

**SSN COLLEGE OF ENGINEERING**  
**Department of Computer Science and Engineering**  
**UCS2621 Cloud Computing**

**Assigned Date: 18.03.2024.**

**Due Date: 18. 03.2024**

**Creation of Virtual Machine and Installing different flavours of Linux OS**

- I. **Creating a Virtual Machine (Hosted- Virtual Machine)**
  1. **Install Virtual Box in Host Operating System (amd- 64 bit processorarchitecture).**
  2. **Check whether the processor supports virtualization or not by giving following command in terminal**

**Command to check if CPU supports Virtualization or Not.**

```
j$ grep --color vmx /proc/cpuinfo  
j$ cat /proc/cpuinfo | egrep "vmx|svm"  
j$ grep -E 'svm|vmx' /proc/cpuinfo
```

vmx – Intel VT-x, virtualization support enabled in BIOS. svm – AMD SVM, virtualization enabled in BIOS.
  3. **Create a Virtual Machine (VM) with 1 GB RAM and 10 GB Hard Disk and install Ubuntu 16.04.1 Desktop as guest OS. Name the VM as VM1.**

<http://releases.ubuntu.com/16.04/>
  4. **Switch the login into root user privilege mode by using the command**

```
j$ sudo -i
```

**When asked for password, give your system password**  
**give j\$ ifconfig and check default IP address**

**Creation of Virtual Machine and Executing a C/JAVA/Python Program in VM**

1. **Install C and execute a C program for the following requirement.**



**To install C, C++ compilers in Ubuntu 20.04**

*]\$ sudo apt-get install basic-utilities*

*Write a C program to count and display number of words in a file.*

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**II. Install Java Development Kit in**

**VM.In Ubuntu 16.04.1**

*]\$ sudo apt-get install openjdk-8-jdk*

**In Ubuntu 20.04**

***]\$ sudo apt-get install default-jdk***

Refer to : <https://phoenixnap.com/kb/install-java-ubuntu>

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*Set path variables in bashrc file*

<https://www.wikihow.com/Set-Up-Your-Java-Home-Path-in-Ubuntu> *Check the java version installed*

***]\$ java -version***

*Execute a simple Java Program in a Virtual Machine.*

***III. Install Python in VM.***

*Execute a simple Python Program in a Virtual Machine.*

# Answer:

## Creation of Virtual Machine and Installing different kinds of Linux OS

**Aim: Creation of Virtual Machine and Installing Different Flavors of Linux OS**

**The Steps Are:**

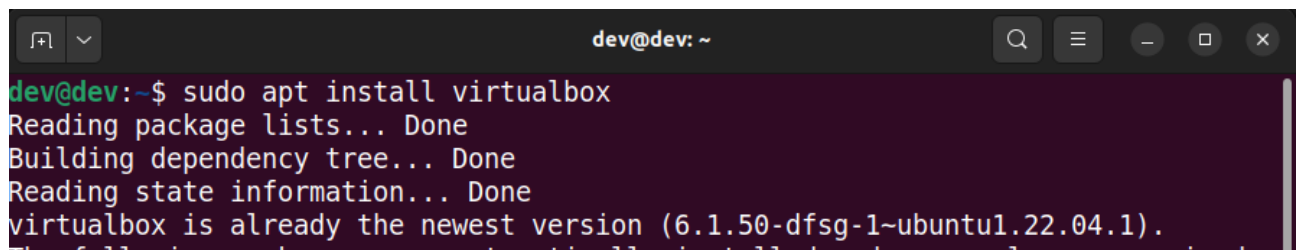
**0)Need to Check if virtualization is supported by the processor or not by giving the following command in the terminal**

```
dev@dev:~$ grep --color vmx /proc/cpuinfo
dev@dev:~$ cat /proc/cpuinfo | egrep
"vmx|svm"dev@dev:~$ grep -E 'svm/vmx'
/proc/cpuinfo
```

**Virtualization support is present in machine.** This is confirmed by the presence of the svm(Secure Virtual Machine) flag in the /proc/cpuinfo output. The svm flag indicates that the AMD's virtualization technology is supported by the CPU

**1)Next,Installing the virtualBox using:**

```
dev@dev:~$ sudo apt install virtualbox
```

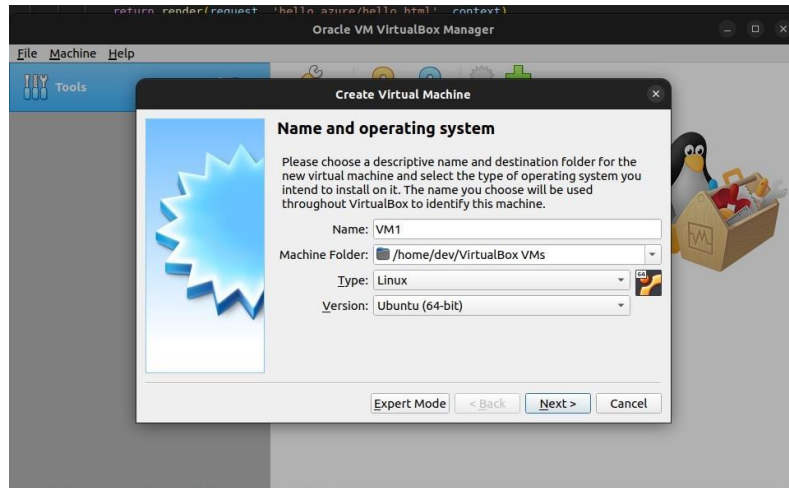
A screenshot of a terminal window with a dark background. The prompt is 'dev@dev: ~'. The command 'sudo apt install virtualbox' has been entered. The output shows: 'Reading package lists... Done', 'Building dependency tree... Done', 'Reading state information... Done', and 'virtualbox is already the newest version (6.1.50-dfsg-1~ubuntu1.22.04.1)'. The following packages were automatically installed and are no longer required.

