# 1. Demonstrate Basic File Commands In Ubuntu.

## ls command

The ls command lists the content of a folder, including files and directories.

Here's the syntax:

```
ls [options] [directory_or_path]
```

If you omit the path, the ls command will check the content of your current directory. To list items inside subfolders, add the -R option. Meanwhile, use -a to show hidden content.

## touch command

Run the touch command to create a new empty file in a specific directory. The syntax is as follows:

```
touch [options] [path_and_file_name]
```

If you omit the path, the touch command will create a new file in your current working directory.

## cat command

The concatenate or cat command has various usages. The most basic one is printing the content of a file. Here's the syntax:

```
cat file_name
```

You can also use cat with the operator to combine the content of multiple files into a new item. In this command, file1.txt and file2.txt will merge into target.txt:

## mkdir command

The mkdir command lets you create one or multiple directories. The syntax looks like this:

```
mkdir [options] directory_name1 directory_name2
```

To create a folder in another location, specify the full path. Otherwise, this command will make the new item in your current working directory.

## mkdir command

Run rmdir to delete empty directories in your Linux system. The command syntax looks like this:

```
rmdir [options] directory_name
```

The rmdir command won't work if the directory contains subfolders. To force the deletion, add the –p option.

# 2. Demonstrate Basic Networking Commands in Ubuntu.

## ping command:

The ping command sends packets to a target server and fetches the responses. It is helpful for network diagnostics. The basic syntax looks like the following:

```
ping [option] [hostname_or_IP_address]
```

By default, ping sends infinite packets until the user manually stops it by pressing Ctrl + C.

## netstat command:

The netstat command displays information about your system's network configuration. The syntax is simple:

```
netstat [options]
```

Add an option to query specific network information. Here are several flags to use:

-a – displays listening and closed sockets.
-t – shows TCP connections.
-u – lists UDP connections.
-r – displays routing tables.
-i – shows information about network interfaces.

## traceroute command:

The traceroute command tracks a packet's path when traveling between hosts, providing information like the transfer time and involved routers. Here's the syntax:

```
traceroute [options] destination
```

You can use a hostname, domain name, or IP address as the destination. If you don't specify an option, traceroute will run the test using the default settings.

## ip command / ifconfig:

The ip utility lets you list and manage your system's network parameters, similar to the ifconfig command in older Linux distros. Here's the syntax:

```
ip [options] object command
```

Running this command without any argument will print the manual, including an explanation about acceptable options and objects.

## dig command:

The domain information groper or dig command displays information about a domain. It is similar to nslookup but more comprehensive. The syntax looks as follows:

```
dig [options] [server] [type] name-or-ip
```

Running dig without an argument will check A records of the specified domain using the operating system's default resolver.

# 3. How to check for a File Existence in the file System using Ubuntu.

In Ubuntu (or any Linux-based system), you can check if a file exists in the file system using the `test` command, its shorthand `[ ]`, or by using tools like `ls` and `find`. Here are a few common methods:

### 1. Using `test` Command in a Script

```
if test -f "/path/to/your/file"; then
  echo "File exists."
else
  echo "File does not exist."
fi
```

### 3. Direct Command-Line Check

Run this in the terminal:

```
[ -f "/path/to/your/file" ] && echo "File exists." || echo "File
does not exist."
```

### 4. Using `ls` Command

You can check if a file exists by listing it:

```
ls /path/to/your/file && echo "File exists." || echo "File does not
exist."
```

### 5. Using `find` Command

To check for a specific file:

```
find /path/to/directory -name "filename" -type f
```

If the file exists, the path will be printed. If not, nothing will be returned.

### Explanation of Flags

- `-f`: Checks if the file exists and is a regular file.
- `-e`: Checks if the file exists (regardless of type).
- `-d`: Checks if the path exists and is a directory.

