

sed Command

1. Change the name Jo to Josephine

```
cat SedLab | sed "s/\bJo\b/Josephine/g" | grep "Jo"
```

- cat SedLab outputs the main input file which is transferred to sed for further processing using pipe(|). sed accepts the format **s/regex/replacement/** which attempts to match the regex pattern (regex) on the pattern space **s** replacing it with **replacement**.
- Finally it outputs to **grep** again via a pipe and on searching for **Jo** we see that it has changed the original file.
- **sed** command is matching the regex **\bJo\b** where **\b** are boundaries. Other words containing the token **Jo** (For ex. San Jose) will not be matched against it.
- Finally, it replaces the match (**Jo**) with the replacement(**Josephine**).

```
mickey@Ubuntu:~$ cat SedLab | sed "s/\bJo\b/Josephine/g" | grep "Jo"
Hester Prynne:408-253-3122:123 Park St., San Jose, CA 04086:7/25/53:85100
Josephine March:327-832-5728:3465 Mirlo Street, Peabody, MA 34756:10/2/65:35200
Ephram Hardy:293-259-5395:235 CarltonLane, Joliet, IL 73858:8/12/20:56700
mickey@Ubuntu:~$
```

2. Delete the last 5 lines.

```
cat SedLab | for i in {1..5}; do sed '$d'; done
```

- After getting input from the pipe buffer, we start a loop from 1 to 5 and delete the line using the command **sed '\$d'**. For instance, if we run **sed 'nd'** it will delete the nth line. Deleting empty lines are also considered a valid deletion.

```

mickey@Ubuntu:~$ cat SedLab | for i in {1..5}; do sed '$d'; done
Huckleberry Finn:238-923-7366:95 Latham Lane, Easton, PA 83755:11/12/56:20300

Betty Boop:245-836-8357:635 Cutesy Lane, Hollywood, CA 91464:6/23/23:14500

Dorian Gray:385-375-8395:3567 Populus Place, Caldwell, NJ 23875:6/18/68:23400

Holly Golightly:397-857-2735:74 Pine Street, Dearborn, MI 23874:3/28/45:245700

Ebenezer Scrooge:548-834-2348:583 Laurel Ave., Kingsville, TX 83745:10/1/35:58900

Hester Prynne:408-253-3122:123 Park St., San Jose, CA 04086:7/25/53:85100

Westley Pirate:284-758-2857:23 Edgecliff Place, Lincoln , NB 92743:7/25/53:85100

Westley Pirate:284-758-2867:23 Edgecliff Place, Lincoln, NB 92743:11/3/35:58200

Westley Pirate:284-758-2867:23 Edgecliff Place, Lincoln, NB 92743:11/3/35:58200

Lizzie Bennett:674-843-1385:20 Parak Lane, Duluth, MN 23850:4/12/23:780900

Nancy Drew:674-843-1385:20 Parak Lane, Duluth, MN 23850:4/12/23:780900

Jo March:327-832-5728:3465 Mirlo Street, Peabody, MA 34756:10/2/65:35200

Victor Frankenstein:835-365-1284:454 Easy Street, Decatur, IL 75732:2/28/53:123500

Ephram Hardy:293-259-5395:235 CarltonLane, Joliet, IL 73858:8/12/20:56700

Meg Murry:834-938-8376:23445 Aster Ave., Allentown, NJ 83745:12/1/38:45000

Lucy Pevensie:385-573-8326:832 Ponce Drive, Gzary, IN 83756:12/1/46:268500

Hemione Granger:408-456-1234:4 Harvard Square, Boston, MA 02133:4/22/62:52600

Mary Poppins:846-836-2837:6937 Ware Road, Milton, PA 93756:9/21/46:43500

Sir Lancelot:837-835-8257:474 Camelot Boulevard, Bath, WY 28356:5/13/69:24500

Minerva McGonagall:408-233-8971:45 Rose Terrace, San Francisco, CA 92303:2/3/36:25000

Zippy Pinhead:834-823-8319:2356 Bizarro Ave., Farmount, IL 84357:1/1/67:89500

Dorothy Gale:923-835-8745:23 Wimp Lane, Kensington, DL 38758:8/31/69:126000

Popeye Sailor:156-454-3322:945 Bluto Street, NotHere, USA 29358:3/19/35:22350

Luna Lovegood:385-898-8357:38 Fife Way, Abilene, TX 39673:1/5/58:95600

Daenerys Targaryen:408-724-0140:1222 Oxbow Court, Sunnyvale, CA 94087:5/19/66:34200

Molly Weasley:387-827-1095:13 Uno Lane, Ashville, NC 23556:7/1/29:57000

mickey@Ubuntu:~$ █