**2)Downloading linux os from:**

<http://releases.ubuntu.com/16.04/>About the OS

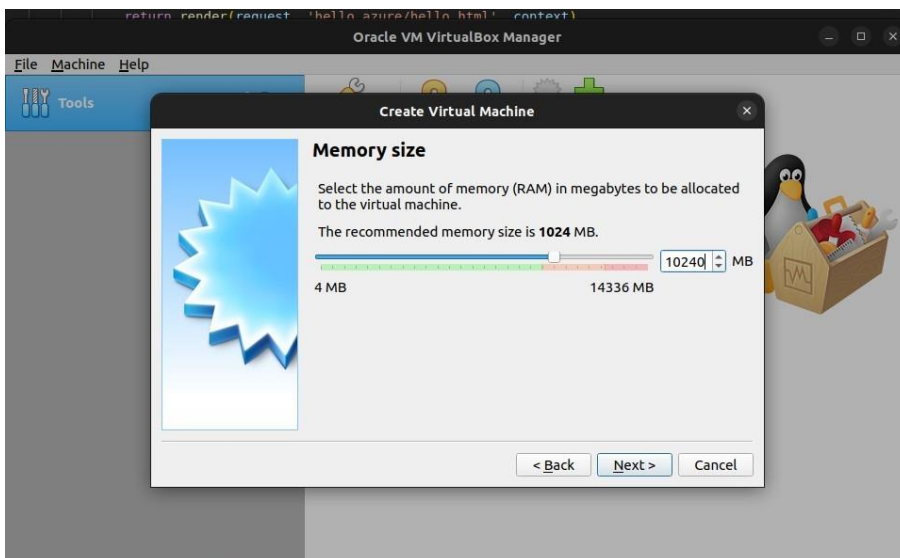
iso file: 4-bit PC (AMD64) desktop image

### 3)Deploying Ubuntu 16.04.7



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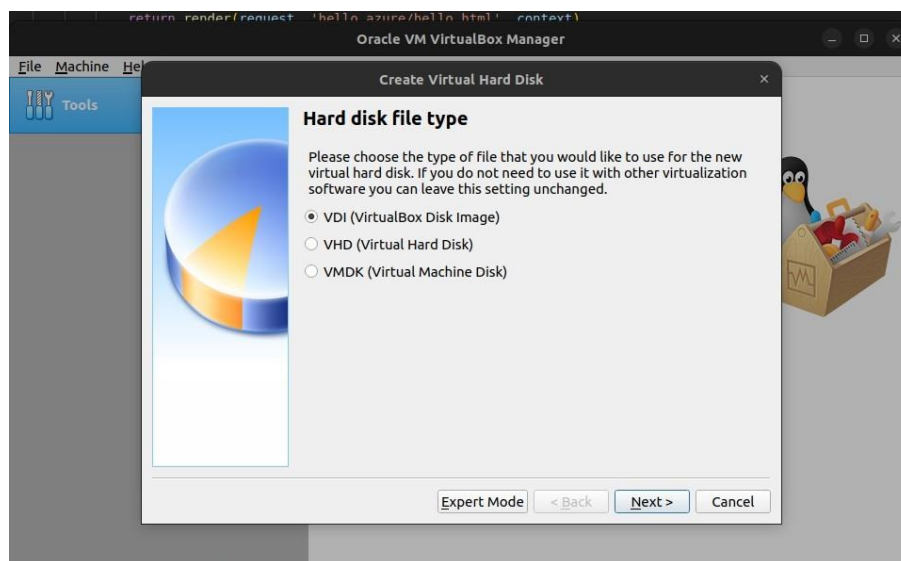
VM Name:  
VM1Type:  
Linux  
Version: Ubuntu (64-bit)



Memory Size: 10GB



**This creates a Virtual hard disk for VM1**

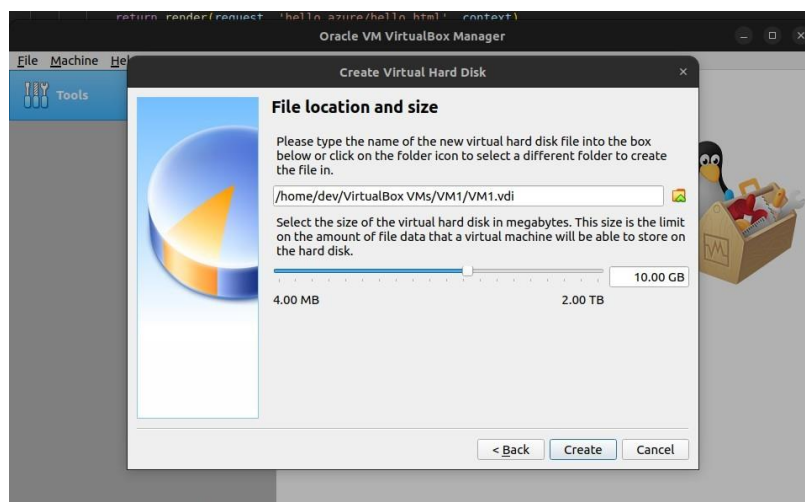


the native disk image format is VD1

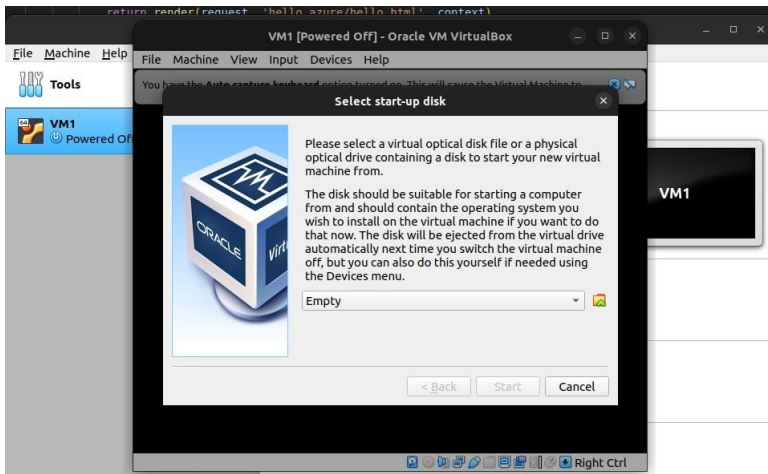


In a dynamically allocated hard disk file, the space on your physical hard disk is used only as it gets filled up (up to a maximum fixed size). However, it does not automatically shrink again when space is freed up.

