OPERATING SYSTEMS

LABORATORY MANUAL

DIPLOMA

(II YEAR –III SEM)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

RAJA JAIT SINGH COLLEGE OF DIPLOMA AND ENGINEERING
(Govt. of India)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION

- To improve the quality of technical education that provides efficient software engineers with an attitude to adapt challenging IT needs of local, national and International arena, through teaching and interaction with alumni and industry.

MISSION

- Department intends to meet the contemporary challenges in the field of IT and is playing a vital role in shaping the education of the 21st century by providing unique Educational and research opportunities.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1 – ANALYTICAL SKILLS

To facilitate the graduates with the ability to visualize, gather information, articulate, analyse, solve complex problems, and make decisions. These are essential to address the challenges of complex and computation intensive problems increasing their productivity.

PEO2 – TECHNICAL SKILLS

To facilitate the graduates with the technical skills that prepare them for immediate employment and pursue certification providing a deeper understanding of the technology in advanced areas of computer science and related fields, thus encouraging to pursue higher education and research based on their interest.

PEO3 – SOFT SKILLS

To facilitate the graduates with the soft skills that include fulfilling the mission, setting goals, showing self-confidence by communicating effectively, having a positive attitude, get involved in team- work, being a leader, managing their career and their life.

PEO4 – PROFESSIONAL ETHICS

To facilitate the graduates with the knowledge of professional and ethical responsibilities by paying attention to grooming, being conservative with style, following dress codes, safety codes, and adapting themselves to technological advancements.

PROGRAM SPECIFIC OUTCOMES (PSOs)

After the completion of the course, B. Tech Information Technology, the graduates
will have the following Program Specific Outcomes:

1. **Fundamentals and critical knowledge of the Computer System:-** Able to Understand the working principles of the computer System and its components , Apply the knowledge to build, asses, and analyse the software and hardware aspects of it .

2. **The comprehensive and Applicative knowledge of Software Development:** Comprehensive skills of Programming Languages, Software process models, methodologies, and able to plan, develop, test, analyse, and manage the software and hardware intensive systems in heterogeneous platforms individually or working in teams.

3. **Applications of Computing Domain & Research:** Able to use the professional, managerial, interdisciplinary skill set, and domain specific tools in development processes, identify the research gaps, and provide innovative solutions to them.
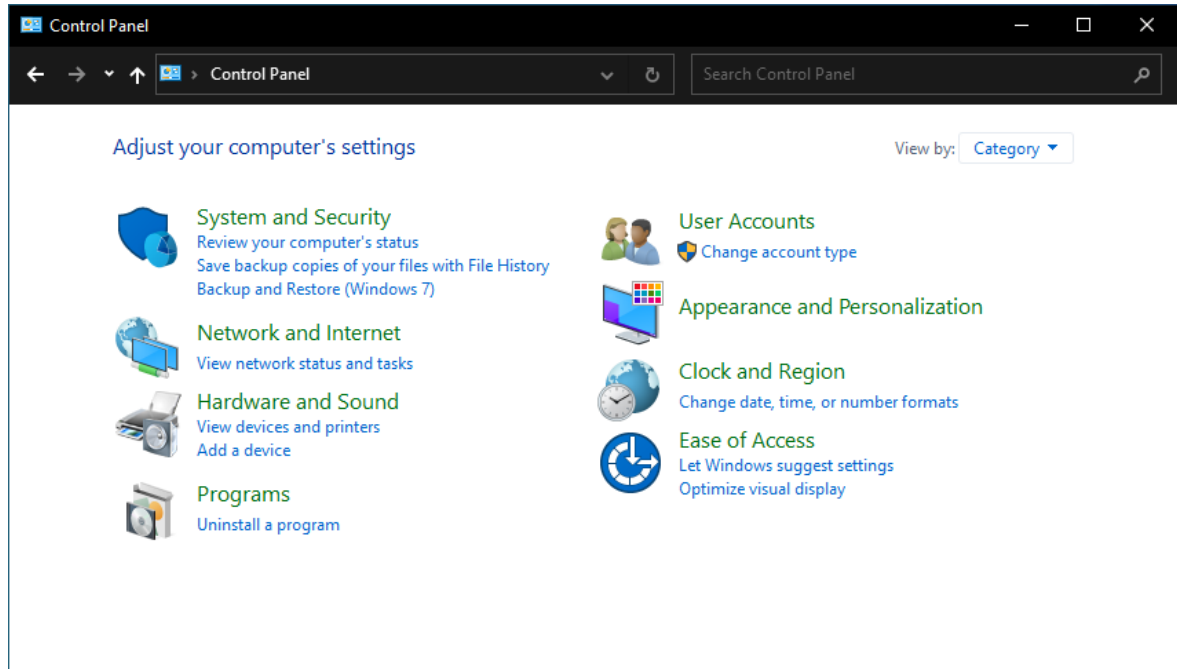
(CODE) OPERATING SYSTEMS LAB

OBJECTIVES:

- To understand the functionalities of various layers of OSI model
- To explain the difference between hardware, software; operating systems, programs and files.
- Identify the purpose of different software applications.

EXPERIMENT - I
DISCRIPTION OF ALL THE CONTROLS PROVIDED IN WINDOWS CONTROL PANELS

Control Panel categories:

Appearance and Personalization

The Appearance and Personalization category allows you to change the look and feel of Windows, which includes adjusting the theme, screen saver, and taskbar. Below is a list of each of the subcategories of Appearance and Personalization in Windows 10.

Taskbar and Navigation - Opens the Taskbar settings that allow you to change how the taskbar is shown or hidden, its location, icons, and other settings.

Navigation properties - Opens the Taskbar settings window.

Ease of Access Center - Opens the Ease of Access Centre, which gives you access to all settings that makes Windows easier to use for all users. In this area, you'll find the following settings.

- Use the computer without a display - Optimize for blindness.
- Make the computer easier to see - Optimize visual display.
- Use the computer without a mouse or keyboard - Set up alternative input devices.

- Make the mouse easier to use - Adjust settings for the mouse or other pointing devices.
- Make the keyboard easier to use - Adjust settings for the keyboard.
- Use text or visual alternatives for sounds - Set up alternatives to sounds.
- Make it easier to focus on tasks - Adjust settings for reading and typing.
- Make touch and tablets easier to use - Adjust settings for touch and tablets.

Accommodate low vision - Adjust High Contrast, make text and icons larger, and other settings to help people with low vision use their computer easier.

Use screen reader - Enable and disable the Narrator that lets you have things on the screen read to you as you use the computer.

Turn on easy access keys - Enable and disable Mouse Keys, Sticky Keys, Toggle Keys, Filter Keys, and get to other keyboard settings.

Turn High Contrast on or off - Adjust all display settings including the background, colors, lock screen, Themes, Start, and the taskbar.

File Explorer Options - Open the File Explorer Options window with options on how to view and search files on your computer.

Specify single- or double-click to open - Adjust the File Explorer mouse settings to be either single-click or double-click.

Show hidden files and folders - Opens the View tab in the File Explorer Options window that allows you to specify if hidden files should be shown.

Fonts - Opens the Fonts window that shows all installed fonts on the computer.

Preview, delete, or show and hide fonts - Opens the Fonts window (same as above).

Change Font Settings - Opens the Fonts settings window to adjust how fonts are shown on the computer.

NVIDIA Control Panel - For computers with NVIDIA video cards gives you access to the NVIDIA Control Panel, which gives you more advanced display settings for your video card.

Clock, Language, and Region

The Clock, Language, and Region category is seen when viewing the Control Panel as categories and allows you to change the date, time, language, and region settings in Windows. Below is a list of each of the subcategories of Clock, Language, and Region in Windows 10.

Date and Time - Opens the Date and Time window that shows you the current date and time and the ability to change your date and time settings.

Set the time and date - Opens the Date and Time window with the " Change date and time..." button that allows you to change the time or date on the computer.

Change the time zone - Opens the Date and Time window with the "Change time zone..." button that allows you to change the time zone.

Add clocks for different time zones - Opens the Date and Time window in the Additional Clocks tab that lets you add additional clocks when hovering over the taskbar clock.

Language - Open the Language window that allows you to adjust, add, and remove the display language and the input and handwriting language.

Add a language - Opens the Language window (same as above) and allows you to add a new language, remove languages, or set the language priorities if more than one language is selected.

Change input methods - Opens the Language window (same as above). Clicking the Options link to the right of the language allows you to change the input methods (i.e., the keyboard layout) for the language.

Region - Opens the Region window that allows you to change the date and time formats and the first day of the week.

Change location - Opens the Region window in the Location tab that lets you to specify the home location.

Change date, time, or number formats - Opens the Region window.

Ease of Access

The Ease of Access is a category shown when viewing the Control Panel as categories that adjust the vision, hearing, speech recognition, and mobility settings. Below is a list of each of the subcategories of System and Security in Windows 10.

Ease of Access Centre - Open the Ease of Access Centre, that gives you access to all settings that makes Windows easier to use for all users. In this area, you'll find the following settings.

- Use the computer without a display - Optimize for blindness.
- Make the computer easier to see - Optimize visual display.
- Use the computer without a mouse or keyboard - Set up alternative input devices.
- Make the mouse easier to use - Adjust settings for the mouse or other pointing devices.
- Make the keyboard easier to use - Adjust settings for the keyboard.
- Use text or visual alternatives for sounds - Set up alternatives to sounds.
- Make it easier to focus on tasks - Adjust settings for reading and typing.
- Make touch and tablets easier to use - Adjust settings for touch and tablets.

Windows suggest settings - Opens the Get recommendations to make your computer easier to use wizard that steps you through questions to determine how the computer can be made easier to use.

Optimize visual display - Open the Make the computer easier to see to adjust the following settings.

- High Contrast.
- Hear text and descriptions read aloud.
- Make things on the screen larger.
- Make things on the screen easier to see.
- Enable Java Access Bridge.

Replace sounds with visual cues - Open the Use text or visual alternatives for sounds (Sound Sentry) settings.

Change how your mouse works - Change the mouse pointers size and mouse inverting, enable Mouse Keys, and change how Windows handles a window.

Change how your keyboard works - Open the Make the keyboard easier to use window that allows you to turn on Mouse Keys, Sticky Keys, Toggle Keys, Filter Keys, and get to other keyboard settings.

Speech Recognition - Open the Speech Recognition window that allows you to open the following areas.

- Start Speech Recognition - Start using your voice to control your computer.
- Set up microphone - Set up your computer to work properly with Speech Recognition.
- Take Speech Tutorial - Learn to use your computer with speech. Learn basic commands and dictation.
- Train your computer to better understand you - Read text to your computer to improve your computer's ability to understand your voice.
- Open the Speech Reference Card - View and print a list of common commands to keep with you, so you always know what to say.

Start speech recognition - Start speech recognition to use your voice to control your computer.

Set up a microphone - Setup a microphone to be used with speech recognition.

Hardware and Sound

The Hardware and Sound category allows you to add and remove printers and other hardware, change system sounds, update drivers and more. Below is a list of each of the subcategories of Hardware and Sound in Windows 10.

Devices and Printers - Open the Devices and Printers window that shows you all the hardware devices, printers, and multimedia devices detected by your computer.

Add a device - Open the Add a device wizard to detect any new hardware connected to your computer. You would run this wizard if Windows did not automatically detect and set up a new device.

Advanced printer setup - Open the Add printer wizard to set up a new printer or set up a network printer.

Mouse - Open the Mouse Properties window to configure all your computer mouse settings.

🛡️ **Device Manager** - Open the Windows Device Manager.

Change Windows To Go startup options - Setup and configure the Windows To Go options.

AutoPlay - Open the AutoPlay settings to configure what happens when disc (e.g., CD, DVD, Blu-ray) is inserted into the computer. The AutoPlay settings also allow you to choose what to do with pictures, videos, music, and mixed content.

Change default settings for media or devices - Opens the AutoPlay settings.

Play CDs or other media automatically - Opens the AutoPlay settings.

Sound - Opens the Sound settings that allows you to adjust the playback, recording, and sounds settings on the computer.

Adjust system volume - Opens the Volume Mixer to adjust the volume and mute settings of your speakers and other sound devices.

Change system sounds - Opens the Sound settings window in the Sounds tab to adjust the sound theme of your computer. These sounds are what you may hear when starts or while using Windows.

Manage audio devices - Opens the Sound settings window in the Playback tab to adjust the audio devices on the computer.

Power Options - Opens the Power Options window to adjust the computer's power plan settings, which are the settings that tell the computer when to go to sleep (Standby) or hibernate.

Change power-saving settings - Opens the Power Options window.

Change what the power buttons do - Change the button settings for your power button and sleep button. For example, when pressing the power button, your computer can be set to Shut down the computer, sleep, hibernate, or do nothing.

Change when the computer sleeps - Change the sleep (Standby) settings of the computer and monitor. From this window, you can change how long to wait until the display and computer goes into sleep mode.

Choose a power plan - Change the Power Options power plan settings from Balanced, Power saver, or high performance.

Edit power plan - Change the sleep (Standby) settings of the computer and monitor. From this window, you can change how long to wait until the display goes into sleep mode and when the computer goes to sleep.

Infrared - Opens the Infrared window to adjust the infrared settings and infrared device settings (e.g., a digital camera with infrared).

Send or receive a file - Opens the Infrared window.

NVIDIA Control Panel - If a NVIDIA video card is installed on the computer with software, this option opens the NVIDIA Control Panel to adjust the video card and other display settings.

Realtek HD Audio Manager - If a Realtek sound card is installed with its software, this option opens the Realtek HD Audio Manager to adjust the sound card settings and other audio properties.

Network and Internet

The Network and Internet category is shown when viewing the Control Panel as categories and allows you to view your network status and configure other network settings and preferences. Below is a list of each of the subcategories of Network and Internet in Windows 10.

Network and Sharing Centre - Opens the Network and Sharing Center window to view basic networking information, set up a new connection, and troubleshoot network problems.

View network status and tasks - Open the Network and Sharing Center window (same as above).

Connect to a network - Open the available networks that which include available Wi-Fi networks and the ability to turn on Airplane mode and set up a mobile hotspot.

View network computers and devices - Opens the Network window that shows computers on your network, media devices, network infrastructure (e.g., router), and other devices (e.g., available IoT devices and Internet/Network connected devices).

HomeGroup - Opens the HomeGroup window to set up, join, and troubleshoot HomeGroup settings and sharing settings.