```

3. Print lines 3-15.

```
cat SedLab | sed '3,15d'
```

- Another way of deleting multiple continuous lines are using the command `sed 'n1,n2d'` where `n1` and `n2` are line numbers. Again, deleting empty lines are also considered a valid deletion.

```

mickey@Ubuntu:~$ cat SedLab | sed '3,15d'
Huckleberry Finn:238-923-7366:95 Latham Lane, Easton, PA 83755:11/12/56:20300

Westley Pirate:284-758-2867:23 Edgecliff Place, Lincoln, NB 92743:11/3/35:58200

Lizzie Bennett:674-843-1385:20 Parak Lane, Duluth, MN 23850:4/12/23:780900

Nancy Drew:674-843-1385:20 Parak Lane, Duluth, MN 23850:4/12/23:780900

Jo March:327-832-5728:3465 Mirlo Street, Peabody, MA 34756:10/2/65:35200

Victor Frankenstein:835-365-1284:454 Easy Street, Decatur, IL 75732:2/28/53:123500

Ephram Hardy:293-259-5395:235 CarltonLane, Joliet, IL 73858:8/12/20:56700

Meg Murry:834-938-8376:23445 Aster Ave., Allentown, NJ 83745:12/1/38:45000

Lucy Pevensie:385-573-8326:832 Ponce Drive, Gzary, IN 83756:12/1/46:268500

Hemione Granger:408-456-1234:4 Harvard Square, Boston, MA 02133:4/22/62:52600

Mary Poppins:846-836-2837:6937 Ware Road, Milton, PA 93756:9/21/46:43500

Sir Lancelot:837-835-8257:474 Camelot Boulevard, Bath, WY 28356:5/13/69:24500

Minerva McGonagall:408-233-8971:45 Rose Terrace, San Francisco, CA 92303:2/3/36:25000

Zippy Pinhead:834-823-8319:2356 Bizarro Ave., Farmount, IL 84357:1/1/67:89500

Dorothy Gale:923-835-8745:23 Wimp Lane, Kensington, DL 38758:8/31/69:126000

Popeye Sailor:156-454-3322:945 Bluto Street, NotHere, USA 29358:3/19/35:22350

Luna Lovegood:385-898-8357:38 Fife Way, Abilene, TX 39673:1/5/58:95600

Daenerys Targaryen:408-724-0140:1222 Oxbow Court, Sunnyvale, CA 94087:5/19/66:34200

Molly Weasley:387-827-1095:13 Uno Lane, Ashville, NC 23556:7/1/29:57000

Arya Stark:438-910-7449:8235 Maple Street, Wilmington, VM 29085:9/23/63:68900
mickey@Ubuntu:~$ █

```

4. Delete lines for people who live in California

```
cat SedLab | sed '/\bCA\b/d' | grep 'CA'
```

- `sed` command is matching the regex `\bCA\b` where `\b` are boundaries. Other words containing the token `CA` will not be matched against it.
- The `/d` deletes the lines which matches the regex pattern provided.
- After deleting, we can't find lines containing `CA` which can be verified using `grep`.

```

mickey@Ubuntu:~$ cat SedLab | grep "CA"
Betty Boop:245-836-8357:635 Cutesy Lane, Hollywood, CA 91464:6/23/23:14500
Hester Prynne:408-253-3122:123 Park St., San Jose, CA 04086:7/25/53:85100
Minerva McGonagall:408-233-8971:45 Rose Terrace, San Francisco, CA 92303:2/3/36:25000
Daenerys Targaryen:408-724-0140:1222 Oxbow Court, Sunnyvale, CA 94087:5/19/66:34200
mickey@Ubuntu:~$

mickey@Ubuntu:~$ cat SedLab | sed '/\bCA\b/d' | grep 'CA'
mickey@Ubuntu:~$

```

5. Print all lines where the birthdays are in the first week of the month. Be careful of the dates for birthdays, the format is MM/DD/YY

6. Append three asterisks (*) to the end of lines starting with Sir

```

cat SedLab | sed -e '/^Sir/s/$/\*\*\*/' | \
grep '\*\*\*'

```

- After getting the input from the pipe, we are matching `sed` expression for the pattern space which starts with `^Sir`. The symbols tells the starting of a line. Thus, it filters out everything except lines starting with `Sir` and then looks for `$` which refers to the end of the line. It then replaces with 3 stars (since regex `*` means every possible character we need to distinguish from that using `*` to refer it to the asterisk symbol).

```

mickey@Ubuntu:~$ cat SedLab | sed -e '/^Sir/s/$/\*\*\*/' | grep '\*\*\*'
Sir Lancelot:837-835-8257:474 Camelot Boulevard, Bath, WY 28356:5/13/69:24500***
mickey@Ubuntu:~$