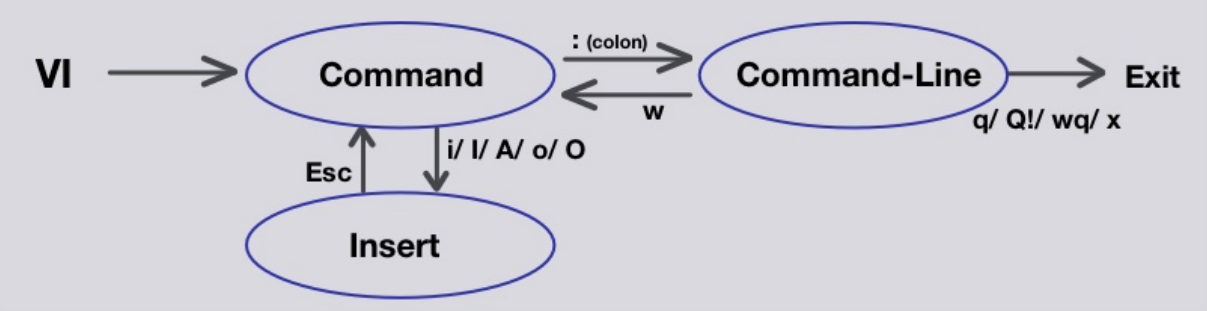
Choose the method based on your specific needs. If you're scripting, the `test` or `[ ]` methods are commonly used.

# 4. Demonstrate the Vi Editor & its Mods in Ubuntu.

Vi editor is a powerful and widely used text editor in UNIX and Linux operating system. It allows us to create, edit and manage text files. Vim is the advanced version of vi editor. There are three modes in vi: Command mode, Last Line Mode and Insert Mode.

## Modes of Operation in the vi editor

Vi has three main modes Command mode, Insert mode and Command-Line mode.




The editor begins in command mode, where cursor movement and copy/paste commands can be issued. If you are ever unsure which mode you're in, press Esc to return to command mode.

### Vi Command Mode :

When vi starts up, it is in Command Mode. This mode is where vi interprets any characters we type as commands and thus does not display them in the window. This mode allows us to move through a file, and delete, copy, or paste a piece of text. Enter into Command Mode from any other mode, requiring pressing the [Esc] key. If we press [Esc] when we are already in Command Mode, then vi will beep or flash the screen.

### Vi Insert mode:

This mode enables you to insert text into the file. Everything that's typed in this mode is interpreted as input and finally, it is put in the file. The vi always starts in command mode. To enter text, you must be in insert mode. To come in insert mode, you simply type i. To get out of insert mode, press the Esc key, which will put you back into command mode.

### Vi Last Line Mode (Escape Mode):

Line Mode is invoked by typing a colon [:], while vi is in Command Mode. The cursor will jump to the last line of the screen and vi will wait for a command. This mode enables you to perform tasks such as saving files and executing commands.

NOTE: vi editor in Linux is case-sensitive.

## Open vi editor in Linux :

To open vi editors, we just need to type the command mentioned below.

```
vi [file_name]
```

# 5. Installation and Configuration of Apache server in Ubuntu.

The Apache HTTP Server, commonly referred to as "httpd," is an open-source web server developed and maintained by the Apache Software Foundation. It is designed to provide a secure, efficient, and extensible server that complies with current HTTP standards. Launched in 1995, it has been the most popular web server on the Internet since April 1996.

Update Package Manager:

```
sudo apt update (package manager)
```

Install Apache:

```
sudo apt install apache2
```

```
sudo systemctl status apache2
```

Start Service:

```
sudo service apache2 start
```

Stop Service:

```
sudo service apache2 stop
```

Check Demo Homepage

Open any browser and type 'localhost' in address bar

```
localhost or 127.0.0.1
```

Location of website File:

```
/var/www/html/index.html
```

Location of Config file:

```
/etc/apache2/
```

# 6. Demonstrate the usage of Design Tool ArgoUML.

ArgoUML is an **open-source** UML modeling tool designed for creating and managing UML diagrams. Its user interface (UI) is straightforward and follows a structured layout, making it user-friendly for both beginners and experienced modelers.

