Assignment-5

Grep Command

1) Create a use case to search 2 regex patterns from the same grep operation in a file.

a) If we want to search the multiple patterns from the file then we have to specify -e option with each pattern.

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID        Name        Salary      Country
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ grep -e "Rutu" -e "Hina" file4.txt
  101        Rutu        25000        India
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ grep -e "India" -e "102" file4.txt
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  104        Hina        35000        India
```

b) If we want to search the multiple patterns with case insensitively from the file then we have to specify -e option with each pattern and -i for case insensitively cases.

```
bhushan@ubuntu:~/Hardsoft$ grep -i -e "india" -e "loki" file4.txt
  101        Rutu        25000        India
  103        Loki        55000       Germany
  104        Hina        35000        India
```

c) If we want to search the multiple patterns from the file then we have to specify -e option with each pattern.

```
bhushan@ubuntu:~/Hardsoft$ grep -i -e "india" -e "loki" -e "45000" file4.txt
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$
```

2) Create use case of 5X flags

1. Case insensitive search : The -i option enables searching for a string case insensitively in the given file.It matches the words like “Rutu”, “RUTU”, “rutu”.

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID        Name        Salary      Country
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ grep -i "rutu" file4.txt
  101        Rutu        25000        India
bhushan@ubuntu:~/Hardsoft$ grep -i "RUTU" file4.txt
  101        Rutu        25000        India
bhushan@ubuntu:~/Hardsoft$ grep -i "rUtU" file4.txt
  101        Rutu        25000        India
bhushan@ubuntu:~/Hardsoft$
```

2. Displaying the count of the number of matches (-c) : We can find the number of lines that matches the given string/pattern.

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID        Name        Salary      Country
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ grep -c "India" file4.txt
2
bhushan@ubuntu:~/Hardsoft$ grep -c "10" file4.txt
4
bhushan@ubuntu:~/Hardsoft$
```

3. Display the file names that match the pattern (-l): We can just display the files that contain the given string/pattern.

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID        Name        Salary      Country
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ grep -l "Loki" *
grep: demo: Is a directory
file4.txt
bhushan@ubuntu:~/Hardsoft$ grep -l "Inida" file1.txt file2.txt file3.txt file4.txt
bhushan@ubuntu:~/Hardsoft$ grep -l "India" file1.txt file2.txt file3.txt file4.txt
file1.txt
file4.txt
bhushan@ubuntu:~/Hardsoft$ cat file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
from Russia. PSLV can also launch small size satellites into Geostationary Transfer Orbit (GTO).

Some notable payloads launched by PSLV include India's first lunar probe Chandrayaan-1, India's first interplanetary mission, Mars Orbiter Mission (Mangalyaan) and India's first
space observatory, Astrosat.

PSLV has gained credibility as a leading provider of rideshare services for small satellites, owing to its numerous multi-satellite deployment campaigns with auxiliary payloads,
usually ride-sharing along with an Indian primary payload. As of June 2022, PSLV has launched 345 foreign satellites from 36 countries.Most notable among these was the launch
of PSLV-C37 on 15 February 2017, successfully deploying 104 satellites in sun-synchronous orbit, tripling the previous record held by Russia for the highest number of satellites
sent to space on a single launch,[14][15] until 24 January 2021, when SpaceX launched the Transporter-1 mission on a Falcon 9 rocket carrying 143 satellites into orbit.

Payloads can be integrated in tandem configuration employing a Dual Launch Adapter.[17][18] Smaller payloads are also placed on equipment deck and customized payload adapters.

bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID        Name        Salary      Country
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
```

4. Checking for the whole words in a file(-w) : By default, grep matches the given string/pattern even if it is found as a substring in a file. The -w option to grep makes it match only the whole words.