```

7. Replace the line containing “Westley Pirate” with the phrase “As you wish.” Make sure you replace the whole line not just the name

```

cat SedLab | sed -e '/Westley Pirate/s/./As you wish./' | \
diff SedLab -

```

- Passing the output to `sed` using a pipe, the command `/Westley Pirate/s/./As you wish./` reduces the pattern space to lines containing `Westly Pirate`, selects all characters (`.*`) and replaces them with the string `As you wish..`
- Can be verified using the `diff SedLab -` command which checks the differences between the file `SedLab` and the console output stream denoted by `(-)`.

```

mickey@Ubuntu:~$ cat SedLab | sed -e '/Westley Pirate/s/./As you wish./' | diff SedLab -
13c13
< Westley Pirate:284-758-2857:23 Edgecliff Place, Lincoln , NB 92743:7/25/53:85100
---
> As you wish.
15c15
< Westley Pirate:284-758-2867:23 Edgecliff Place, Lincoln, NB 92743:11/3/35:58200
---
> As you wish.
17c17
< Westley Pirate:284-758-2867:23 Edgecliff Place, Lincoln, NB 92743:11/3/35:58200
---
> As you wish.
mickey@Ubuntu:~$ █

```

8. Change Minerva McGonagall's birthday to 10/04/1935. Assume you don't know Minerva's original birthday. Use a regular expression to search for it.

```

cat SedLab | sed -E \
'/Minerva McGonagall/s/[0-9]{1,2}\/[0-9]{1,2}\/[0-9]{1,2}/10\04\35/' | \
diff SedLab -

```

- We filter out the matching space to everything except the lines containing Minerva McGonagall. Since the format of the date here is (1 or 2) digits/(1 or 2) digits/(1 or 2) digits we use `[0-9]{1,2}\/[0-9]{1,2}\/[0-9]{1,2}` as the regex pattern. `[0-9]{1,2}` means all numeric characters from 0 to 9 with length of either 1 or 2. Finally, we replace it with `10\04\35`. We need to use the backward slash because forward slash is the identifier for the sed command and to distinguish a identifier from a character, we need to append a backward slash in the beginning.

```

mickey@Ubuntu:~$ cat SedLab | sed -E '/Minerva McGonagall/s/[0-9]{1,2}\/[0-9]{1,2}\/[0-9]{1,2}/10\04\35/' | diff SedLab -
39c39
< Minerva McGonagall:408-233-8971:45 Rose Terrace, San Francisco, CA 92303:2/3/36:25000
---
> Minerva McGonagall:408-233-8971:45 Rose Terrace, San Francisco, CA 92303:10/04/35:25000
mickey@Ubuntu:~$ █

```

9. Delete all blank lines.

```

cat SedLab | sed '/^$/d'

```

- It searches for the pattern `^$` which means starting of a line and ending of a line without anything in between. After filtering that out, it then deletes the matched lines (what we refer to here is blank lines).

```

mickey@Ubuntu:~$ cat SedLab | sed '/^$/d'
Huckleberry Finn:238-923-7366:95 Latham Lane, Easton, PA 83755:11/12/56:20300
Betty Boop:245-836-8357:635 Cutesy Lane, Hollywood, CA 91464:6/23/23:14500
Dorian Gray:385-375-8395:3567 Populus Place, Caldwell, NJ 23875:6/18/68:23400
Holly Golightly:397-857-2735:74 Pine Street, Dearborn, MI 23874:3/28/45:245700
Ebenezer Scrooge:548-834-2348:583 Laurel Ave., Kingsville, TX 83745:10/1/35:58900
Hester Prynne:408-253-3122:123 Park St., San Jose, CA 04086:7/25/53:85100
Westley Pirate:284-758-2857:23 Edgecliff Place, Lincoln , NB 92743:7/25/53:85100
Westley Pirate:284-758-2867:23 Edgecliff Place, Lincoln, NB 92743:11/3/35:58200
Westley Pirate:284-758-2867:23 Edgecliff Place, Lincoln, NB 92743:11/3/35:58200
Lizzie Bennett:674-843-1385:20 Parak Lane, Duluth, MN 23850:4/12/23:780900
Nancy Drew:674-843-1385:20 Parak Lane, Duluth, MN 23850:4/12/23:780900
Jo March:327-832-5728:3465 Mirlo Street, Peabody, MA 34756:10/2/65:35200
Victor Frankenstein:835-365-1284:454 Easy Street, Decatur, IL 75732:2/28/53:123500
Ephram Hardy:293-259-5395:235 Carlton Lane, Joliet, IL 73858:8/12/20:56700
Meg Murry:834-938-8376:23445 Aster Ave., Allentown, NJ 83745:12/1/38:45000
Lucy Pevensie:385-573-8326:832 Ponce Drive, Gzary, IN 83756:12/1/46:268500
Hemione Granger:408-456-1234:4 Harvard Square, Boston, MA 02133:4/22/62:52600
Mary Poppins:846-836-2837:6937 Ware Road, Milton, PA 93756:9/21/46:43500
Sir Lancelot:837-835-8257:474 Camelot Boulevard, Bath, WY 28356:5/13/69:24500
Minerva McGonagall:408-233-8971:45 Rose Terrace, San Francisco, CA 92303:2/3/36:25000
Zippy Pinhead:834-823-8319:2356 Bizarro Ave., Farmount, IL 84357:1/1/67:89500
Dorothy Gale:923-835-8745:23 Wimp Lane, Kensington, DL 38758:8/31/69:126000
Popeye Sailor:156-454-3322:945 Bluto Street, NotHere, USA 29358:3/19/35:22350
Luna Lovegood:385-898-8357:38 Fife Way, Abilene, TX 39673:1/5/58:95600
Daenerys Targaryen:408-724-0140:1222 Oxbow Court, Sunnyvale, CA 94087:5/19/66:34200
Molly Weasley:387-827-1095:13 Uno Lane, Ashville, NC 23556:7/1/29:57000
Arya Stark:438-910-7449:8235 Maple Street, Wilmington, VM 29085:9/23/63:68900
mickey@Ubuntu:~$ █

