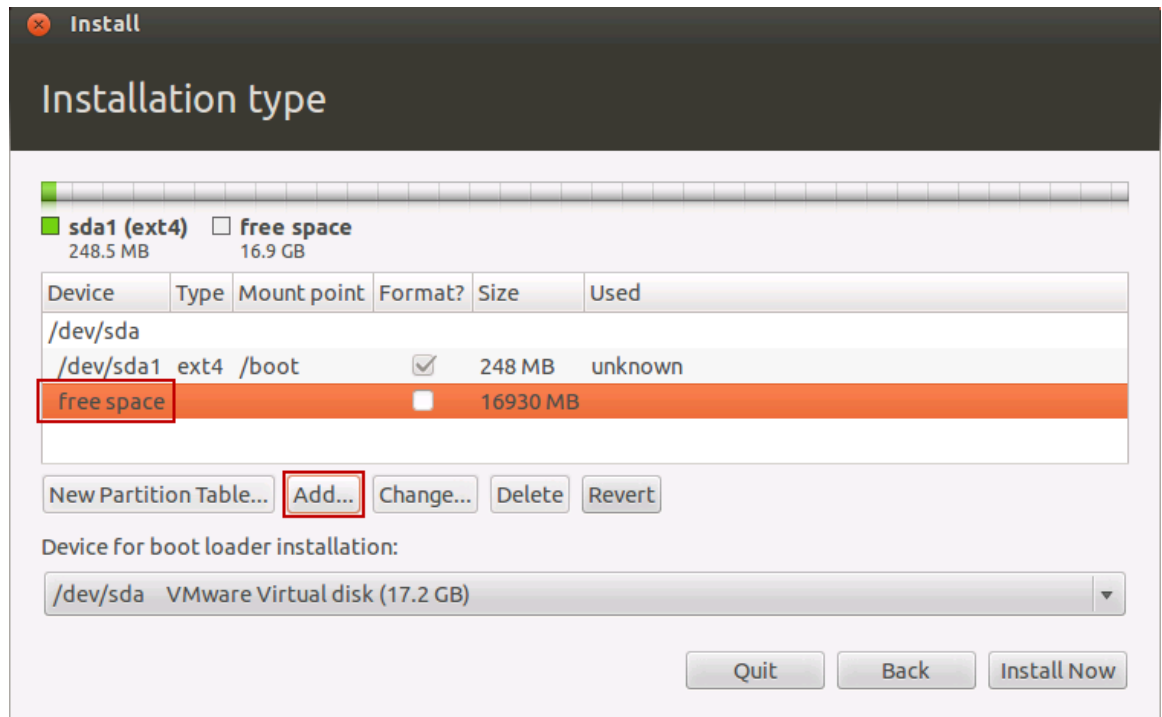
7. Select **free space**, then click **Add**:



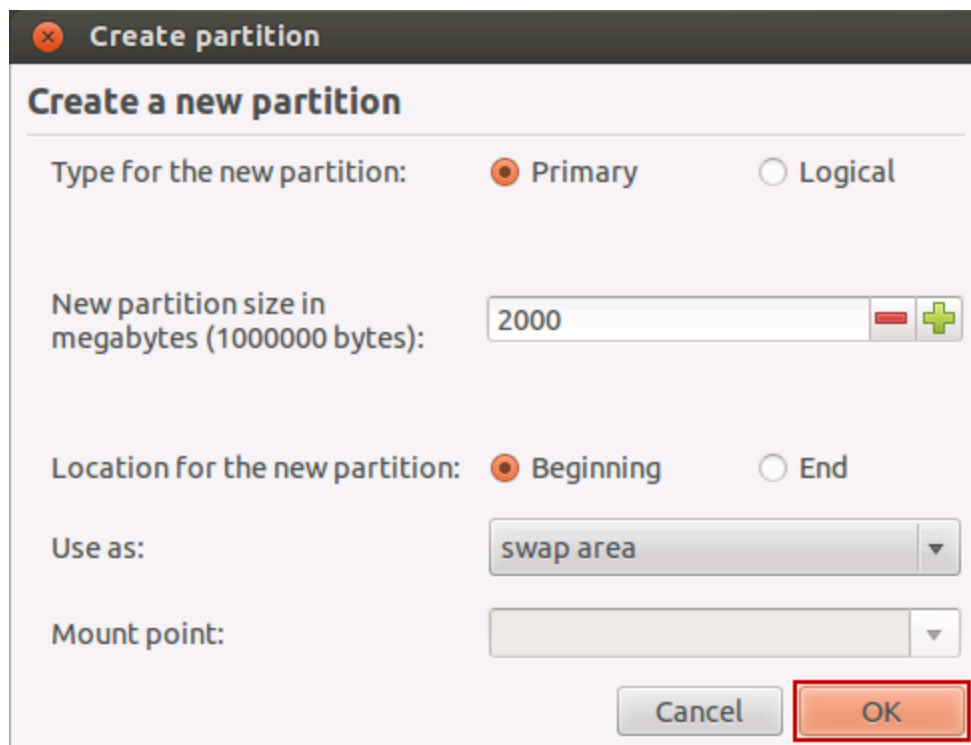
8. Fill in the information to match the screen below and then click **OK**:

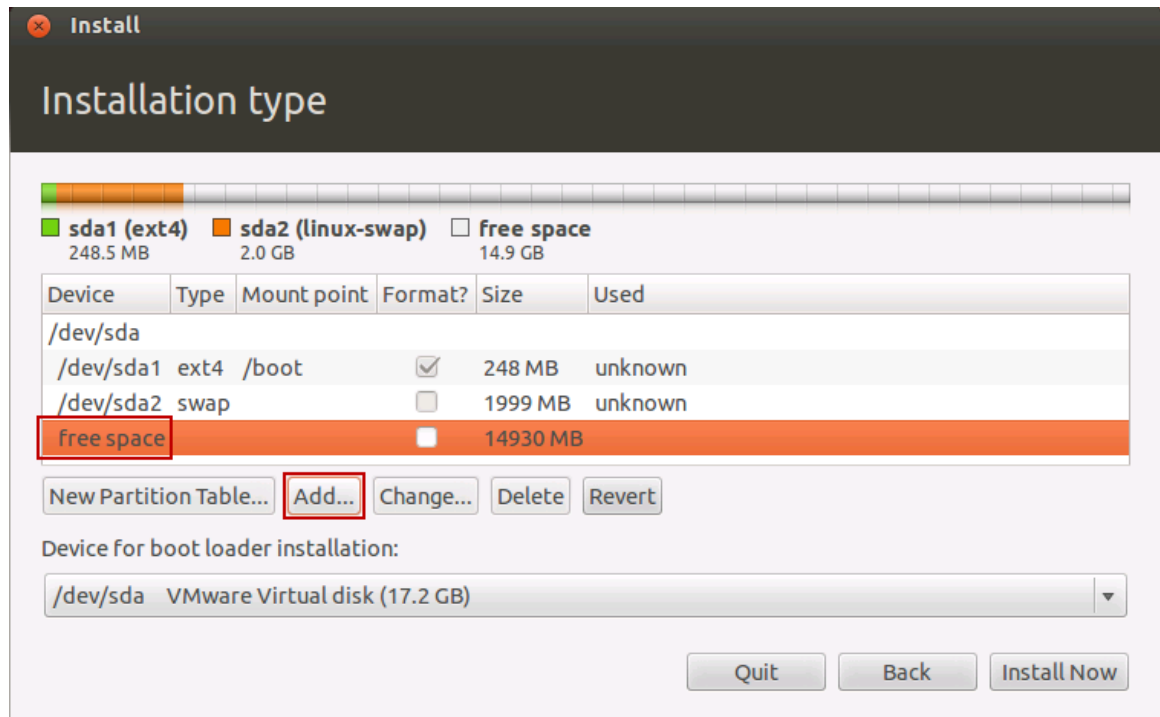
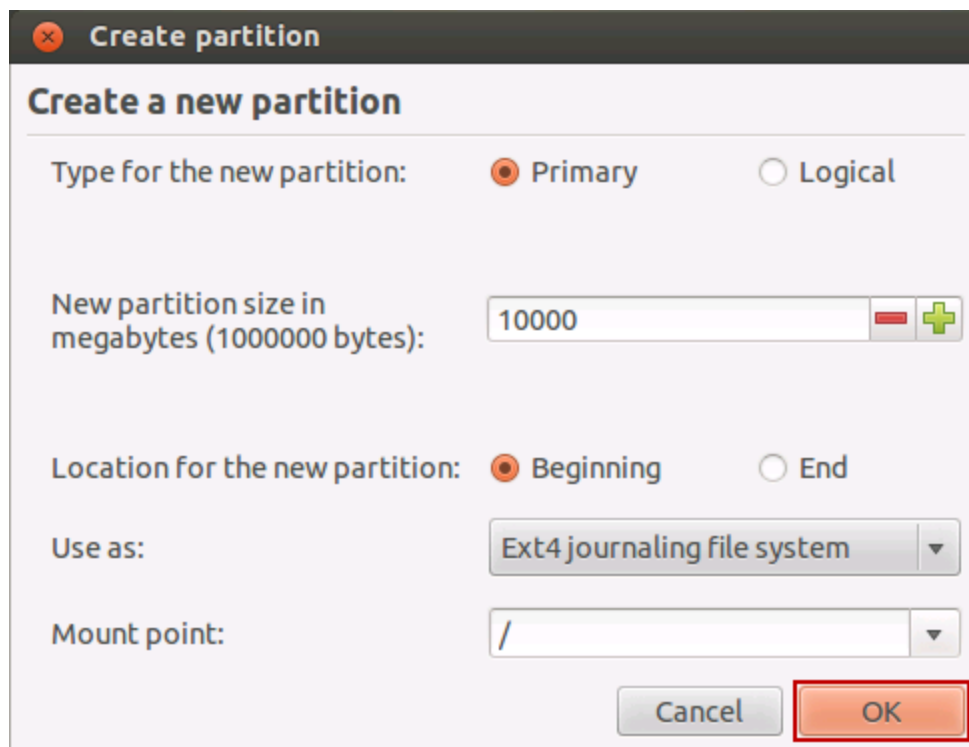


