Bharatiya Vidya Bhavan's
Sardar Patel Institute of Technology
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous College Affiliated to University of Mumbai)

Computer Engineering Department & Information Technology Engineering Department

Academic Year: 2021-2022

Class: S.Y.B.Tech **Sem.:** 4 **Course:** OS

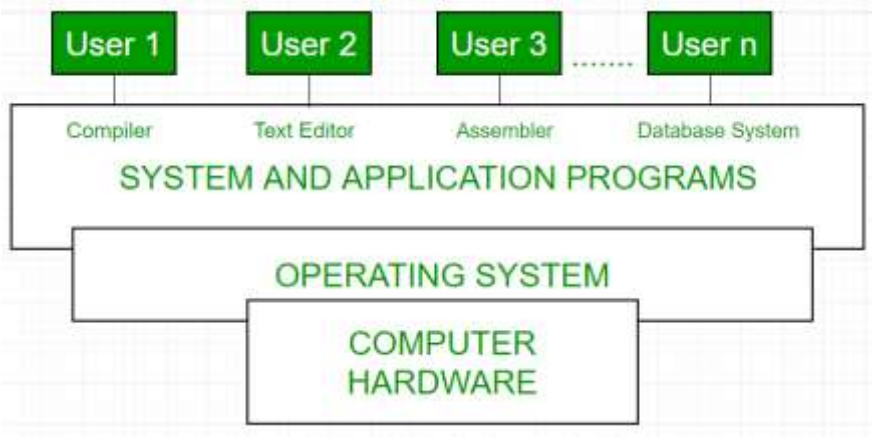
Name	**Pratik Pujari**		
UID no.	**2020300054**	**Class:**	**Comps C Batch**
Experiment No.	1		

AIM:	Installation of Linux OS on Virtual Machine.
THEORY:	**Introduction to Operating System** An operating system acts as an intermediary between the user of a computer and computer hardware. The purpose of an operating system is to provide an environment in which a user can execute programs conveniently and efficiently. An operating system is a software that manages computer hardware. The hardware must provide appropriate mechanisms to ensure the correct operation of the computer system and to prevent user programs from interfering with the proper operation of the system. **Operating System – Definition:** • An operating system is a program that controls the execution of application programs and acts as an interface between the user of a computer and the computer hardware. • A more common definition is that the operating system is the one program running at all times on the computer

(usually called the kernel), with all else being application programs.

Functions of Operating system – Operating system performs three functions:

1. Convenience: An OS makes a computer more convenient to use.
2. Efficiency: An OS allows the computer system resources to be used efficiently.
3. Ability to Evolve: An OS should be constructed in such a way as to permit the effective development, testing, and introduction of new system functions at the same time without interfering with service.
4. Throughput: An OS should be constructed so that It can give maximum throughput(Number of tasks per unit time).



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	OS is designed to serve two basic purposes: 1. It controls the allocation and use of the computing System's resources among the various user and tasks. 2. It provides an interface between the computer hardware and the programmer that simplifies and makes it feasible for coding, creation, debugging of application programs. Examples of Operating System are – • Windows (GUI based, PC) • GNU/Linux (Personal, Workstations, ISP, File and print server, Three-tier client/Server) • macOS (Macintosh), used for Apple's personal computers and workstations (MacBook, iMac). • Android (Google's Operating System for smartphones/tablets/smartwatches) • iOS (Apple's OS for iPhone, iPad, and iPod Touch) **What is a virtual machine?** A Virtual Machine (VM) is a compute resource that uses software instead of a physical computer to run programs and deploy apps. One or more virtual "guest" machines run on a physical "host" machine. Each virtual machine runs its own operating system and functions separately from the other VMs, even when they are all running on the same host.

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	How do virtual machines work? The virtual machine runs as a process in an application window, similar to any other application, on the operating system of the physical machine. Key files that make up a virtual machine include a log file, NVRAM setting file, virtual disk file and configuration file. **Advantages of virtual machines** Virtual machines are easy to manage and maintain, and they offer several advantages over physical machines: • VMs can run multiple operating system environments on a single physical computer, saving physical space, time and management costs. • Virtual machines support legacy applications, reducing the cost of migrating to a new operating system. **Disadvantages of virtual machines** While virtual machines have several advantages over physical machines, there are also some potential disadvantages: • Running multiple virtual machines on one physical machine can result in unstable performance if infrastructure requirements are not met. • Virtual machines are less efficient and run slower than a full physical computer. Most enterprises use a combination of physical and virtual infrastructure to balance the corresponding advantages and disadvantages.