Choose homegroup and sharing options - Opens the HomeGroup window (same as above).

Internet Options - Opens the Internet Properties window to adjust Internet Explorer browser settings (e.g., home page, browsing history, and other settings).

Change your homepage - Opens the Internet Properties window.

Manage browser add-ons - Opens the Internet Properties window in the Programs tab. From the Programs tab, you can manage any add-ons that are installed into Internet Explorer and choose how the computer opens links.

Delete browsing history and cookies - Opens the Internet Properties window in the General tab that allows you to delete the browsing history and change the browsing history settings and delete cookies and adjust cookie settings.

Infrared - Open the Infrared window to adjust the infrared settings and infrared device settings (e.g., a digital camera with infrared).

Send or receive a file - Open the Infrared window.

Programs

The Programs category is shown when viewing the Control Panel as categories and allows you to get new programs and uninstall programs on your computer. Below is a list of each of the subcategories of Programs in Windows 10.

Programs and Features - Opens the Programs and Features window that allows you to change, repair, and uninstalled any program that is installed on the computer.

Uninstall a program - Opens the Program and Features window (same as above).

Turn Windows features on or off - Opens the Windows Features window to view enabled Windows features and turn features on and off.

View installed updates - Opens the Installed Updates window to see a full list of all updates that are installed on the computer.

Run programs made for previous versions of Windows - Open the Windows Program Compatibility Troubleshooter to fix problems with running older programs in Windows.

How to install a program - Opens the Windows support web page for help with installing a program.

Default Programs - Opens the Default Programs window with the options to Set your default programs, associate files, change AutoPlay settings, and set program access and computer defaults.

Change default settings for media or devices - Opens the AutoPlay settings to configure what happens when disc (e.g., CD, DVD, Blu-ray) is inserted into the computer. The AutoPlay settings also allow you to choose what to do with pictures, videos, music, and mixed content.

Make a file type always open in a specific program - Open the Set Associations window to view and change how file types (files with a certain file extension) are opened.

System and Security

The System and Security category allows you to view computer system information and settings and view and change the computer security settings. Below is a list of each of the subcategories of System and Security in Windows 10.

Security and Maintenance - View the system security settings (e.g., the Network firewall, virus protection, Internet security settings, and User Account Control). In Security and Maintenance, you're also able to adjust your maintenance settings.

Review your computer's status and resolve issues - Open the Security and Maintenance and show any of the computer issues that are detected.

Change User Account Control settings - Opens the User Account Control Settings to adjust the level of UAC (User Account Control).

Troubleshoot common computer problems - Opens the Troubleshoot tool to fix common problems with Windows and hardware connected to Windows using the troubleshooter.

Windows Firewall - View the Windows Firewall status and adjust settings.

Check firewall status - Show the Windows Firewall status to determine if the firewall is turned on or off and how it is blocking incoming connections.

System - Opens the System information section to display computer information. Information includes the version of Windows, processor speed, RAM, if it's 32-bit or 64-bit, if pen or touch is enabled, computer name, workgroup, and if Windows is activated.

View amount of RAM and processor speed - Opens the System information window (same as above).

Allow remote access - Opens the System Properties window Remote tab to allow and not allow remote access to the computer.

See the name of this computer - Opens the System window (mentioned above) that displays system information including the computer name and option to change the name.

Power Options - Opens the Power Options that allow you to change how Windows manages the power and sleep (Stand By) option to your computer and devices connected to your computer.

Change what the power buttons do - Opens the System Settings for the Power Options that allows you to change what happens when you press the power button and sleep button. For example, you could change the power button to put your computer to sleep instead of shutting down the computer when it is pressed.

Change when the computer sleeps - Opens Power Plan Settings to specify how long to wait until the display and the computer are put to sleep.

File History - Opens the File History window that shows you if File History is enabled and external drives available for File History.

Save backup copies of your files with File History - If File History is enabled save a backup of your files.

Restore your files with File History - Restore files from your File History if available.

Backup and Restore (Windows10) - Open the Windows 10 Backup and Restore option and where you can find the location to create a system image and create a system repair disc.

Restore files from backup - Restore any files that were backed up using Windows.

Storage Spaces - Manage Storage Spaces that allow you to save files to two or more drives to help protect your computer in case of a drive failure and add more drives when you run low on disk capacity.

Manage Storage Spaces - Manage Storage Spaces (same as above).

Work Folders - Manage and set up Work Folders that allow other devices to access your files, even when offline.

Manage Work Folders - Manage Work Folders (same as above).

Administrative Tools - Open the Administrative Tools window that gives you access to all settings important to system administrators. These tools can include all the following tools.

Component Services
Computer Management
Defragment and Optimize Drives
Disk Cleanup
Event Viewer
Internet Information Services (IIS) Manager
iSCSI initiator
Local Security Policy
ODBC Data Sources (32-bit and 64-bit)
Performance Monitor
Services
System Configuration
System Information
Task Scheduler
Windows Firewall with Advanced Security

Windows Memory Diagnostic

Free up disk space - Opens the Disk Cleanup tool that allows you to free up disk space by cleaning any files no longer needed.

Defragment and optimize your drives - Opens the Optimize Drives tool that allows you to defrag your hard disk drive and optimize the drive.

🛡️ **Create and format hard disk partitions** - Opens the Disk Management tool that allows you to partition a disk drive and change other drive settings needed when setting up a hard drive for the first time.

🛡️ **View event logs** - Opens the Event Viewer to view the system event logs.

🛡️ **Schedule tasks** - Opens the Task Scheduler that allows you to schedule when a task or program needs to run.

Flash Player (32-bit) - Opens the Adobe Flash Player Settings Manager that allows you to adjust the settings of Adobe Flash.

User Accounts

The User Accounts category is shown when viewing the Control Panel as categories and allows you to view user accounts, adjust user settings (e.g., passwords), and adjust other user settings. Below is a list of each of the subcategories of the User Accounts in Windows 10.

User Accounts - Opens the User Accounts window to make changes to your user account, change your account type, manage another account, and change User Account Control settings.

Change account type - Opens the Manage Accounts window to adjust the account type of one or more of the users on the computer.

Remove user accounts - Opens the Manage Accounts window (same as above).

Action Center

Open the Windows Action Center that allows you to review recent messages and resolve problems that may have happened with your computer.

Administrative Tools

Open the Administrative Tools window that gives you access to all settings important to system administrators. These tools can include all the following tools.

Component Services
Computer Management
Defragment and Optimize Drives
Disk Cleanup
Event Viewer
Internet Information Services (IIS) Manager
iSCSI Initiator
Local Security Policy
ODBC Data Sources (32-bit and 64-bit)
Performance Monitor
Services
System Configuration
System Information

Task Scheduler
Windows Firewall with Advanced Security
Windows Memory Diagnostic

AutoPlay

Open the AutoPlay settings to configure what happens when disc (e.g., CD, DVD, Blu-ray) is inserted into the computer. The AutoPlay settings also allow you to choose what to do with pictures, videos, music, and mixed content.

Color Management

Opens the Color Management window that allows you to adjust the color settings for your display device and calibrate your display.

Credential Manager

Opens the Credential Manager window to view the Web Credentials and Windows Credentials. From this area, you can also view, edit, and remove any of the credentials.

Date and Time

Opens the Date and Time window that shows you the current date and time and the ability to change your date and time settings.

Default Programs

Opens the Default Programs window with the options to Set your default programs, associate files, change AutoPlay settings, and set program access and computer defaults.

Desktop Gadgets

Show the available gadgets available for the Windows desktop of computers running Windows 7 and Windows Vista.

Device Manager

Opens the Windows Device Manager to list detected computer hardware, change hardware settings, and add and remove hardware devices.

Devices and Printers

Opens the Devices and Printers that shows you all the hardware devices, printers, and multimedia devices detected by your computer.

Display

Configure the display settings of your computer and your computer screen. Includes the ability to adjust the resolution, calibrate the color, change display settings, adjust ClearType text, and set custom text size (DPI).

Ease of Access Center

Opens the Ease of Access Center, that gives you access to all settings that makes Windows easier to use for all users. In this area, you'll find the following settings.

Use the computer without a display - Optimize for blindness.

Make the computer easier to see - Optimize visual display.

Use the computer without a mouse or keyboard - Set up alternative input devices.

Make the mouse easier to use - Adjust settings for the mouse or other pointing devices.

Make the keyboard easier to use - Adjust settings for the keyboard.

Use text or visual alternatives for sounds - Set up alternatives to sounds.

Make it easier to focus on tasks - Adjust settings for reading and typing.

Make touch and tablets easier to use - Adjust settings for touch and tablets.

File Explorer Options

Opens the File Explorer Options window with options on how to view and search files on your computer.

Note

This option replaces the "Folder Options" in Windows 7 and earlier.

File History

Opens the File History window that shows you if File History is enabled and external drives available for File History.

Folder Options

Opens the Folder Options for File Explorer in Windows 7 and earlier with options on how to view and search files on your computer.

Flash Player (32-bit)

Opens the Adobe Flash Player Settings Manager that allows you to adjust the settings of Adobe Flash.

Fonts

Opens the Fonts window that shows all installed fonts on the computer.

Getting Started

Start the Getting Started guide that helps you learn more about Windows by linking you to guides on how to use Windows and important areas of the computer.

HomeGroup

Opens the HomeGroup window to set up, join, and troubleshoot HomeGroup settings and sharing settings.

Indexing Options

Opens the Indexing Options window that shows how many files are indexed and allows you adjust your indexing preferences.

Infrared

Opens the Infrared window to adjust the infrared settings and infrared device settings (e.g., a digital camera with infrared).

Internet Options

Opens the Internet Properties window to adjust Internet Explorer browser settings (e.g., home page, browsing history, and other settings).

Java (32-bit)

If Java is installed on the computer, this option opens the Java Control Panel to adjust Java related settings.

Keyboard

Opens the Keyboard Properties window to adjust the keyboard settings such as the character repeat delay and rate settings and the cursor blink rate.

Language

Opens the Language window that allows you to adjust, add, and remove the display language and the input and handwriting language.

Location and Other Sensors

Add and configure sensors and get direct access to the Location Activity in the Event Viewer.

MobileMe

Opens the Apple MobileMe settings to configure MobileMe relates services.

Mouse

Opens the Mouse Properties window to configure all your computer mouse settings.

Network and Sharing Center

Opens the Network and Sharing Center or Network and Sharing window to view basic networking information, set up a new connection, and troubleshoot network problems.

Notification Area Icons

Change the settings of the notification icons that appear on the Windows Notification Area. In this area, you can adjust what icons should be shown and what icons should be hidden.

NVIDIA Control Panel

For computers with NVIDIA video cards gives you access to the NVIDIA Control Panel, which gives you more advanced display settings for your video card.

Parental Controls

Setup and control Parental Controls for user accounts using the Windows Live Family Safety in Windows 7 and earlier versions of Windows. In Windows 10, this area has changed to "Family options" and is part of the Windows Defender Security Center.

Performance Information and Tools

View the rating of your computer and tips you can do to help improve the computer's performance. With the introduction of Windows 8, this option is no longer available for Windows 8 and Windows 10.

Personalization

Opens the Personalization window that gives you access to change the desktop background, change themes, adjust sounds, and adjust the screen saver. With Windows 10, this option has been moved into the "Themes and related settings" section.

Phone and Modem

Opens the Phone and Modem settings that allow you to specify your modem dialing rules and add, remove, and change the properties of the installed modem in the computer.

Power Options

Opens the Power Options window to adjust the computer's power plan settings, which are the settings that tell the computer when to go to sleep (Standby) or hibernate.

Programs and Features

Opens the Programs and Features window that allows you to change, repair, and uninstalled any program that is installed on the computer.

Realtek HD Audio Manager

If a Realtek sound card is installed with its software, this option opens the Realtek HD Audio Manager to adjust the sound card settings and other audio properties.

Recovery

Opens the Recovery tools window that allows you to create a recovery drive, open System Restore, and configure System Restore.

Region

Opens the Region window that allows you to change the date and time formats and the first day of the week. In Windows 7 and earlier, this area was called "Region and Language."

RemoteApp and Desktop Connections

Connect to and add new RemoteApp connections.

Security and Maintenance

View the system security settings (e.g., the Network firewall, virus protection, Internet security settings, and User Account Control). In Security and Maintenance, you're also able to adjust your maintenance settings.

Sound

Opens the Sound settings that allows you to adjust the playback, recording, and sounds settings on the computer.

Speech Recognition

Open the Speech Recognition window that allows you to open the following areas.

Start Speech Recognition - Start using your voice to control your computer.

Set up microphone - Set up your computer to work properly with Speech Recognition.

Storage Spaces

Manage Storage Spaces that allow you to save files to two or more drives to help protect your computer in case of a drive failure and add more drives when you run low on disk capacity.

System

Opens the System information section to display computer information. Information includes the version of Windows, processor speed, RAM, if it's 32-bit or 64-bit, if pen or touch is enabled, computer name, workgroup, and if Windows is activated.

Taskbar and Navigation

Opens the Taskbar settings that allow you to change how the Taskbar is shown or hidden, its location, icons, and other settings.

Troubleshooting

Opens the Troubleshooting window to troubleshoot software programs, hardware and sound, network and Internet, and system and security areas.

User Accounts

Opens the User Accounts window to make changes to your user account, change your account type, manage another account, and change User Account Control settings.

Windows Anytime Upgrade

Discontinued option that allowed you to upgrade your version of Windows.

Windows CardSpace

In Windows 7, the Windows CardSpace Control Panel option allows you to add, view, and edit CardSpace card data. Microsoft has discontinued Windows CardSpace.

Windows Defender

In Windows 7 and earlier, this Control Panel option allows you to view and edit Windows Defender options. In Windows 10, this option has been moved into the Windows Defender Security Center.

Windows Firewall

View the Windows Firewall status and adjust settings.

Windows Live Language Setting

Gives you the ability to download and adjust the languages for Windows Live programs.

Windows To Go

Setup and configure the Windows To Go options.

Windows Update

View the available Windows updates available for download and install, change your update settings, view your update history, and other update related settings.

EXPERIMENT - 2
Exercise on basics of windows

Desktop

Open your computer and turn on the power.

After the computer completes the BOOT UP process, and your START SCREEN is full of the Windows 10 TILES, bring up your desktop using the desktop tile and/or the keyboard windows button.

Folders & Files

On the DESKTOP, right click and create a **NEW FOLDER**. Name the folder "operating system" (or your course number).