9. Select **free space**, then click **Add...**

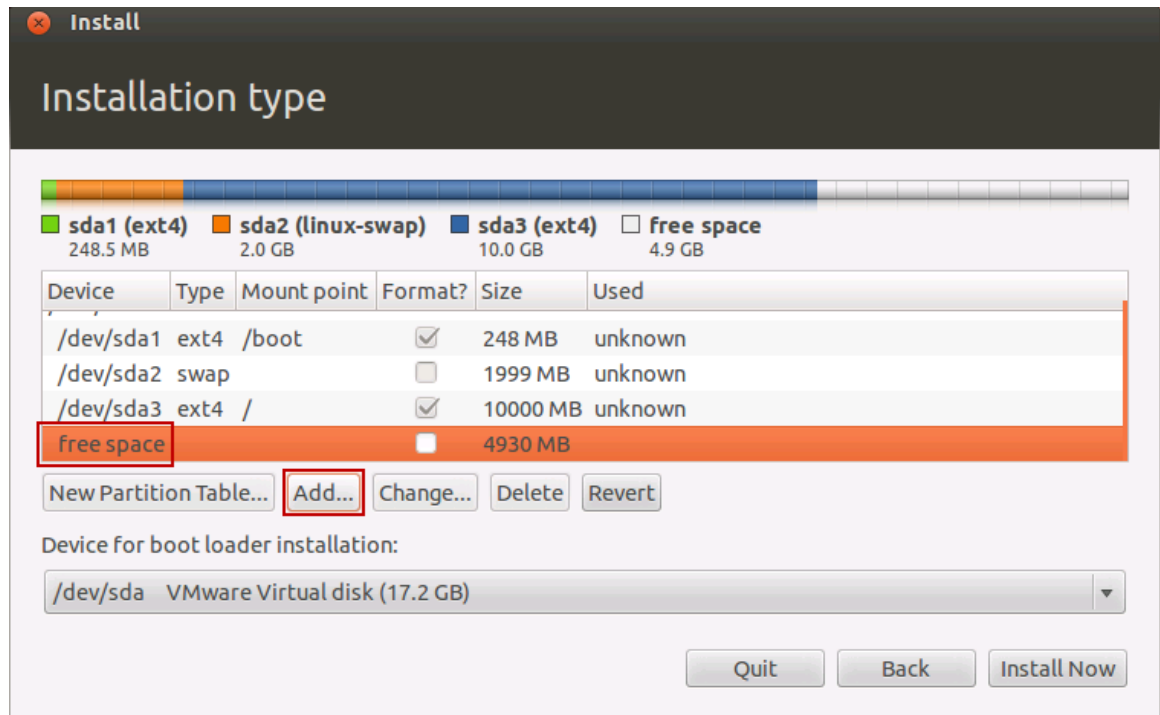


10. Fill in the information to match the screen below and then click **OK**:

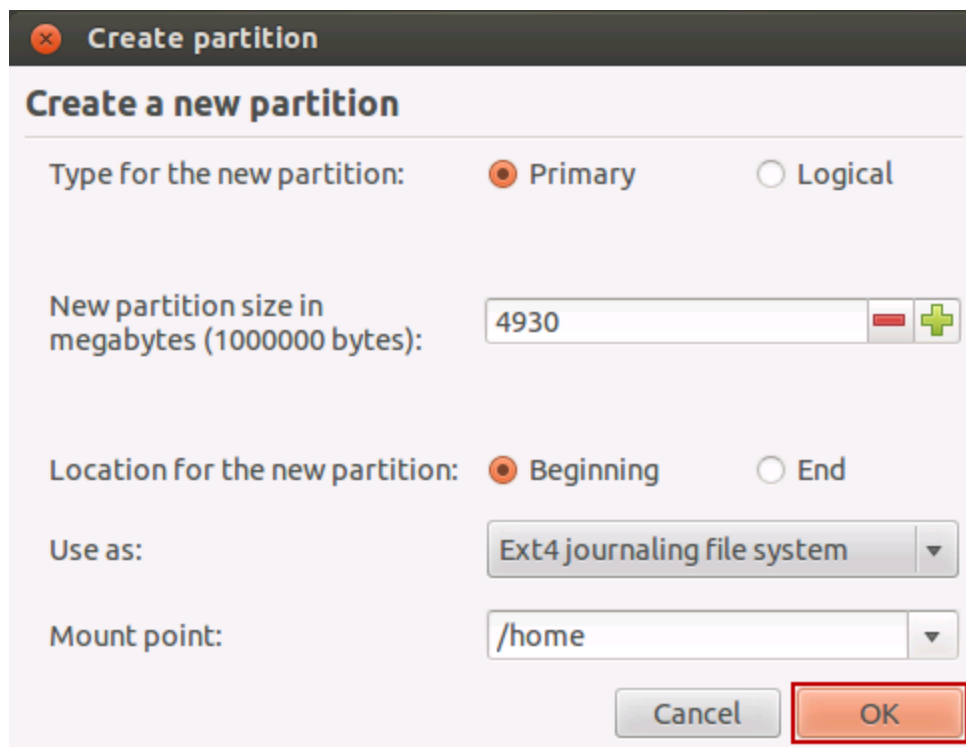


11. Select **free space**, then click **Add...**12. Fill in the information to match the screen below and then click **OK**:

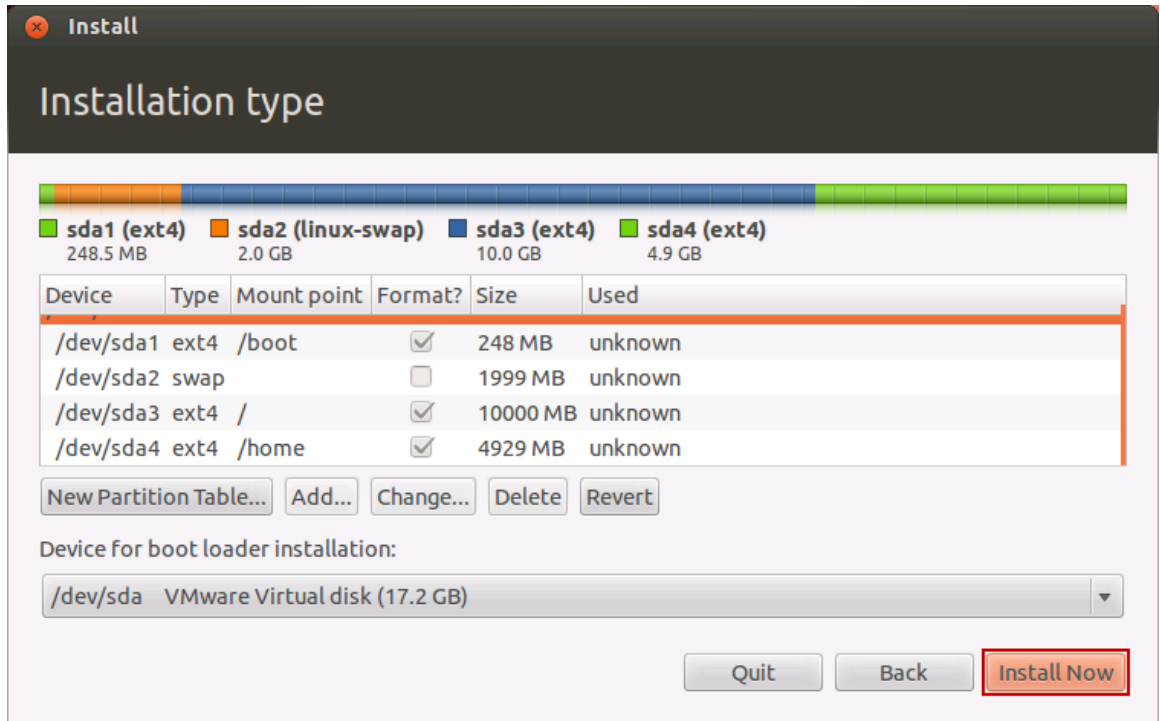
13. Select **free space**, then click **Add...**



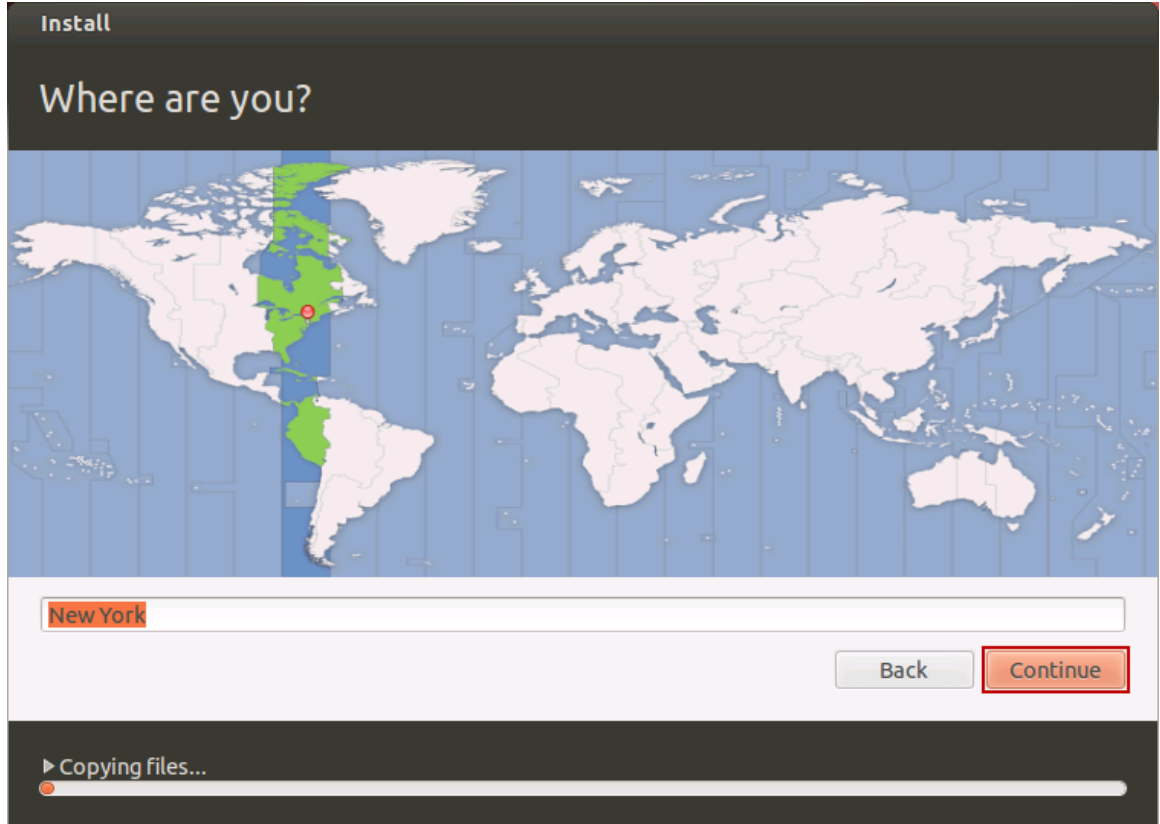
14. Fill in the information to match the screen below and then click **OK**:



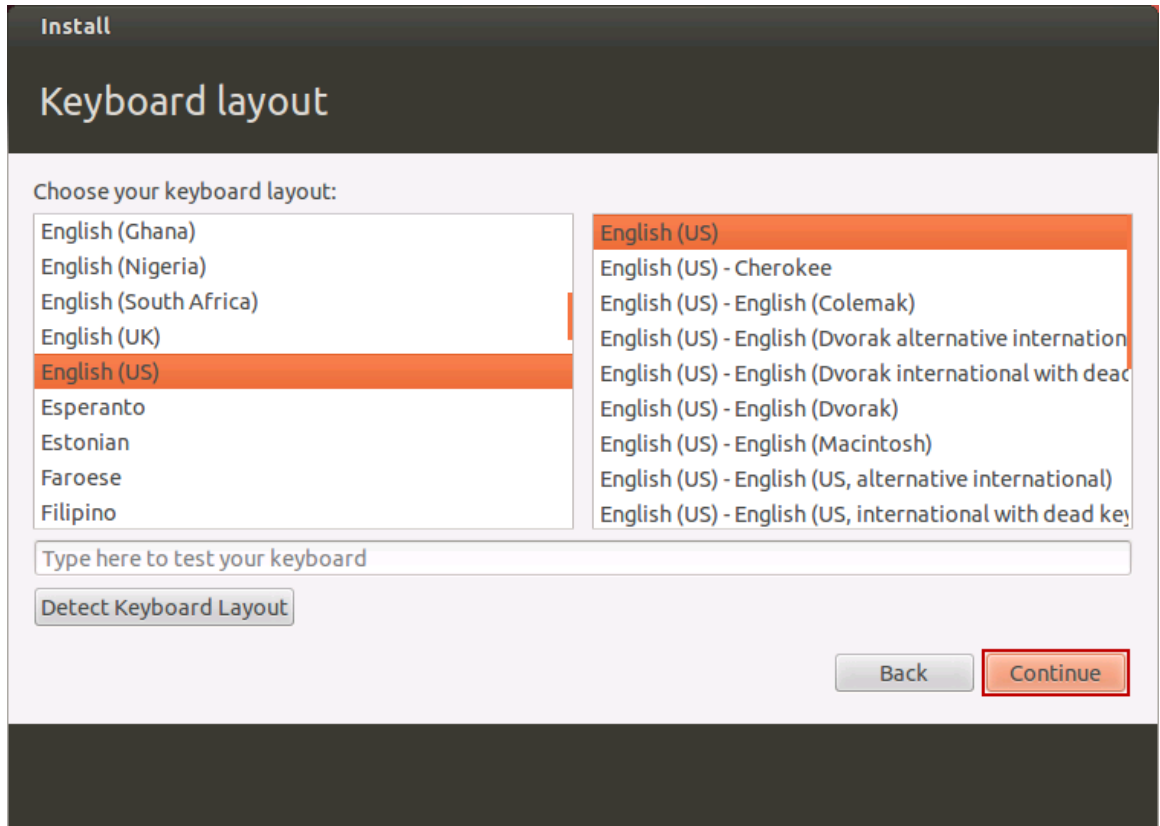
15. Click **Install Now**:



16. Click on your time zone/city in the map, then click **Continue**:



17. Select your Keyboard layout **English (US)**, **English (US)** , then click **Continue**:



18. Enter information as shown below, using `Training` for a password, then click **Continue**:

The screenshot shows the 'Who are you?' screen in the Ubuntu installer. The title bar says 'Install'. The main heading is 'Who are you?'. The form contains the following fields and options:

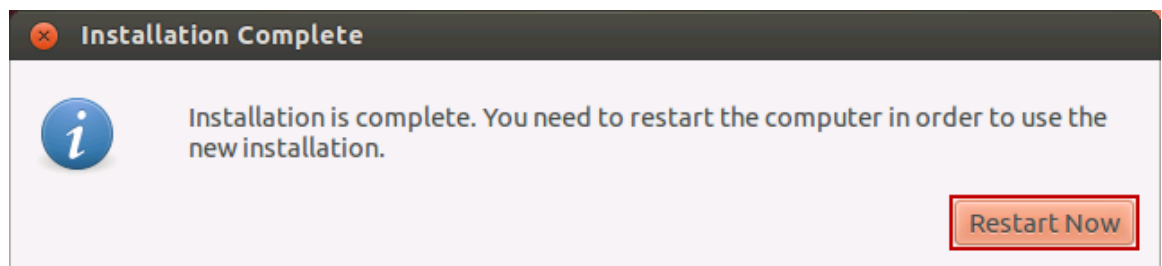
- Your name:** Jane Doe ✓
- Your computer's name:** jane-vm ✓
The name it uses when it talks to other computers.
- Pick a username:** jane ✓
- Choose a password:** [masked] Fair password
- Confirm your password:** [masked] ✓
- Log in automatically
- Require my password to log in
- Encrypt my home folder

At the bottom right, there are two buttons: 'Back' and 'Continue'. The 'Continue' button is highlighted with a red border.

19. The installation will proceed; let it complete undisturbed:



20. Click **Restart Now**:

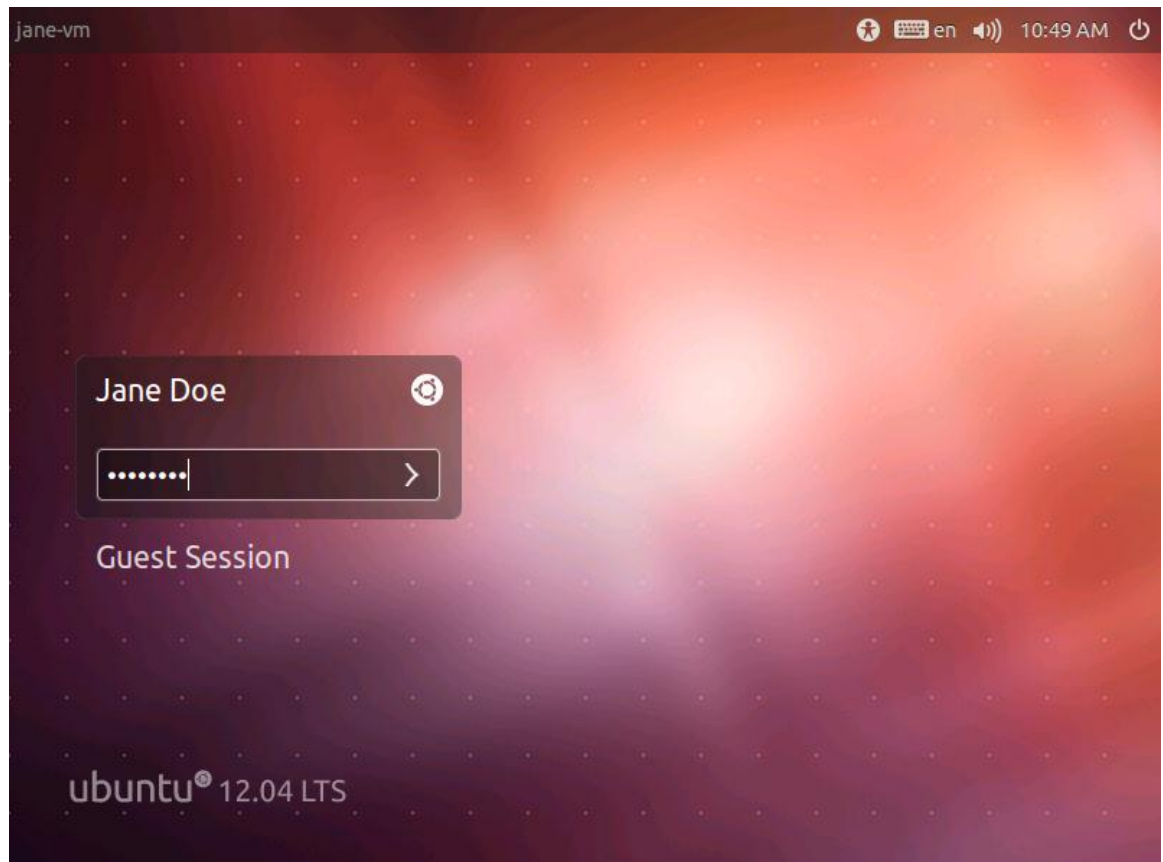


21. When prompted to remove media, press the **Enter** key.

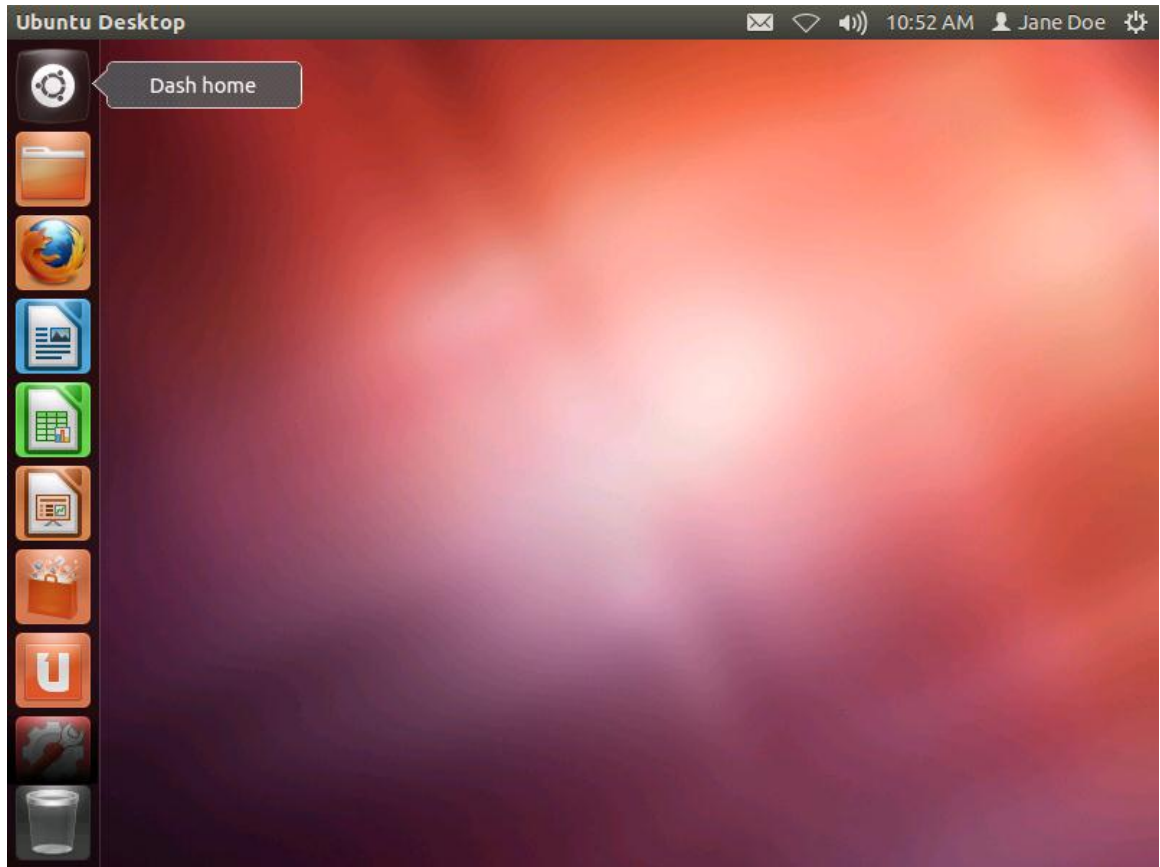
```
Ubuntu 12.04
. . . . . * Killing all remaining processes..
. t/speech-dispatcher [fail]
modem-manager[1157]: <info> Caught signal 15, shutting down...

* Deconfiguring network interfaces... [ OK ]
* Unmounting temporary filesystems... [ OK ]
* Deactivating swap... [ OK ]
* Stopping remaining crypto disks... [ OK ]
* Stopping early crypto disks... [ OK ]
umount: /run/lock: not mounted
* casper is resyncing snapshots and caching reboot files...
Please remove installation media and close the tray (if any) then press ENTER:
```