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	What is Linux and why it is used? Linux® is an open source operating system (OS). An operating system is the software that directly manages a system's hardware and resources, like CPU, memory, and storage. The OS sits between applications and hardware and makes the connections between all of your software and the physical resources that do the work
EXPERIMENT 1	
PROCEDURE:	Step 1: Download Virtual Box from the Offical Website of virtual box (https://www.virtualbox.org/wiki/Downloads)  Select Window Host to download the file if your operating system is Windows and same for other OS systems. Open the EXE file and run the application to install it

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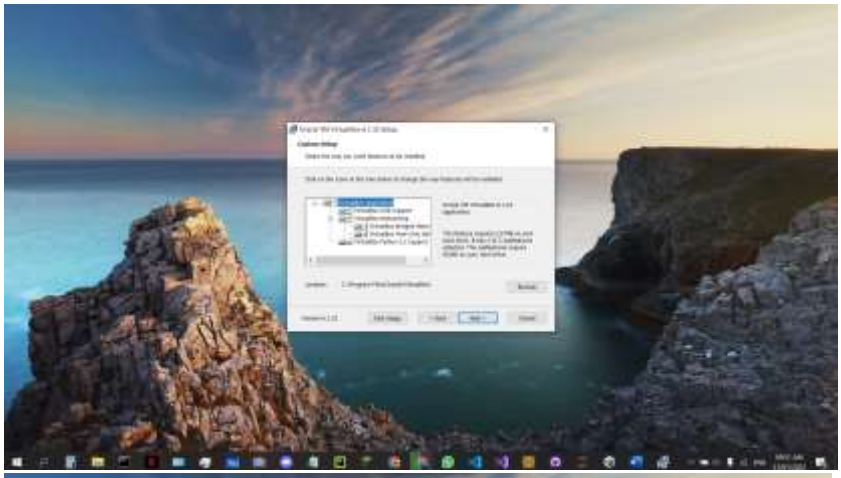