Open the new folder and create two NEW FOLDERS inside the operating system folder. Name each **folder** as follows: ASSIGNMENTS & DUE DATES — COURSE PROJECT.

Download and save in the ASSIGNMENTS & DUE DATES folder, the assignment due dates **FILE** from the assignments menu in Blackboard.

Download and save in the COURSE PROJECT folder, the course project **FILE** from the assignments section in Blackboard.

Navigation

Return to the START SCREEN by clicking on your user name in the upper right corner; select the LOCK choice to go to the LOCK SCREEN. Click or press on the screen to go to the SIGN IN SCREEN, enter your sign on password, and to the START SCREEN

ZOOM in and out using the keyboard and mouse.

Navigate your returning to the desktop using HOT CORNERS, SCROLLING MOUSE, SCROLL BARS, and BUMPING SIDES.

Sign out of the Windows 8 environment using the CHARMS BAR, and CONTROL – ALT – DELETE keys on the keyboard.

Customization

Personalize the start screen using the charms bar and Change PC Settings.

Customize the tiles on the start screen using the mouse with press & drag.

Customize the Desktop with right click on an open area of the screen using the Touch and Hold method.

EXPERIMENT – III

Installation of the Linux operating system

Ubuntu 16.04 LTS code name '**Xenial Xerus**' has been released recently on 21st April 2016. As this release is under LTS(Long Term Support) so its Desktop support will be for next 5 years and Server support will be for next 3 years.

Some of new improved features of Ubuntu 16.04 LTS are listed below:

- New Linux Kernel 4.4
- Snap – New application Package format
- Introduction of LXD – new Container hypervisor on Linux, In Ubuntu 16.04 LTS docker containers can run inside LXD.
- Latest version of Openstack Mitaka included in this release.
- Ubuntu 16.04 will support IBM Z and LinuxONE Servers
- Python 3
- PHP 7
- Gnome Desktop 3.18
- Chromium 48
- LibreOffice 5.1

Step: 1 Download Ubuntu 16.04 LTS ISO file.

Download ISO file of Ubuntu 16.04 LTS from their official Web site.

http://www.ubuntu.com/download/desktop

Once the ISO file is downloaded, burn it into a USB pendrive or DVD and Boot your system with bootable USB Pen drive or DVD, below screen will appear which is shown in step 2

Step: 2 Select 'Install Ubuntu' to start installation.
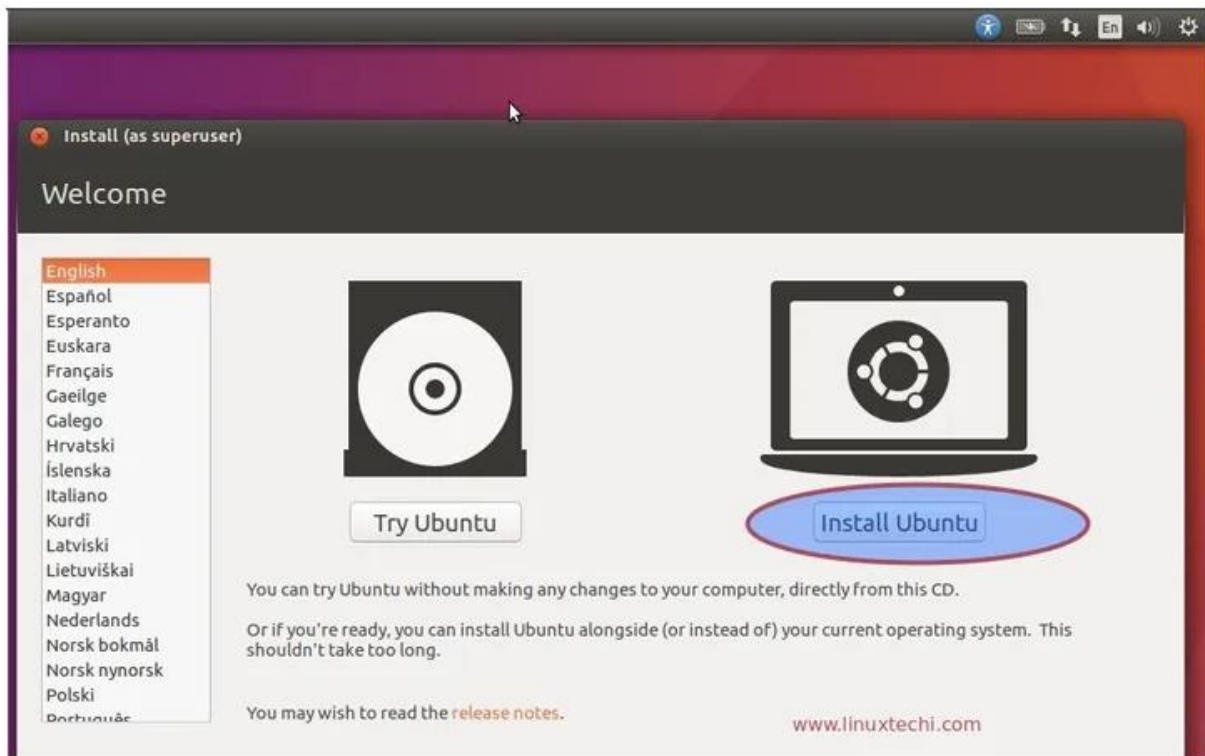
Step: 3 Preparing to Install Ubuntu 16.06 LTS

In case your system is connected to the Internet and wants to install third party tools during installation, you can select both the options as shown in below snap otherwise leave the options uncheck.
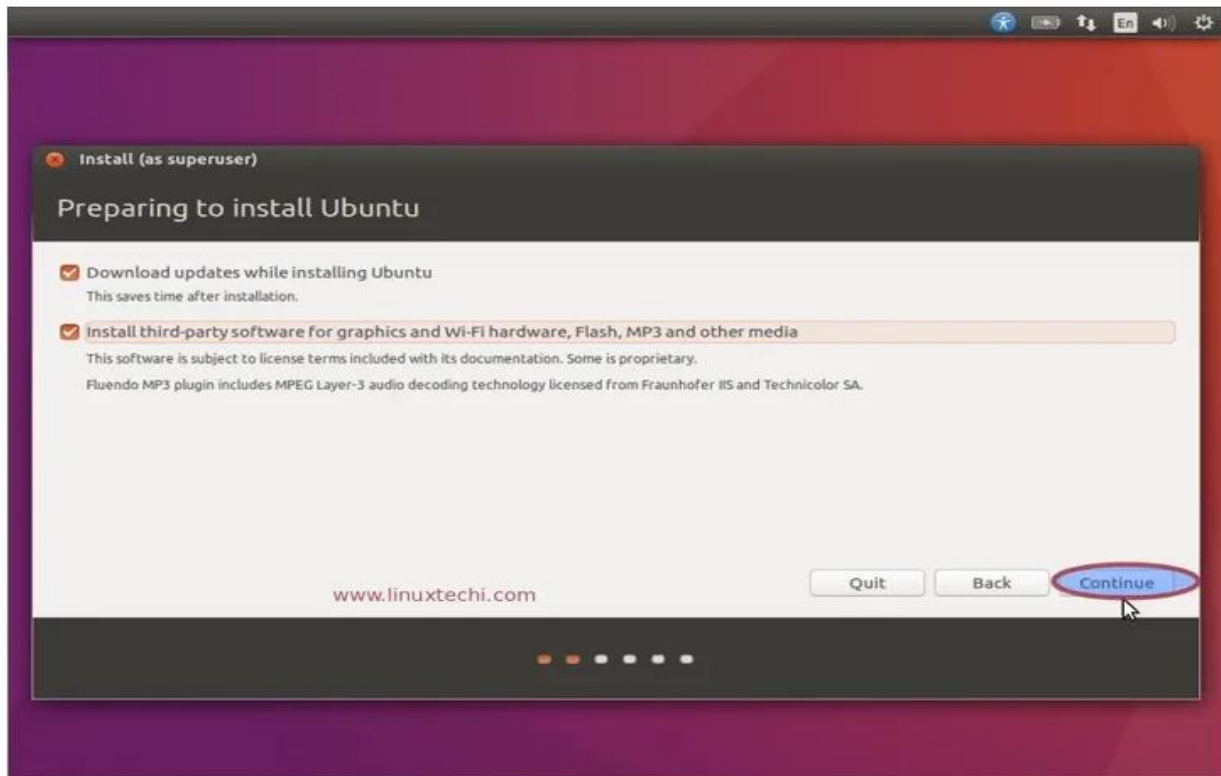
Click on **Continue** to proceed further.

Step: 4 Choose 'something else' option to create customize partition scheme.

If you are planning to create your own customize partition table then select '**something else**'option in the below screen and Click on Continue.

In case you Select the first option '**erase disk and install ubuntu**', it will delete all data on disk and will install Ubuntu with the default partition scheme.
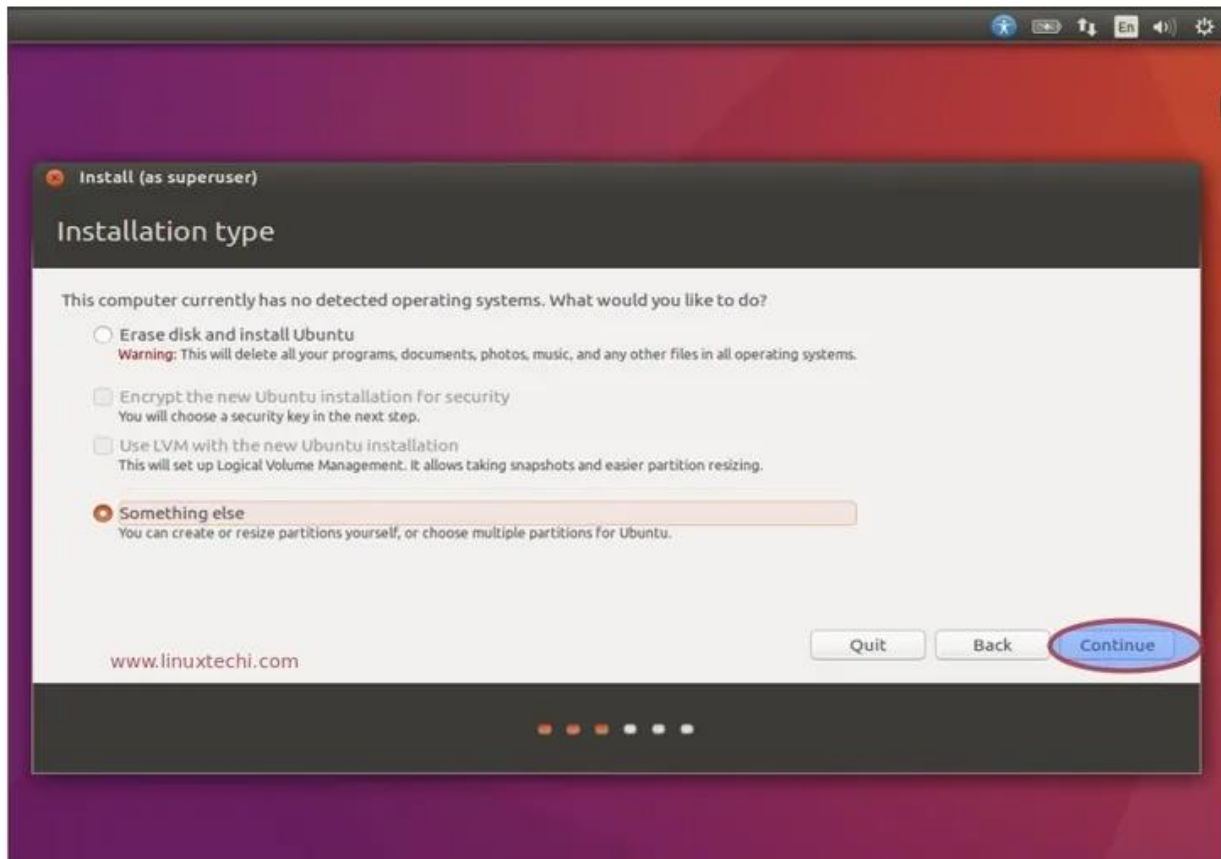
Click on New Partition Table.
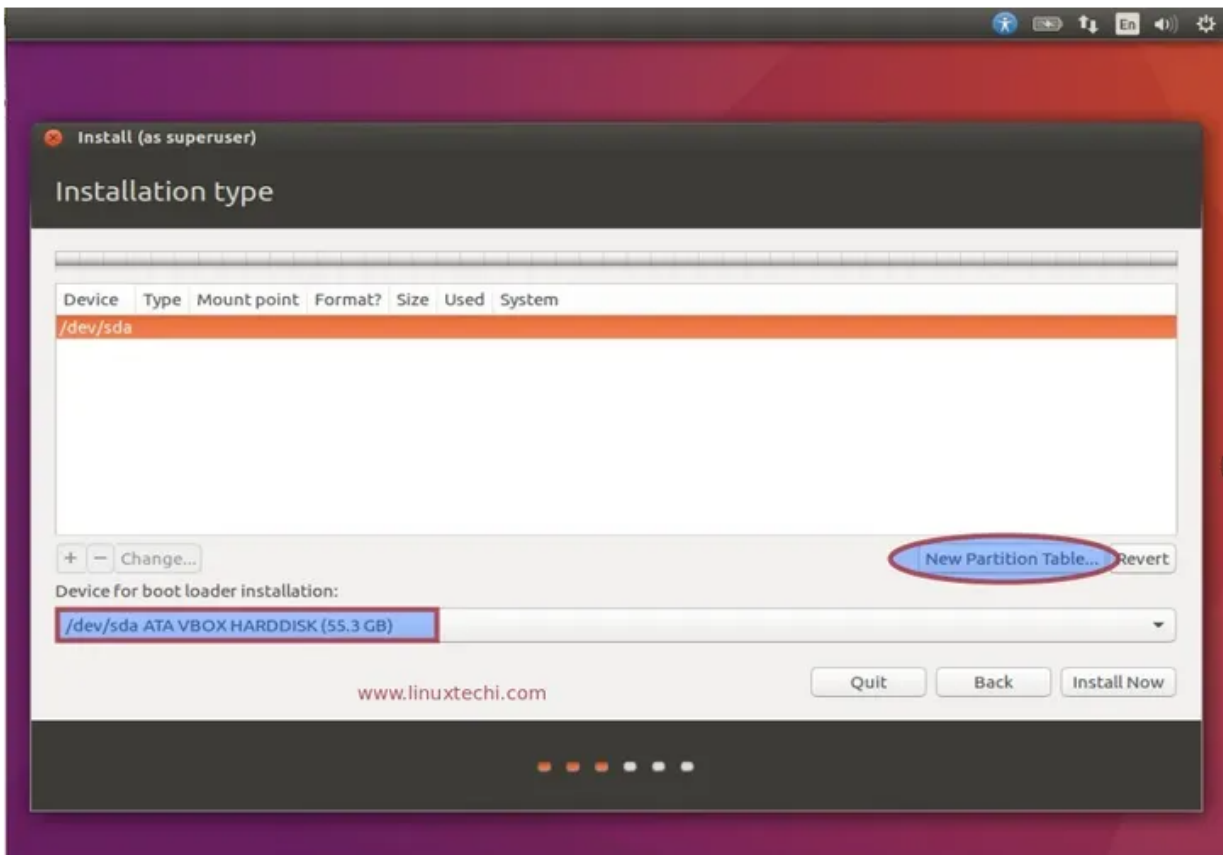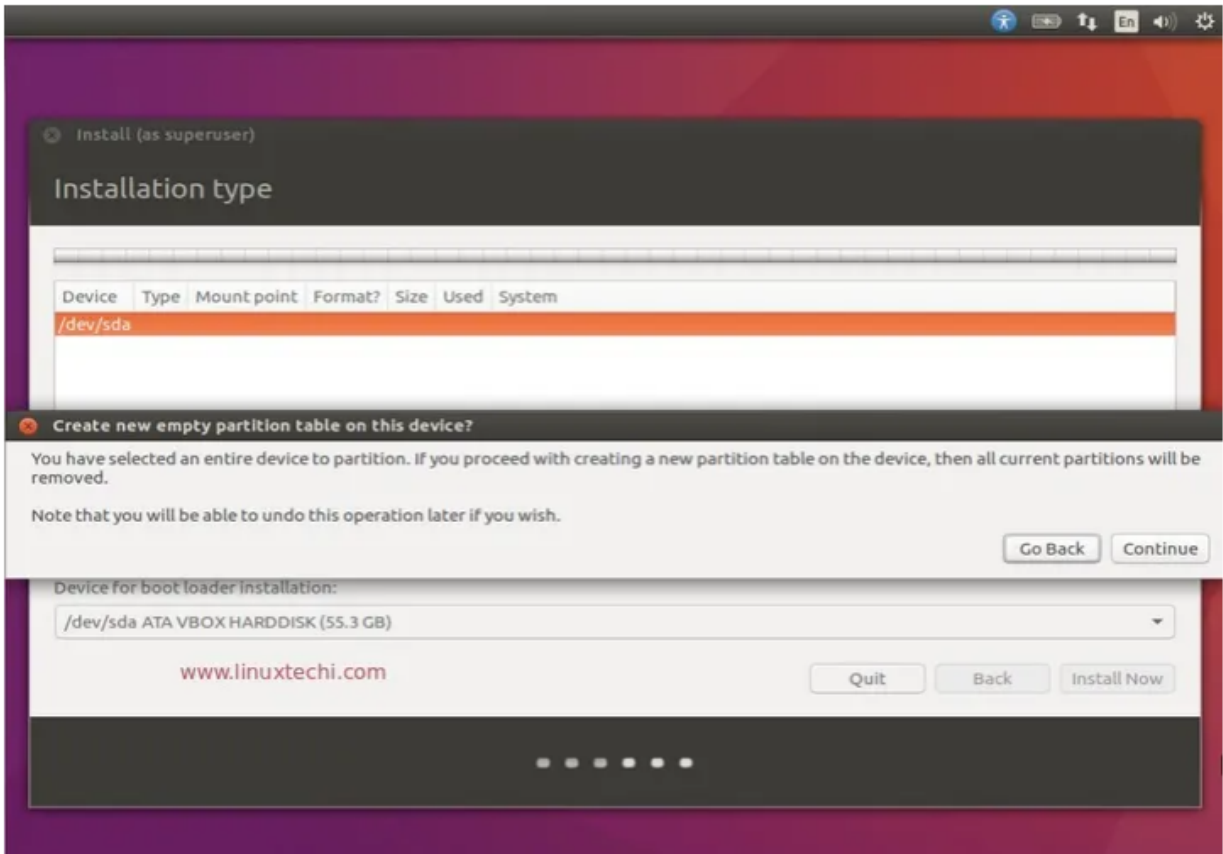
Click on Continue.