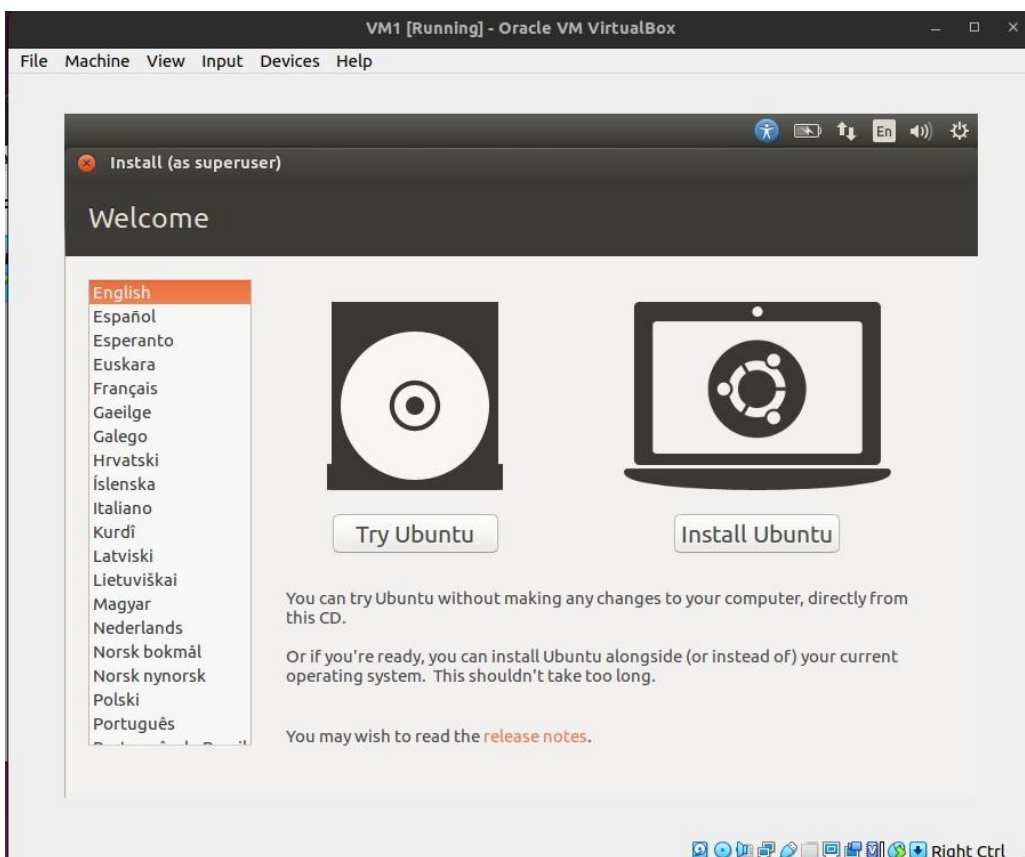
On the other hand, a fixed-size hard disk file may take longer to create on some systems but is often faster to use.



Select the VM1 and click on start.

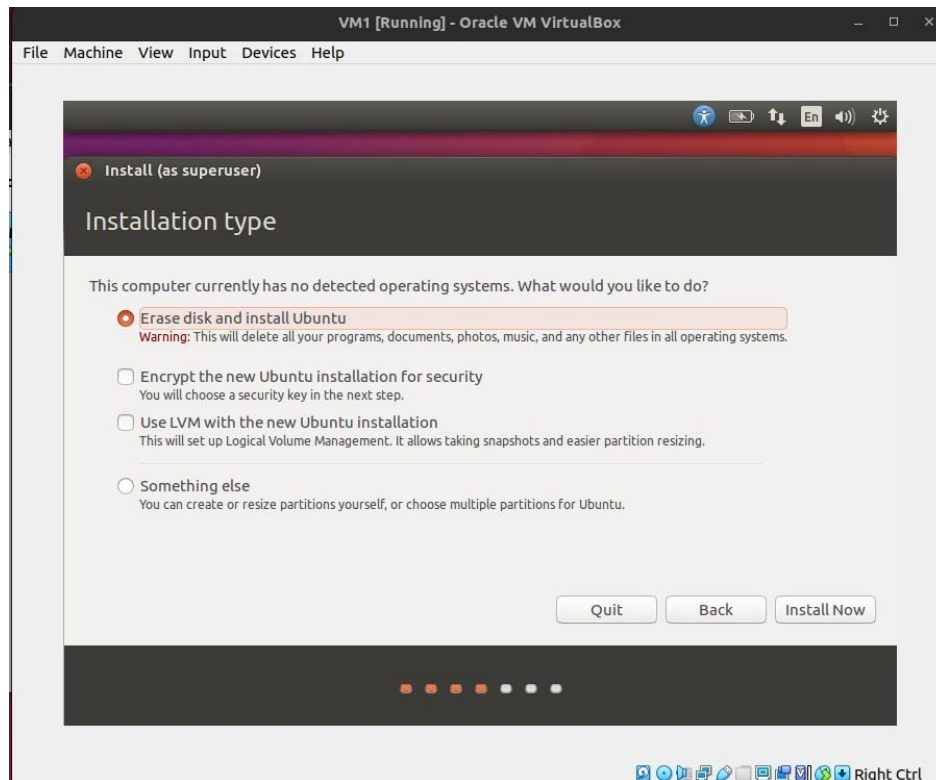


Select the Ubuntu ISO file.