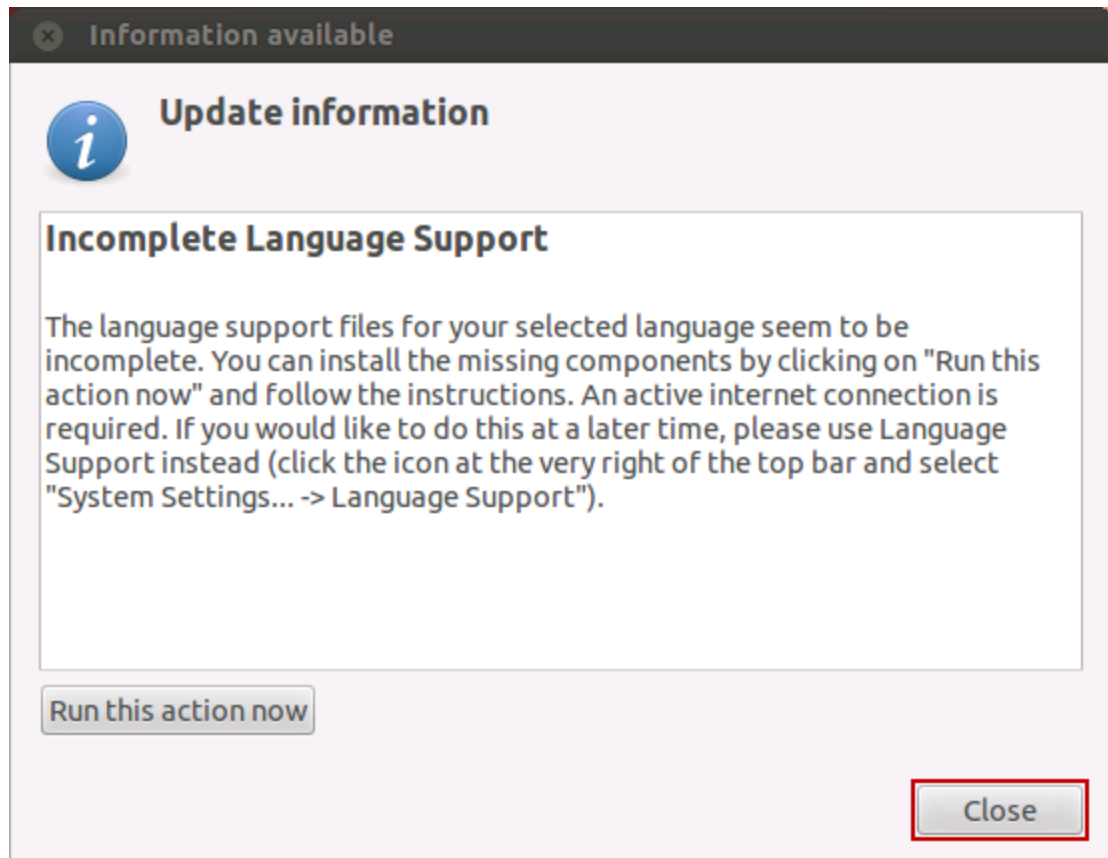
22. For the password, enter `Training` and then press the **Enter** key:



23. Congratulations! You have just installed Ubuntu. Mouse over the buttons on the left to view their functions:



24. If prompted to update information, just click the **Close** button.



25. To open a terminal, click on the Dash home button, then type `Terminal` in the search field. Finally, click on **Terminal**.

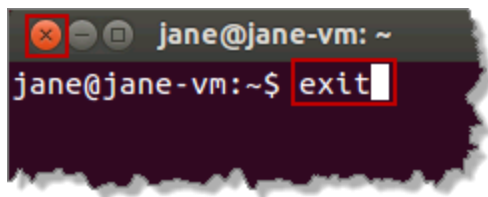


26. Note the shell prompt in the image below. This prompt demonstrates the command shell (bash) is ready for you to type commands:



27. Close the terminal by either clicking on the close button or typing `exit` at the prompt followed by pressing **Enter**.

```
exit
```



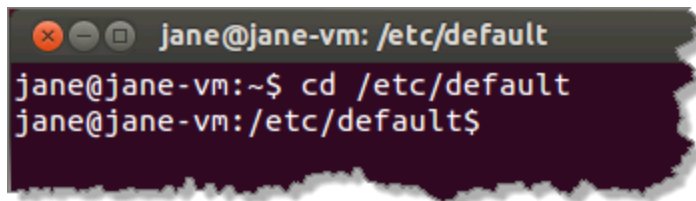
2 Make Configuration Changes to Modify the Ubuntu GRUB 2 Menu

In this task, we will modify GRUB to display the boot menu and set a 30 second timeout.

1. Open a terminal window using the method previously described.
2. Change directory `cd` to the location where the GRUB configuration file resides `/etc/default/grub` as shown below:

```
cd /etc/default
```

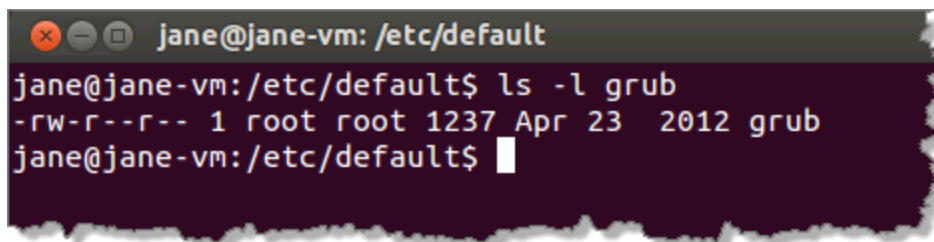
Your output should be similar to the following:

A terminal window with a dark background and light text. The title bar shows 'jane@jane-vm: /etc/default'. The terminal content shows the user at the prompt 'jane@jane-vm:~\$' typing 'cd /etc/default' and receiving the response 'jane@jane-vm: /etc/default\$'.

```
jane@jane-vm: /etc/default
jane@jane-vm:~$ cd /etc/default
jane@jane-vm: /etc/default$
```

3. List the GRUB configuration file. Note that the `-l`. Be aware that the list command below is a lowercase 'L', not a numeric "one":

