

NETWORKING & SYSTEM ADMINISTRATION LAB

Experiment No.: 1

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Batch B
31-3-2022

Aim

Familiarization of basic Linux commands.

Procedure

1. **cat -n /cat -b [filename]** : To display line numbers

Syntax : \$ cat -n filename

Output :

```
student@S53:~$ cat -n a.txt
 1 subjects marks
 2 maths 50
 3 English 90
 4 malayalam 75
student@S53:~$ cat -b a.txt
 1 subjects marks
 2 maths 50
 3 English 90
 4 malayalam 75
```

2. **touch filename** : To create an empty file.

Syntax : \$ cat filename

Output :

```
student@S53:~$ touch b.txt
student@S53:~$ echo mark of diff subjects >> b.txt
```

3. echo : To add content to an empty file created using touch command.

Syntax : \$ echo [content] >> filename

Output :

```
*-+ Matayalam 75
student@S53:~$ touch b.txt
student@S53:~$ echo mark of diff subjects >> b.txt
```

4. head : By default, it prints the first 10 lines of the specified files.

Syntax : \$ head [filename]

Output :

```
*-+ student@S53:~$ cat a.txt
subjects marks
maths 50
Enlish 90
malayalam 75
```

5. head -4 [filename] : To print first n lines of specified files.

Syntax : \$ head -n [filename]

Output :

```
*-+ student@S53:~$ head a.txt
subjects marks
maths 50
Enlish 90
malayalam 75
```

6. tail : By default, print last 10 lines of specified file.

Syntax : \$ tail [filename]

Output :

```
student@S53:~$ tail a.txt
Ananghu
Nikhil
Anhijith
Nobel
Amal
Kishore
Gokul
Santosh
Alwin
Amruthesh
```

7. tail -3 [filename] : To print last n lines of specified files.

Syntax : \$ tail -n [filename]

Output :

```
student@S53:~$ tail -3 a.txt
Santosh
Alwin
Amruthesh
```

8. cut -d- -f2 [filename] : It can be used to cut parts of a line by field.

Syntax : \$ cut -d "delimiter" -f (field number) file.txt

Output :

```
student@S53:~$ cut -d- -f2 a.txt
subjects marks
maths 50
English 90
malayalam 75
Vishnu
Ananghu
Nikhil
Anhijith
Nobel
Amal
Kishore
Gokul
Santosh
Alwin
Amruthesh
```

9. rmdir : Used to delete a directory if it is empty.

Syntax : \$ rmdir [directory name]

Output :

```
student@553:~$ rmdir
```

10. cut -b 2 [filename] : It can be used to cut parts of a line by byte position(n).

Syntax : cut -b num [filename]

Output :

11. cut --complement -c 1 [filename] : This option instructs cut to display all the fields, bytes or characters except the selected.

Syntax : \$ cut --complement -c num [filename]

Output :

```
student@553:~$ cut --complement -c 1 mark1
nglish 78
aths 75
alayalam 85
```

12. paste marvel1 marvel2 : To paste the content in one file to another file.

Syntax : \$ paste file1 file2

Output :

```
student@S53:~$ cat > marvel1
iron man
spider man
captain Marvel
groot
thanos
^Z
[2]+  Stopped                  cat > marvel1
student@S53:~$ cat > marvel2
Captain America
Bucky Barnes
Rocket
^Z
[3]+  Stopped                  cat > marvel2
student@S53:~$ paste marvel1 marvel2
iron man      Captain America
spider man    Bucky Barnes
captain marvel Rocket
^C
```

```
student@S53:~$ paste marvel1 marvel2
iron man      Captain America
spider man    Bucky Barnes
captain marvel Rocket
groot
thanos
```

13. paste marvel1 marvel2 > marvel3 : To paste the contents of two given files to a third file.

