

# The Stream Editor



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# Overview



## Using sed

- The stream editor sed can be used to:
  - Select lines by number or regular expression
  - Insert, append or delete lines
  - Replace text
- By learning sed you can programmatically edit files even remotely





# Using sed



# Selecting Lines Using Line Number

## Line Number

```
sed -n '1p' /etc/passwd
```

## Last Line

```
sed -n '$p' /etc/passwd
```



```
$ sed -n '1,3p' /etc/passwd  
$ sed -n '20,$p' /etc/passwd
```

## Ranges of Lines

We can also print ranges of lines making sed more useful than head or tail



# Demo



## Becoming used to sed

### Beginning by selecting lines by number

- We learn the power of sed
- Selecting text by number, range and the last line







**I can see your not impressed**

**Hang on:**

- `sudo sed '$a 8.8.8.8 google' /etc/hosts`
- `sudo sed -i '$a 8.8.8.8 google' /etc/hosts`
- `sudo sed -i '$d' /etc/hosts`
- `sudo sed -i '1i #Managed by sed' /etc/hosts`

**-i For in-place edit**

**a To append**

**i To insert**

**d To delete**



# Demo



## Editing content by line number

**We can easily insert, append and delete**

- Test first by viewing output
- When you are confident using -i for in-place edit
- Using line numbers with vim







# Using Strings and Regular Expressions



```
$ sudo apt install git #Ubuntu/Debian  
$ sudo yum install git #RedHat/Fedora/CentOS/Alma  
$ sudo zypper in git-core #SUSE/OpenSUSE  
$ git clone https://github.com/theurbanpenguin/sed-and-awk.git
```

## Course Git Repo

To work with files that are a little longer and more complex we can install the course git repo. If git is not installed you will need to install it



```
$ sed -n '/ServerName/p' sed-and-awk/vhost.template  
$ sed -n 's/dummy-host.example.com/www.example.com/p' sed-and-awk/vhost.template
```

## Working with Text

We can search and print matching lines, we can also substitute lines with text. We can choose to run the in-place edit or not



```
$ cat sed-and-awk/vhost.template
$ sed -E '/^(#|$)/d' sed-and-awk/vhost.template
$ sed -E '/^\s*(#|$)/d' sed-and-awk/vhost.template
$ sed -E '/^\s*(#|$)/d' sed-and-awk/vhost.template > ./vhost.template
```

## Cleaning the Configuration

We have a demonstration Apache web server configuration files to work with. It is heavily commented, some comments are indented.

**\s** = Any white space

**\*** = Applies to previous character and saying any amount, i.e. zero or more





```
$ alias cleanfile="sed -E ' /^\s*(#|$)/d' "
```

## Create Alias

Rather than typing the sed code each time we need it we can create an alias to store the configuration



# Demo



## Working with text and regular expressions

### We are not restricted to only line numbers

- Clone course git repo
- Working with simple text
- Replacing text with substitutions
- Deleting more complex comments
- Working with vim and text edits




# Demo



## Working with aliases

- Cleanfile alias
- List different commented files
- Streamline your command line usage





# Printing Blocks of Text





# Apache Blocks

```
<Directory "/srv/www/vhosts/dummy-host.example.com/cgi-bin">  
    AllowOverride None  
    Options +ExecCGI -Includes  
    <IfModule !mod_access_compat.c>  
        Require all granted  
    </IfModule>  
    <IfModule mod_access_compat.c>  
        Order allow,deny  
        Allow from all  
    </IfModule>  
</Directory>
```



```
$ sed -n '/<Directory/,/<\nDirectory/p' ~/test/vhost.template
```

## Print Directory Blocks

Just as with line numbers we can add ranges into our expressions using starting and ending text. Here we print the text between the opening and closing directory blocks



# Demo



## Working Blocks

- Print <Directory> blocks in Apache
- Allowing you greater control over what is printed



# Summary



## Using sed

- Using line numbers:
  - `sed -n '1p' /etc/hosts`
  - `sed -n '$p' /etc/hosts`
  - `sed -n '1,3d' /etc/hosts`
- Using regular expressions
  - `sed -n '/ServerName/p' vhost`
  - `sed -n 's/dummy/www/p' vhost`
  - `sed -E '/^\s*(#|$)/d' vhost`
  - `sed -n '/<Dir/,/<\Dir/p' vhost`





**Up Next:**

# **Advanced Editing Using sed**

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