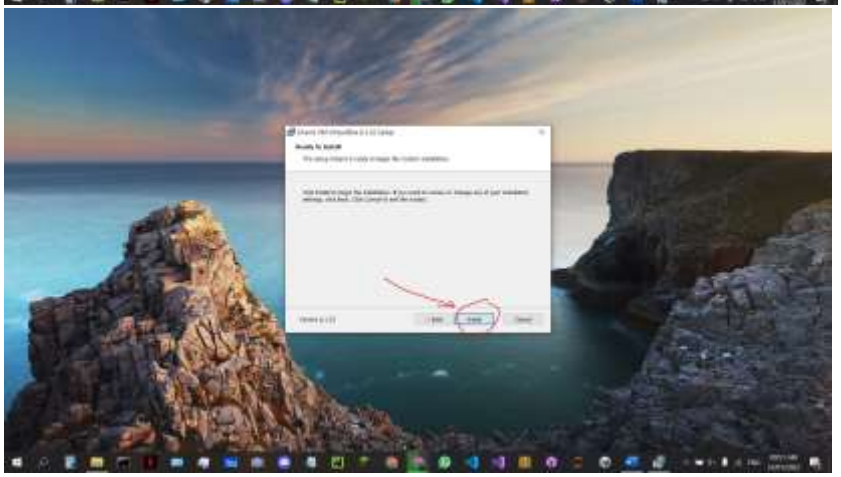

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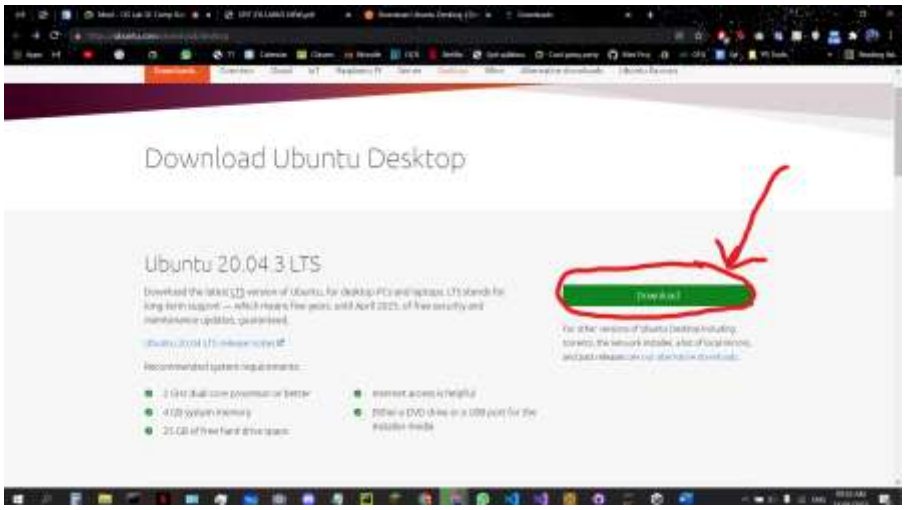
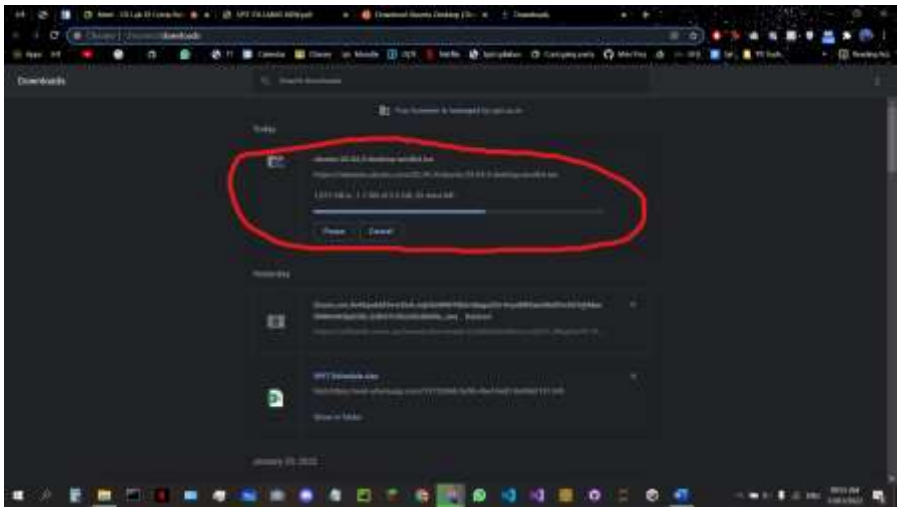
Step 2: Once Virtual Box is Downloaded, We have to download Ubuntu Desktop(https://ubuntu.com/download/desktop)



Installation should look like this



Let the downloading process be completed for future use.

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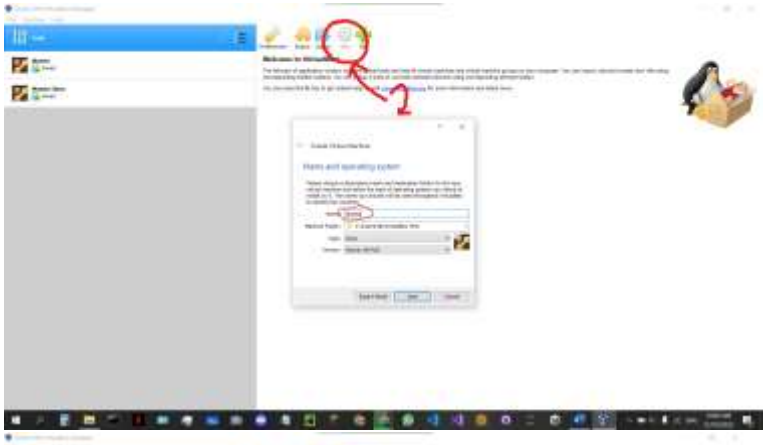
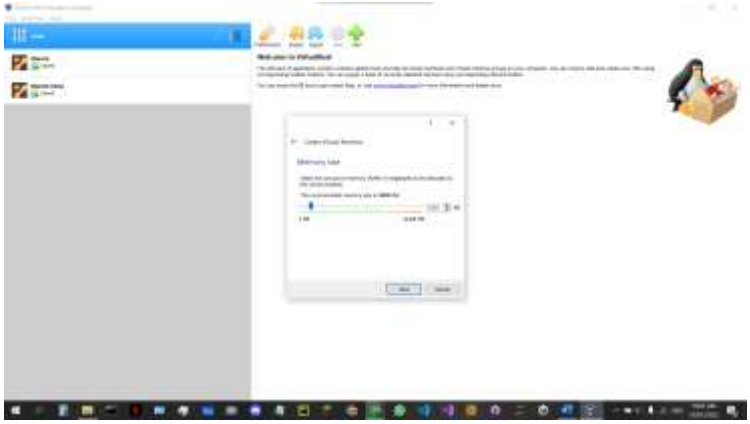
Step 3: Open the virtual Box Application to install Ubuntu

Click on new in upper menu bar and write ubuntu in the name section of Virtual Machine and press the next button.