Syntax : \$ paste file1 file2 > file3

Output :

```
student@S53:~$ paste marvel1 marvel2 > marvel3
student@S53:~$ cat marvel3
iron man      Captain America
spider man    Bucky Barnes
captain marvel Rocket
groot
thanos
student@S53:~$ paste -d '-' marvel1 marvel2
iron man-Captain America
spider man-Bucky Barnes
captain marvel-Rocket
groot-
thanos-
student@S53:~$ paste -d '%' marvel1 marvel2 marvel3
iron man%Captain America|iron man      Captain America
spider man%Bucky Barnes|spider man    Bucky Barnes
captain marvel%Rocket|captain marvel   Rocket
groot%|groot
thanos%|thanos
student@S53:~$ paste -s marvel1 marvel2
iron man      spider man    captain marvel groot thanos
Captain America Bucky Barnes   Rocket
```

14. paste -d ‘ - ’ marvel1 marvel : The -d, -delimiters option allows you to specify a list of characters to be used as delimiters instead of the default TAB separator.

Syntax : \$ paste -d ‘ - ’ file1 file2

Output :

```
student@553:~$ paste -d '-' marvel1 marvel2
iron man-Captain America
spider man-Bucky Barnes
captain marvel-Rocket
groot-
thanos-
student@553:~$ paste -d '%' marvel1 marvel2 marvel3
iron man%Captain America|iron man      Captain America
spider man%Bucky Barnes|spider man      Bucky Barnes
captain marvel%Rocket|captain marvel    Rocket
groot%|groot
thanos%|thanos
```

15. paste -d ‘%|’ marvel1 marvel2 marvel1 : Two delimiters are used. If more than one character is specified as delimiter then paste uses it in a circular fashion for each file line separation.

Syntax : \$ paste -d ‘%|’ file1 file2 file1

Output :

```
thanos-
student@553:~$ paste -d '%' marvel1 marvel2 marvel3
iron man%Captain America|iron man      Captain America
spider man%Bucky Barnes|spider man      Bucky Barnes
captain marvel%Rocket|captain marvel    Rocket
groot%|groot
thanos%|thanos
```

16.paste -s marvel1 marvel2: This command will merge all lines from the given file in separated lines.

Syntax : \$ paste -s file1 file2

Output :

```
student@S53:~$ paste -s marvel1 marvel2
iron man      spider man    captain marvel  groot   thanos
Captain America Bucky Barnes   Rocket
```

17.more name : The more command displays the first section of the file. By pressing the “ENTER” key, we can scroll line by line, all the way to the bottom of the file.

