



# LAB ASSIGNMENT NO -02

# NAME- AVISEK MANDAL

**ROLL NO - 102383071**

2C035

## 1. INTRODUCTION OF INTERNAL AND EXTERNAL COMMANDS.

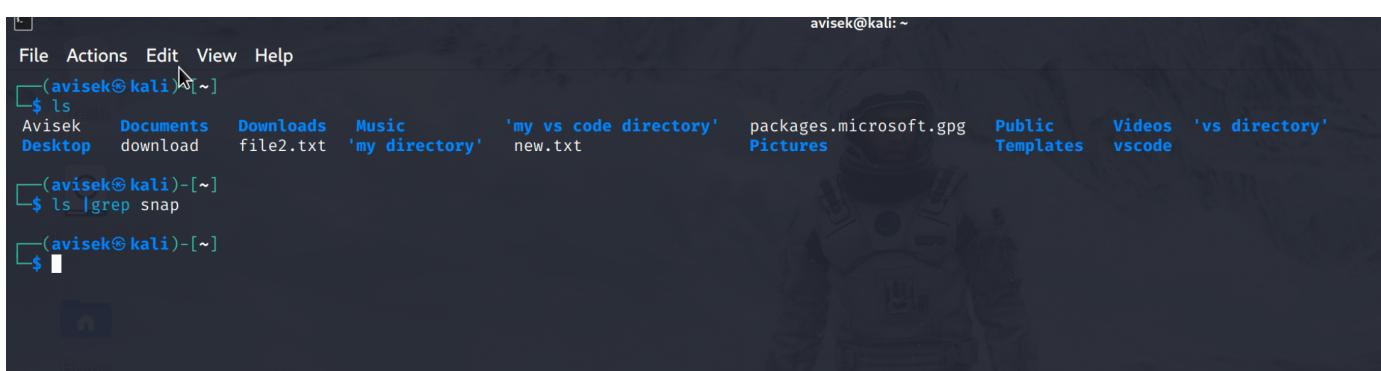
Ans. Internal commands are built-in commands that are directly integrated into the shell or command interpreter. These commands are executed within the shell itself, without invoking any external programs. Internal commands are typically simple and perform basic operations. Examples of internal commands include echo, cd, pwd, and help. These commands are usually faster and more efficient than external commands because they do not require the overhead of creating a new process.

External commands, on the other hand, are separate executable programs or scripts that are stored in separate files on the system. These commands are not built into the shell and need to be invoked as separate processes. External commands are more complex and can perform a wide range of operations. Examples of external commands include ls, grep, mkdir, and rm.

When an external command is executed, the shell creates a new process to run the command, which requires additional system resources.

## 2. FEEDING OUTPUT OF ONE COMMAND TO ANOTHER COMMAND BY PIPELINING.

Ans. To feed the output of one command to another command by pipelining in Unix-like operating systems, you can use the pipe symbol (|). The pipe symbol acts as a connector between commands, allowing the output of one command to serve as the input for another command.



The screenshot shows a terminal window with a dark background and light-colored text. At the top, it says "avisek@kali: ~". The terminal displays the following commands and their outputs:

```
File Actions Edit View Help
(avisek㉿kali)[~]
$ ls
Avisek  Documents  Downloads  Music      'my vs code directory'  packages.microsoft.gpg  Public    Videos  'vs directory'
Desktop download   file2.txt  'my directory'  new.txt          Pictures        Templates  vscode

(avisek㉿kali)-[~]
$ ls |grep snap

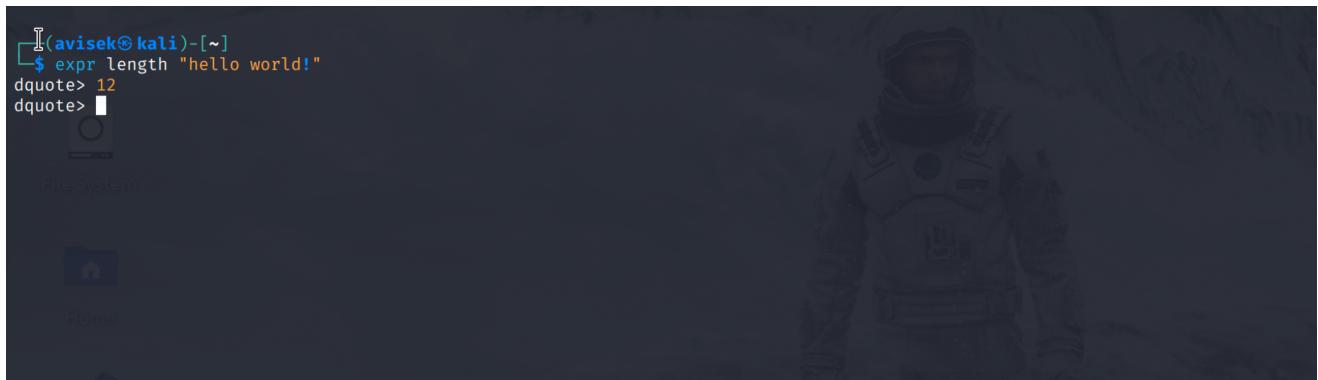
(avisek㉿kali)-[~]
$
```

The terminal shows the user navigating through directories and listing files. The final command, \$ ls |grep snap, demonstrates pipelining, where the output of the first ls command is passed as input to the grep command to filter for files containing 'snap'.

In this example, ls lists all the files in the current directory, and the output is then passed as input to the grep command. The grep command searches for the specified filename within the list of files generated by ls.

### 3. EXPR, LOCATING COMMAND

Ans. In Unix-like operating systems, the expr command is used to evaluate and perform arithmetic or string operations. It can be used to perform mathematical calculations, compare values, manipulate strings, and more.



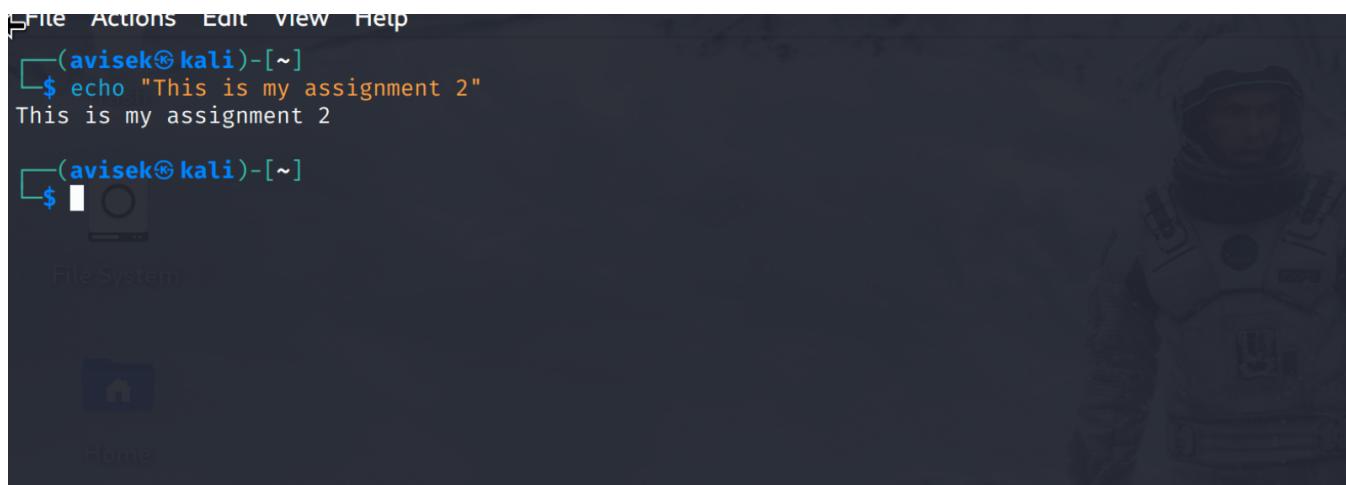
The screenshot shows a terminal window on a Kali Linux desktop environment. The terminal prompt is '(avisek㉿kali)-[~]'. The user has run the command '\$ expr length "hello world!"'. The output shows 'dquote> 12' followed by another 'dquote>'. The desktop background features a faint image of an astronaut in space.

```
(avisek㉿kali)-[~]
$ expr length "hello world!"
dquote> 12
dquote>
```

- The locating command mentioned in your question is not a specific command in Unix-like systems. It might be a typo or a misinterpretation. If you are referring to locating files or directories, you can use the find command or the locate command.

#### 4. ECHO COMMAND

Ans. The echo command is a commonly used command in Unix-like operating systems that is used to display text or variables on the terminal.



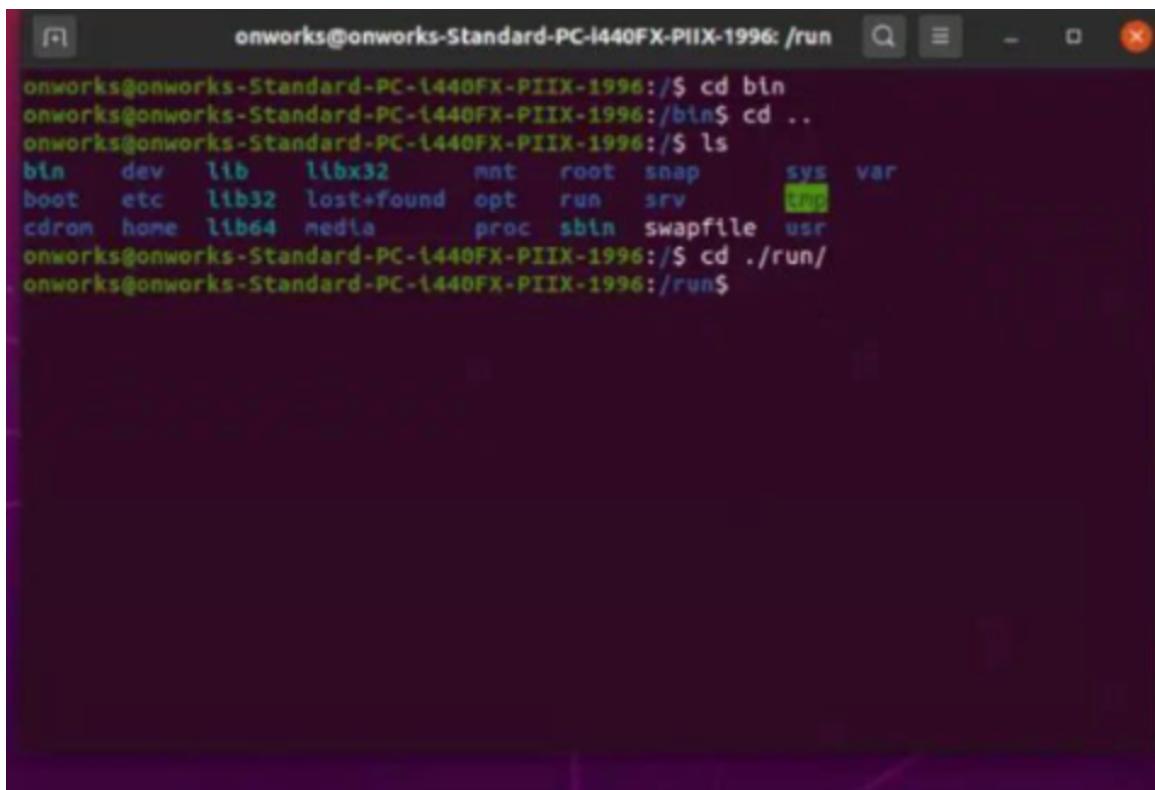
The screenshot shows a terminal window with a dark background. At the top, there's a menu bar with options: File, Actions, Edit, View, Help. Below the menu, the terminal prompt is '(avisek㉿kali)-[~]'. A user types '\$ echo "This is my assignment 2"' and presses Enter. The output 'This is my assignment 2' is displayed below the command. The terminal window has a faint watermark of an astronaut on the right side.

#### 5. USING . AND ..

Ans.

- . (dot): The . (dot) represents the current directory. It is used to refer to the current working directory in file paths or commands.

- .. (dot dot): The .. (dot dot) represents the parent directory. It is used to refer to the directory one level above.



A screenshot of a Linux terminal window titled "onworks@onworks-Standard-PC-i440FX-PIIX-1996: /run". The terminal shows the following command sequence:

```
onworks@onworks-Standard-PC-i440FX-PIIX-1996:/$ cd bin  
onworks@onworks-Standard-PC-i440FX-PIIX-1996:/bin$ cd ..  
onworks@onworks-Standard-PC-i440FX-PIIX-1996:/$ ls  
bin dev lib lib32 mnt root snap sys var  
boot etc lib32 lost+found opt run srv  
cdrom home lib64 media proc sbtn swapfile usr  
onworks@onworks-Standard-PC-i440FX-PIIX-1996:/$ cd ./run/  
onworks@onworks-Standard-PC-i440FX-PIIX-1996:/run$
```

## 6. WAYS FOR SIGNING OFF FROM LINUX.

Ans. There are several ways to sign off or log out from a Linux system. Here are some common methods:

Using the "exit" command: You can simply type "exit" in the terminal and press Enter. This will log you out of the current session and return you to the login screen.

Using the "logout" command: Similar to the "exit" command, you can use the "logout" command to sign off from the current session. Just type "logout" in the terminal and press Enter.

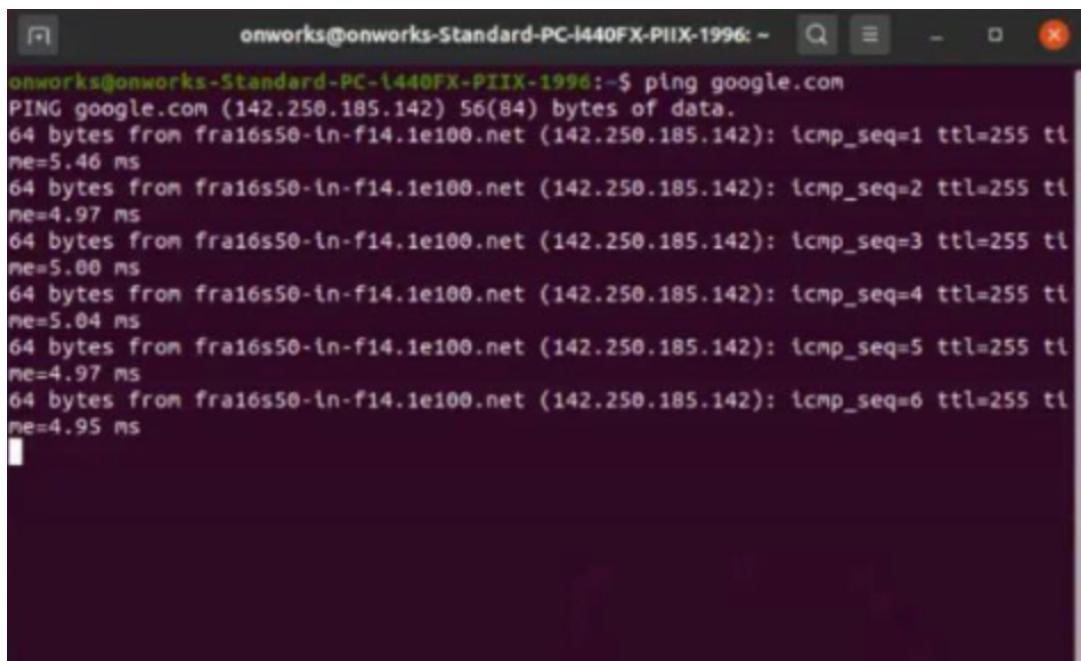
Using the keyboard shortcut: On most Linux distributions, you can use the keyboard shortcut Ctrl+D to sign off from the current session. Pressing Ctrl+D will have the same effect as using the "exit" or "logout" command.

Using the "shutdown" command: If you want to sign off and shut down the system completely, you can use the "shutdown" command with the appropriate options. For example, to shut down the system immediately, you can use the command "sudo shutdown -h now". This will log you out and power off the system.

## 7. PING, MAN AND HELP COMMAND.

Ans. The ping command is used to test the connectivity between two network devices. It sends ICMP echo request packets to a specified IP address or domain name and waits for

ICMP echo reply packets to measure the round-trip time and packet loss. The ping command is commonly used to



```
onworks@onworks-Standard-PC-I440FX-PIIX-1996: ~ $ ping google.com
PING google.com (142.250.185.142) 56(84) bytes of data.
64 bytes from fra16s50-in-f14.1e100.net (142.250.185.142): icmp_seq=1 ttl=255 time=5.46 ms
64 bytes from fra16s50-in-f14.1e100.net (142.250.185.142): icmp_seq=2 ttl=255 time=4.97 ms
64 bytes from fra16s50-in-f14.1e100.net (142.250.185.142): icmp_seq=3 ttl=255 time=5.88 ms
64 bytes from fra16s50-in-f14.1e100.net (142.250.185.142): icmp_seq=4 ttl=255 time=5.04 ms
64 bytes from fra16s50-in-f14.1e100.net (142.250.185.142): icmp_seq=5 ttl=255 time=4.97 ms
64 bytes from fra16s50-in-f14.1e100.net (142.250.185.142): icmp_seq=6 ttl=255 time=4.95 ms
```

troubleshoot network connectivity issues.



```
LS(1) User Commands LS(1)
NAME
ls - list directory contents
SYNOPSIS
ls [OPTION]... [FILE]...
DESCRIPTION
List information about the FILEs (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

Mandatory arguments to long options are mandatory for short options too.

-a, --all
      do not ignore entries starting with .

-A, --almost-all
      do not list implied . and ..

--author
```

- The man command is used to display the manual pages for a specific command or topic. It provides detailed information about the usage, options, and examples of a command.
- The help command is a built-in command in the shell that provides information about the built-in commands and their usage. It displays a list of available commands and their brief descriptions.

```
LS(1)                               User Commands                               LS(1)

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DESCRIPTION
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Mandatory arguments to long options are mandatory for short options too.

-a, --all
          do not ignore entries starting with .

-A, --almost-all
          do not list implied . and ..

--author
          with -l, print the author of each file

-b, --escape
          print C-style escapes for nongraphic characters

--block-size=SIZE
          with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE format below

-B, --ignore-backups
          do not list implied entries ending with ~

-c
          with -lt: sort by, and show, ctime (time of last modification of file status information); with -l: show ctime and sort by name; otherwise: sort by ctime, newest first

-C
          list entries by columns

--color[=WHEN]
          color the output WHEN; more info below

-d, --directory
          list directories themselves, not their contents

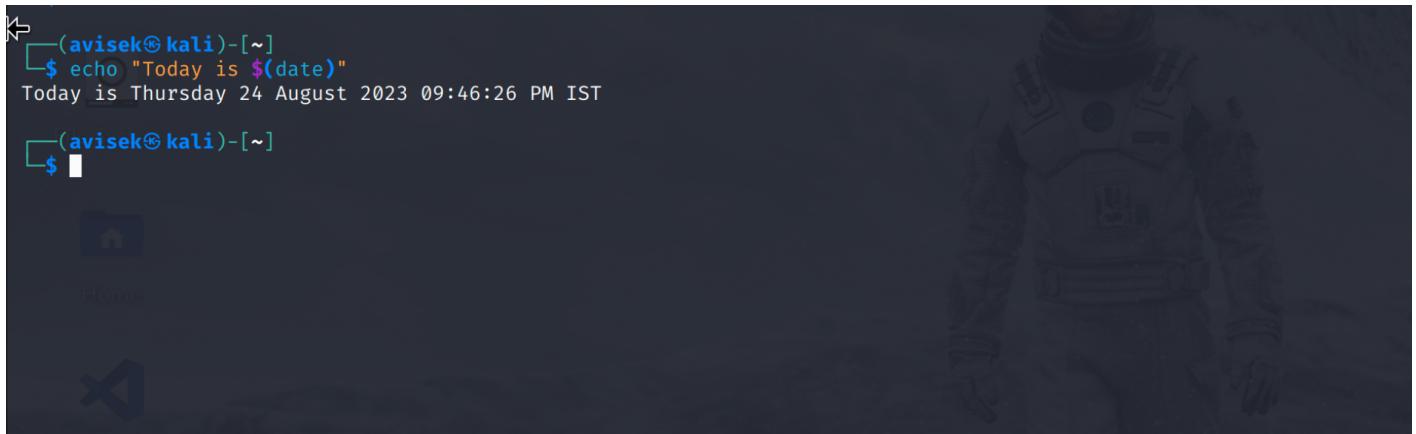
-D, --dirend
          generate output designed for Emacs' dirent mode

-f
          list all entries in directory order

-F, --classify[=WHEN]
          append indicator (one of */=>@|) to entries WHEN
```

## COMBINING THE COMMANDS.

Ans. Combining commands in Unix-like operating systems allows you to perform complex operations by chaining multiple commands together.