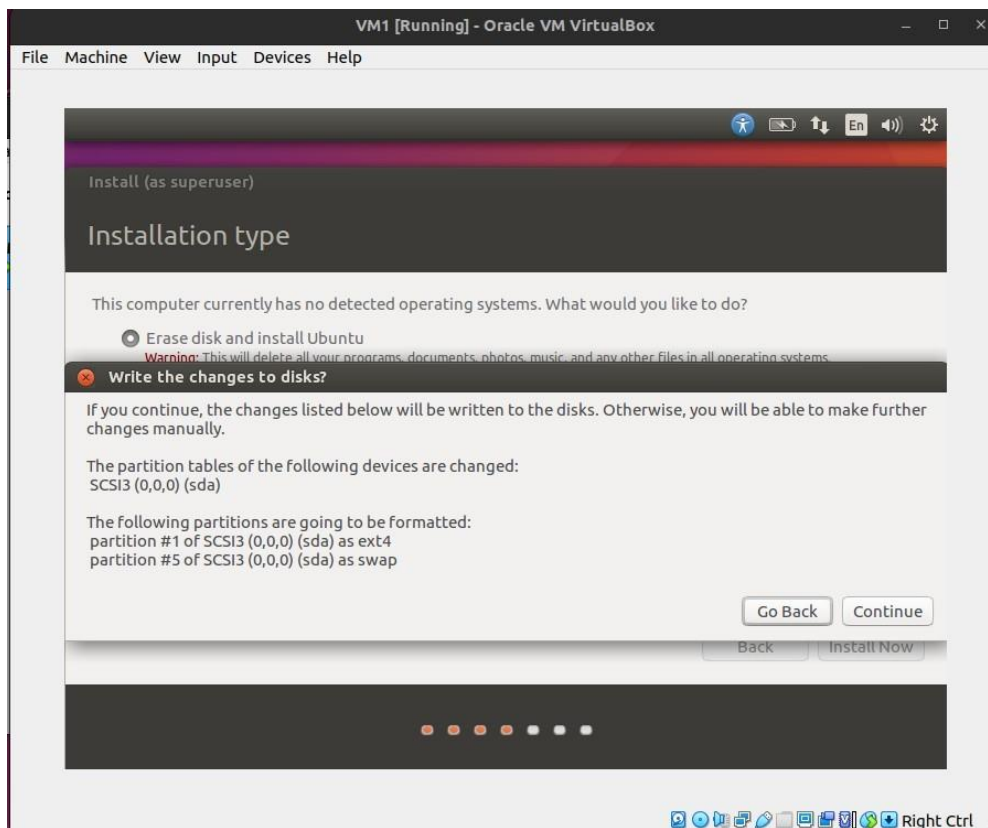


Click on Install Ubuntu to Deploy in your machine.