Syntax : \$ more filename

Output :

```
student@S53:~$ more sample
By 2005, Marvel Entertainment had begun planning to produce its own films independently and distribute them through Paramount Pictures.[2] Previously, Marvel had co-produced several superhero films with Columbia Pictures, New Line Cinema and others, including a seven-year development deal with 20th Century Fox.[3] Marvel made relatively little profit from its licensing deals with other studios and wanted to get more money out of its films while maintaining artistic control of the projects and distribution.[4] Avi Arad, head of Marvel's film division, was pleased with Sam Raimi's Spider-Man films at Sony Pictures, but was less pleased with others. As a result, Arad decided to form Marvel Studios, Hollywood's first major independent film studio since DreamWorks.[5]

Kevin Feige, Arad's second-in-command,[5] realized that unlike Spider-Man and the X-Men, whose film rights were licensed to Sony and Fox, respectively, Marvel still owned the rights to the core members of the Avengers. Feige, a self-described "fanboy", envisioned creating a shared universe, just as creators Stan Lee and Jack Kirby had done with their comic books in the early 1960s.[6] To raise capital, the studio secured funding from a seven-year, $525 million revolving credit facility with Merrill Lynch.[4] Marvel's plan was to release individual films for their main characters and then merge them in a crossover film.[7] Arad, who doubted the strategy yet insisted that it was his reputation that helped secure the initial financing, resigned the following year.[5][8] In 2007, at 33 years old, Feige was named studio chief. In order to preserve its artistic integrity, Marvel Studios formed a creative committee of six people familiar with its comic book lore: Feige, Marvel Studios co-president Louis D'Esposito, Marvel Comics' president of publishing Dan Buckley, Marvel's chief creative officer Joe Quesada, writer Brian Michael Bendis, and Marvel Entertainment president Alan Fine, who oversaw the committee.[5] Feige initially referred to the shared narrative continuity of these films as the "Marvel Cinema Universe", [9] but later used the term "Marvel Cinematic Universe".[10] Since the franchise expanded to other media, this phrase has been used by some to refer to the feature films only.[11] Marvel designated the Marvel Cinematic Universe as Earth-19999 within the continuity of the company's comic multiverse, a collection of fictional alternate universes.[12]

In October 2014, Marvel Studios held a press event to announce the titles of their Phase Three films.[13] By September 2015, after Marvel Studios was integrated into Walt Disney Studios with Feige reporting to Walt Disney Studios chairman Alan Horn instead of Marvel Entertainment CEO Isaac Perlmutter,[14] the studios' creative committee had "nominal" input on the films moving forward, though they continued to consult on Marvel Television productions, which remained under Perlmutter's control.[15][16] All key film decisions going forward were to be made by Feige, D'Esposito and Victoria Alonso.[15] Feige mentioned that Avengers: Endgame (2019) would provide "a definitive end" to the films and storyline preceding it, with the franchise having "two distinct periods. Everything before [Endgame] and everything after".[17]

In December 2017, The Walt Disney Company agreed to acquire assets from 21st Century Fox, including 20th Century Fox.[18] The transaction officially closed on March 19, 2019.[19] The acquisition saw the return of the film rights of Deadpool, the X-Men characters, and the Fantastic Four characters to Marvel Studios, which would "create richer, more complex worlds of inter-related characters and stories".[18] In July 2019, Feige announced the Phase Four slate at San Diego Comic-Con, consisting of films and television event series on Disney+.[20] In December 2020, at Disney's Investor Day, Marvel Studios provided updates to previously announced films and series, and announced additional Disney+ series and a special, which were confirmed to be part of Phase Four.[21][22] Some of the first elements previously controlled by 20th Century Fox to be
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l, called GNU Hurd, were stalled and incomplete.[43]
```

MINIX was created by Andrew S. Tanenbaum, a computer science professor, and released in 1987 as a minimal Unix-like operating system targeted at students and others who wanted to learn operating system principles. Although the complete source code of MINIX was freely available, the licensing terms prevented it from being free software until the licensing changed in April 2000.[44]

Although not released until 1992, due to legal complications, development of 386BSD, from which NetBSD, OpenBSD and FreeBSD descended, predated that of Linux.

Linus Torvalds has stated on separate occasions that if the GNU kernel or 386BSD had been available at the time (1991), he probably would not have created Linux.[45][46]

Creation

In 1991, while attending the University of Helsinki, Torvalds became curious about operating systems.[47] Frustrated by the licensing of MINIX, which at the time limited it to educational use only,[44] he began to work on his own operating system kernel, which eventually became the Linux kernel.

Trash
Torvalds began the development of the Linux kernel on MINIX and applications written for MINIX were also used on Linux. Later, Linux matured and further Linux kernel development took place on Linux systems.[48] GNU applications also replaced all MINIX components, because it was advantageous to use the freely available code from the GNU Project with the fledgling operating system; code licensed under the GNU GPL can be reused in other computer programs as long as they also are released under the same or a compatible license. Torvalds initiated a switch from his original license, which prohibited commercial redistribution, to the GNU GPL.[49] Developers worked to integrate GNU components with the Linux kernel, making a fully functional and free operating system.[50]

Naming

5.25-inch floppy disks holding a very early version of Linux

Linus Torvalds had wanted to call his invention "Freak", a portmanteau of "free", "freak", and "x" (as an allusion to Unix). During the start of his work on the system, some of the project's makefiles included the name "Freak" for about half a year. Torvalds had already considered the name "Linux", but initially dismissed it as too egotistical.[51]

To facilitate development, the files were uploaded to the FTP server (ftp.funet.fi) of FUNET in September 1991. Ari Lemmke, Torvalds' coworker at the Helsinki University of Technology (HUT), who was one of the volunteer administrators for the FTP server at the time, did not think that "Freak" was a good name, so he named the project "Linux" on the server without consulting Torvalds.[51] Later, however, Torvalds consented to "Linux".