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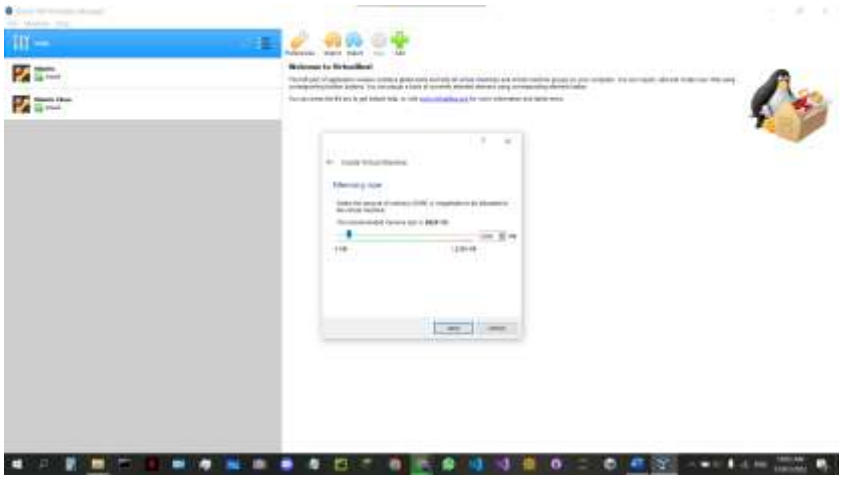
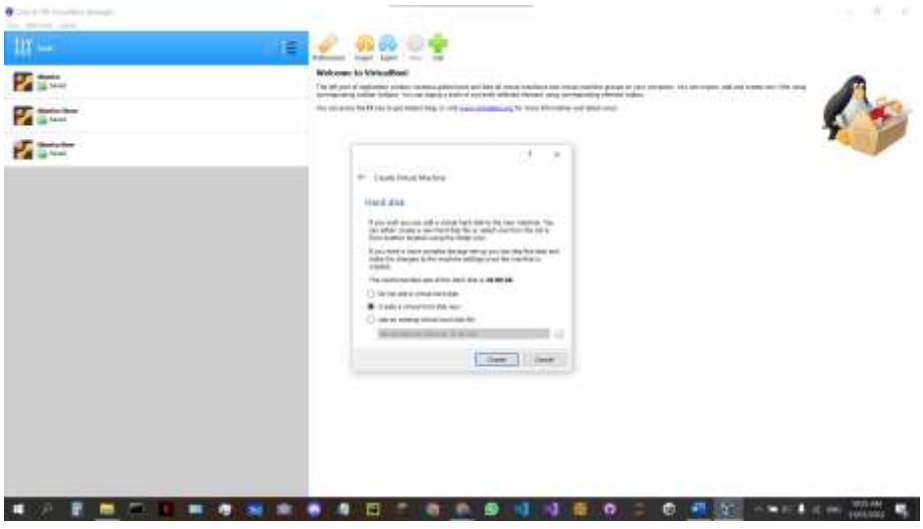


If your system has more than 8gb of Ram, then you can increase the Ram size otherwise click the next button

Step 4: Choose the option where "Create a virtual disk now" and simply click next until you can see a new Ubuntu desktop(powered off) in the Virtual machines section