In the below Screen Select the Disk, click on '+' option to create partition.
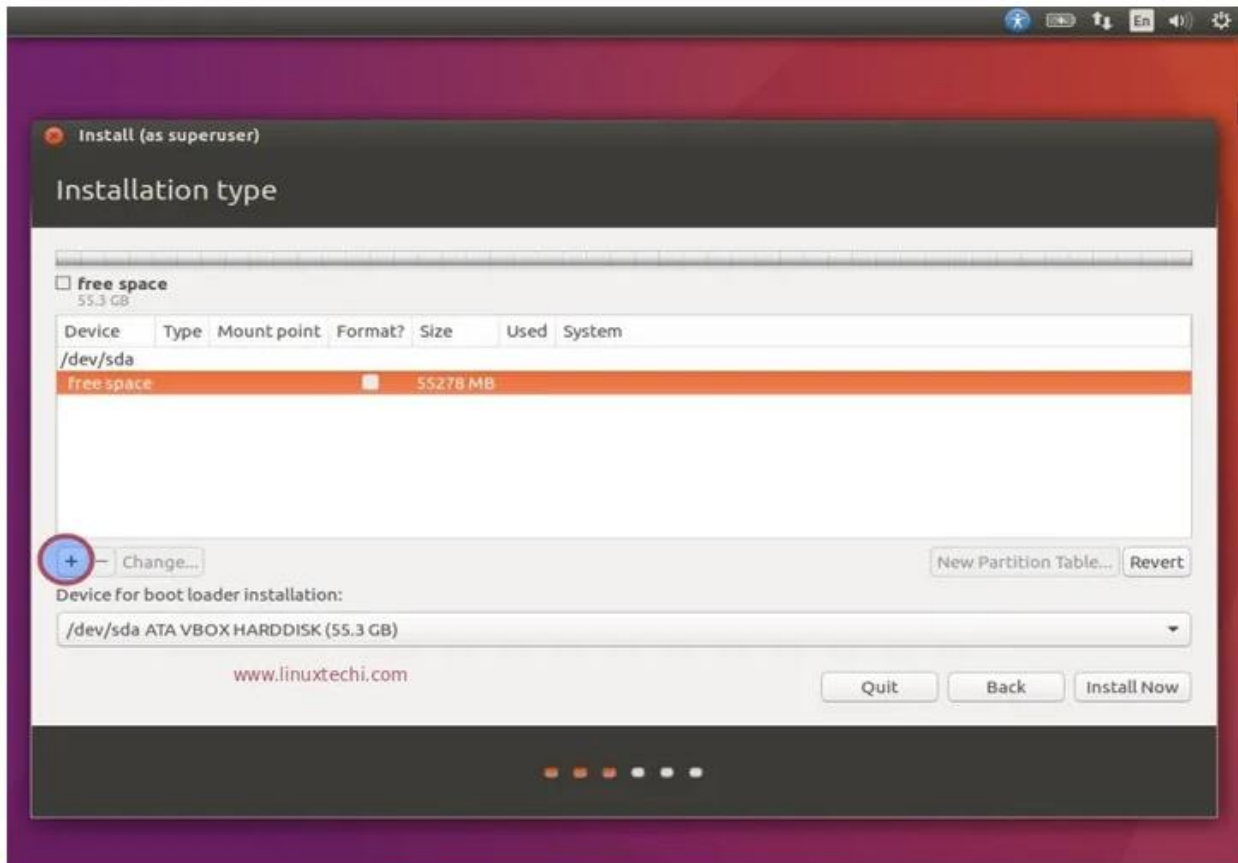
Specify the mount point as **/boot** and File system type as **ext4** and partition size as 500 MB.
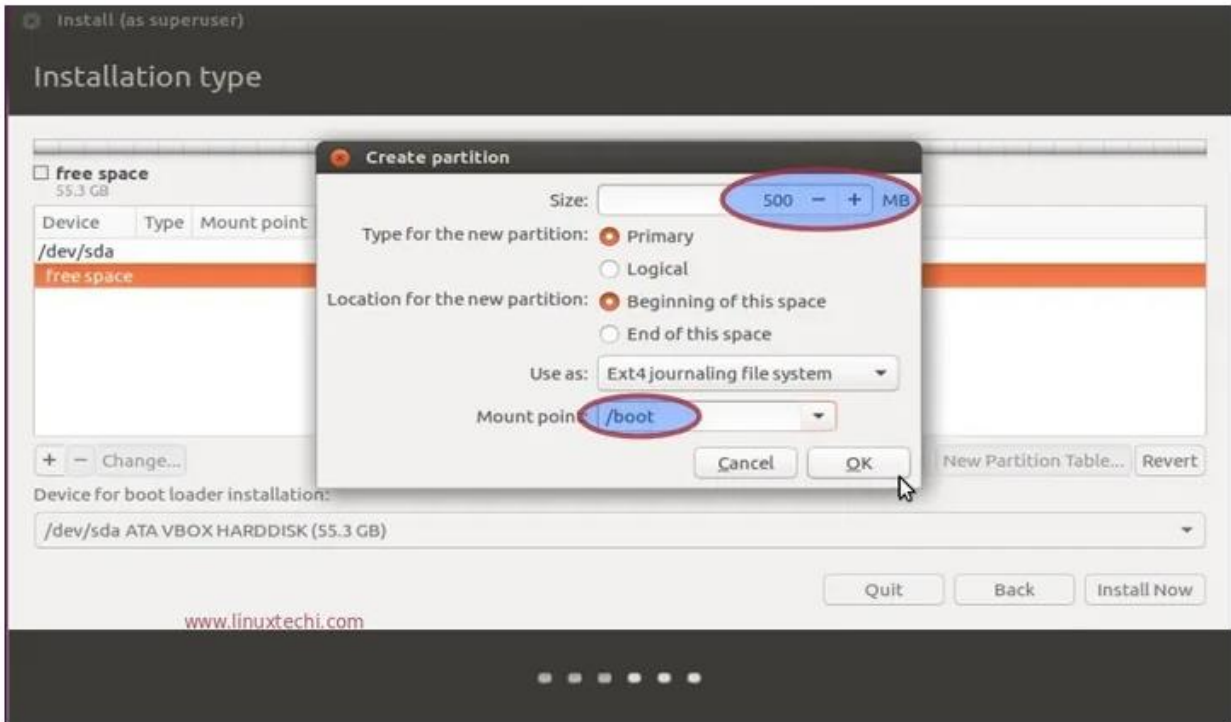
Similarly create **/var** and **/home** partitions as per your available disk.
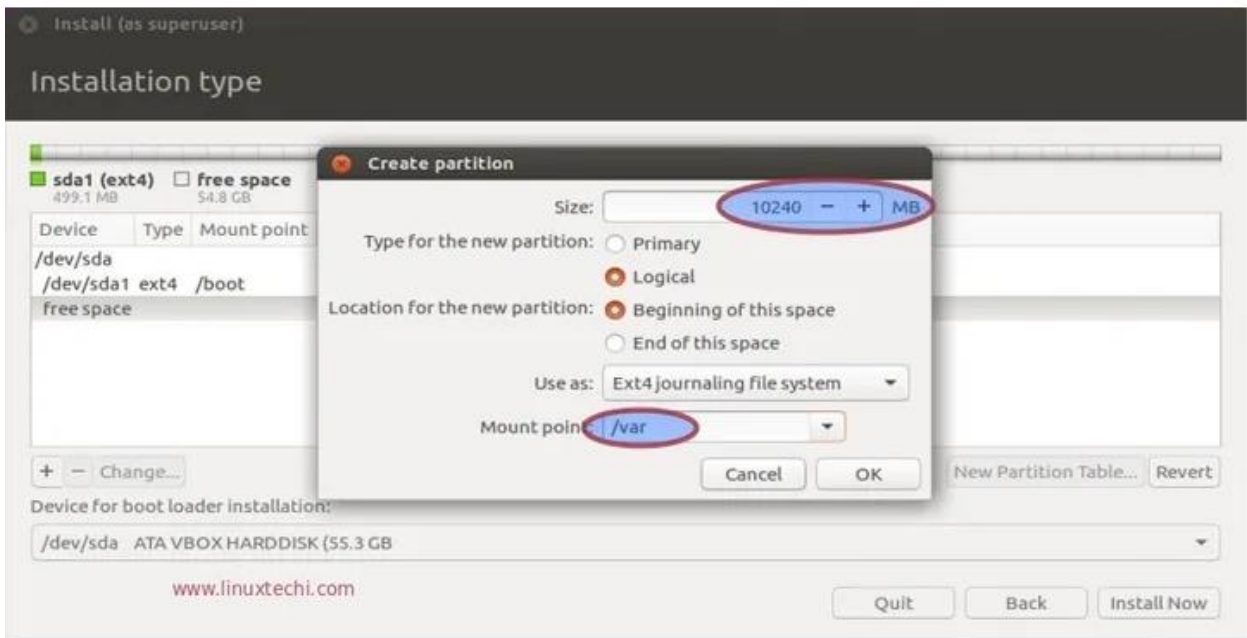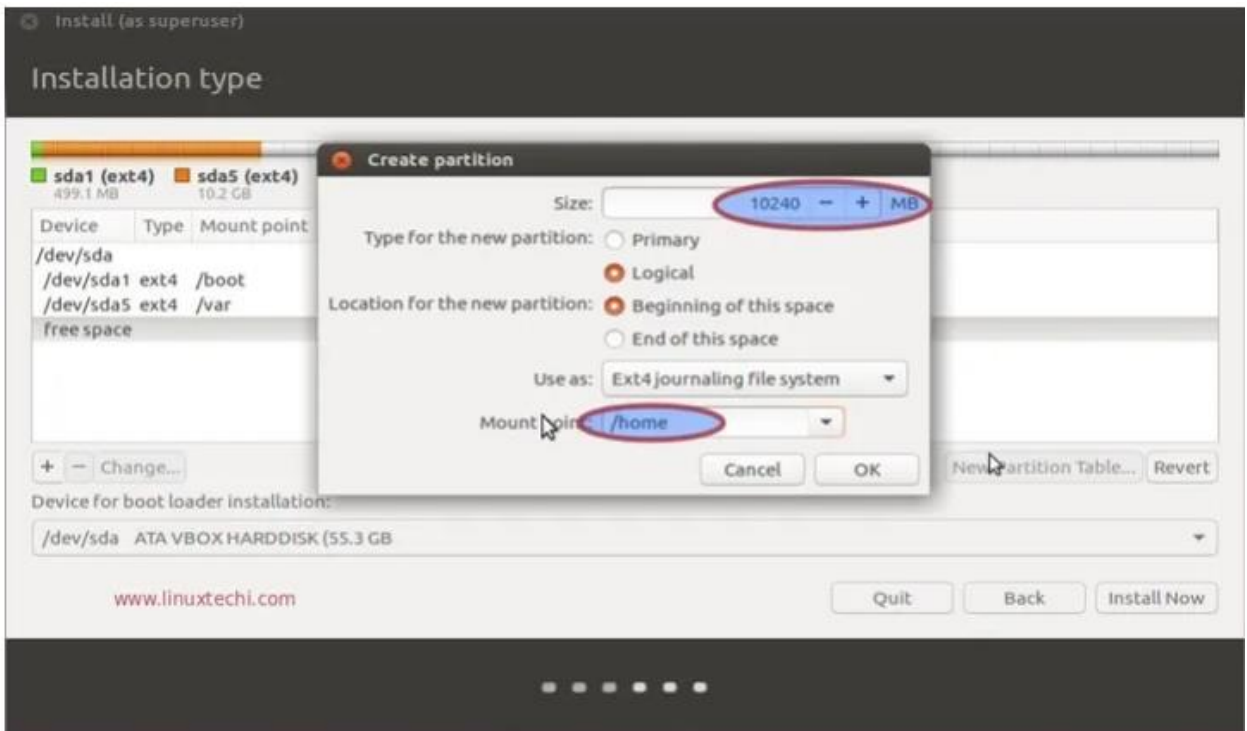
Create a Swap partition and size of swap should be double of your RAM, in my case RAM size is 2 GB so swap size should be 4 GB.
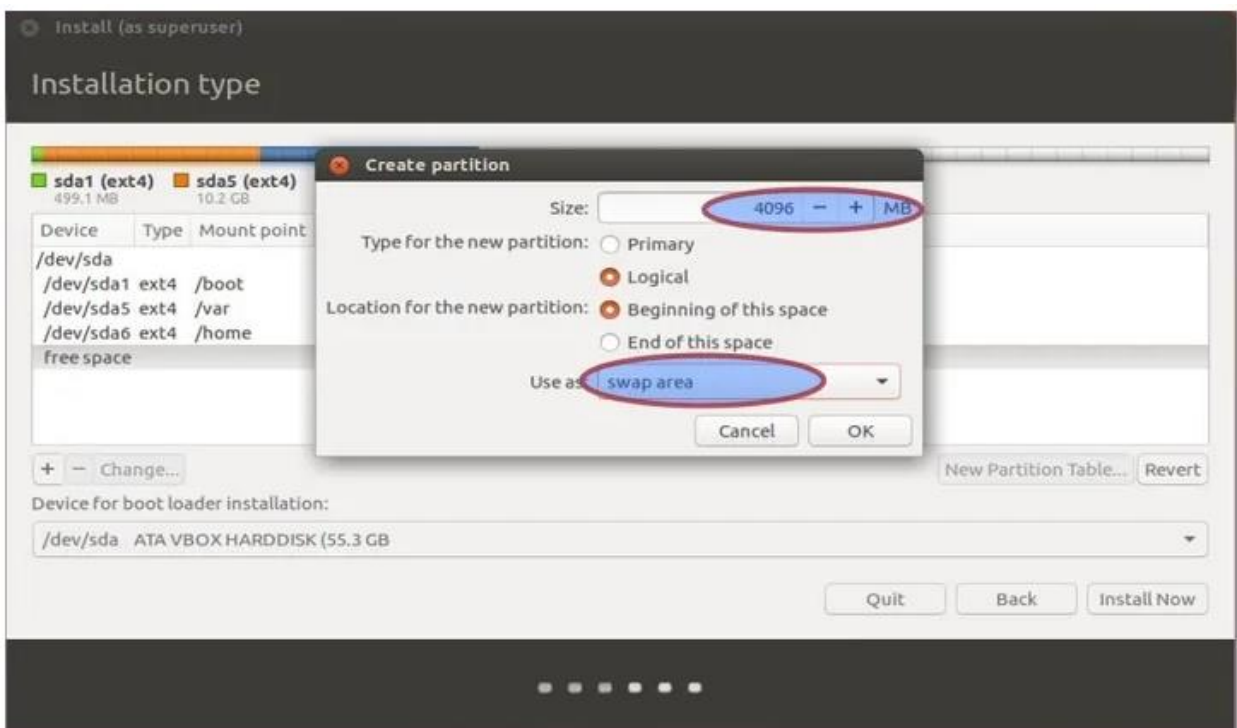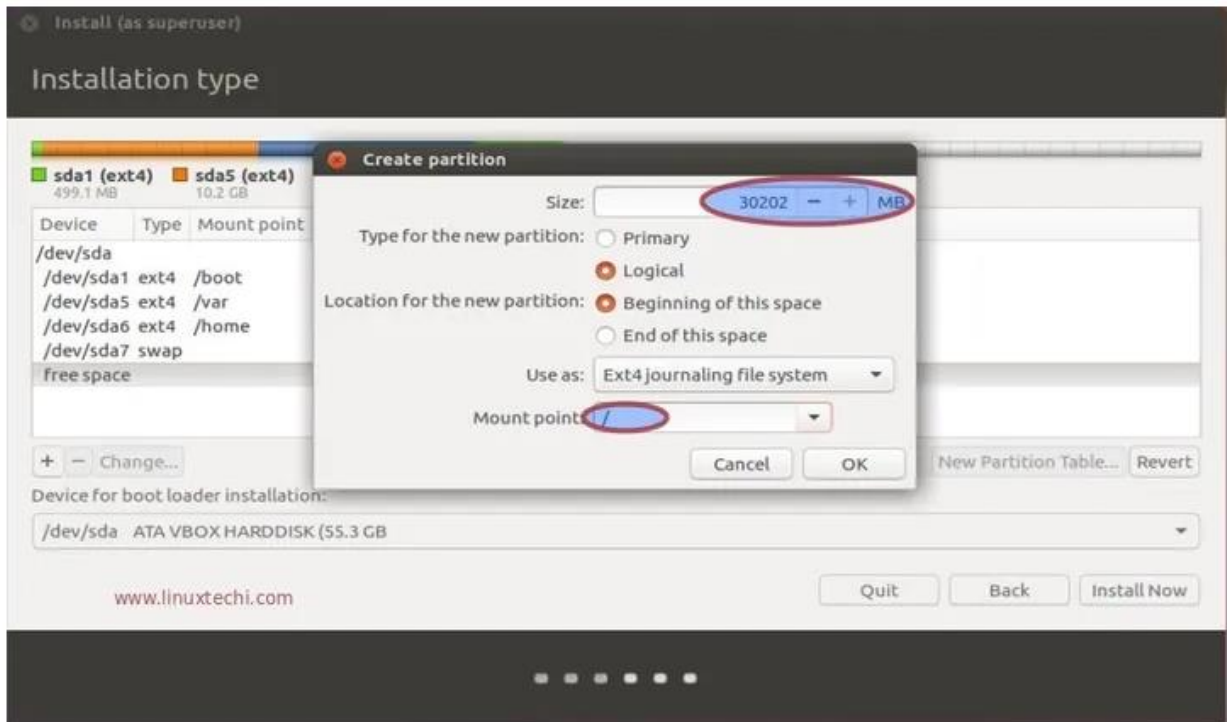
In the last create **'/'** partition on remaining size and file system type should be ext4.