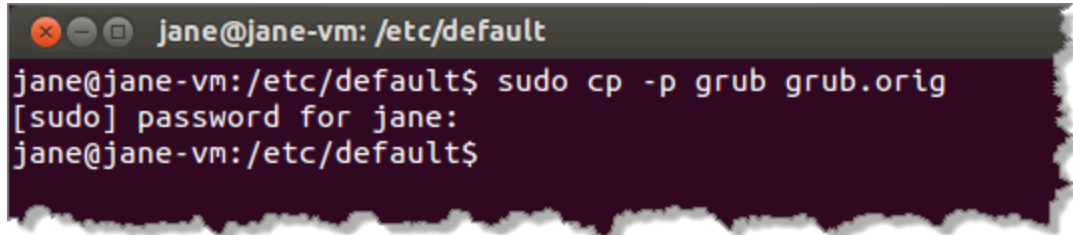
```
ls -l grub
```

A terminal window with a dark background and light text. The title bar shows 'jane@jane-vm: /etc/default'. The terminal content shows the user at the prompt 'jane@jane-vm: /etc/default\$' typing 'ls -l grub' and receiving the response '-rw-r--r-- 1 root root 1237 Apr 23 2012 grub'.

```
jane@jane-vm: /etc/default
jane@jane-vm: /etc/default$ ls -l grub
-rw-r--r-- 1 root root 1237 Apr 23 2012 grub
jane@jane-vm: /etc/default$
```

4. Create a backup copy in case we “clobber” it, and then list the files again. The `-p` argument preserves the mode, ownership, and timestamp of the file:
Enter the command to copy:

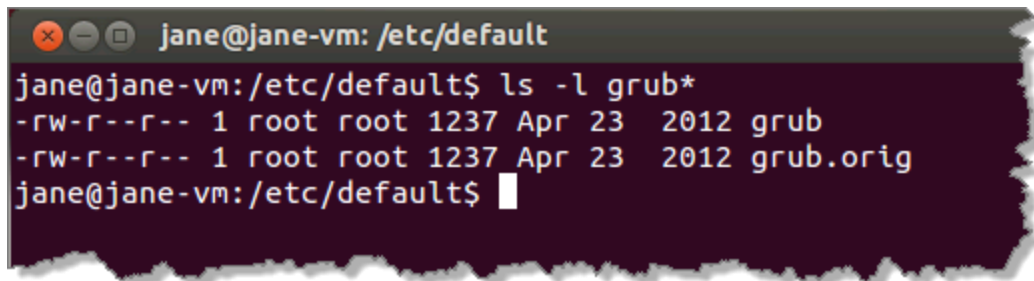
```
sudo cp -p grub grub.orig
```



```
jane@jane-vm: /etc/default
jane@jane-vm:/etc/default$ sudo cp -p grub grub.orig
[sudo] password for jane:
jane@jane-vm:/etc/default$
```

- Enter the password if prompted, `Training`.
List grub files:

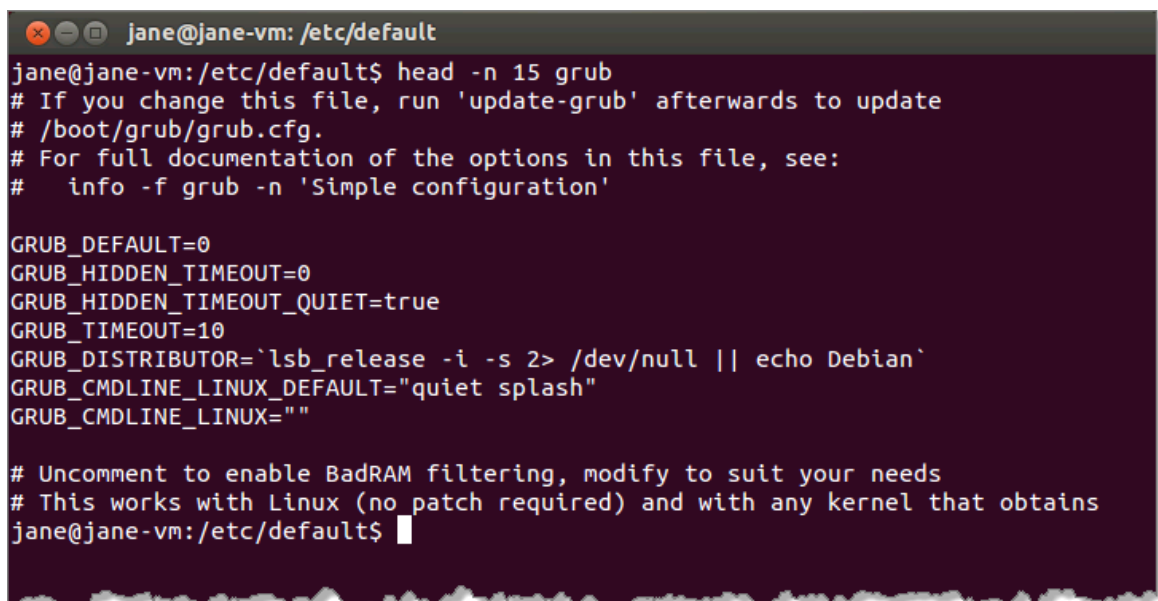
```
ls -l grub*
```



```
jane@jane-vm: /etc/default
jane@jane-vm:/etc/default$ ls -l grub*
-rw-r--r-- 1 root root 1237 Apr 23 2012 grub
-rw-r--r-- 1 root root 1237 Apr 23 2012 grub.orig
jane@jane-vm:/etc/default$
```

5. Use the `head` command to display only the first 15 lines of the `grub` file:

```
head -n 15 grub
```



```
jane@jane-vm: /etc/default
jane@jane-vm:/etc/default$ head -n 15 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_HIDDEN_TIMEOUT=0
GRUB_HIDDEN_TIMEOUT_QUIET=true
GRUB_TIMEOUT=10
GRUB_DISTRIBUTOR=`lsb_release -i -s 2> /dev/null || echo Debian`
GRUB_CMDLINE_LINUX_DEFAULT="quiet splash"
GRUB_CMDLINE_LINUX=""

# Uncomment to enable BadRAM filtering, modify to suit your needs
# This works with Linux (no patch required) and with any kernel that obtains
jane@jane-vm:/etc/default$
```

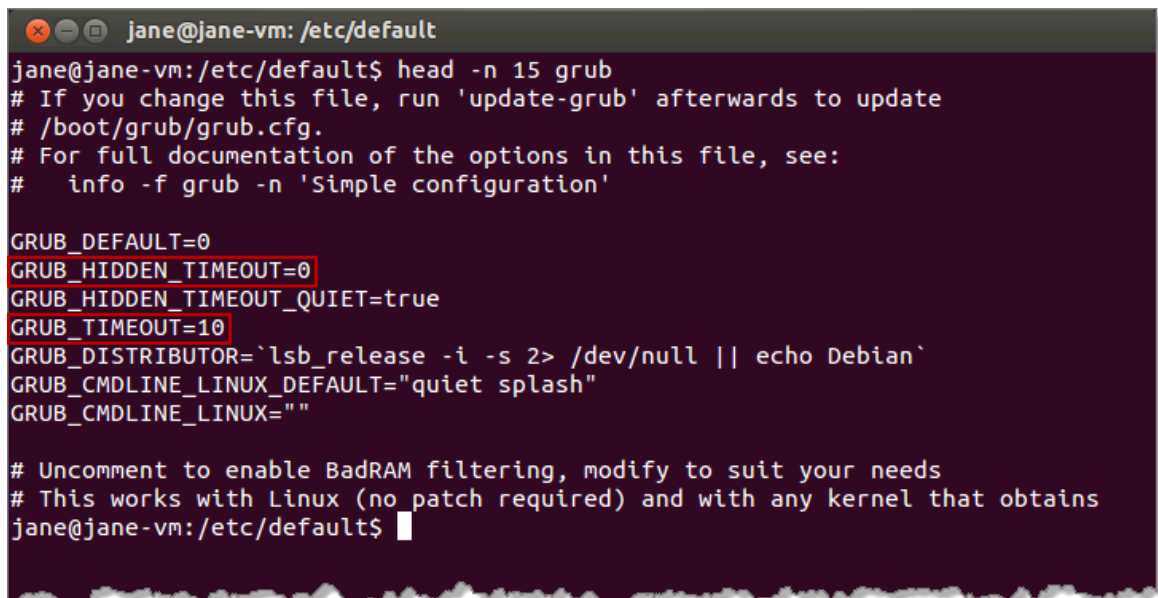
6. We will modify two of the parameters in the grub file as shown below:

```
FROM:      GRUB_HIDDEN_TIMEOUT=0
TO:        #GRUB_HIDDEN_TIMEOUT=0

FROM:      GRUB_TIMEOUT=10
TO:        GRUB_TIMEOUT=30
```

The first change adds the pound sign (#) in front of the parameter to “unhide” the boot menu and make it visible upon boot. The second modification changes the timeout time from 10 seconds to 30 seconds.