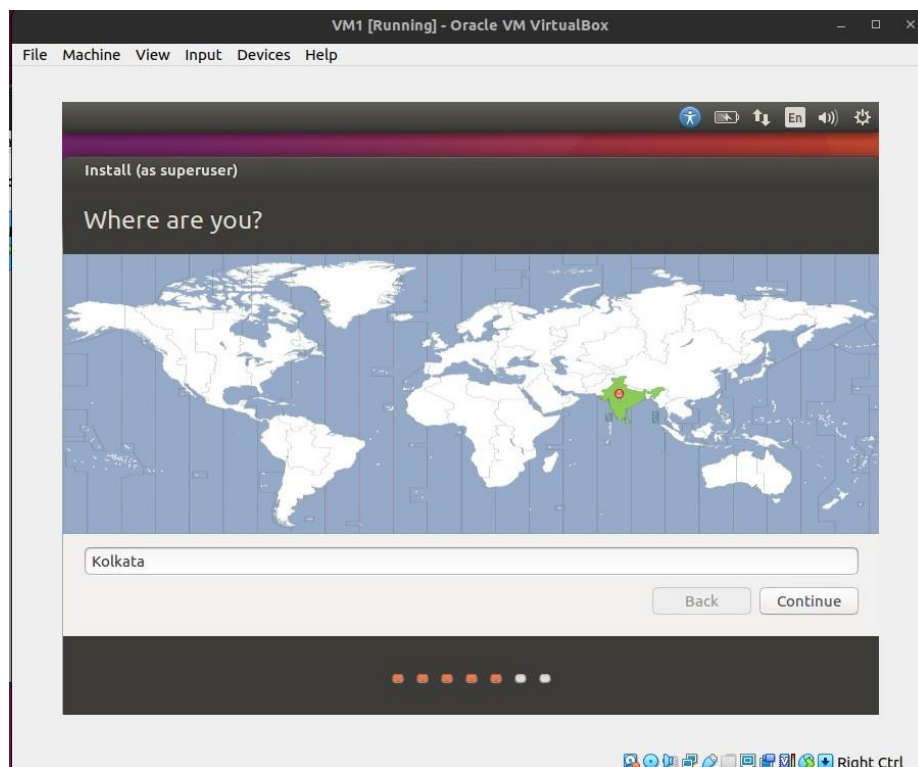




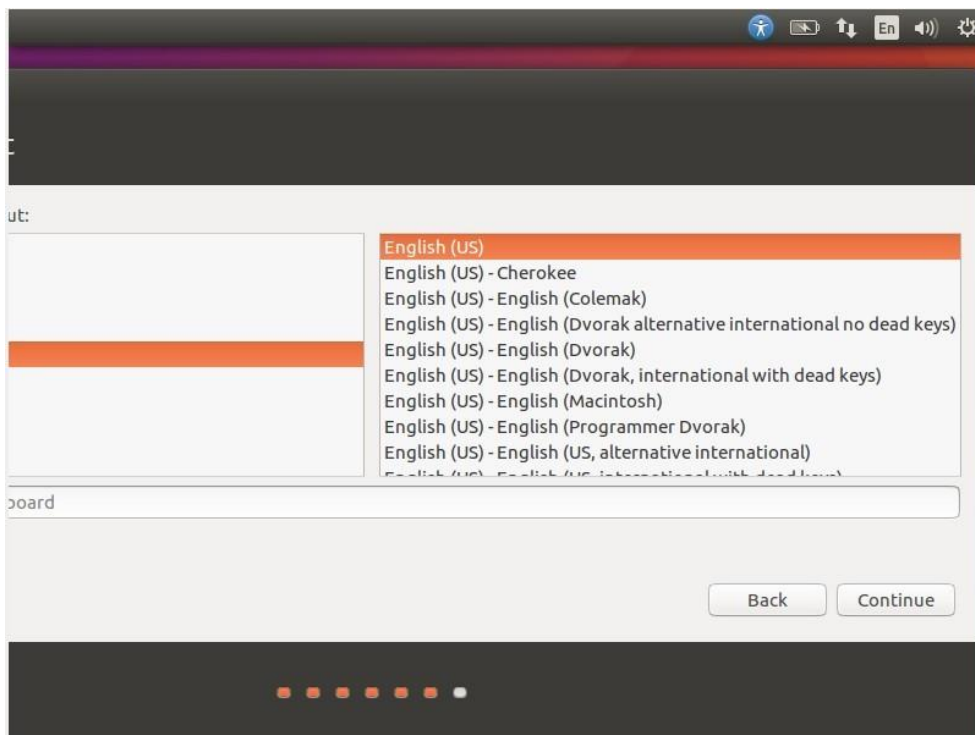
Erase disk and install Ubuntu option will delete all the file that is in the splited space simply click Install Now



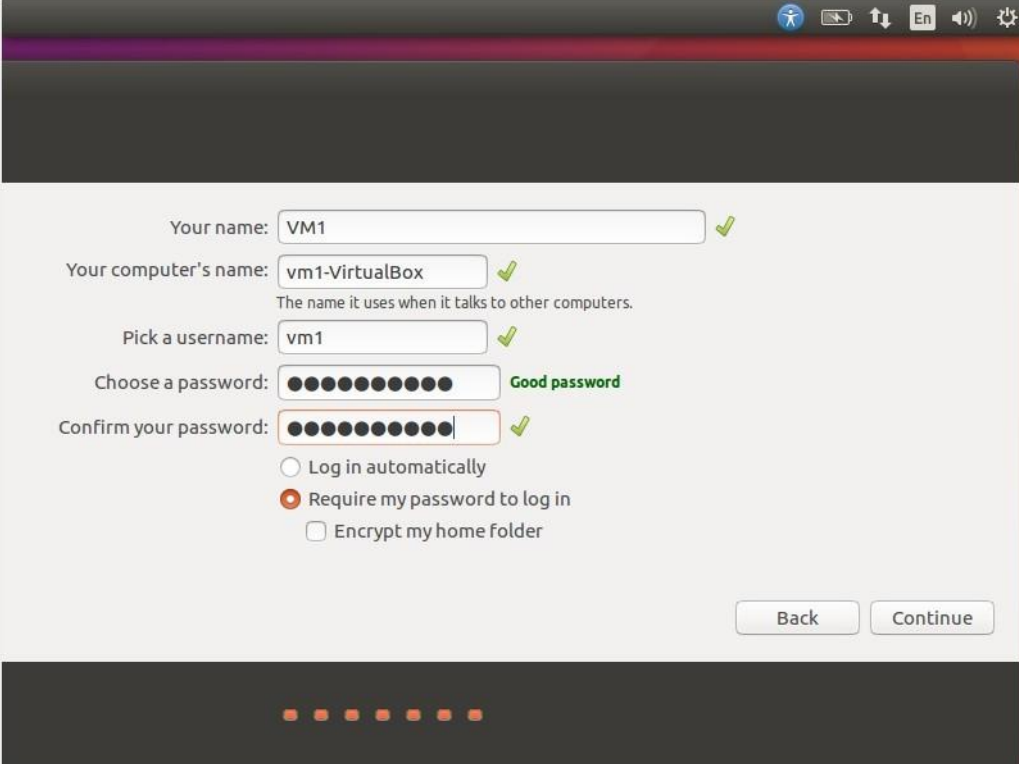
This will Display the space that allocated to the OS and file system. Click on **Continue**



Select the location and Click on **Continue**



Select the Language and Click on **Continue**



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Your Name: User name  
Your Computer name:  
Machine name and Set the  
strong password