Once you are done with partition table click on '**Install Now**'. It will show the below screen, click on Continue to Proceed.
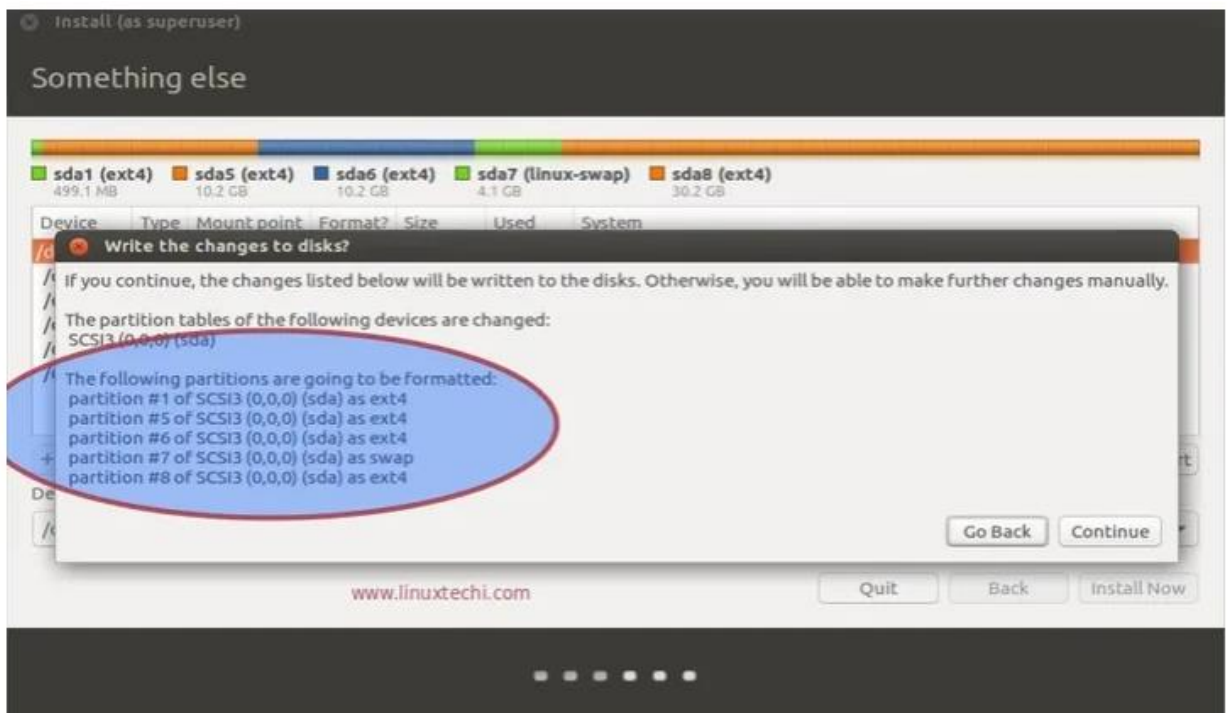
Step: 5 Specify the Time Zone as per your location.

Click on Continue.

Step: 6 Select the Keyboard Layout as per your setup.
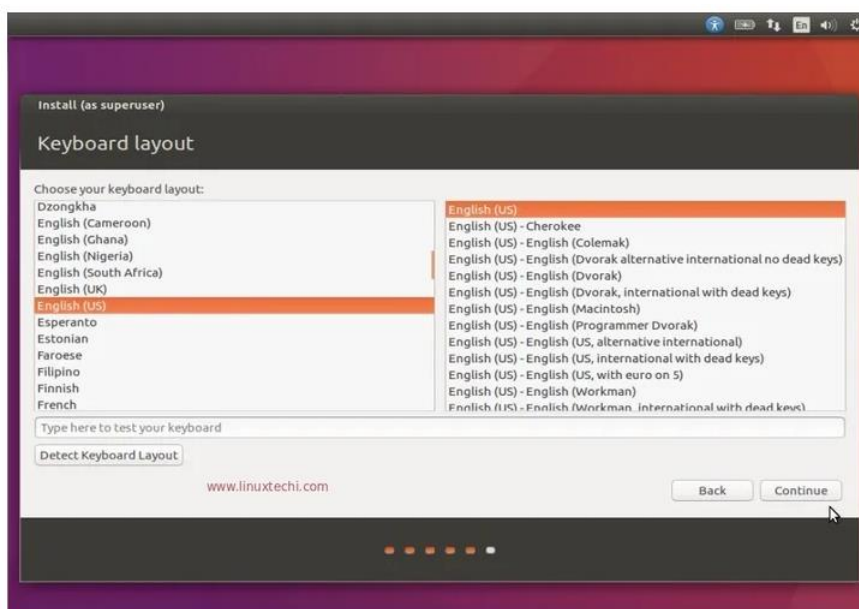
Step: 7 Specify the Hostname, User name and its password. In this step specify
the hostname for your system, user name and its password. We will using this user to login

to the system after the installation.
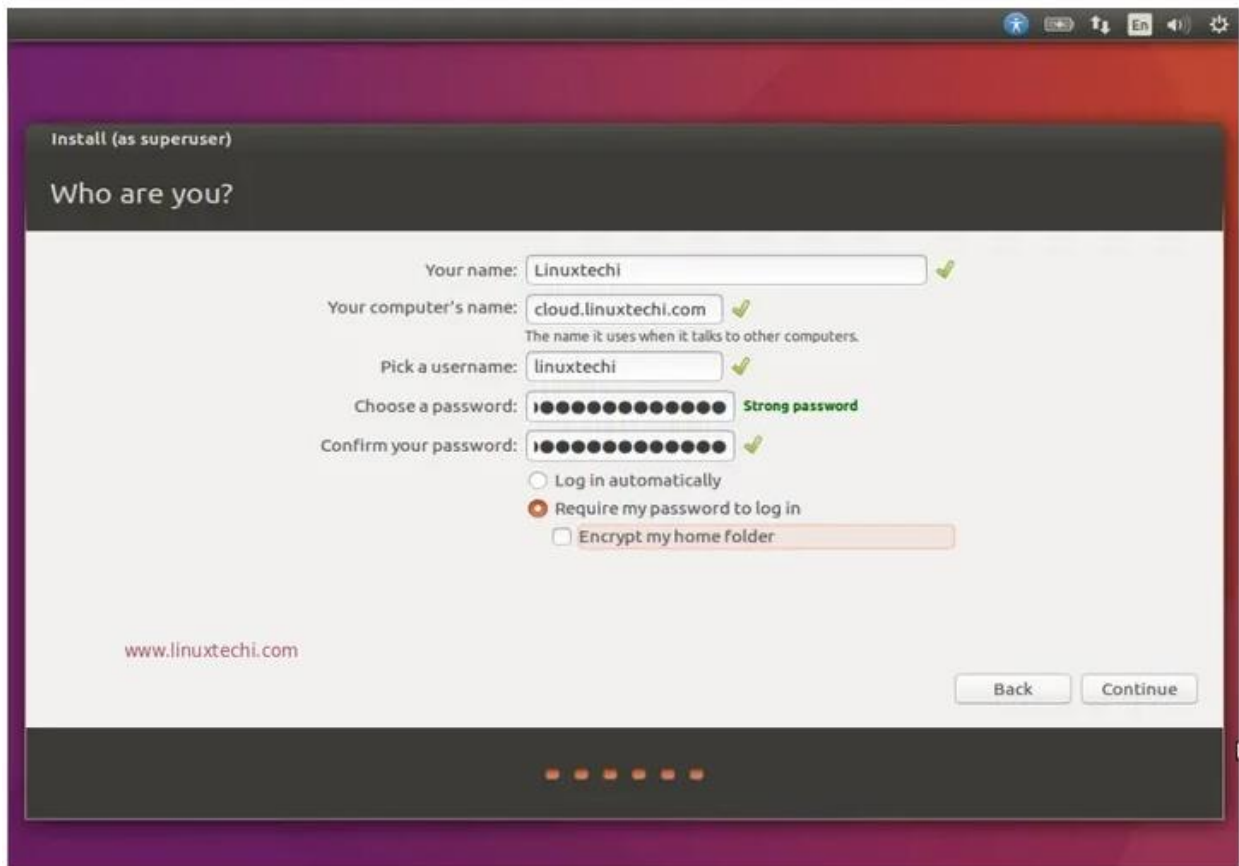
Click on Continue to start the installation

Step: 8 Installation is in Progress.