## Key Features of the ArgoUML User Interface

1. **Drag-and-Drop Functionality**: Easily add and connect elements to diagrams.
2. **Consistency Checking**: Built-in tools to validate models and ensure they adhere to UML standards.
3. **Customizable Views**: Allows zooming, panning, and rearranging panels for personalized workflows.
4. **Export Options**: Supports exporting diagrams to formats like PNG, GIF, and PostScript.
5. **Extensibility**: Plugins and extensions are available for adding functionality.

## How to Use the Interface

1. **Start a New Project**:
    - Use the File menu to create a new project or open an existing one.
2. **Create Diagrams**:
    - Select the type of diagram from the toolbar or menu and start adding elements.
3. **Edit Elements**:
    - Use the Properties Panel to modify the attributes of selected elements.
4. **Validate Diagrams**:
    - Check the To-Do Panel for warnings or suggestions and resolve them.

# 7. Install Git on Ubuntu and write the each steps of installation

Git is a distributed version control system designed to handle everything from small to very large projects with speed and efficiency. It helps you keep track of code changes, collaborate with other developers, and manage different versions of your codebase.

### Installing git:

```
sudo apt get git
git --version
```

### Cloning Remote Repo:

```
git clone "https://path_to_github_repo.git]
```

### CONFIG:

```
git config
git config --global user.email "you@example.com"
git config --global user.name "Your Name”
```

### ADD:

```
git add . (adding all files to commit )
```

### COMMIT:

```
git commit:
git commit -m "first commit"
```

### REMOTE ADD ORIGIN:

```
git remote add origin https://github.com/pravin-inspire/bca.git
```

### GIT PUSH:

```
git push -u origin main
github username
github password
```

# 8. Demonstrate how to track Bugs using Bugzilla

Bugzilla is an open source defect tracking system developed by the Mozilla Foundation. It is implemented in PERL and is quite mature.

**Features include:**

1. attachments and comments
2. custom fields
3. reporting and charts
4. integrated email
5. user preferences and profiles
6. saved searches
7. good security
8. high performance and scalability

**Technology stack**

1. Perl (5.10.1 +)
2. MySQL/Oracle/PostgreSQL databases
3. Apache (2.2 +) or IIS (7 +)
4. all web browsers

**License:**

Mozilla Public License

Bugzilla Playground :

Bugzilla Main Page [https://bugzilla52.allizgub.org/]

# 9. Demonstrate how to track Bugs using trac.

Trac is a minimalistic approach to web-based management of software projects. Its goal is to simplify effective tracking and handling of software issues, enhancements and overall progress.

All aspects of Trac have been designed with the single goal to help developers write great software while staying out of the way and imposing as little as possible on a team's established process and culture.

You can use trac-admin to configureTrac to better fit your project, especially in regard to components, versions and milestones.

Trac features:

1. Interface to Subversion and Git (or other version control systems)
2. Integrated Wiki
3. Convenient reporting facilities
4. Allows wiki markup in issue descriptions and commit messages
5. Creates links and seamless references between bugs, tasks, changesets, files and wiki pages
6. Deeply integrates ticket tracking, version control, and wiki

**trac playground:**

Trac Demo 1.4 `https://trac.edgewall.org/demo-1.4`

# 10. Create your college website using Bootstrap Components

Bootstrap is a popular, open-source front-end framework used for building responsive and mobile-first websites and web applications. It provides pre-designed templates, styles, and components to speed up web development. Bootstrap is widely used because it simplifies the creation of visually appealing and consistent layouts across devices and browsers.

## Key Features of Bootstrap:

1. **Responsive Grid System**:
    - A flexible 12-column grid layout that adapts to different screen sizes, ensuring that websites look good on desktops, tablets, and mobile devices.
2. **Pre-designed Components**:
    - Includes ready-made UI elements like navigation bars, buttons, modals, forms, carousels, and more.
3. **Cross-browser Compatibility**:
    - Ensures your site works seamlessly across modern web browsers.
4. **Utility Classes**:
    - Provides helper classes for quick styling adjustments (e.g., margins, padding, text alignment).
5. **Mobile-first Approach**:
    - Designed to prioritize mobile device compatibility, making sites responsive by default.

## How to Use Bootstrap:

**Include Bootstrap in Your Project**:

- Use a CDN (Content Delivery Network):
  ```
  <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">
  ```
- Or download and host the files locally.

**Use the Classes and Components**:

- Apply Bootstrap's predefined classes to HTML elements to style them.
- Example:
  ```
  <button class="btn btn-primary">Click Me</button>
  ```

# 11. Write the steps to Create Wikipedia Account and create a Wikipedia Page for Yourself/Organization/ Biography

## Steps to Create a Wikipedia Account

### 1. Open the Wikipedia Homepage

- Go to the official Wikipedia website: www.wikipedia.org.
- Select your preferred language by clicking on it (e.g., English).

---

### 2. Click on "Create Account"

- At the top-right corner of the page, click the **"Create account"** link.

---

### 3. Fill Out the Registration Form

You will be directed to a form. Complete it as follows:

1. Username:
2. Password:
3. Email Address
4. Captcha Verification:

---

### 4. Click "Create Your Account"

- After filling in the required details, click the **"Create your account"** button.

---

### 5. Confirm Your Email Address (Optional)

- If you provided an email address, check your inbox for a confirmation email from Wikipedia.
- Click the link in the email to confirm your email address.

## Creating a Wikipedia page for an organization:

Creating a Wikipedia page for an organization is a detailed process that requires adherence to Wikipedia's guidelines, particularly around **notability** and **neutrality**. Below are the steps to create a Wikipedia page for an organization:

### Step 1: Check Eligibility (Notability)

- Ensure the organization meets Wikipedia's **notability criteria**:
    - It should have significant coverage in **reliable, independent sources** (e.g., news articles, books, journals).
    - Promotional or self-published content (e.g., press releases, blogs, the organization's website) is not considered sufficient.

### Step 2: Create a Wikipedia Account

1. Visit Wikipedia and click **Create Account**.
2. Register with a username, password, and optional email for verification.
3. Once registered, log in to your account.

### Step 3: Familiarize Yourself with Wikipedia Guidelines

1. Review the **Wikipedia Manual of Style** and the **notability guidelines** for organizations.
2. Understand Wikipedia's **neutral point of view (NPOV)** policy to ensure the page is factual and unbiased.
3. Learn about **conflict of interest (COI)** policies if you are directly affiliated with the organization.

### Step 4: Gather Reliable Sources

- Collect verifiable, independent sources about the organization, such as:
    - Articles from major news outlets.
    - Academic or industry journals.
    - Published books.

### Step 5: Draft the Page

1. **Go to Wikipedia's Sandbox**:
    - Use your personal sandbox to draft the page: `https://en.wikipedia.org/wiki/Special:MySandbox`.
2. **Include Key Sections**:
    - **Introduction**: A brief summary of the organization, including its name, purpose, and founding date.
    - **History**: The organization's origins and significant milestones.
    - **Products/Services**: An overview of what the organization offers.
    - **References**: Include a list of reliable sources supporting the content.
    - **External Links**: Link to the official website and other relevant non-promotional pages.
3. **Citations**:
    - Use inline citations with the `<ref></ref>` tags to reference your sources.

---

## Step 6: Submit the Article

1. **Move the Draft to the Mainspace**:
    - Once you are confident the draft meets Wikipedia’s guidelines, move it from your sandbox to the main article space.
    - To do this, click on the "Submit" button or manually move it by following Wikipedia's guidelines.
2. **Request Review**:
    - If you’re unsure about the notability or content, submit the draft for review via **Wikipedia's Articles for Creation (AFC)** process.
    - Wait for an experienced editor to approve the page.

---

## Step 7: Maintain the Page

1. Monitor for Edits:
    - Once published, other editors can modify the page. Keep an eye on the page to ensure accuracy.
2. Update Information:
    - Add new information as the organization evolves, ensuring all updates comply with Wikipedia's guidelines.

# 12. Demonstrate setting updation of Mozilla Firefox

Firefox is a free, Open Source web browser developed by the Mozilla Foundation and Mozilla Corporation in 2004. The Firefox web browser can be used with Windows, Mac and Linux operating systems, as well as Android and iOS mobile devices. Firefox uses the Google search page as its homepage and default search engine.

You can update Firefox using Ubuntu's built-in package manager. This method ensures that Firefox integrates well with your system but may not provide the absolute latest version released by Mozilla.

Step 1: Update your package list to get the latest information on available packages:

```
sudo apt update
```

Step 2: Install or upgrade Firefox using the following command:

```
sudo apt install firefox
```

Step 3: Check latest installed version

```
firefox --version
```

# 13. Build a Website With Joomla 4

Joomla is a **free and open-source content management system (CMS)** designed for building and managing websites and online applications. It is built on PHP and uses a MySQL or PostgreSQL database for storing data. Joomla is known for its flexibility, user-friendliness, and extensive customization options, making it suitable for creating websites ranging from simple blogs to complex e-commerce platforms and corporate portals.

## Installing joomla on wamp

Installing Joomla on a WAMP (Windows, Apache, MySQL, PHP) server involves several steps. Here's a step-by-step guide:

## Prerequisites

1. Download and install **WAMP** from wampserver.com.
2. Download the latest Joomla package from the official Joomla website.

---

## Step-by-Step Installation

### 1. Start WAMP

- Launch the WAMP server and ensure the WAMP icon in the system tray turns green, indicating that Apache and MySQL are running.
- If the icon stays orange, check for issues such as conflicting software (e.g., Skype, which may use port 80).

---

### 2. Create a Database for Joomla

1. Open the WAMP homepage:
    - In the system tray, click the WAMP icon and select **phpMyAdmin**.
    - Alternatively, open a browser and go to `http://localhost/phpmyadmin`.
2. Log in to phpMyAdmin:
    - Default username: `root`
    - Default password: Leave blank (unless you've set one).
3. Create a database:
    - Click **Databases**.
    - Enter a name for your database (e.g., `joomla_db`) and click **Create**.

---

### 3. Place Joomla Files in WAMP's Root Directory

1. Extract the Joomla package you downloaded.
2. Copy the extracted files into WAMP's root directory:
    - Navigate to `C:\wamp64\www\` (or the directory where WAMP is installed).

- Create a new folder (e.g., `joomla`) and paste the Joomla files into this folder.

---

**5. Begin Joomla Installation**

1. Open a browser and navigate to your Joomla folder:
   - For example, `http://localhost/joomla`.
2. Follow the on-screen setup wizard:
   - **Step 1: Configuration**
     - Choose the site name and enter administrative details like username (e.g., `admin`), password, and email.
   - **Step 2: Database Setup**
     - Database type: MySQLi
     - Host name: `localhost`
     - Username: `root`
     - Password: Leave blank (unless set in phpMyAdmin)
     - Database name: Enter the name you created earlier (e.g., `joomla_db`).
   - **Step 3: Finalization**
     - Choose whether to install sample data (useful for beginners).
     - Review the settings and click **Install**.

---

**6. Finalize Installation**

- After installation is complete, delete the **installation** folder as prompted for security reasons:
  - Click the button **Remove installation folder**.
- Access your Joomla site:
  - Frontend: `http://localhost/joomla`
  - Backend (Administrator Panel): `http://localhost/joomla/administrator`

# 14. Demonstrate how to use the libreoffice.

a) Writer (Word processing)
b) Calc (spreadsheets)
c) Impress (presentations)
d) Draw (vector graphics and flowcharts)
e) Base (databases),
f) Math (formula editing).

LibreOffice is a free and open-source office suite developed by The Document Foundation. It is a powerful alternative to proprietary office software like Microsoft Office, offering similar functionality for a wide range of office-related tasks. LibreOffice is available for multiple platforms, including Windows, macOS, and Linux.