Even though `vi` is indeed available to edit the file, we will use `gedit`. `gedit` is a graphical text editor that is more user friendly and intuitive. Navigation is similar to a word processor.



```
jane@jane-vm: /etc/default
jane@jane-vm:/etc/default$ head -n 15 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_HIDDEN_TIMEOUT=0
GRUB_HIDDEN_TIMEOUT_QUIET=true
GRUB_TIMEOUT=10
GRUB_DISTRIBUTOR=`lsb_release -i -s 2> /dev/null || echo Debian`
GRUB_CMDLINE_LINUX_DEFAULT="quiet splash"
GRUB_CMDLINE_LINUX=""

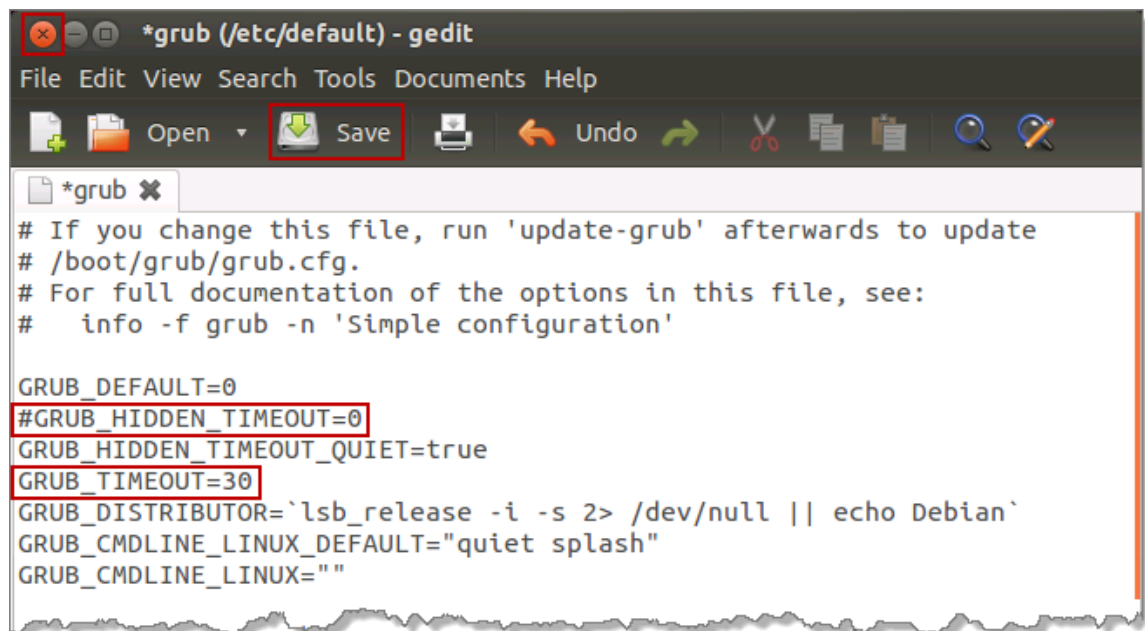
# Uncomment to enable BadRAM filtering, modify to suit your needs
# This works with Linux (no patch required) and with any kernel that obtains
jane@jane-vm:/etc/default$
```


7. Enter the following command to invoke `gedit` to modify the `grub` file.

```
sudo gedit grub
```

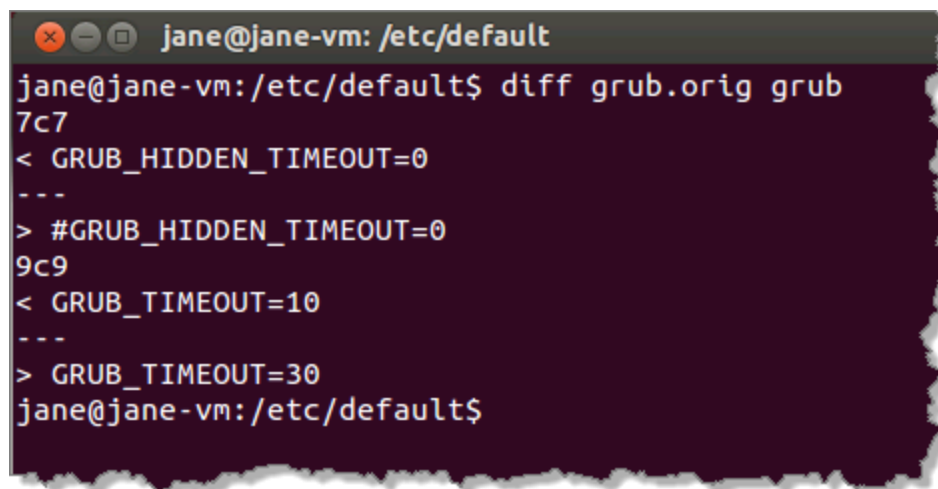
Enter the password `Training`, if prompted.

8. Make the modifications as noted below, then **Save** and close `gedit`:
- Add a `#` sign in front of `GRUB_HIDDEN_TIMEOUT=0`.
 - Change the value of `GRUB_TIMEOUT` from 10 to 30.
 - Click **Save**.
 - Click the **X** to close `gedit`.



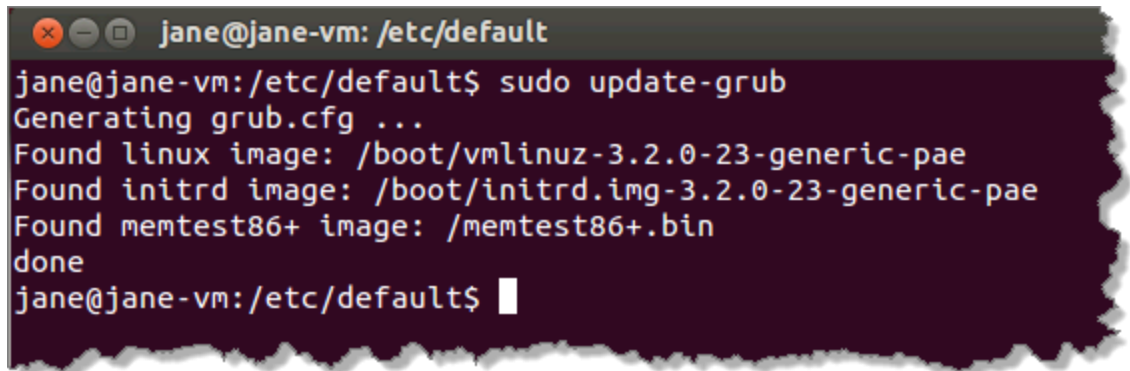
9. Enter the `diff` command to see the difference between the original file, of which we made a backup, and the modified file:

```
diff grub.orig grub
```



10. After making modifications, enter the command below to commit the changes and enable them to take effect:

```
sudo update-grub
```



```
jane@jane-vm: /etc/default
jane@jane-vm:/etc/default$ sudo update-grub
Generating grub.cfg ...
Found linux image: /boot/vmlinuz-3.2.0-23-generic-pae
Found initrd image: /boot/initrd.img-3.2.0-23-generic-pae
Found memtest86+ image: /memtest86+.bin
done
jane@jane-vm:/etc/default$
```

The changes are implemented in the main GRUB 2 configuration file, `/boot/grub/grub.cfg`. This file is typically not modified manually.