**Click on Continue**

**Wait for 20 to 30 min to deploy the Ubuntu16 on your Host OS.**

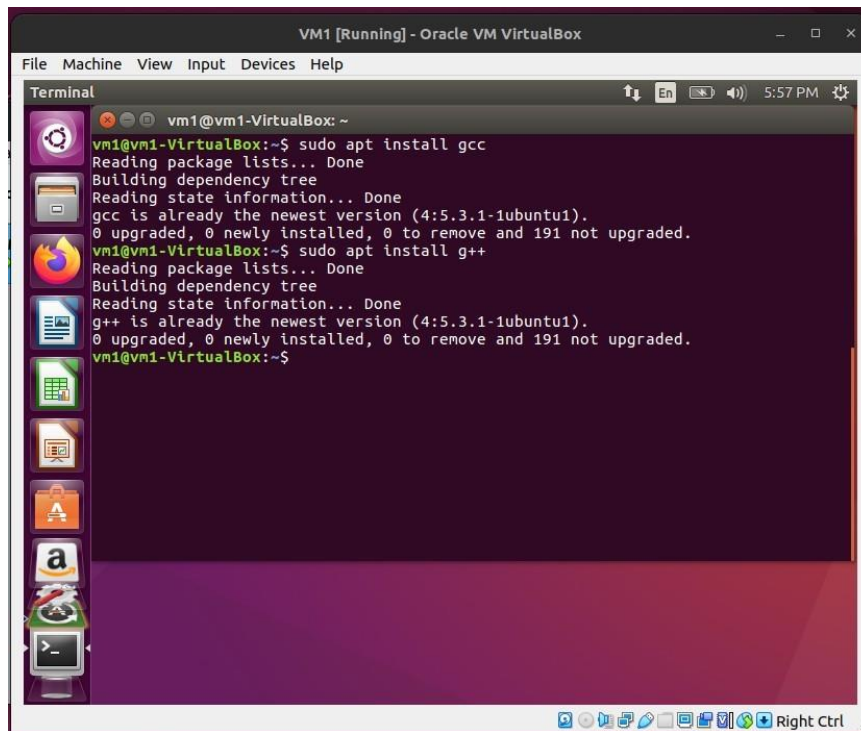
Then wait for restart....

Now you good to go. by providing your password.

#### 4)Deploy a Java Application.

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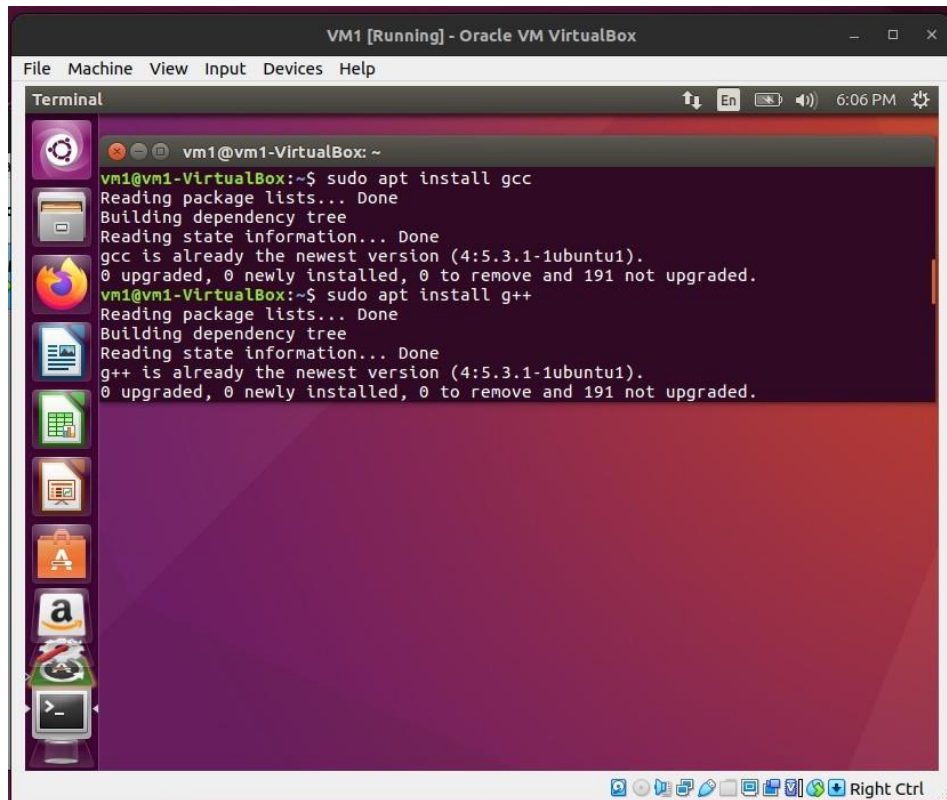
##### 4.1)Install C and C++ and run C and C++ program.

A screenshot of a VirtualBox window titled 'VM1 [Running] - Oracle VM VirtualBox'. Inside the window is a terminal window titled 'Terminal' with a dark background. The terminal shows the following commands and output:

```
vm1@vm1-VirtualBox: ~  
vm1@vm1-VirtualBox:~$ sudo apt install gcc  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
gcc is already the newest version (4:5.3.1-1ubuntu1).  
0 upgraded, 0 newly installed, 0 to remove and 191 not upgraded.  
vm1@vm1-VirtualBox:~$ sudo apt install g++  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
g++ is already the newest version (4:5.3.1-1ubuntu1).  
0 upgraded, 0 newly installed, 0 to remove and 191 not upgraded.  
vm1@vm1-VirtualBox:~$
```

The terminal window has a sidebar on the left with various application icons. The top of the terminal window shows the time as 5:57 PM and the status 'En'. The bottom of the terminal window shows a taskbar with various icons and the text 'Right Ctrl'.

Open the terminal and run the below commands.  
vm1 @vm1-VirtualBox:~\$  
**sudo apt install gcc** vm1 @vm1-  
VirtualBox:~\$ **sudo apt install g++**



The screenshot shows a VirtualBox window titled "VM1 [Running] - Oracle VM VirtualBox". Inside the window is a terminal window titled "Terminal" with a dark background. The terminal shows the following commands and output:

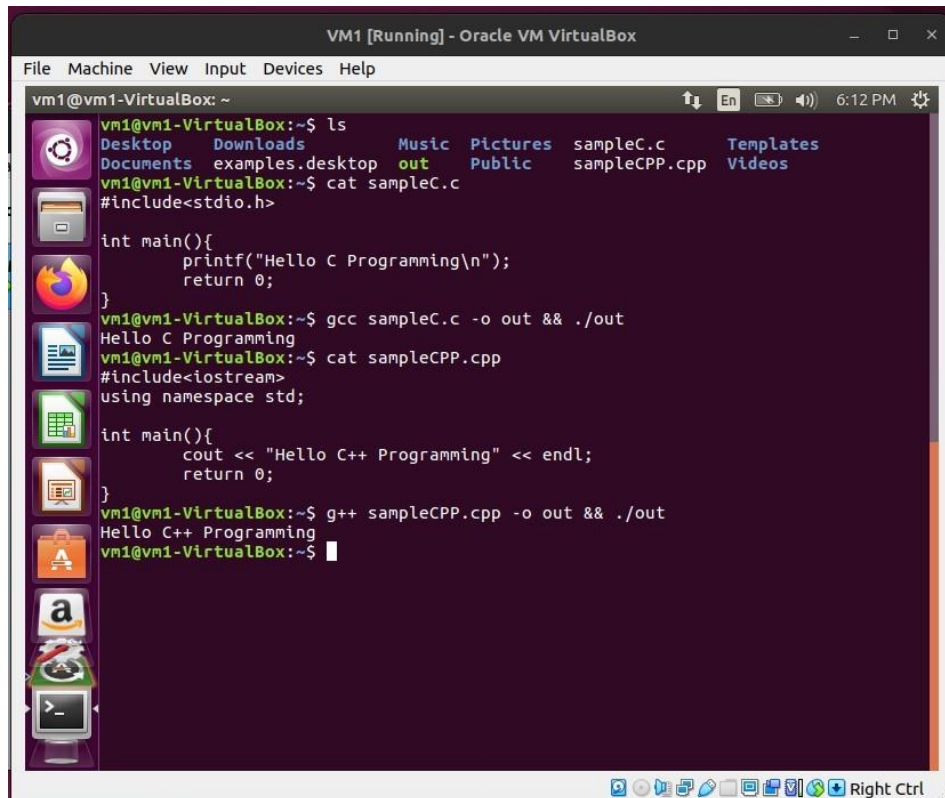
```
vm1@vm1-VirtualBox: ~  
vm1@vm1-VirtualBox:~$ sudo apt install gcc  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
gcc is already the newest version (4:5.3.1-1ubuntu1).  
0 upgraded, 0 newly installed, 0 to remove and 191 not upgraded.  
vm1@vm1-VirtualBox:~$ sudo apt install g++  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
g++ is already the newest version (4:5.3.1-1ubuntu1).  
0 upgraded, 0 newly installed, 0 to remove and 191 not upgraded.
```

The terminal window has a sidebar on the left with icons for various applications. The bottom of the window shows a taskbar with several icons and the text "Right Ctrl".

4.1.1) Create a sampleC.c file and write a sample code and run it.

4.1.2) Create a sampleCPP.cpp file and write a sample code and run it.

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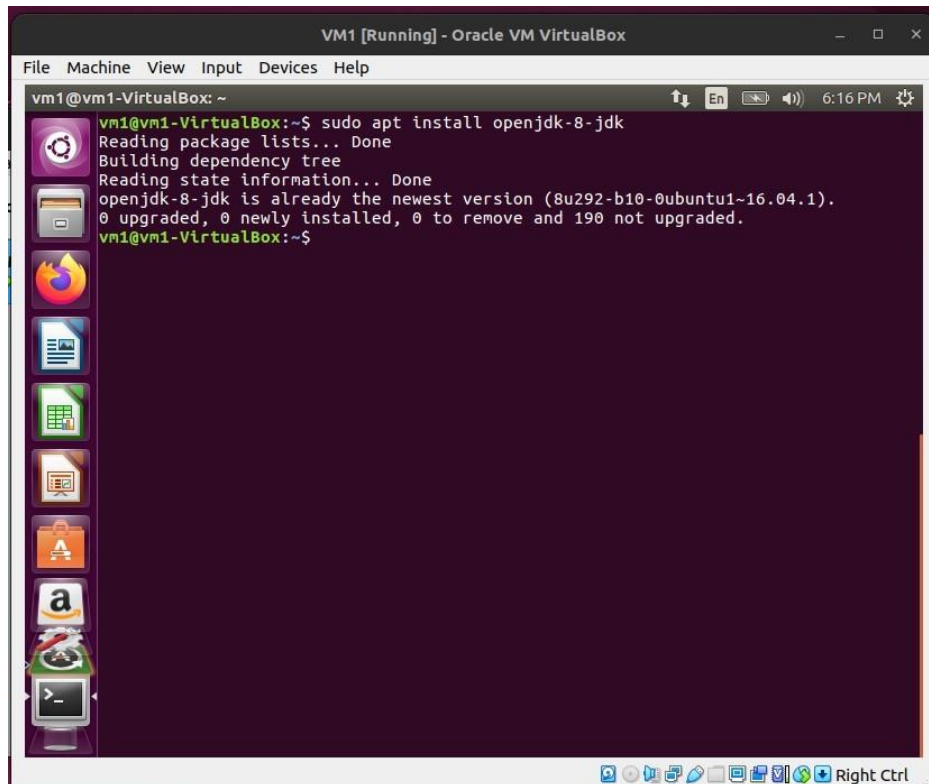


The screenshot shows a terminal window titled "VM1 [Running] - Oracle VM VirtualBox". The terminal output is as follows:

```
vm1@vm1-VirtualBox: ~  
vm1@vm1-VirtualBox:~$ ls  
Desktop  Downloads      Music  Pictures  sampleC.c  Templates  
Documents examples.desktop out      Public  sampleCPP.cpp Videos  
vm1@vm1-VirtualBox:~$ cat sampleC.c  
#include<stdio.h>  
  
int main(){  
    printf("Hello C Programming\n");  
    return 0;  
}  
vm1@vm1-VirtualBox:~$ gcc sampleC.c -o out && ./out  
Hello C Programming  
vm1@vm1-VirtualBox:~$ cat sampleCPP.cpp  
#include<iostream>  
using namespace std;  
  
int main(){  
    cout << "Hello C++ Programming" << endl;  
    return 0;  
}  
vm1@vm1-VirtualBox:~$ g++ sampleCPP.cpp -o out && ./out  
Hello C++ Programming  
vm1@vm1-VirtualBox:~$
```

4.2) Install java and run java program.

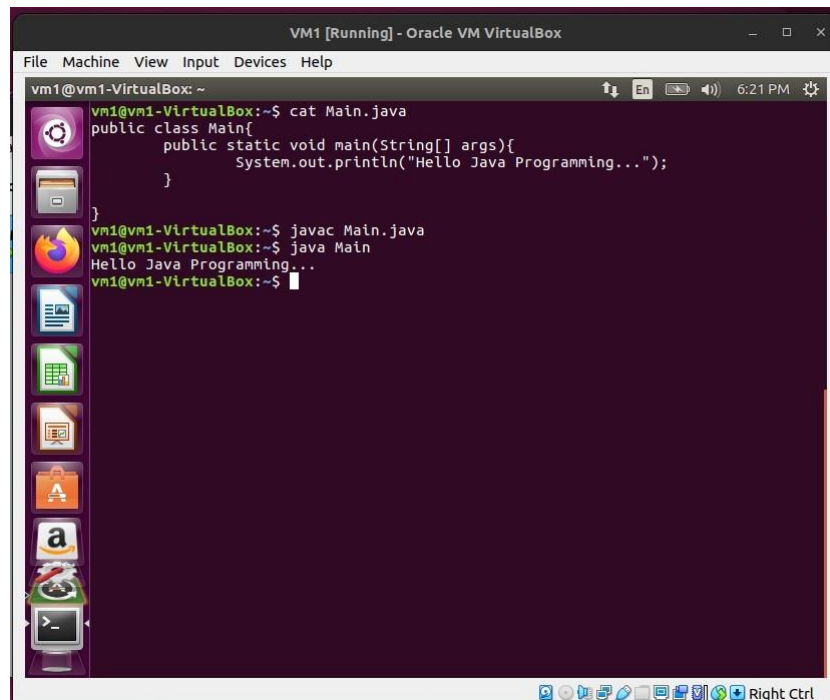
vm1 @vm1-VirtualBox:~\$ **sudo apt install openjdk-8-jdk**



```
vm1@vm1-VirtualBox: ~  
vm1@vm1-VirtualBox:~$ sudo apt install openjdk-8-jdk  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
openjdk-8-jdk is already the newest version (8u292-b10-0ubuntu1~16.04.1).  
0 upgraded, 0 newly installed, 0 to remove and 190 not upgraded.  
vm1@vm1-VirtualBox:~$
```



4.2.1) create a simple java file with simple code and run the java file.



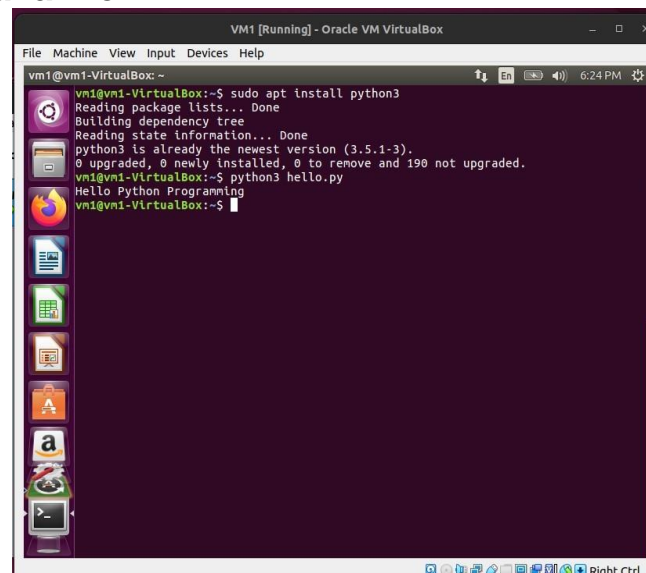
The screenshot shows a VirtualBox window titled 'VM1 [Running] - Oracle VM VirtualBox'. Inside the VM, a terminal window displays the following commands and output:

```
vm1@vm1-VirtualBox: ~  
vm1@vm1-VirtualBox:~$ cat Main.java  
public class Main{  
    public static void main(String[] args){  
        System.out.println("Hello Java Programming...");  
    }  
}  
vm1@vm1-VirtualBox:~$ javac Main.java  
vm1@vm1-VirtualBox:~$ java Main  
Hello Java Programming...  
vm1@vm1-VirtualBox:~$
```

4.3) Install python and run python program.

vm1@vm1-VirtualBox:~\$ sudo apt install python3

4.3.1) create a simple java file with simple code and run the java file.



The screenshot shows a VirtualBox window titled 'VM1 [Running] - Oracle VM VirtualBox'. Inside the VM, a terminal window displays the following commands and output:

```
vm1@vm1-VirtualBox: ~  
vm1@vm1-VirtualBox:~$ sudo apt install python3  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
python3 is already the newest version (3.5.1-3).  
0 upgraded, 0 newly installed, 0 to remove and 190 not upgraded.  
vm1@vm1-VirtualBox:~$ python3 hello.py  
Hello Python Programming  
vm1@vm1-VirtualBox:~$
```

*Result: Created Virtual Machine and Installed Different flavours of Linux OS*