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID        Name        Salary      Country
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ grep -w "medium-lift" file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
bhushan@ubuntu:~/Hardsoft$ grep -w "India" file4.txt
  101        Rutu        25000        India
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ grep -w "payloads" file1.txt
Some notable payloads launched by PSLV include India's first lunar probe Chandrayaan-1, India's first interplanetary mission, Mars Orbiter Mission (Mangalyaan) and India's first
PSLV has gained credibility as a leading provider of rideshare services for small satellites, owing to its numerous multi-satellite deployment campaigns with auxiliary payloads,
Payloads can be integrated in tandem configuration employing a Dual Launch Adapter.[17][18] Smaller payloads are also placed on equipment deck and customized payload adapters.
bhushan@ubuntu:~/Hardsoft$
```

5. Displaying only the matched pattern (-o): By default, grep displays the entire line which has the matched string. We can make the grep to display only the matched string by using the -o option.

```
bhushan@ubuntu:~/Hardsoft$ cat file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
from Russia. PSLV can also launch small size satellites into Geostationary Transfer Orbit (GTO).

Some notable payloads launched by PSLV include India's first lunar probe Chandrayaan-1, India's first interplanetary mission, Mars Orbiter Mission (Mangalyaan) and India's first
space observatory, Astrosat.

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usually ride-sharing along with an Indian primary payload. As of June 2022, PSLV has launched 345 foreign satellites from 36 countries.Most notable among these was the launch
of PSLV-C37 on 15 February 2017, successfully deploying 104 satellites in sun-synchronous orbit, tripling the previous record held by Russia for the highest number of satellites
sent to space on a single launch,[14][15] until 24 January 2021, when SpaceX launched the Transporter-1 mission on a Falcon 9 rocket carrying 143 satellites into orbit.

Payloads can be integrated in tandem configuration employing a Dual Launch Adapter.[17][18] Smaller payloads are also placed on equipment deck and customized payload adapters.

bhushan@ubuntu:~/Hardsoft$ grep -o "PSLV" file1.txt
PSLV
PSLV
PSLV
PSLV
PSLV
PSLV
PSLV
bhushan@ubuntu:~/Hardsoft$ grep -o "ISRO" file1.txt
ISRO
bhushan@ubuntu:~/Hardsoft$ grep -o "India" file4.txt
India
India
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID        Name        Salary      Country
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
```
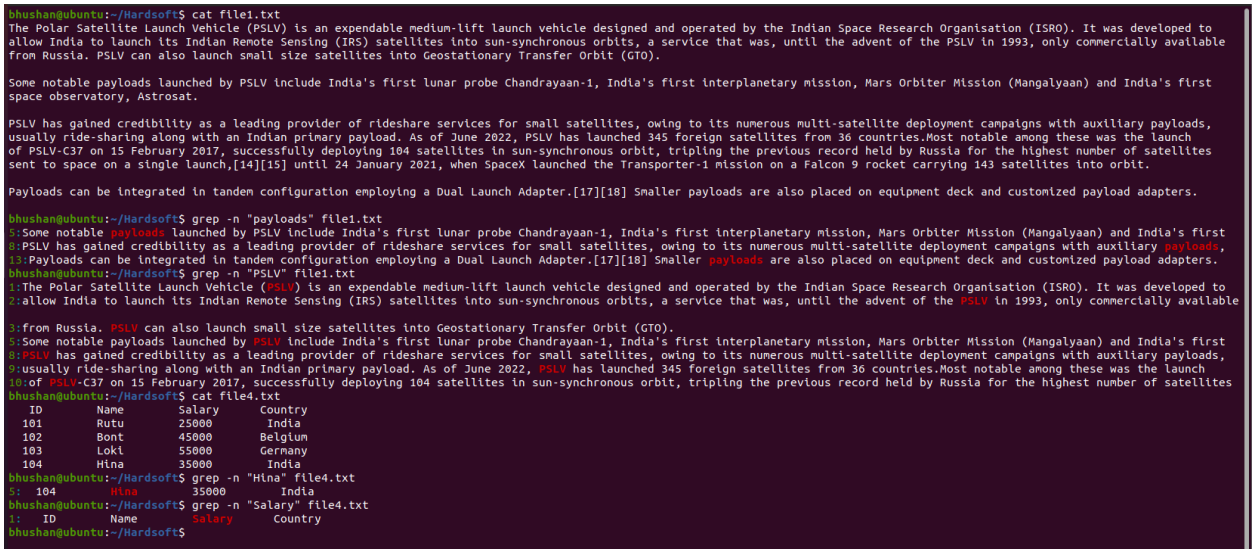
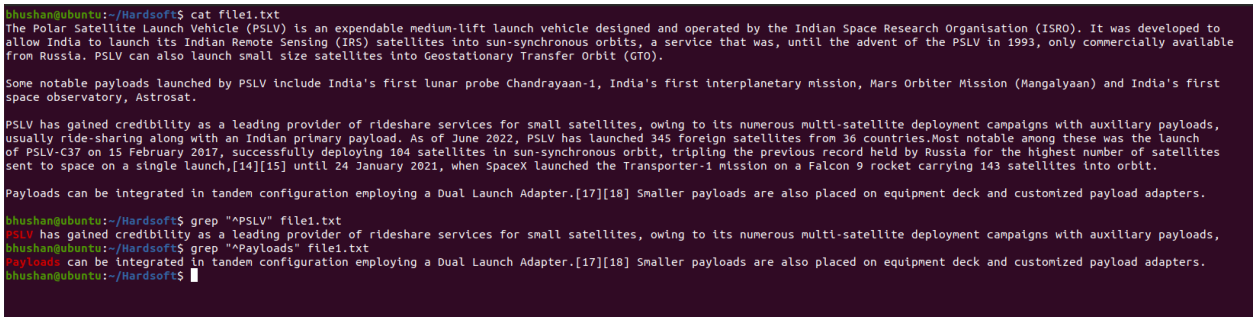

6. Show line number while displaying the output using grep (-n) : To show the line number of file with the line matched.

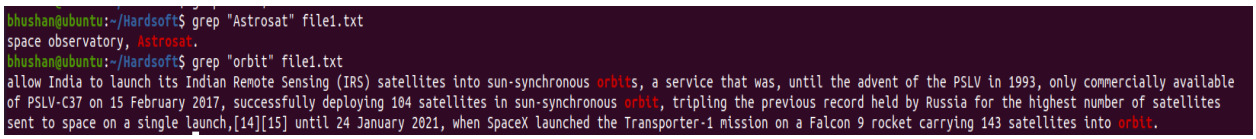


7. Inverting the pattern match (-v) : You can display the lines that are not matched with the specified search string pattern using the -v option.

8. Matching the lines that start with a string (^): The ^ regular expression pattern specifies the start of a line. This can be used in grep to match the lines which start with the given string or pattern.



9. Matching the lines that end with a string ($): The $ regular expression pattern specifies the end of a line. This can be used in grep to match the lines which end with the given string or pattern



10.Specifies expression with -e option. If we want to use multiple pattern to be search then we use -e option.

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID        Name        Salary      Country
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ grep -e "India" -e "Loki" file4.txt
  101        Rutu        25000        India
  103        Loki        55000       Germany
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ grep -e "ISRO" -e "PSLV" file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
from Russia. PSLV can also launch small size satellites into Geostationary Transfer Orbit (GTO).
Some notable payloads launched by PSLV include India's first lunar probe Chandrayaan-1, India's first interplanetary mission, Mars Orbiter Mission (Mangalyaan) and India's first
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usually ride-sharing along with an Indian primary payload. As of June 2022, PSLV has launched 345 foreign satellites from 36 countries.Most notable among these was the launch
of PSLV-C37 on 15 February 2017, successfully deploying 104 satellites in sun-synchronous orbit, tripling the previous record held by Russia for the highest number of satellites
```

11.Obtain patterns from FILE (-f): File option Takes patterns from file, one per line.

```
bhushan@ubuntu:~/Hardsoft$ vi pat.txt
bhushan@ubuntu:~/Hardsoft$ cat pat.txt
Rutu
Germany
bhushan@ubuntu:~/Hardsoft$ grep -f pat.txt file4.txt
  101        Rutu        25000        India
  103        Loki        55000       Germany
bhushan@ubuntu:~/Hardsoft$ vi pat.txt
bhushan@ubuntu:~/Hardsoft$ cat pat.txt
ISRO
June
orbit
bhushan@ubuntu:~/Hardsoft$ grep -f pat.txt file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
usually ride-sharing along with an Indian primary payload. As of June 2022, PSLV has launched 345 foreign satellites from 36 countries.Most notable among these was the launch
of PSLV-C37 on 15 February 2017, successfully deploying 104 satellites in sun-synchronous orbit, tripling the previous record held by Russia for the highest number of satellites
sent to space on a single launch,[14][15] until 24 January 2021, when SpaceX launched the Transporter-1 mission on a Falcon 9 rocket carrying 143 satellites into orbit.
bhushan@ubuntu:~/Hardsoft$
```