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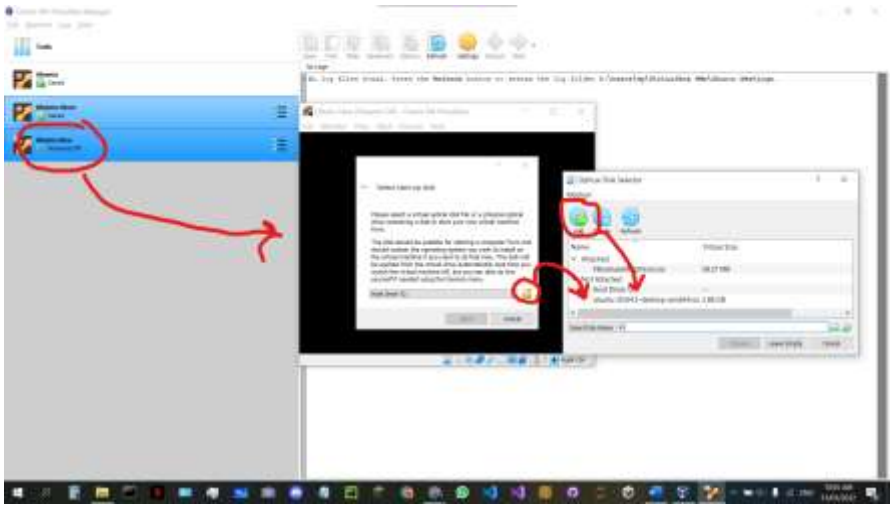
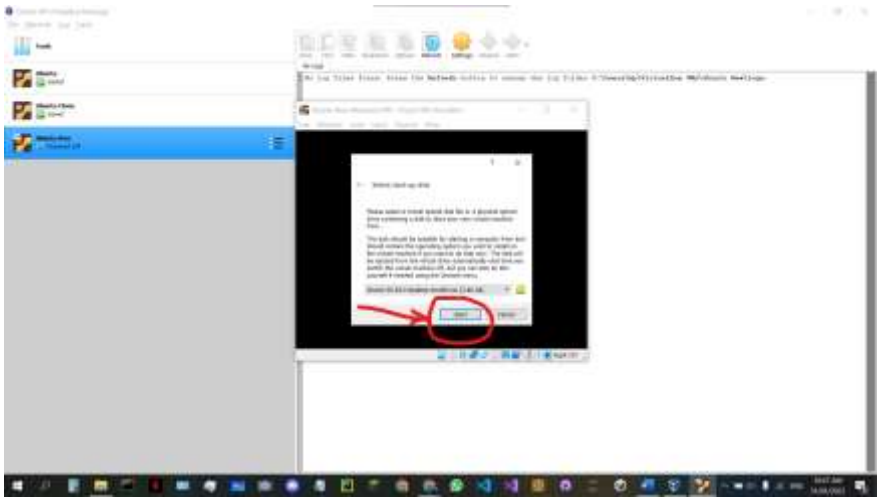
Step 5: Double Click on the Ubuntu New Machine to power it up Then you should see a startup disk request. Click on file icon and then add the zip file which we have downloaded in the second step (Ubuntu Desktop)

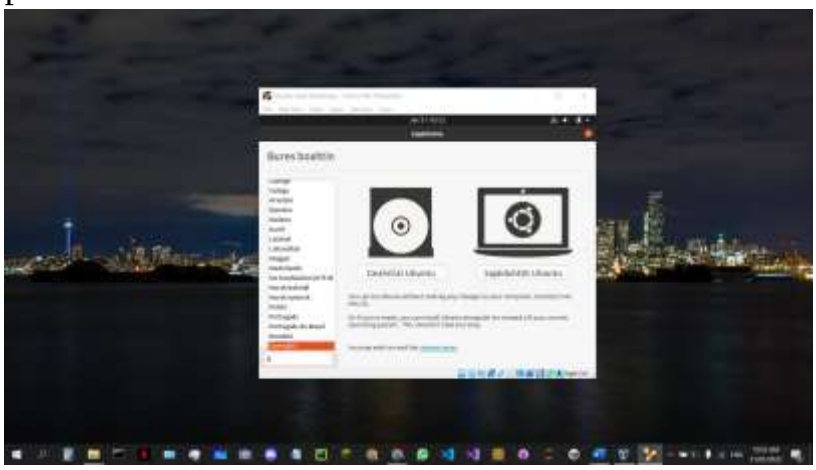




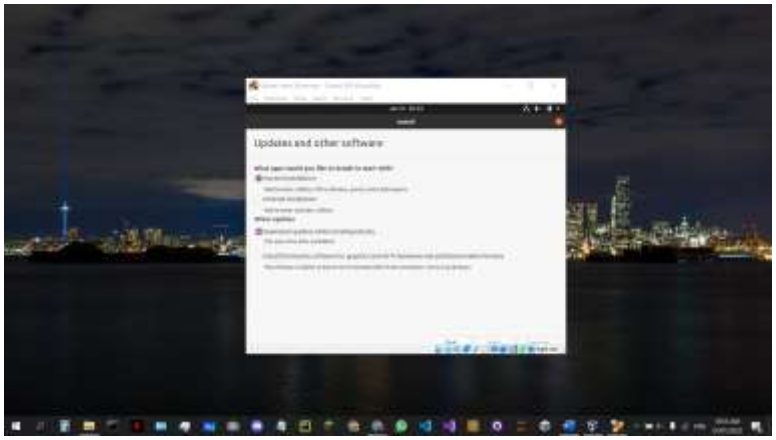
After mounting of the iso file (zip file) click on Start to install Ubuntu