```

10. sed script

sedScript.sh

```
#!/usr/bin/sed -f
```

```

1i\ - Great Literary Characters -
s/\(^\\b[a-zA-Z]\\+\\) \\([a-zA-Z]\\+\\):\\(\\.\\{12\\}\\)\\).*\\2 \\3/
$aHappily Ever after. The End

```

Can be invoked by

```
./SedScript.sh SedLab
```

- We save the script as **sedScript.sh** and invoke it passing the **SedLab** file as the argument.
- **cat \$1** outputs the file to **sed** command via a pipe, which appends the line - **Great Literary Characters -** using the **1 i**. It does a carriage return at the beginning along with a backspace moving the cursor to the beginning of the line. It appends the characters following **i**.
- The next output does a regex match for the pattern **(^\\b[a-zA-Z]\\+\\) \\([a-zA-Z]\\+\\):\\(\\.\\{12\\}\\)\\).*\\2 \\3** and replaces it with the 2nd and 3rd regex groups - the last name and phone number respectively. The **-r** outputs it to the output stream to be processed further using a pipe.
- Finally, the stream reads and appends the line **Happily Ever after. The End** indicated by the **\$a** in the beginning of the expression.

```
mickey@Ubuntu:~$ ./SedScript.sh SedLab
- Great Literary Characters -
Finn 238-923-7366

Boop 245-836-8357

Gray 385-375-8395

Golightly 397-857-2735

Scrooge 548-834-2348

Prynne 408-253-3122

Pirate 284-758-2857

Pirate 284-758-2867

Pirate 284-758-2867

Bennett 674-843-1385

Drew 674-843-1385

March 327-832-5728

Frankenstein 835-365-1284

Hardy 293-259-5395

Murry 834-938-8376

Pevensie 385-573-8326

Granger 408-456-1234

Poppins 846-836-2837

Lancelot 837-835-8257

McGonagall 408-233-8971

Pinhead 834-823-8319

Gale 923-835-8745

Sailor 156-454-3322

Lovegood 385-898-8357

Targaryen 408-724-0140

Weasley 387-827-1095

Stark 438-910-7449
Happily Ever after. The End
mickey@Ubuntu:~$ █
```

References

1. <https://www.gnu.org/software/sed/manual/sed.html>
2. <https://stackoverflow.com/questions/1032023/sed-whole-word-search-and-replace>
3. <https://unix.stackexchange.com/questions/52779/delete-last-line-from-the-file>
4. <https://unix.stackexchange.com/questions/78625/using-sed-to-find-and-replace-complex-string-preferrably-with-regex>
5. <https://unix.stackexchange.com/questions/922/cant-pipe-into-diff>
6. <https://unix.stackexchange.com/questions/78625/using-sed-to-find-and-replace-complex-string-preferrably-with-regex>
7. <https://unix.stackexchange.com/questions/99350/how-to-insert-text-before-the-first-line-of-a-file>
8. <https://www.theunixschool.com/2014/08/sed-examples-remove-delete-chars-from-line-file.html>