12. Print n specific lines from a file: -A prints the searched line and n lines after the result,
Syntax:- $grep -A[NumberOfLines(n)] [search] [file]

```
bhushan@ubuntu:~/Hardsoft$ cat file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
from Russia. PSLV can also launch small size satellites into Geostationary Transfer Orbit (GTO).

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of PSLV-C37 on 15 February 2017, successfully deploying 104 satellites in sun-synchronous orbit, tripling the previous record held by Russia for the highest number of satellites
sent to space on a single launch,[14][15] until 24 January 2021, when SpaceX launched the Transporter-1 mission on a Falcon 9 rocket carrying 143 satellites into orbit.

Payloads can be integrated in tandem configuration employing a Dual Launch Adapter.[17][18] Smaller payloads are also placed on equipment deck and customized payload adapters.

bhushan@ubuntu:~/Hardsoft$ grep -A2 ISRO file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
from Russia. PSLV can also launch small size satellites into Geostationary Transfer Orbit (GTO).
bhushan@ubuntu:~/Hardsoft$ grep -A1 ISRO file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
bhushan@ubuntu:~/Hardsoft$
```

-B prints the searched line and n lines before the result
Syntax:-$grep -B[NumberOfLines(n)] [search] [file]

```
bhushan@ubuntu:~/Hardsoft$ grep -B2 ISRO file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
bhushan@ubuntu:~/Hardsoft$ grep -B1 PSLV file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
from Russia. PSLV can also launch small size satellites into Geostationary Transfer Orbit (GTO).
```

-C prints the searched line and n lines after and before the result.
Syntax:-$grep -C[NumberOfLines(n)] [search] [file]

```
bhushan@ubuntu:~/Hardsoft$ grep -C2 ISRO file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
from Russia. PSLV can also launch small size satellites into Geostationary Transfer Orbit (GTO).
bhushan@ubuntu:~/Hardsoft$ grep -C1 ISRO file1.txt
The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisation (ISRO). It was developed to
allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 1993, only commercially available
bhushan@ubuntu:~/Hardsoft$
```

(Prints the searched line along with the next n lines (here n = 1 (A1).)
(Will print each and every occurrence of the found line, separating each output by --)
13. Search recursively for a pattern in the directory(-R): -R prints the searched pattern in the given directory recursively in all the files.

```
bhushan@ubuntu:~/Hardsoft$ grep -iR "India" /home/bhushan/Hardsoft/
/home/bhushan/Hardsoft/file4.txt:  101        Rutu        25000        India
/home/bhushan/Hardsoft/file4.txt:  104        Hina        35000        India
/home/bhushan/Hardsoft/file1.txt:The Polar Satellite Launch Vehicle (PSLV) is an expendable medium-lift launch vehicle designed and operated by the Indian Space Research Organisatio
n (ISRO). It was developed to
/home/bhushan/Hardsoft/file1.txt:allow India to launch its Indian Remote Sensing (IRS) satellites into sun-synchronous orbits, a service that was, until the advent of the PSLV in 19
93, only commercially available
/home/bhushan/Hardsoft/file1.txt:Some notable payloads launched by PSLV include India's first lunar probe Chandrayaan-1, India's first interplanetary mission, Mars Orbiter Mission (
Mangalyaan) and India's first
/home/bhushan/Hardsoft/file1.txt:usually ride-sharing along with an Indian primary payload. As of June 2022, PSLV has launched 345 foreign satellites from 36 countries.Most notable
among these was the launch
bhushan@ubuntu:~/Hardsoft$
```

SED Command

What Is the Sed Command in Linux?

Linux sed command is a stream editor and acts as a text editor with no interactive interface. It works on piped input or text files based on the instructions we give it to follow as it goes through the text. We can manipulate text in streams and files using sed from the command line in Bash and other command-line shells.

Sed Command Syntax in Linux

There are three parts of the sed command syntax.

1. **Options** control the output of the Linux command
2. **Script** contains a list of Linux commands to run
3. **File name (with extension)** represents the file on which you're using the sed command

We can run a sed command without any option. We can also run it without a filename, in which case, the script works on the std input data.

sed OPTIONS [SCRIPT] [INPUTFILENAME]

Awk and Sed Command In Linux

Awk and sed are both command-line utilities in Linux that work with text. However, there are some differences between the two:

- Works to parse and transform text in a compact and simple language.
- Helps in text processing and writing potent programs in the form of statements.
- Simple, limited, and less powerful than awk.
- Complex, sophisticated, versatile, and more powerful than sed.

sed Command in Linux with Examples

Let us first create a file we'll be working with. This file, file2.txt, forms the basis of all the examples. **Note that** sed doesn't alter the original file, so all changes will show in the output, but the original file remains the same for each command we successively run.

1. Replacing or substituting string : Sed command is mostly used to replace the text in a file. The below simple sed command replaces the word "unix" with "Fedora" in the file. Here the "s" specifies the substitution operation. The "/" are delimiters. The "unix" is the search pattern and the "linux" is the replacement string. By default, the sed command replaces the first occurrence of the pattern in each line and it won't replace the second, third…occurrence in the line.

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed 's/unix/Fedora/' file2.txt
Fedora is great os. unix is opensource. unix is free os.
learn operating system.
Fedora linux which one you choose.
Fedora is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$
```

2. Replacing the nth occurrence of a pattern in a line : Use the /1, /2 etc flags to replace the first, second occurrence of a pattern in a line. The below command replaces the second occurrence of the word "unix" with "Ubuntu" in a line.

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed 's/unix/Ubuntu/2' file2.txt
unix is great os. Ubuntu is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.Ubuntu is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$
```

3. Replacing all the occurrences of the pattern in a line : The substitute flag /g (global replacement) specifies the sed command to replace all the occurrences of the string in the line.

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed 's/unix/Red-Hat/g' file2.txt
Red-Hat is great os. Red-Hat is opensource. Red-Hat is free os.
learn operating system.
Red-Hat linux which one you choose.
Red-Hat is easy to learn.Red-Hat is a multiuser os.Learn Red-Hat .Red-Hat is a powerful.
bhushan@ubuntu:~/Hardsoft$
```

4. Replacing from nth occurrence to all occurrences in a line : Use the combination of /1, /2 etc and /g to replace all the patterns from the nth occurrence of a pattern in a line. The following sed command replaces the third, fourth, fifth… "unix" word with "Mac-OS" word in a line.

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed 's/unix/Mac-OS/3g' file2.txt
unix is great os. unix is opensource. Mac-OS is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn Mac-OS .Mac-OS is a powerful.
bhushan@ubuntu:~/Hardsoft$
```

5. Replacing string on a specific line number : You can restrict the sed command to replace the string on a specific line number. The following sed command replaces the string only on the third line.

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed '3 s/unix/WIN-OS/' file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
WIN-OS linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$
```

6. Duplicating the replaced line with /p flag : The /p print flag prints the replaced line twice on the terminal. If a line does not have the search pattern and is not replaced, then the /p prints that line only once.

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed 's/unix/CENT-OS/p' file2.txt
CENT-OS is great os. unix is opensource. unix is free os.
CENT-OS is great os. unix is opensource. unix is free os.
learn operating system.
CENT-OS linux which one you choose.
CENT-OS linux which one you choose.
CENT-OS is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
CENT-OS is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$
```

7. Printing only the replaced lines : Use the -n option along with the /p print flag to display only the replaced lines. Here the -n option suppresses the duplicate rows generated by the /p flag and prints the replaced lines only one time. If you use -n alone without /p, then the sed does not print anything.

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed -n 's/unix/CENT-OS/p' file2.txt
CENT-OS is great os. unix is opensource. unix is free os.
CENT-OS linux which one you choose.
CENT-OS is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed -n 's/unix/CENT-OS/' file2.txt
bhushan@ubuntu:~/Hardsoft$
```

8. Replacing string on a range of lines : You can specify a range of line numbers to the sed command for replacing a string. Here the sed command replaces the lines with range from 1 to 3.

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed '1,3 s/unix/CENT-OS/' file2.txt
CENT-OS is great os. unix is opensource. unix is free os.
learn operating system.
CENT-OS linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
```

Here $ indicates the last line in the file. So the sed command replaces the text from the second line to last line in the file.

```
bhushan@ubuntu:~/Hardsoft$ sed '2,$ s/unix/CENT-OS/' file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
CENT-OS linux which one you choose.
CENT-OS is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$
```

9. Deleting lines from a particular file : SED command can also be used for deleting lines from a particular file. SED command is used for performing deletion operations without even opening the file.

a) To Delete a particular line say n in this example **$ sed 'nd' filename.txt**

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed '4d' file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
```

b) To Delete a last line **sed '$d' filename.txt**

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed '$d' file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
```

c) To delete from range x to y **$ sed 'x,yd' filename.txt**

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$ sed '2,3d' file2.txt
unix is great os. unix is opensource. unix is free os.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
bhushan@ubuntu:~/Hardsoft$
```

10. Parenthesize the first character of each word : This sed example prints the first character of every word in parenthesis.

```
bhushan@ubuntu:~/Hardsoft$ echo "Welcome in Code-Mind Pvt Ltd." | sed 's/\(\b[A-Z]\)/\(\1\)/g'
(W)elcome in (C)ode-(M)ind (P)vt (L)td.
bhushan@ubuntu:~/Hardsoft$
```

Sed with Variables

1. Use '&' to print matched string

The following command will search the word starting with 'L' and replace the text by appending 'Matched String is -' with the matched word by using '&' symbol. In this example 'p' is used to print the modified text. The 'file3.txt' file is used with this content: Here is the command, note **the '^' used to signify start of line:** Note in the output only matched lines are printed when using 'p' command:

```
bhushan@ubuntu:~/Hardsoft$ cat file3.txt
Windows OS
Fedora
Linux
REd-Hat
MAc-OS
Solaris
Android
Sandwish
Hello How are you!

bhushan@ubuntu:~/Hardsoft$ sed -n 's/^S/Matched String is - &/p' file3.txt
Matched String is - Solaris
Matched String is - Sandwish
bhushan@ubuntu:~/Hardsoft$
```

2. Print line numbers of the file

'=' symbol is used in sed command to print the line number before each line of a file. The following command will print the content of 'os.txt' file with line number:The line number is printed before each line of the file:

```
bhushan@ubuntu:~/Hardsoft$ sed '=' file3.txt
1
Windows OS
2
Fedora
3
Linux
4
REd-Hat
5
MAc-OS
6
Solaris
7
Android
8
Sandwish
9
Hello How are you!
10
```

3. Replace all alpha-numeric characters by space in each line of a file.

This sed command works by matching all alphabetical characters in the full range of uppercase and lowercase as well as integers and uses sed ‘s’ substitution command with ‘g’ global modifier:

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID        Name        Salary      Country
  101        Rutu        25000        India
  102        Bont        45000       Belgium
  103        Loki        55000       Germany
  104        Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ sed 's/[A-Za-z0-9]//g' file4.txt




bhushan@ubuntu:~/Hardsoft$ vi file4.txt
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID          Name        Salary      Country
  [101]       -Rutu        -25000       -India
  [102]       -Bont        45000       Belgium
  [103]       -Loki        55000       Germany
  [104]       -Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ sed 's/[A-Za-z0-9]//g' file4.txt

  []       -        -       -
  []       -
  []       -
  []       -
bhushan@ubuntu:~/Hardsoft$
```

4. Insert empty line in a file sed‘s ‘G’ option is used to insert empty lines in a file after each existing line. You can think of this as converting a single spaced file to a double spaced file with a blank line between each existing line.