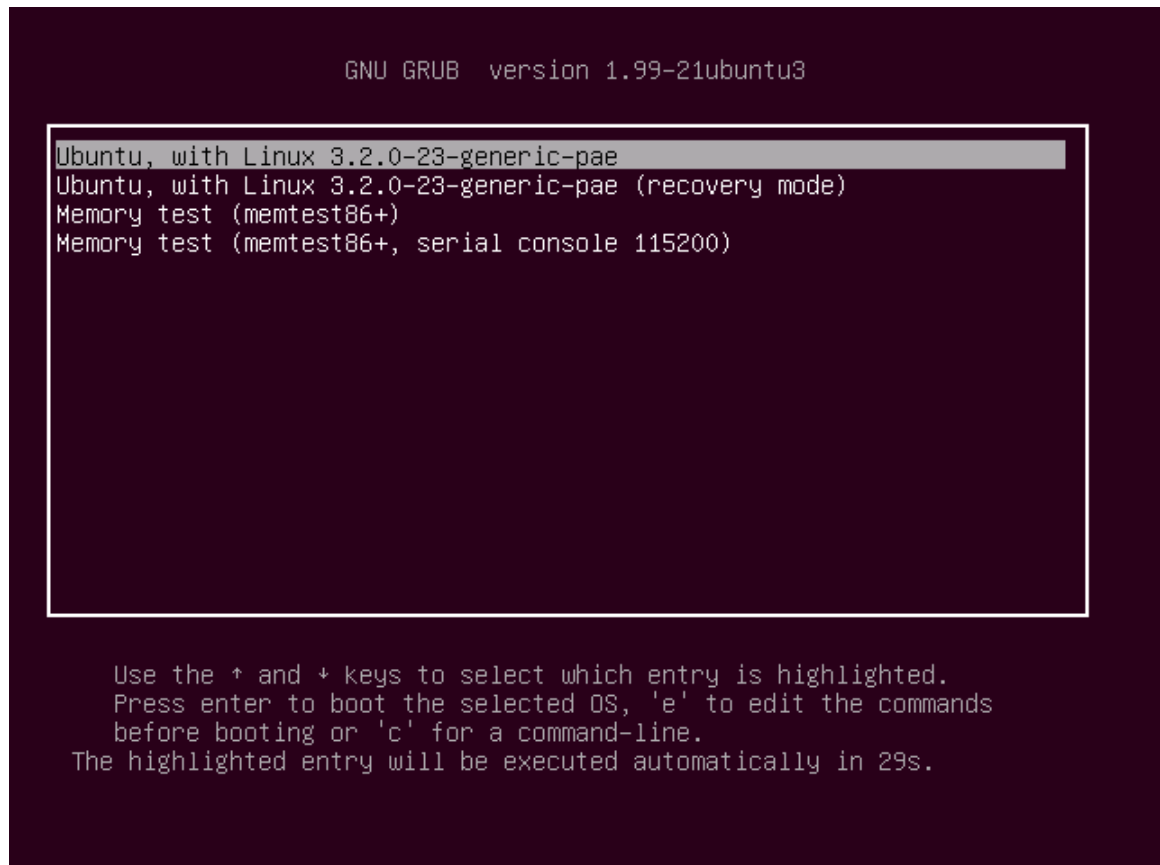
11. Reboot the **Ubuntu Workstation**.

```
sudo reboot
```

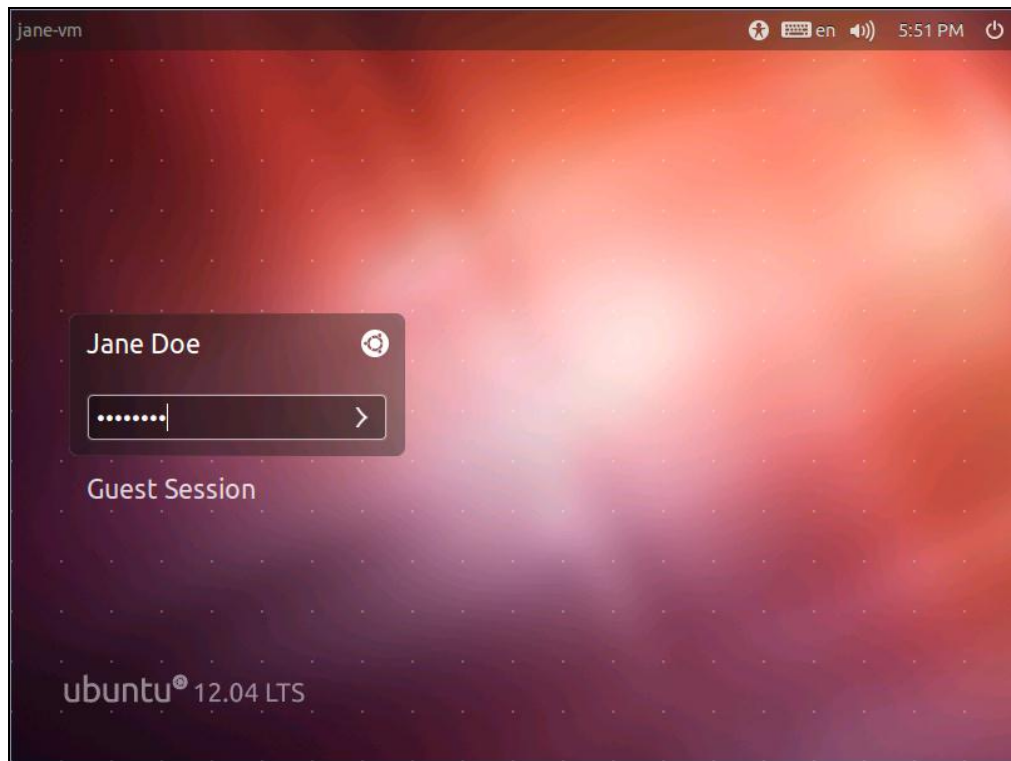


```
jane@jane-vm: /etc/default
jane@jane-vm:/etc/default$ sudo reboot
```

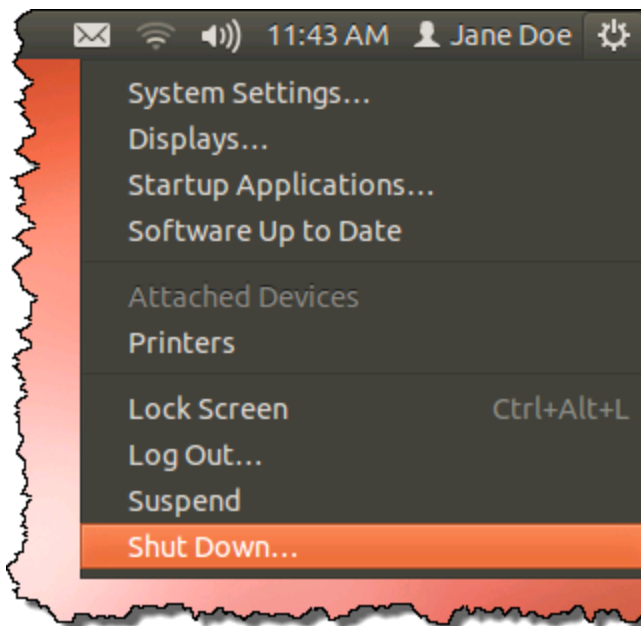
12. Observe that the boot menu is now displayed. Press **Enter** to select the default (first) entry:



13. Enter the password `Training` at the login screen.



14. Shutdown **Ubuntu Workstation**. Click on the gear in the upper-right side of the desktop then click **Shut Down...**



15. To confirm, click **Shut Down**:

