Linux Utilities

Session Objectives

➢ **Compression**
➢ **Gzip**
➢ **Compress**
➢ **Mail and communication**
➢ **Banner**
➢ **bc**
➢ **Ispell**
➢ **Finger**
➢ **Chfn**

Compression

As the number of files on the Linux machine increases, there may be a shortage of hard disk space. To solve this problem, we can compress some files so that some hard disk space becomes free. The utilities that compress files can make use of different kinds of algorithms. One such algorithm could be replacing a word or a set of words with a character. Since a fewer number of characters is used, the space occupied is reduced. Decompressing refers to the process of replacing the characters back with the original word or set of words.

There are various utilities available in Linux to compress files. A few of them are discussed below:

The compress utility

The compress command is used to compress a disk file into a file of smaller size. It compresses the file and replaces it with a `.Z` extension. While compressing the file, the compress utility also attaches a magic number to the file. The magic number is not visible but is stored by compress in the file. The compress utility will not change the original attributes of the files such as ownership, permissions and last modified date. The compressed file can be restored to its original form by using the uncompress utility. The `zcat` utility is used to view the contents of a file without actually decompressing the file. The zcat utility does not look for the .z extension but only looks for the magic number that the compress utility attaches. The compress utility can reduce the size of a text file by approximately 50 to 60 percent of its original size.

For example, consider the following command:

```
$ ls -l
total 3
-rw-rw-r--  1 meerav  meerav  91  May 11 15:35  first

$ compress first

$ ls -l
total 3
-rw-rw-r--  1 meerav  meerav  91  May 11 15:35  first.Z

$ uncompress first

$ ls -l
total 3
-rw-rw-r--  1 meerav  meerav  91  May 11 15:35  first
```

Some of the options available are:

```
-c    displays the output to the standard output
-r    compresses/uncompresses directories recursively
-v    prints the version of compress and uncompress utilities
```

The gzip utility

The `gzip` command can be used to compress files. The files can be uncompressed using `gunzip`, `gzip -d` or `zcat`. The `gzip` utility reduces the size of the file by approximately 60 to 70 percent of

the original file size. The `gzip` utility creates a file with the extension `.gz`. `gzip` can uncompress files that have been compressed using `gzip` or `compress`.

Redirection

The output redirection can be used with the `gzip` utility.

```
$ gzip –c first>myfiles.gz
```

The above command compresses the file `first` and creates the file `myfiles.gz`.

```
$ gzip –c file2>>files.gz
```

The above command adds the contents of file `second` to the file `myfiles`

```
$ gunzip –c files.gz
```

The above command displays the contents of the two files `first` and `second` to the standard output.

Mail and communication

The linux e-mail system can be configured to enable users of the Linux system to send and receive mail over the Intranet or Internet. There are two components of an e-mail system on Linux – the MUA (Mail User Agent) and MTA (Mail Transport Agent). MUA is the user interface of the mail software and MTA manages the sending and receiving of mail. The most popular and commonly used MTA is `sendmail`. Another MTA available is `fetchmail`. Some MUAs available are `pine`, `elm`, `mail` and `netscape messenger`.

Working of e-mail

When the user starts any MUA, he can access his mailbox. His mail identification corresponds to his login name. The mail program checks for the location where the mail is stored for the user from the environment variable MAIL or in the default path `/var/spool/mail/username`.

- The user composes a mail message by using any MUA at the terminal.
- MUA passes the message on to MTA
- MTA resolves the destination of the recipient from the e-mail address or an alias when the recipient is on the same local network
- If the recipient is on a remote network, MTA establishes a connection with mail machines on the route to the destination and transfers the mail

The connection is usually TCP based and uses SMTP for the routing of messages

MTA also manages problems in delivering mail. Problems can occur due to the following reasons:

- The login or e-mail address of the user does not exist or is incorrectly spelled
- The name of the recipient's machine is incorrectly spelled.

In the above cases, MTA notifies the user that the e-mail could not be delivered. MTA works transparently to the user.

The format of an e-mail address is <username>@<hostname>

For example, the following are valid e-mail addresses:

```
meerav@linux
arul@linux
```

The pine utility

The pine (Program for Internet News and E-mail)utility is a character based interface MUA in Linux that can be used for sending and receiving messages and Internet news.

To invoke the pine utility, type `pine` at the command prompt
```
$ pine
```
The following screen appears, when pine is invoked for the first time.

```
Telnet - 192.168.11.210                                    _ □ ×
Connect  Edit  Terminal  Help

              <<<This message will appear only once>>>

          Welcome to Pine ... a Program for Internet News and Email

We hope you will explore Pine's many capabilities. From the Main Menu,
select Setup/Config to see many of the options available to you. Also
note that all screens have context-sensitive help text available.

SPECIAL REQUEST: This software is made available world-wide as a public
service of the University of Washington in Seattle. In order to justify
continuing development, it is helpful to have an idea of how many people
are using Pine. Are you willing to be counted as a Pine user? Pressing
Return will send an anonymous (meaning, your real email address will not
be revealed) message to the Pine development team at the University of
Washington for purposes of tallying.

          Pine is a trademark of the University of Washington.


                        [ALL of greeting text]
? Help        E Exit this greeting          - PrevPage Z Print
          Ret [Be Counted!]                 Spc NextPage
```

Press E to go to the main menu.

```
Telnet - 192.168.11.210
Connect  Edit  Terminal  Help

        ?       HELP              -  Get help using Pine

        C       COMPOSE MESSAGE   -  Compose and send a message

        I       MESSAGE INDEX     -  View messages in current folder

        L       FOLDER LIST       -  Select a folder to view

        A       ADDRESS BOOK      -  Update address book

        S       SETUP             -  Configure Pine Options

        Q       QUIT              -  Leave the Pine program


     Copyright 1989-1999.  PINE is a trademark of the University of Washington.
Choose a setup task from the menu below :
? Help      P [Printer]  C Config      A AddressBooks  R Rules    K Kolor
^C Cancel   N Newpassword S Signature  L collectionList D Directory
```

Go to the SETUP option. Choose the Config task from the menu by pressing **C** (Shift+c). Make the changes as shown below:

```
Telnet - 192.168.11.210
Connect  Edit  Terminal  Help

personal-name            = meerav
user-domain              = Linux
smtp-server              = 192.168.10.200
nntp-server              = <No Value Set>
inbox-path               = <No Value Set: using "inbox">
incoming-archive-folders = <No Value Set>
pruned-folders           = <No Value Set>
default-fcc              = <No Value Set: using "sent-mail">
default-saved-msg-folder = <No Value Set: using "saved-messages">
postponed-folder         = <No Value Set: using "postponed-msgs">
read-message-folder      = <No Value Set>
form-letter-folder       = <No Value Set>
signature-file           = <No Value Set: using ".signature">
feature-list             =
            Set      Feature Name
            ---      --------------------
  [ Composer Preferences ]
            [ ]      compose-cut-from-cursor
            [ ]      compose-maps-delete-key-to-ctrl-d

? Help        E Exit Setup  P Prev              - PrevPage A Add Value  % Print
              C [Change Val] N Next          Spc NextPage D Delete Val  W WhereIs
```
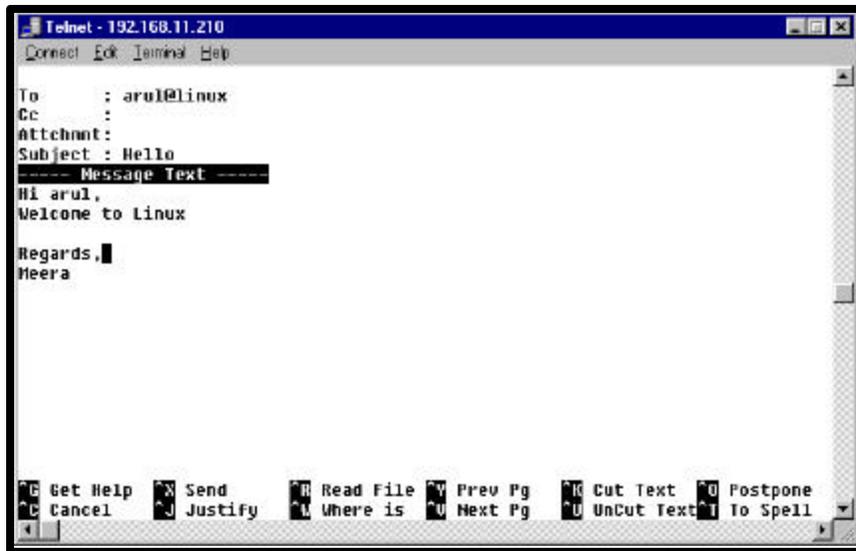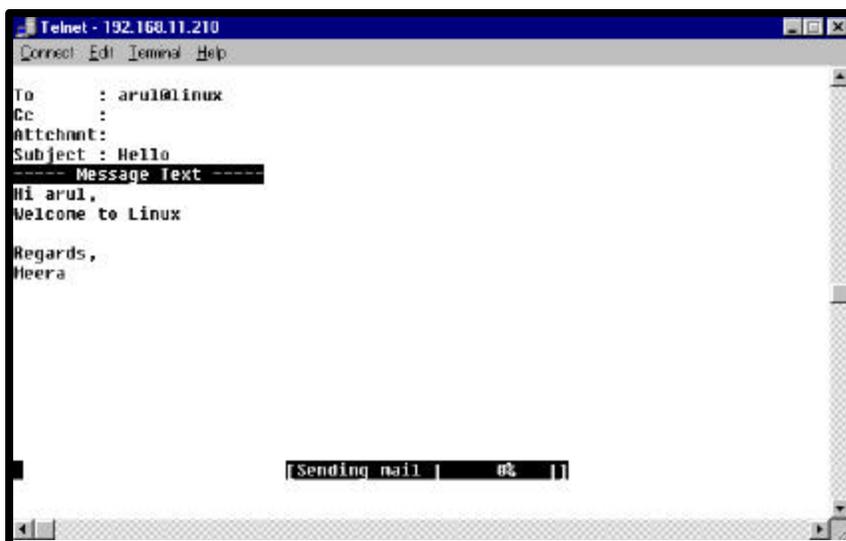
Exit setup (Shift+E) and return to the main menu. Choose the compose message option. The following screen appears:

Compose the message to the intended recipient and choose the Send option from the menu.

So when the user arul logs on to Linux, he gets a message stating that he has got mail. He can use the pine utility or the mail option to read the mail.

The elm utility

The elm utility is another MUA that is available. It can be invoked from the command prompt by typing elm at the prompt. The following screen appears when the command given below is typed:

```
$ elm
```
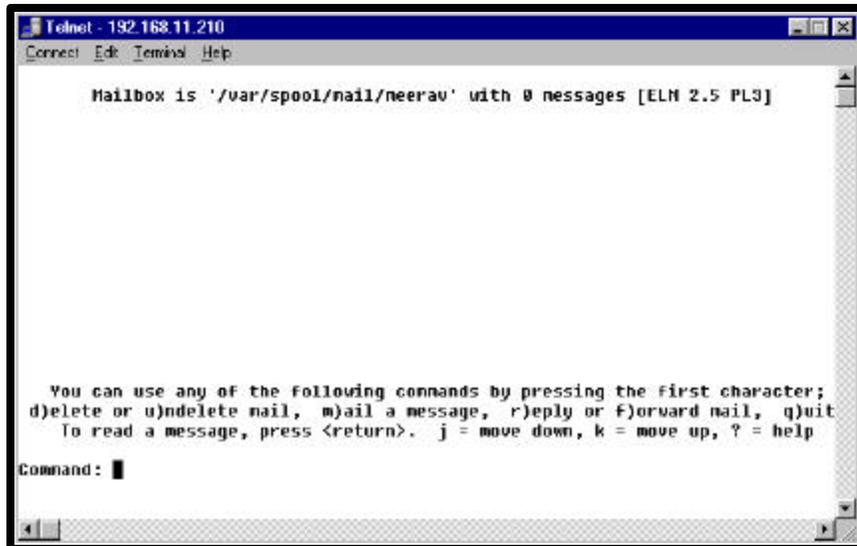
The elm utility uses the vi editor by default.

Communicating with other users in Linux

It is possible to talk or chat with other Linux users over the Internet or Intranet. Two important commands used in chat are mesg and who command with –T option.

The mesg command

The mesg command gives us the facility to allow or disallow other users to write to our terminal. There are two options that can be used with the mesg command – mesg y and mesg n. The option mesg y allows other users to write to our terminal while the mesg n option prevents other users from writing to our terminal.

The mesg option without any parameters will display the current access state of our terminal.

```
$ mesg
is y
```

The who –T command

The who –T command displays the users currently logged in who have allowed/disallowed access to their terminal.

```
$ who –T

root      +   tty1     May 21 14:33
root      ?   :0       May 21 13:58
meerav    –   pts/0    May 21 14:34
```

The + indicates that the user has allowed access to his terminal
The – indicates that the user has disallowed access to his terminal
The **?** indicates that the status of the user's terminal cannot be determined.

The talk command

The talk utility is used to talk or chat with other Linux users on the network. The talk utility is an interactive visual communicator which copies lines from one user's terminal to that of another user.

The syntax is

```
$ talk username[terminal name]
```

The write utility

The write utility is used to write text on another user's terminal. The syntax is

```
$ write username [terminal name]
```

For example, consider the following command:

```
$ write arul
Hello arul
Ctrl +c
$_
```

The write command allows us to now type the message on arul's terminal provided he has set the mesg option to y.

The following message appears on arul's terminal

```
$ Message from meera@linux on tty2 at 15:08
$ Hello arul
$_
```

If the user arul has set the mesg option to n, the following message appears on the sender's terminal.

```
write:arul has messages disabled
```

If the user arul is not logged on, the following message appears:

```
write :arul is not logged in
```

The wall utility

The wall utility is used to broadcast messages to all the user terminals. The message is sent to all the users currently logged in and who have set the mesg option to y.

The syntax is

```
$ wall
type your message
$_
```

1. The compress command compresses the file and replaces it with a _____ extension.
2. The files compressed using gzip can be uncompressed using _____, _____ or _____.
3. Some MUAs available are _____, _____ and _____.
4. The _____ command displays the users currently logged in who have allowed/disallowed access to their terminal.
5. The _____utility is used to broadcast messages to all the user terminals.

The banner utility

The banner utility is used to print a large banner on the printer or standard output. The banner utility is available in the /usr/games directory.

The syntax is

```
$ /usr/games/banner –w <width of banner> message
```

For example,

```
$  /usr/games/banner –w 35 Hello
```

The bc utility

The bc utility can be used as a calculator. It can take entries from a file that has mathematical expressions and displays the result of each expression on the standard output. If the file name is not specified, the input can be given from the standard output.

```
$ bc
4*5
20
quit
$_
```

The ispell utility

The ispell utility is used to check the spelling of the contents of a file. It checks every word in the file and suggests replacements for the words that do not exist in the dictionary. The user is given the option of selecting from one of the words suggested, replacing the word with a different word or ignore the word.

The syntax is

```
$ ispell filename
```

The finger utility

The finger utility is used to display the status of all the users currently logged on to the Linux system. The syntax is

```
$ finger [options][user name]
```

The finger option without any parameter displays a single line output for each user currently logged in. The finger option displays the following details:

➢ user's login name
➢ full name
➢ terminal name
➢ idle status
➢ login time
➢ the machine address where the user is currently logged in
➢ the office phone number

```
$ finger

Login     Name      Tty    Idle   Login Time     Office     Office phone
meerav    meerav    tty2           May 12 12:39
root      root      *:0            May 12 12:12
```

If the login name is specified along with the finger utility additional information about the user is also displayed such as
➢ user's HOME directory
➢ home phone number
➢ login shell
➢ mail status
➢ contents of the files, .plan, .project and .forward

The various options available with the finger utility are

Option	Significance
-l	displays the same information as displayed by finger <username> but only for all logged in users
-p	does not give information from the .plan and .project files
-m	makes finger utility case sensitive with respect to login name and actual name. It does not check for the real name of the user but only the login name.

The chfn(change finger) utility

The chfn utility is used to change the user's finger information. The chfn utility checks for the user's information from the /etc/passwd file and allows the user to change information.

The syntax is

```
$ chfn [options] [user name]
```

If no options are specified, it turns into interactive mode where it asks the user to enter or change information for each of the fields in the /etc/passwd file.

For example,

```
$ chfn
Changing finger information for user1
Password:
Name [user1]:
Office[]:Transed
Office Phone []:4354567
Home Phone[]:

Finger information changed.
```

REVIEW QUESTIONS

1. The _____utility is available in the /usr/games directory.
2. The _____ utility can be used as a calculator.
3. The _____utility is used to display the status of all the users currently logged on to the Linux system.
4. The chfn utility checks for the user's information from the _____file and allows the user to change information.