According to a newsgroup post by Torvalds,[11] the word "Linux" should be pronounced ('linuks/ (audio speaker iconlisten) LIN-uuks) with a short 'i' as in 'print' and 'u' as in 'put'. To further demonstrate how the word "Linux" should be pronounced, he included an audio guide (audio speaker iconlisten (help-info)) with the kernel source code.[52] However, in this recording, he pronounces 'Linux' ('linuks/ (audio speaker iconlisten) LEEN-uuks wi
--More--(40%)

18.more -3 name : Used to type the number of lines(num) to display per screen.

Syntax : \$ more -num filename

Output :

```
student@554:~$ more -3 name
```

GNU General Public License (GNU GPL) in 1989. By the early 1990s, many of the programs required in an operating system (such as libraries, compilers, text editors, a command-line shell, and a windowing system) were completed, although low-level elements such as device drivers, daemons, and the kernel, called GNU Hurd, were stalled and incomplete.[43]

```
--More--(4%)
```

19.more +3 name : This option displays the text after the specified number of lines of the document.

Syntax : \$ more +num filename

Output :

```
[student@553:~]$ more +3 sample
student@553:~$ more +3 sample
Kevin Feige, Arad's second-in-command,[5] realized that unlike Spider-Man and the X-Men, whose film rights were licensed to Sony and Fox, respectively, Marvel still owned the rights to the core members of the Avengers. Feige, a self-described "fanboy", envisioned creating a shared universe, just as creators Stan Lee and Jack Kirby had done with their comic books in the early 1960s.[6] To raise capital, the studio secured funding from a seven-year, $525 million revolving credit facility with Merrill Lynch.[4] Marvel's plan was to release individual films for their main characters and then merge them in a crossover film.[7] Arad, who doubted the strategy yet insisted that it was his reputation that helped secure the initial financing, resigned the following year.[5][8] In 2007, at 33 years old, Feige was named studio chief. In order to preserve its artistic integrity, Marvel Studios formed a creative committee of six people familiar with its comic book lore: Feige, Marvel Studios co-president Louis D'Esposito, Marvel Comics' president of publishing Dan Buckley, Marvel's chief creative officer Joe Quesada, writer Brian Michael Bendis, and Marvel Entertainment president Alan Fine, who oversaw the committee.[5] Feige initially referred to the shared narrative continuity of these films as the "Marvel Cinema Universe", [9] but later used the term "Marvel Cinematic Universe".[10] Since the franchise expanded to other media, this phrase has been used by some to refer to the feature films only.[11] Marvel designated the Marvel Cinematic Universe as Earth-199999 within the continuity of the company's comic multiverse, a collection of fictional alternate universes.[12]
```

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20. more -s name : This option squeezes multiple blank lines into one single blank line.

Syntax : \$ more -s filename

Output :

```
[student@553:~]$ more -s sample
student@553:~$ more -s sample
By 2005, Marvel Entertainment had begun planning to produce its own films independently and distribute them through Paramount Pictures.[2] Previously, Marvel had co-produced several superhero films with Columbia Pictures, New Line Cinema and others, including a seven-year development deal with 20th Century Fox.[3] Marvel made relatively little profit from its licensing deals with other studios and wanted to get more money out of its films while maintaining artistic control of the projects and distribution.[4] Avi Arad, head of Marvel's film division, was pleased with Sam Raimi's Spider-Man films at Sony Pictures, but was less pleased with others. As a result, Arad decided to form Marvel Studios, Hollywood's first major independent film studio since DreamWorks.[5]
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