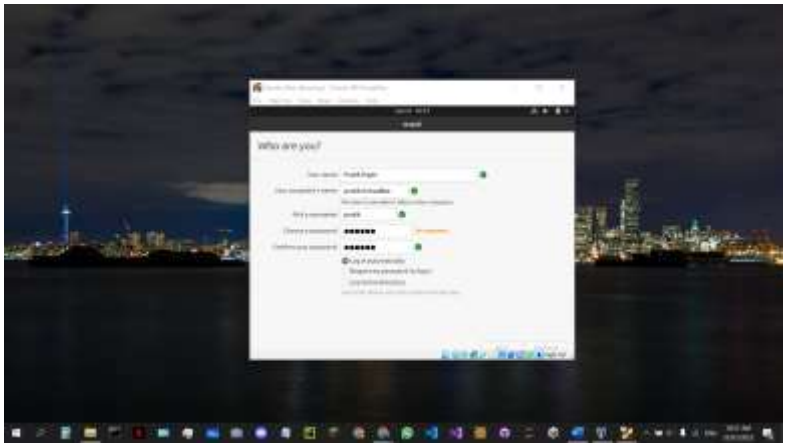
Step 6: Ubuntu will perform all the necessary checks and will start and show the installation page

Step 7: Click on Install Ubuntu

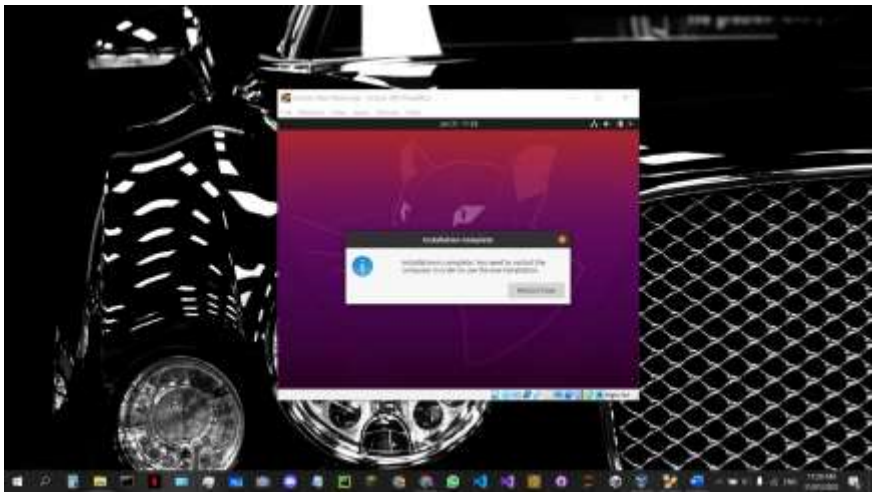


Click continue:



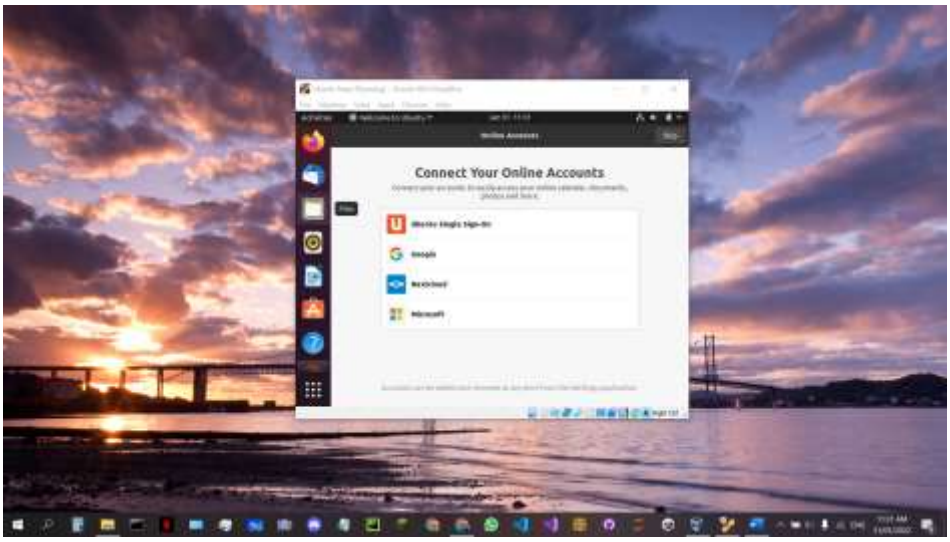


Wait until Ubuntu is finished completing the installation of the OS



Click on Restart Now to start the ubuntu OS

Step 8: Lastly you may login with any account and start using the OS



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PROGRAM:	Make a folder for all the programs(mkdir command)  In terminal write cd filename and touch add.c to create a program that adds two numbers 

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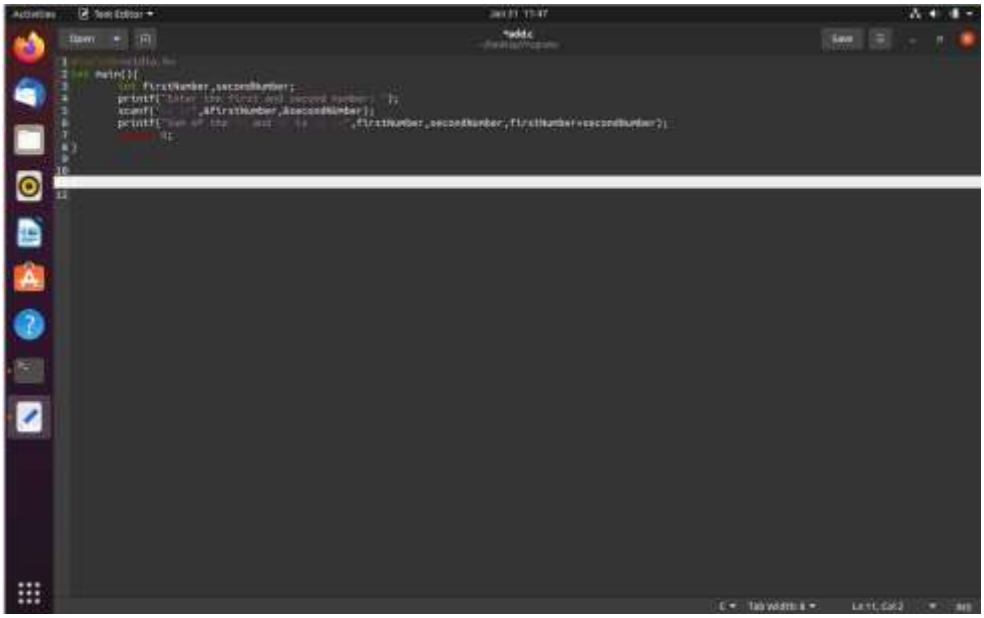
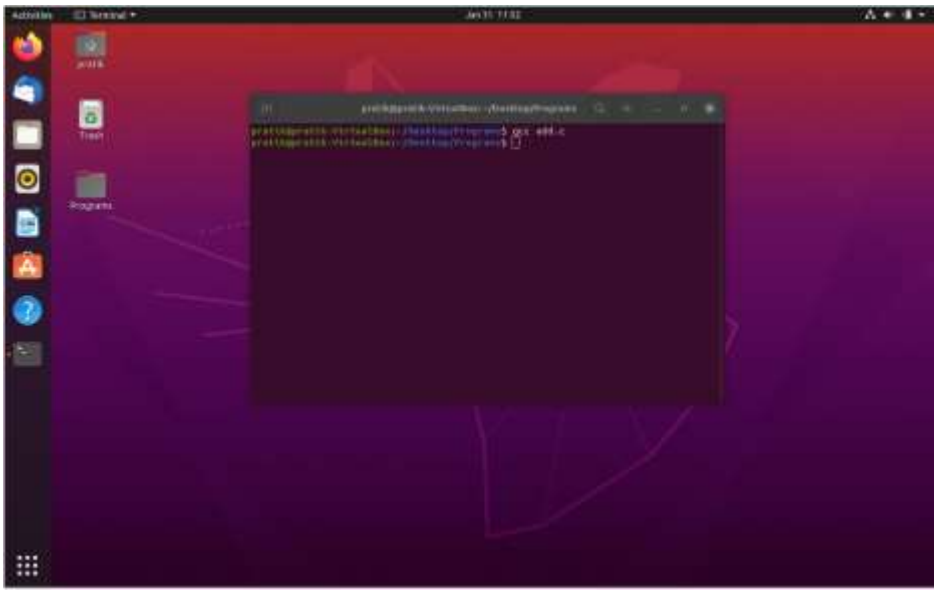
Using gedit filename(add.c) write the code for addition of two numbers and save the file