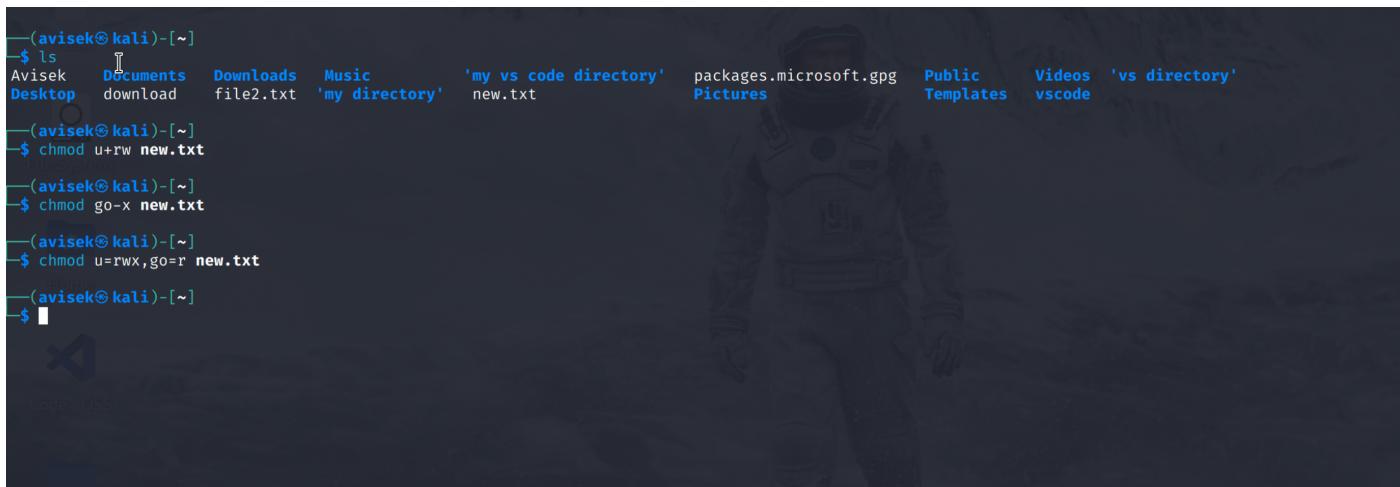


```
(avisek㉿kali)-[~]
$ echo "Today is $(date)"
Today is Thursday 24 August 2023 09:46:26 PM IST
(avisek㉿kali)-[~]
$
```

## 1. FILE PERMISSIONS AND CHANGING THE ACCESS RIGHTS (CHMOD).

Ans. File permissions are a crucial aspect of computer security that determine who can access, modify, or execute a file. In Unix-like operating systems, such as Linux, file permissions are managed using the chmod command.

The chmod command allows users to change the access rights of a file or directory. It can be used to grant or revoke permissions for the owner of the file, the group associated with the file, and other users.



```
(avisek㉿kali)-[~]
$ ls
Avisek  Documents  Downloads  Music      'my vs code directory'  packages.microsoft.gpg  Public  Videos  'vs directory'
Desktop  download   file2.txt  'my directory'  new.txt          Pictures  Templates  vscode

(avisek㉿kali)-[~]
$ chmod u+rnew.txt
(avisek㉿kali)-[~]
$ chmod go-x new.txt
(avisek㉿kali)-[~]
$ chmod u=rwx,go=r new.txt
(avisek㉿kali)-[~]
$
```

## 2. VI EDITOR AND ITS BASICS: WRITE A SMALL PARAGRAPH USING VI EDITOR.

Ans. The vi editor is a powerful and widely used text editor in Unix-like operating systems. It provides a range of features and commands that allow users to efficiently edit and manipulate text files. One of the key features of vi is its modal editing mode, which allows users to switch between different modes for different tasks.



```
onworks@onworks-Standard-PC-I440FX-PIIX-1996: ~
VI is a powerful text editor that is commonly used in Unix-like operating systems. It provides a wide range of features and commands for editing and manipulating text files. One of the key advantages of vi is its modal editing mode, which allows users to switch between different modes for efficient editing. In command mode, users can navigate through the file, search for text, and execute various commands. In insert mode, user can directly input and edit text. Vi also supports advanced features like copy-pasting, undo-redo, and syntax highlighting. Overall, vi is a versatile and widely used text editor that offers a robust set of efficient text editing.
```