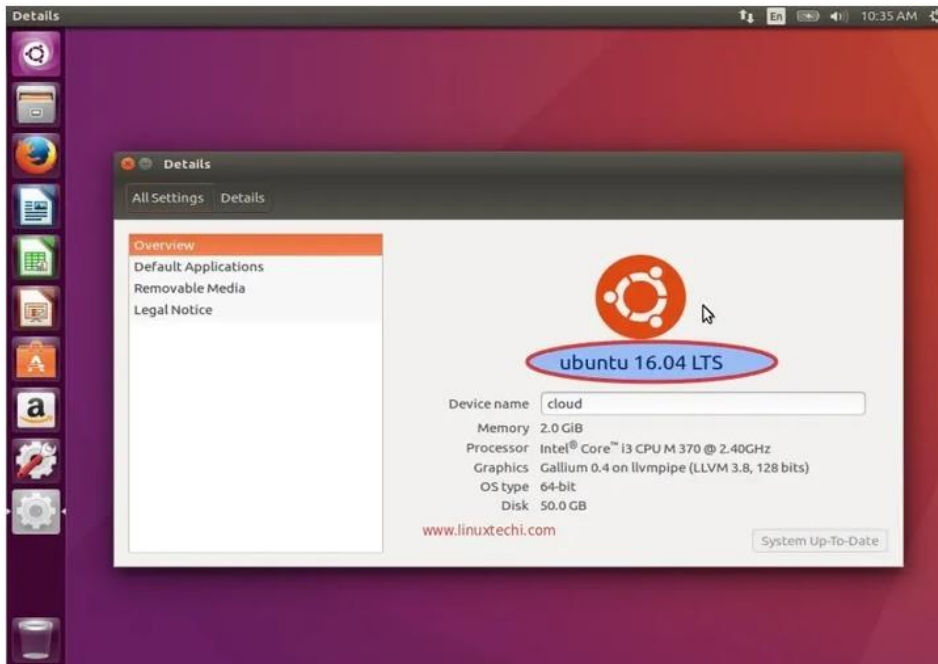As we can see below that installation is progress, once the installation is completed we will get the message to reboot the system.
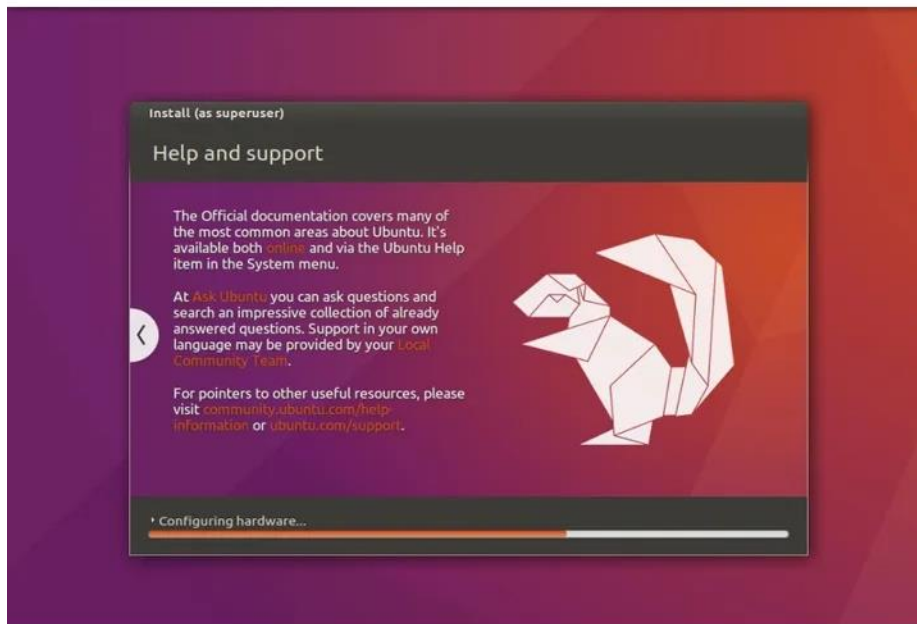
To Reboot the system click on '**Restart Now**'
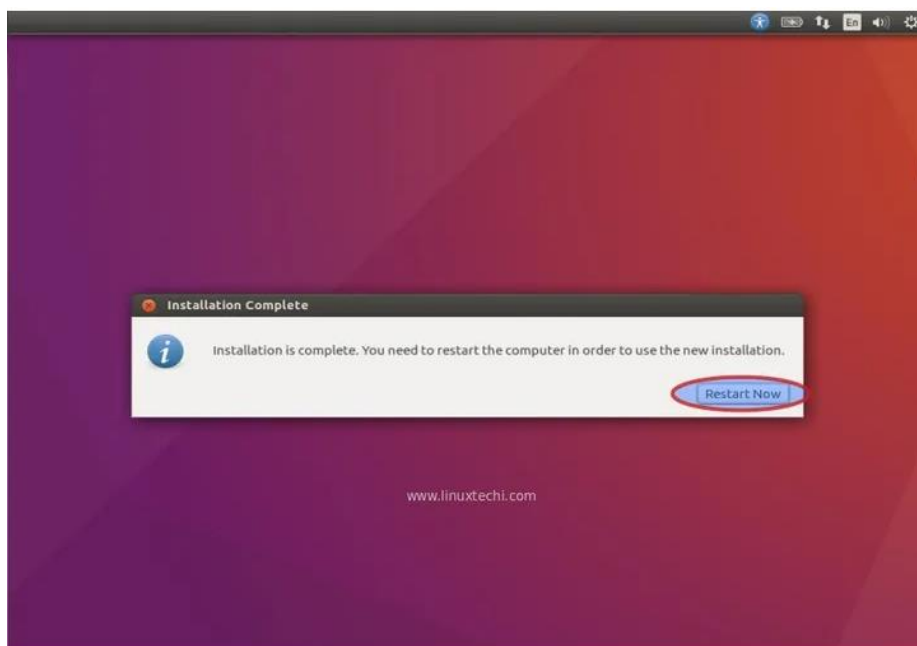
Step: 9 Now login to the system with User that we created during installation.

Installation of Ubuntu 16.04 LTS is completed, explore it now and have fun ⏎

LINUX:

Linux is an operating system's kernel. You might have heard of UNIX. Well, Linux is a UNIX clone. But it was actually created by Linus Torvalds from Scratch. Linux is free and open-source, that means that you can simply change anything in Linux and redistribute it in your own name! There are several Linux Distributions, commonly called "distros".
Ubuntu Linux
Red Hat Enterprise Linux
Linux Mint
Debian
Fedora

Linux is Mainly used in servers. About 90% of the internet is powered by Linux servers. This is because Linux is fast, secure, and free!
It is similar to UNIX, which is created by Linus Torualds. All UNIX commands works in Linux. Linux is a open source software. The main feature of Linux is coexisting with other OS such as windows and UNIX.

STRUCTURE OF A LINUXSYSTEM:
It consists of three parts:
UNIX kernel
Shells

Tools and Applications

UNIX KERNEL:

Kernel is the core of the UNIX OS. It controls all tasks, schedule all Processes and carries out all the functions of OS.

Decides when one programs tops and another starts.

SHELL:

Shell is the command interpreter in the UNIX OS. It accepts command from the user and analyses and interprets them

EXPERIMENT – IV

USAGE OF DIRECTED MANAGEMENT COMMANDS

COMMANDS:

mkdir directoryname

This command will create a subdirectory in your present working directory, which is usually your "Home Directory".

For example:

```
home@VirtualBox:~$ mkdir mydirectory
home@VirtualBox:~$ ls
Desktop     Downloads               Music        Pictures   Templates
Documents   examples.desktop        mydirectory  Public     Videos
home@VirtualBox:~$
```

mkdir mydirectory

To create a directory in a different location other than 'Home directory', use the following command -

mkdir

For example:

mkdir /tmp/MUSIC will create a directory 'Music' under '/tmp' directory

```
home@VirtualBox:~$ mkdir /tmp/MUSIC
home@VirtualBox:~$ ls /tmp
keyring-yCD2no  pulse-Ob9vyJcXyHZz  ssh-SSSsjczv1036        virtual-home.HaC7Mw
MUSIC           pulse-PKdhtXMmr18n  unity_support_test.1
home@VirtualBox:~$
```

we can also create more than one directory at a time.

```
home@VirtualBox:~$ mkdir dir1 dir2 dir3
home@VirtualBox:~$ ls
Desktop   dir2  Documents   examples.desktop   Pictures   Templates
dir1      dir3  Downloads   Music              Public     Videos
home@VirtualBox:~$
```

Removing Directories

To remove a directory, use the command -

rmdir directoryname

Example

rmdir mydirectory will delete the directory mydirectory

```
home@VirtualBox:~$ rmdir mydirectory
home@VirtualBox:~$ ls
Desktop  dir2  Documents  examples.desktop  Pictures  Templates
dir1     dir3  Downloads  Music             Public    Videos
home@VirtualBox:~$
```

Tip: Ensure that there is no file / sub-directory under the directory that you want to delete.
Delete the files/sub-directory first before deleting the parent directory.

```
home@VirtualBox:~$ rmdir Documents
rmdir: failed to remove `Documents': Directory not empty
home@VirtualBox:~$
```

Renaming Directory

The 'mv' (move) command (covered earlier) can also be used for renaming directories. Use
the below-given format:

mv directoryname newdirectoryname

```
home@VirtualBox:~$ mv mydirectory newdirectory
home@VirtualBox:~$ ls
Desktop     Downloads          Music         Pictures  Templates
Documents   examples.desktop   newdirectory  Public    Videos
home@VirtualBox:~$
```

The History Command

History command shows all the commands that you have used in the past for the current terminal session. This can help you refer to the old commands you have entered and re-used them in your operations again.

pwd command

Use the pwd command to find out the path of the current working directory (folder) you're in. The command will return an absolute (full) path, which is basically a path of all the directories that starts with a forward slash (/). An example of an absolute path is /home/username.

The pwd command is used to display the location of the current working directory.

Syntax :pwd

Output:

cd command

To navigate through the Linux files and directories, use the cd command. It requires either the full path or the name of the directory, depending on the current working directory that you're in.

There are some shortcuts to help you navigate quickly:

cd.. (with two dots) to move one directory up

cd to go straight to the home folder

cd- (with a hyphen) to move to your previous directory

Note: Linux's shell is case sensitive.

ls command

The ls command is used to view the contents of a directory. By default, this command will display the contents of your current working directory.

If you want to see the content of other directories, type ls and then the directory's path.

For example, enter ls /home/username/Documents to view the content of Documents.

There are variations you can use with the ls command:

ls -R will list all the files in the sub-directories as well

ls -a will show the hidden files

ls -al will list the files and directories with detailed information like the permissions, size, owner, etc.

EXPERIMENT – V

Usage of file management commands

more command

The more command is quite similar to the cat command, as it is used to display the file content in the same way that the cat command does. The only difference between both commands is that, in case of larger files, the more command displays screenful output at a time.

In more command, the following keys are used to scroll the page:

ENTER key: To scroll down page by line.

Space bar: To move to the next page.

b key: To move to the previous page.

/ key: To search the string.

Syntax:

more <file name> Output:

```
;;; gyp.el - font-lock-mode support for gyp files.

;; Copyright (c) 2012 Google Inc. All rights reserved.
;; Use of this source code is governed by a BSD-style license that can be
;; found in the LICENSE file.

;; Put this somewhere in your load-path and
;; (require 'gyp)

(require 'python)
(require 'cl)

(when (string-match "python-mode.el" (symbol-file 'python-mode 'defun))
  (error (concat "python-mode must be loaded from python.el (bundled with "
                 "recent emacsen), not from the older and less maintained "
                 "python-mode.el")))

(defadvice python-indent-calculate-levels (after gyp-outdent-closing-parens
                                                 activate)
  "De-indent closing parens, braces, and brackets in gyp-mode."
  (when (and (eq major-mode 'gyp-mode)
             (string-match "^ *[])}][],)}]* *$"
                           (buffer-substring-no-properties
--More--(7%)
```

less Command

The less command is similar to the more command. It also includes some extra features such as 'adjustment in width and height of the terminal.' Comparatively, the more command cuts the output in the width of the terminal.