Then gcc filename.c in the terminal (sudo apt install gccif not installed)



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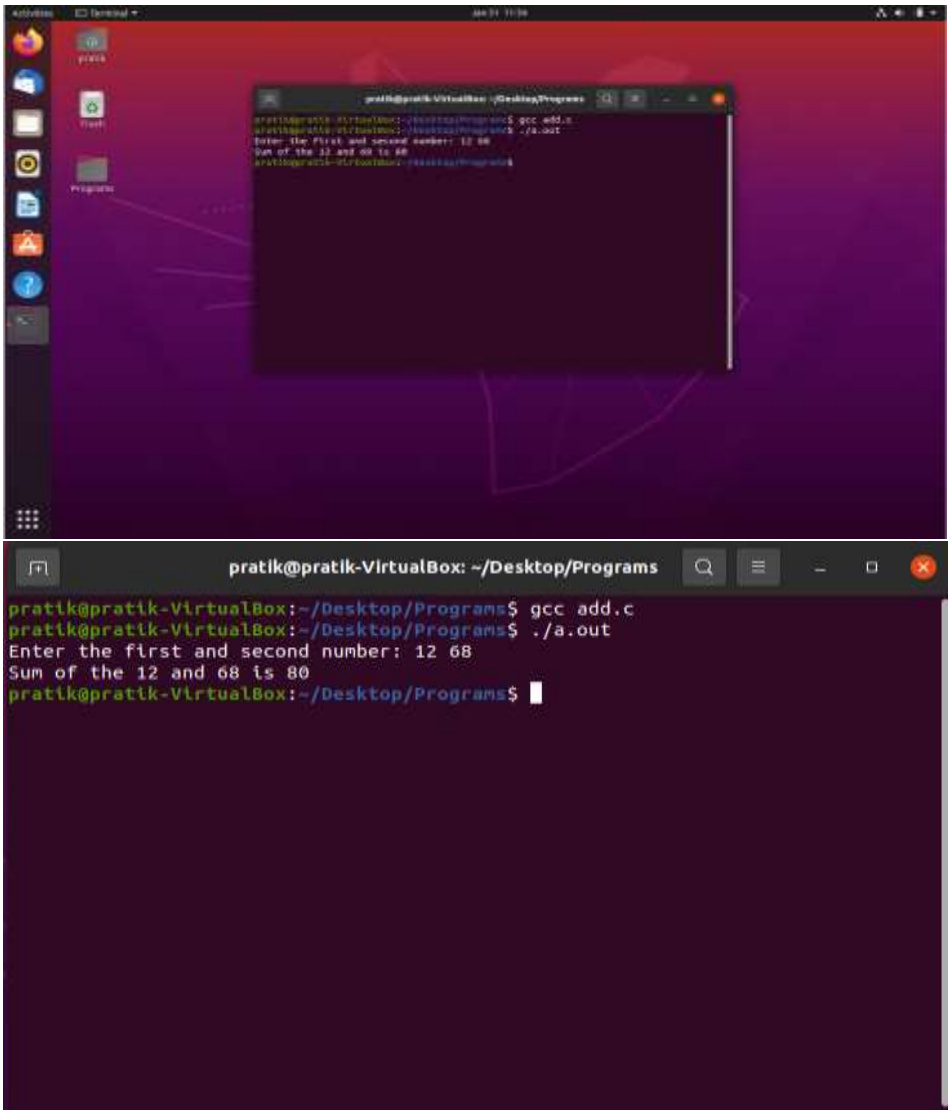
OUTPUT TABLE:	After compling the program type the command ./a.out to execute the program 
CONCLUSION: I learnt to download and install the Ubuntu 64 bit or any other virtual machine. Used linux commands like mkdir,touch and gedit to make and compile C Program. Learnt about other IDE like vim and nano to edit code.	