**Key Features:**

1. File Compatibility: LibreOffice supports a wide range of file formats, including Microsoft Office formats (e.g., DOCX, XLSX, PPTX) and open standards like ODF (Open Document Format).
2. Free and Open Source: It is completely free to use, modify, and distribute, making it a popular choice for individuals, businesses, and governments.
3. Community-Driven: Continuous development and support are provided by a global community of volunteers and contributors.
4. Cross-Platform Support: Works on Windows, macOS, and Linux.

LibreOffice consists of several components, each designed for specific office tasks. Here's an explanation of each:

---

### 1. Writer (Word Processor)

- **Purpose**: Similar to Microsoft Word, Writer is used for creating and editing text documents.
- **Features**:
    - Text formatting tools (fonts, styles, and templates).
    - Support for headers, footers, tables, and page numbering.
    - Spellcheck, grammar check, and thesaurus.
    - Compatibility with DOC, DOCX, and other text file formats.
    - Export to PDF.
- **Use Cases**: Writing reports, letters, resumes, books, and articles.

---

### 2. Calc (Spreadsheet Application)

- **Purpose**: Comparable to Microsoft Excel, Calc is used for handling data in spreadsheets.
- **Features**:
    - Support for formulas, functions, and pivot tables.
    - Data visualization through charts and graphs.
    - Conditional formatting and data filtering.
    - Compatibility with XLS, XLSX, and CSV files.

    - Export to PDF and data import from external sources.
- **Use Cases**: Financial analysis, budgeting, data tracking, and statistical analysis.

---

### 3. Impress (Presentation Software)

- **Purpose**: Similar to Microsoft PowerPoint, Impress is used for creating slide-based presentations.
- **Features**:
    - Slide design templates and customizable layouts.
    - Support for animations, transitions, and multimedia elements.
    - Export presentations as PDF, PPTX, or SWF (Flash).
- **Use Cases**: Business presentations, academic lectures, and project proposals.

---

### 4. Draw (Vector Graphics and Diagram Tool)

- **Purpose**: Used for creating vector graphics, flowcharts, diagrams, and illustrations.
- **Features**:
    - Tools for drawing shapes, lines, and connecting objects.
    - Support for layers and grouping elements.
    - Export to various image formats like PNG, JPG, and SVG.
- **Use Cases**: Technical diagrams, organization charts, and illustrations.

---

### 5. Base (Database Management System)

- **Purpose**: Comparable to Microsoft Access, Base is used for creating and managing databases.
- **Features**:
    - Tools for designing tables, queries, forms, and reports.
    - Support for various database engines (HSQLDB, MySQL, PostgreSQL).
    - Integration with external data sources like ODBC or JDBC.
    - Visual SQL query builder.
- **Use Cases**: Inventory management, CRM systems, and data organization.

---

### 6. Math (Formula Editor)

- **Purpose**: Used for creating and editing mathematical equations.
- **Features**:
    - Graphical interface for writing formulas.
    - Support for complex mathematical and scientific notations.
    - Integration with Writer, Impress, and other components.
    - Export equations as part of documents or standalone objects.
- **Use Cases**: Scientific papers, academic documents, and technical manuals.

---

# 15. Write the steps to install GNU Compiler to Ubuntu.

The GCC (GNU Compiler Collection) is a free software compiler system capable of compiling several programming languages, including C, C++, Objective-C, and Fortran.

**Prerequisites**

- Ubuntu 20.04 or Ubuntu 22.04 installed.
- Access to a terminal window/command line.
- A user account with root or sudo privileges.

**Installation:**

To install the GCC compiler from Ubuntu repositories:

Step 1: Update the Ubuntu package repository using the following command:

```
sudo apt update
```

Step 2: Install the *build-essential* package:

The *build-essential* package includes the GCC compiler and other utilities required for building software.These packages are libc, gcc, g++, make, dpkg-dev etc.

```
sudo apt install build-essential
```

Step 3: Use the following command to check the GCC version:

```
gcc --version
```

**Removing build-essential tool from Ubuntu:**

```
sudo apt remove build-essential
```

It will be a good idea to run the autoremove command to remove the residual dependency packages as well:

```
sudo apt autoremove
```