Syntax:

less <file name> Output:

```
;;; gyp.el - font-lock-mode support for gyp files.

;; Copyright (c) 2012 Google Inc. All rights reserved.
;; Use of this source code is governed by a BSD-style license that can be
;; found in the LICENSE file.

;; Put this somewhere in your load-path and
;; (require 'gyp)

(require 'python)
(require 'cl)

(when (string-match "python-mode.el" (symbol-file 'python-mode 'defun))
  (error (concat "python-mode must be loaded from python.el (bundled with "
                 "recent emacsen), not from the older and less maintained "
                 "python-mode.el")))

(defadvice python-indent-calculate-levels (after gyp-outdent-closing-parens
                                                 activate)
```

cat command

cat (short for concatenate) is one of the most frequently used commands in Linux. It is used to list the contents of a file on the standard output (sdout).

To run this command, type cat followed by the file's name and its extension. For instance: cat file.txt.

Other ways to use the cat command:

cat > filename creates a new file

Add content

Press 'ctrl + d' to return to command prompt.

cat filename1 filename2>filename3 joins two files (1 and 2) and stores the output of them in a new file (3)

to convert a file to upper or lower case use, cat filename | tr a-z A-Z >output.txt

Example :

To view a file, use the command -

cat filename


```
guru99@VirtualBox:~$ cat sample1
This is sample1
```

See another file sample2


```
guru99@VirtualBox:~$ cat > sample2
This is sample2
```

It can also be used for copying, combining and creating new text files. The syntax to combine 2 files is -

cat file1 file2 > newfilename

Let's combine sample 1 and sample 2.


```
guru99@VirtualBox:~$ cat sample1 sample2 > sample
```

As soon as you insert this command and hit enter, the files are concatenated, but you do not see a result. This is because Bash Shell (Terminal) is silent type. Shell Commands will never give you a confirmation message like "OK" or "Command Successfully Executed". It will only show a message when something goes wrong or when an error has occurred.

To view the new combo file "sample" use the command

cat sample

```
guru99@VirtualBox:~$ cat sample
This is sample1
This is sample2
```

Note: Only text files can be displayed and combined using this command.

cp command

Use the cp command to copy files from the current directory to a different directory. For instance, the command cp scenery.jpg /home/username/Pictures would create a copy of scenery.jpg (from your current directory) into the Pictures directory.

Deleting Files

The 'rm' command removes files from the system without confirmation. To remove a file use syntax -

rm filename

Moving and Re-naming files

To move a file, use the command. mv filename new_file_location Example :

Suppose we want to move the file "sample2" to location

/home/guru99/Documents. Executing the command

mv sample2 /home/guru99/Documents


```
guru99@VirtualBox:~$ mv sample2 /home/guru99/Documents
mv: cannot move `sample2' to `/home/guru99/Documents': Permission denied
```

For renaming file:(with super user privileges)

mv filename newfilename

```
guru99@VirtualBox:~$ mv test test1
guru99@VirtualBox:~$ ls
Desktop     Downloads        Music      Public      test1
Documents   examples.desktop Pictures   Templates   Videos
guru99@VirtualBox:~$ 
```

NOTE: By default, the password you entered for sudo is retained for 15 minutes per terminal. This eliminates the need of entering the password time and again.

You only need root/sudo privileges, only if the command involves files or directories not owned by the user or group running the commands

EXPERIMENT-VI

USAGE OF GENEARL PURPOSE COMMANDS

wc Command

Linux wc command helps in counting the lines, words, and characters in a file. It displays the number of lines, number of characters, and the number of words in a file. Mostly, it is used with pipes for counting operation.

Syntax:

wc [OPTION]... [FILE]...

Options:

Some useful command line options supported by the wc command are as following:

-c, --bytes: It is used to print the byte counts.

-m, --chars: It is used to print the character counts.

-l, --lines: It is used to print the newline counts.

--files0-from=F: It is used to read input from specified files.

-L, --max-line-length: It is used to print the maximum display width.

-w, --words: It is used to print the word counts.

--help: It is used to display the help manual.

--version: It is used to display the version information.

whoami

It tells you about the system's username.

Syntax: Whoami

Look at the above snapshot, 'sssit' is our system's username.

Who

The who command gives the information about the users logged on to the system.

Syntax:

who

w

This command tells about the users who are logged in and what are they doing.

Syntax : w

lp

Once you are done with the formatting, and it is time for you to get a hard copy of the file, you need to use the following command:

lp Filename

or

lpr Filename

In case you want to print multiple copies of the file, you can use the number modifier.

Print 10 Copies of a File

Specify -nNumber with 'lp' command
```
guru99@VirtualBox:~$ lp -n10 testfile
```
Specify Number with lpr command
```
guru99@VirtualBox:~$ lpr 10 testfile
```

In case you have multiple printers configured, you can specify a particular printer using the Printer modifier

In case of multiple printers , specify a particular printer

-dPrinter with lp command
```
guru99@VirtualBox:~$ lp -dHPofficejet testfile
```
-Pprinter with lpr command
```
guru99@VirtualBox:~$ lpr -PHPofficejet testfile
```

form of packages. A package contains the program itself. Any dependent component needs to be downloaded separately.

You can also send e-mails from terminal using the 'mail' network commands. It is very useful linux commands.

date Command

The date command is used to display date, time, time zone, and more.
Syntax: date

Output:

```
javatpoint@javatpoint-Inspiron-3542:~$ date
Fri May 22 21:51:05 IST 2020
```

cal Command

The cal command is used to display the current month's calendar with the current date highlighted.

Syntax: cal<

Output:

```
javatpoint@javatpoint-Inspiron-3542:~$ cal
        May 2020
Su Mo Tu We Th Fr Sa
                 1  2
 3  4  5  6  7  8  9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
```

time Command

The time command is used to display the time to execute a command.

Syntax: time

Output:

```
javatpoint@javatpoint-Inspiron-3542:~$ time

real    0m0.000s
user    0m0.000s
sys     0m0.000s
```

exit Command

Linux exit command is used to exit from the current shell. It takes a parameter as a number and exits the shell with a return of status number.

Syntax:

Exit

Output:

After pressing the ENTER key, it will exit the terminal.

The clear command

This command clears all the clutter on the terminal and gives you a clean window to work on, just like when you launch the terminal.

EXPERIMENT – VII

USAGE OF SIMPLE FILTER

Linux Filters

Linux Filter commands accept input data from stdin (standard input) and produce output on stdout (standard output). It transforms plain-text data into a meaningful way and can be used with pipes to perform higher operations.

These filters are very small programs that are designed for a specific function which can be used as building blocks.

head Command

The head command is used to display the content of a file. It displays the first 10 lines of a file.

Syntax:

1. head <file name> Output:

tail Command

The tail command is similar to the head command. The difference between both commands is that it displays the last ten lines of the file content. It is useful for reading the error message.

Syntax:

tail <file name> Output:

Pasting commands into the terminal

Many times you would have to type in long commands on the Terminal. Well, it can be annoying at times, and if you want to avoid such a situation then copy, pasting the commands can come to rescue.

For copying, the text from a source, you would use Ctrl + c, but for pasting it on the Terminal, you need to use Ctrl + Shift + p. You can also try Shift + Insert or select Edit>Paste on the menu

NOTE: With Linux upgrades, these shortcuts keep changing. You can set your preferred shortcuts via Terminal> Edit> Keyboard Shortcuts.

Option	Function
x	Divides the data into 'x' columns
-h "header"	Assigns "header" value as the report header
-t	Does not print the header and top/bottom margins
-d	Double spaces the output file
-n	Denotes all line with numbers

-l page length	Defines the lines (page length) in a page. Default is 56
-o margin	Formats the page by the margin number

Printing in Unix/Linux 'pr' command

This command helps in formatting the file for printing on the terminal. The most used 'pr' options are listed below.

Dividing data into columns

'Tools' is a file (shown below).

we want its content to be arranged in three columns. The syntax for the same would be:

pr -x Filename

```
home@VirtualBox:~$ pr -3 Tools

2012-09-02 19:27                     Tools                          Page 1

    5/16" - 3/4" Standa      Extension - 3",6",1      Needle Nose 6"
    3/8" - 3/4" Deep (6      Universal Joint          Diagonal Cutter 7"
    9mm - 19mm Standard      Fractional Universa      Channel Locks 12" (
    9mm - 19mm Deep (6       Metric Universal Im      Long Reach End Cutt
    Ratchet                  Slip Joint 6"            Vise Grip Pliers 10
```

The '-x' option with the 'pr' command divides the data into x columns.

Assigning a header

The syntax is:

pr -h "Header" Filename

The '-h' options assigns "header" value as the report header.

```
home@VirtualBox:~$ pr -3 -h "Important Tools" Tools

2012-09-02 19:27              Important Tools                      Page 1

    5/16" - 3/4" Standa      Extension - 3",6",1      Needle Nose 6"
    3/8" - 3/4" Deep (6      Universal Joint          Diagonal Cutter 7"
    9mm - 19mm Standard      Fractional Universa      Channel Locks 12" (
    9mm - 19mm Deep (6       Metric Universal Im      Long Reach End Cutt
    Ratchet                  Slip Joint 6"            Vise Grip Pliers 10
```

As shown above, we have arranged the file in 3 columns and assigned a header

Denoting all lines with numbers

The syntax is:

pr -n Filename

This command denotes all the lines in the file with numbers.

These are some of the 'pr' command options that you can use to modify the file format.

Cat Filters

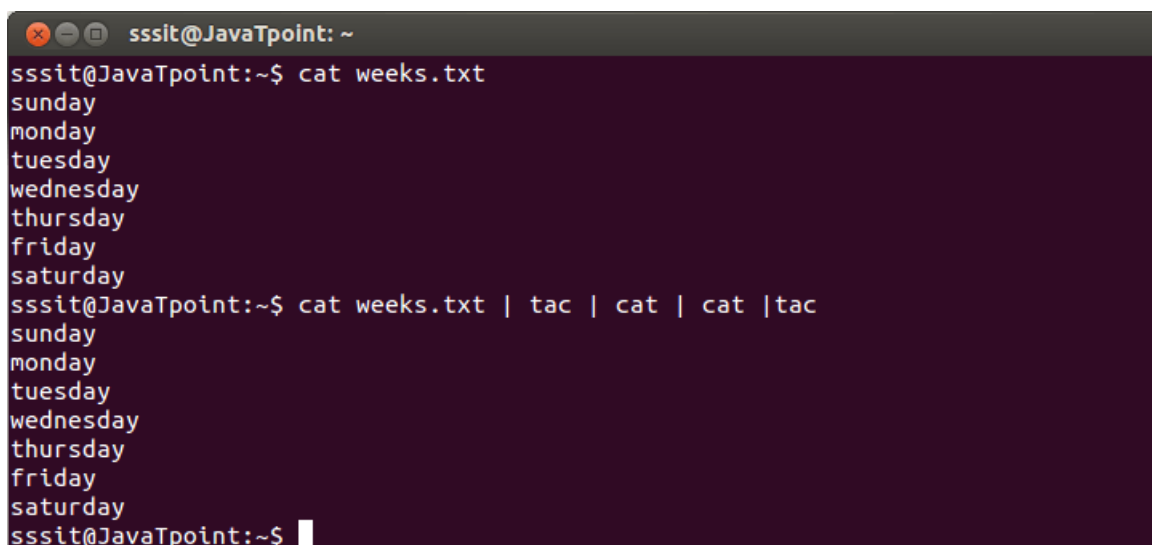When cat command is used inside pipes, it does nothing except moving stdin to stout.

Syntax:

cat <fileName> | cat or tac | cat or tac |. . .

Example:

cat weeks.txt | tac | cat | cat | tac

sort Command

The sort command is used to sort files in alphabetical order.

Syntax:

   sort <file name> Output:

```
javatpoint@javatpoint-Inspiron-3542:~$ sort marks.txt
alen-70
alex-50
carry-85
celena-90
jon-75
justin-80
```

Grep Command

The 'grep' command stands for "global regular expression print". grep command filters the content of a file which makes our search easy.

grep with pipe

The 'grep' command is generally used with pipe (|). Syntax:

1. command | grep <searchWord>

Example:

cat marks.txt | grep 9

```
sssit@JavaTpoint: ~
sssit@JavaTpoint:~$ cat marks.txt
Priya-66
Suman-91
Abhi-78
Soumya-72
Ankit-95
Gaurav-90
Sumit-98
sssit@JavaTpoint:~$ cat marks.txt | grep 9
Suman-91
Ankit-95
Gaurav-90
Sumit-98
sssit@JavaTpoint:~$
```
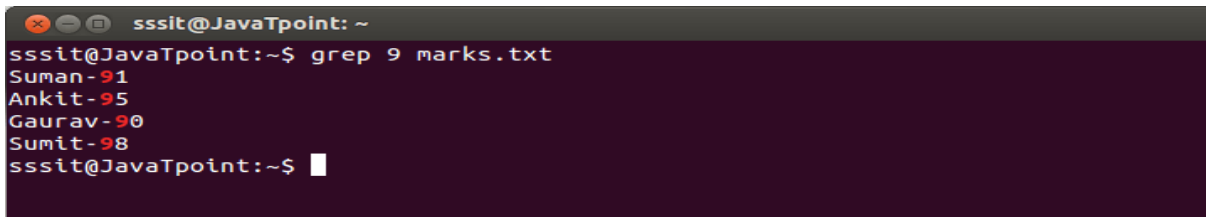
grep without pipe

It can be used without pipe also.

Syntax:

grep <searchWord> <file name>

Example : grep 9 marks.txt

Look at the above snapshot, grep command do the same work as earlier example but without pipe.

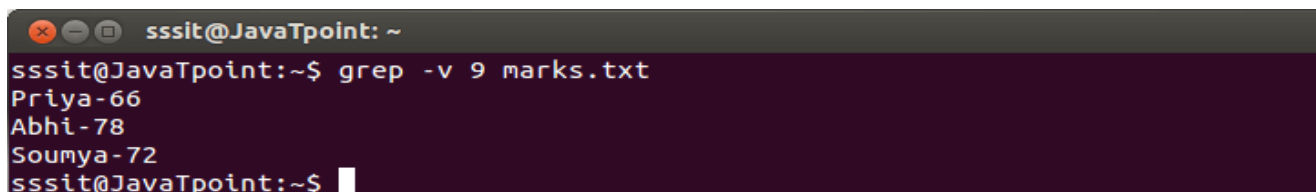grep options

grep -vM: The 'grep -v' command displays lines not matching to the specified word.

Syntax:

grep -v <searchWord> <fileName>

Example:grep -v 9 marks.txt

command "grep -v 9 marks.txt" displays lines hwich don't contain our search word '9'.

grep -i: The 'grep -i' command filters output in a case-insensitive way.