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID          Name        Salary      Country
  [101]       -Rutu        -25000       -India
  [102]       -Bont        45000       Belgium
  [103]       -Loki        55000       Germany
  [104]       -Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ sed G file4.txt
   ID          Name        Salary      Country

  [101]       -Rutu        -25000       -India

  [102]       -Bont        45000       Belgium

  [103]       -Loki        55000       Germany

  [104]       -Hina        35000        India
```

Files

5. Combine sed with other commands The following command will combine the sed command with cat command. In this example the cat command is used to generate output to stdout. The first sed command will take input from 'file3.txt' file and send the output of the command to second sed command after replacing the text' 'Rutu' by 'Pooja'. The second sed command will replace the text 'Belgium' by 'Kasol'. These 3 commands are combined with linux pipes.

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID          Name        Salary      Country
  [101]       -Rutu        -25000       -India
  [102]       -Bont        45000       Belgium
  [103]       -Loki        55000       Germany
  [104]       -Hina        35000        India
bhushan@ubuntu:~/Hardsoft$ cat file4.txt | sed 's/Rutu/Pooja/' | sed 's/Belgium/Kasol/i'

   ID          Name        Salary      Country
  [101]       -Pooja        -25000       -India
  [102]       -Bont        45000       Kasol
  [103]       -Loki        55000       Germany
  [104]       -Hina        35000        India
bhushan@ubuntu:~/Hardsoft$
bhushan@ubuntu:~/Hardsoft$
```

6. Execute multiple sed commands from the command-line

'-e' when combined with multiple sed commands separated by semi-colon can be combined together. The following sed command will take a text as input from echo command and replace 'Programming' by 'Hi-Tech' and 'World' by 'Coaching-Classes'. Note due to the separating semicolon multiple 's/' commands are combined with one sed.

```
bhushan@ubuntu:~/Hardsoft$ echo "Welcome in Programming World!"|sed -e 's/Programming/Hi-Tech/ ; s/World/Coaching-Classes/'
Welcome in Hi-Tech Coaching-Classes!
bhushan@ubuntu:~/Hardsoft$
```

7. Running multi-line sed scripts from a file Multiple sed commands can be stored in a file and all the commands can be executed together by running sed command. To demonstrate this ensure you have 'file2.txt':

```
bhushan@ubuntu:~/Hardsoft$ cat file2.txt
unix is great os. unix is opensource. unix is free os.
learn operating system.
unix linux which one you choose.
unix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
```

Create a file named ‘sed_script’ and add the following content:

```
bhushan@ubuntu:~/Hardsoft$ vi sed_script.txt
bhushan@ubuntu:~/Hardsoft$ cat sed_script.txt
s/unix/Red-Hat/g
s/learn/teach/
```

Above, two sed commands are added in the file. One command will replace the text ‘unix’ by ‘Red-Hat’ another command will replace the text ‘learn’ by the text ‘teach’. The ‘-f’ option is used in the sed command to execute all the commands from the file.

```
bhushan@ubuntu:~/Hardsoft$ sed -f sed_script.txt file2.txt
Red-Hat is great os. Red-Hat is opensource. Red-Hat is free os.
teach operating system.
Red-Hat linux which one you choose.
Red-Hat is easy to teach.Red-Hat is a multiuser os.Learn Red-Hat .Red-Hat is a powerful.
bhushan@ubuntu:~/Hardsoft$
```

8. Search for a number in line and append any currency symbol before the number
The following sed command will search for the first matching number in each line of ‘file4.txt’ file and append the currency symbol, ‘$’ before each number. The following output will appear after running the above commands. Here, ‘$’ symbol is added before the number of each line. Note we don’t use ‘g’ for global we only match the first number, if the example needed to accommodate multiple multi-digit numbers per line something more complex for a solution is needed.

```
bhushan@ubuntu:~/Hardsoft$ cat file4.txt
   ID          Name        Salary      Country
  [101]       -Rutu        -25000       -India
  [102]       -Bont        45000       Belgium
  [103]       -Loki        55000       Germany
  [104]       -Hina        35000        India
bhushan@ubuntu:~/Hardsoft$  sed 's/\([0-9]\)/$\1/' file4.txt
   ID          Name        Salary      Country
  [$101]       -Rutu        -25000       -India
  [$102]       -Bont        45000       Belgium
  [$103]       -Loki        55000       Germany
  [$104]       -Hina        35000        India
bhushan@ubuntu:~/Hardsoft$
```