Syntax:

grep -i <searchWord> <fileName>

Example:

grep -i red exm.txt

command "grep -i red exm.txt" displays all lines containing 'red' whether in upper case or lower case.
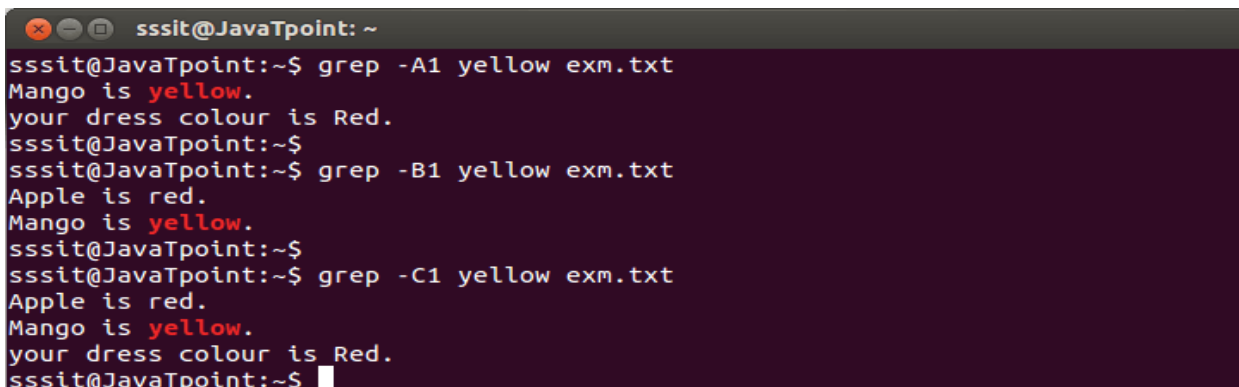
grep -A/ grep -B/ grep -C

grep -A command is used to display the line after the result. grep -B command is used to display the line before the result.

grep -C command is used to display the line after and line before the result.

You can use (A1, A2, A3.....)(B1, B2, B3....)(C1, C2, C3.   ) to display any

number of lines.

Syntax:

grep -A<lineNumber> <searchWord> <fileName> grep -B<lineNumber> <searchWord> <fileName> grep -C<lineNumber> <searchWord> <fileName>

Above snapshot, command "grep -A1 yellow exm.txt" displays searched line with next succeeding line, command "grep -B1 yellow exm.txt" displays searched line with one preceding line and command "grep

-C1 yellow exm.txt" displays searched line with one preceding and succeeding line.

Linux cut Command

Linux cut command is useful for selecting a specific column of a file. It is used to cut a specific sections by byte position, character, and field and writes them to standard output. It

cuts a line and extracts the text data. It is necessary to pass an argument with it; otherwise, it will throw an error message.

To cut a specific section, it is necessary to specify the delimiter. A delimiter will decide how the sections are separated in a text file. Delimiters can be a space (' '), a hyphen (-), a slash (/), or anything else. After '-f' option, the column number is mentioned.

Syntax:

1. cut OPTION... [FILE]...

Options:

The following command line options are used by the cut command to make it more specific:

-b, --bytes=LIST: It is used to cut a specific section by bytes.

-c, --characters=LIST: It is used to select the specified characters.

-d, --delimiter=DELIM: It is used to cut a specific section by a delimiter.

-f, --fields=LIST: It is used to select the specific fields. It also prints any line that does not contain any delimiter character, unless the -s option is specified.

-n: It is used to ignore any option.

--complement: It is used to complement the set of selected bytes, characters or fields.

-s, --only-delimited: It is used to not print lines that do not have delimiters.

--output-delimiter=STRING: This option is specified to use a STRING as an output delimiter; The default is to use "input delimiter".

-z, --zero-terminated: It is used if line delimiter is NUL, not newline.

--help: It is used to display the help manual.

--version: It is used to display the version information.

Using Hyphen (-) As Delimiter

To cut by using the hyphen (-) as the delimiter, execute the below command:

 cut -d- -f(columnNumber) <fileName> Consider the following commands:

cut -d- -f2 marks.txt

cut -d- -f1 marks.txt

from the above commands, the output will be trimmed from hyphen (-). Consider the below

output:

```
javatpoint@javatpoint-Inspiron-3542:~$ cat marks.txt
alex-50
alen-70
jon-75
carry-85
celena-90
justin-80
javatpoint@javatpoint-Inspiron-3542:~$ cut -d- -f2 marks.txt
50
70
75
85
90
80
javatpoint@javatpoint-Inspiron-3542:~$ cut -d- -f1 marks.txt
alex
alen
jon
carry
celena
justin
```

As we can see from the above output, our delimiter is the hyphen (-); hence we have used (-
) after (-d). Command "cut -d- -f1 marks.txt" displays column 1 and command "cut -d- -f2
marks.txt" displays column 2.

Using Space As Delimiter

If we want to use space as a delimiter, then we have to quote the space (' ') with the cut
command. To cut the output by using space as delimiter, execute the command as follows:

1. cut -d ' ' -f(columnNumber) <fileName> Consider the following commands:

cut -d ' ' -f2 exm.txt

cut -d ' ' -f5 exm.txt

From the above commands, the output will be trimmed after space for the specified column. The above commands will produce the output as follows:

From the above output, our delimiter is space; hence we have used (' ') after (- d). Command "cut -d ' ' -f2 exm.txt" displays column 2, command "cut -d ' ' -f5 exm.txt" displays column 5.

Cut by byte

The '-b' option is used to cut a section of line by byte. To cut a file by its byte position, execute the command as follows:

1. cut -b <byte number> <file name> Consider the below command:

1. cut -b 2 exm.txt

The above command will cut the line by a specified byte position. Consider the below output:

Cut by Character

The '-c' option is used to cut a specific section by character. However, these character

arguments can be a number or a range of numbers, a list of comma-separated numbers, or any other character.

To cut by specified character, execute the command as follows:

1. cut -c < characters> <file name> Consider the below commands:

cut -c 1,6 exm.txt

cut -c 1-3 exm.txt

The above commands will cut the line by the specified characters. Consider the below output:

From the above output, we can see the first command is cutting the first and sixth character from each line, and the second command is cutting the first to the third character from each line.

GENERAL

Display count information of multiple files

To display the complete count information of multiple files at once, specify the file names after space (' '). It is executed as follows:

wc <file1> <file2>

Consider the below example:

wc exm.txt marks.txt

The above command will display the number of words, the number of characters, and the
number of the bytes from the files 'exm.txt' and 'marks.txt'. Consider the below output:

```
javatpoint@javatpoint-Inspiron-3542:~$ wc exm.txt marks.txt
  4  16  80 exm.txt
  6   6  52 marks.txt
 10  22 132 total
```

Display the number of lines in a file

The '-l' option is used to display the number of lines in a file. It is executed as follows:

wc - l <file name>

Consider the below example:

wc -l exm.txt

The above command will display the number of lines from 'exm.txt'. Consider the below
output:

```
javatpoint@javatpoint-Inspiron-3542:~$ wc -l exm.txt
4 exm.txt
```

Display the number of characters in a file

The '-m' option is used to display the number of characters in a file. It is executed as follows:

wc -m <file name>

Consider the below example:

wc -m exm.txt

The above command will display the number of words from the file 'exm.txt'. Consider the
below output:

```
javatpoint@javatpoint-Inspiron-3542:~$ wc -m exm.txt
80 exm.txt
```

Display the number of bytes in a file

The '-c' option is used to display the number of bytes in a file. It is executed as follows:

wc -c <file name>

Consider the below example:

wc -c exm.txt

The above command will display the number of bytes in a file. Consider the below output:

```
javatpoint@javatpoint-Inspiron-3542:~$ wc -c exm.txt
80 exm.txt
```

Display the number of words in a file

The '-w' option is used to display the total number of words from a file. It is executed as follows:

wc -w <file name>

Consider the below example:

wc -w exm.txt

The above command will display the total number of words from the file 'exm.txt'. Consider the below output:

```
javatpoint@javatpoint-Inspiron-3542:~$ wc -w exm.txt
16 exm.txt
```

Count the number files in a directory

To count the number of files and folders in a directory, combine the wc command with the ls command. Execute it as follows:

ls | wc -l

The above command will display the count of the files from the current working directory. Consider the below output:

```
javatpoint@javatpoint-Inspiron-3542:~$ ls | wc -l
50
```

Display the length of the longest line

The '-L' option is used to display the length of the longest line from a file. It is executed as follows:

wc -L <file name>

Consider the below example:

wc -L exm.txt

The above command will display the length of the longest line of the file 'exm.txt'. Consider the below output:

```
javatpoint@javatpoint-Inspiron-3542:~$ wc -L exm.txt
24 exm.txt
```

EXPERIMENT - VIII

USAGE OF COMMUNICATION COMMANDS

mesg

Allows/disallows 'write' or 'talk' session to display terminal

Examples	What it does
mesg y	Allows 'write' or 'talk'
mesg n	Doesn't allows 'write' or 'talk'

wall

Writes a message to all the users that are currently logged in. This command is typically used by the system administrator to notify users that the system will be coming down shortly for maintenance or system updates.

Example: wall "PLEASE LOG OFF!!! SYSTEM GOING DOWN FOR MAINTENANCE."

write

Allows two logged-in users to have an interactive chat session with each other. Consult the mesg command to disable the 'talk' or 'write' command from writing to your terminal. Must have '/etc/writesrv' daemon running if you wish to have the ability to write to other users.

Examples	What it does
write roger	Start a conversation with the user roger
write – tty22	Start a conversation with the person logged in on terminal 22

sendmail

The daemon that is is used to control the sending of Email.

Examples	What it does
sendmail -bp	Displays any Email that is in the send queue.

refresh -s sendmail	Will cause the current running daemon to use the current configuration stored in /etc/sendmail.cf

write

Another command for sending text without reverting to email is **write**. This command can be used to communicate with a specific user.

$ write nemo

Are you still at your desk?

I need to talk with you right away.

^C

Enter your text and use **^C** to exit when you're done. The command allows you to send text, but doesn't start a two-way conversation. It just sends the text. If the user is logged in on more than one terminal, you can specify which terminal you want to send the message to or you can rely on the system to choose the one with the shortest idle time.

$ write nemo#1

If the user you are trying to write to has messages blocked, you should see something like this:

$ write nemo

write: nemo has messages disabled

Talk is a visual communication program which copies lines from your terminal to that of another user, much like an instant messenger service. When first called, talk contacts the talk daemon on the other user's machine, which sends the message below.

Message from TalkDaemon@his_machine...

talk: connection requested by your_name@your_machine.

talk: respond with: talk your_name@your_machine

to that user. At this point, he then replies by typing

talk your_name@your_machine

It doesn't matter from which machine the recipient replies, as long as his login name is the same. Once communication is established, the two parties may type simultaneously; their output appears in separate windows. Typing control-L (^L) causes the screen to be

reprinted. The erase, kill line, and word erase characters (normally ^H, ^U, and ^W, respectively) will behave normally. To exit, type the interrupt character
(normally ^C); talk then moves the cursor to the bottom of the screen and restores the terminal to its previous state.

talk supports scrollback; use esc-p and esc-n to scroll your window, and ctrl-p and ctrl-n to scroll the other window.

If you do not want to receive talk requests, you may block them using the mesg command. By default, talk requests are normally not blocked. Certain commands, in particular nroff, pine, and pr, may block messages temporarily to preserve their output.

Syntax

talk person [ttyname]

Options

| person | If you want to talk to someone on your machine, then person is the person's login name. If you want to talk to a user on another host, then person is of the form 'user@host'. |
| ttyname | If you want to talk to a user who is logged in more than once, the ttyname argument may be used to indicate the appropriate terminal name, where ttyname is of the form 'ttyXX' or 'pts/X'. |

Examples

talk hope

Talk to user hope.

EXPERIMENT -IX

To study of UNIX editors such as vi and write a shell program to find the factorial of a number.

CONCEPT:

Editor is a program that allows user to see a portions a file on the screen and modify characters and lines by simply typing at the current position. UNIX supports variety of Editors. They are: ed ex vi EMACS

Vi- vi is stands for "visual".vi is the most important and powerful editor.vi is a full screen editor that allows user to view and edit entire document at the same time.vi editor was written in the University of California, at Berkley by Bill Joy, who is one of the co-founder of Sun Microsystems.

Features of vi:

It is easy to learn and has more powerful features.

Itworksgreatspeedandiscasesensitive.vihaspowerfulundofunctionsandhas3modes:

Command mode

Insert mode

Escape or ex mode

In command mode, no text is displayed on the screen.

In Insert mode, it permits user to edit insert or replace text. In escape mode, it displays commands at command line.

Moving the cursor with the help of h, l, k, j, I, etc

Factorial of a number.

```
#shell script for factorial of a number
#factorial using while loop
#!/bin/bash

echo "Enter a number"
read num

fact=1

while [ $num -gt 1 ]
do
  fact=$((fact * num))  #fact = fact * num
  num=$((num - 1))      #num = num - 1
done

echo $fact
```

   Output

```
Enter a number
3
6
Enter a number
4
24
```

Find check whether a number is prime or not

```
#!/bin/bash
num=29
for((i=2; i<=num/2; i++))
do
  if [ $((num%i)) -eq 0 ]
  then
    echo "$num is not a prime number."
    exit
  fi
done
echo  "$num is a prime number."
```

Output of the above program
```
29 is a prime number.
```

Find average of n numbers

```bash
#!/bin/bash
echo "Enter Size(N)"
read N

i=1
sum=0

echo "Enter Numbers"
while [ $i -le $N ]
do
  read num                 #get number
  sum=$((sum + num))     #sum+=num
  i=$((i + 1))
done

avg=$(echo $sum / $N | bc -l)

echo $avg
```

Output
```
Enter Size(N)
5
Enter Numbers
10
20
30
40
50
30.00000000000000000000
```

```
Enter Size(N)
3
Enter Numbers
1
2
5
2.66666666666666666666
```

A Shell program thyat will convert all the text of the file Lowercase to uppercase.

```bash
#!/bin/bash
# get filename
echo -n "Enter File Name : "
read fileName

# make sure file exits for reading
if [ ! -f $fileName ]; then
  echo "Filename $fileName does not exists."
  exit 1
fi

# convert uppercase to lowercase using tr command
tr '[A-Z]' '[a-z]' < $fileName
```