I/O Redirect   Redirecting standard o/p and error

1. Create a file called output.txt that contains the output of the date command

   Note : run date cmd in the terminal and observe the o/p

   ```
   [siddharrth@linux ~]$ date > output.txt
   [siddharrth@linux ~]$ cat output.txt
   Tuesday 22 October 2024 06:45:57 PM IST
   ```

2. Append the current user's name to a file called output.txt (use whoami)

   ```
   [siddharrth@linux ~]$ whoami >> output.txt
   [siddharrth@linux ~]$ cat output.txt
   Tuesday 22 October 2024 06:45:57 PM IST
   siddharrth
   ```

3. Append the host name to a file called output.txt (use hostname)

   ```
   [siddharrth@linux ~]$ cat output.txt
   Tuesday 22 October 2024 06:45:57 PM IST
   siddharrth
   linux
   ```

4. Attempt to list a non-existent directory and redirect the error message to error.log

   ```
   [siddharrth@linux ~]$ ls -ltr new1 2> error.log
   [siddharrth@linux ~]$ cat error.log
   ls: cannot access 'new1': No such file or directory
   [siddharrth@linux ~]$
   ```

5. Run a cmd to get output and error and redirect only the output to file and display the error
   a. Use ls -l existingdir non-existentdir ❼ e.g. ls -l CEO dir1 2>&1 > error.log

   ```
   [siddharrth@linux ~]$ ls -l CEO dir1 2>&1 > error.log
   ls: cannot access 'dir1': No such file or directory
   ```

   b. Cat existingfile non-existentfile

   ```
   [siddharrth@linux ~]$ cat error.log
   CEO:
   total 4
   -rw-r--r--. 1 Neymar Football 18 Oct  3 16:35 try
   drwxr-xr-x. 4 Neymar Football 41 Oct  1 19:34 VP_Engineering
   drwxr-xr-x. 3 Neymar Football 21 Oct  1 19:32 VP_People
   drwxr-xr-x. 4 Neymar Football 48 Oct  1 19:29 VP_Product
   drwxr-xr--. 3 Neymar Football 24 Oct  1 19:31 VP_Sales
   [siddharrth@linux ~]$
   ```

6. Run a cmd to get output and error and redirect only the error to file and display the output
   a. Use ls -l existingdir non-existentdir ❼ e.g. ls -l CEO dir1 2>error.log

```
[siddharrth@linux ~]$ ls -l CEO dir1 2> error.log
CEO:
total 4
-rw-r--r--. 1 Neymar Football 18 Oct  3 16:35 try
drwxr-xr-x. 4 Neymar Football 41 Oct  1 19:34 VP_Engineering
drwxr-xr-x. 3 Neymar Football 21 Oct  1 19:32 VP_People
drwxr-xr-x. 4 Neymar Football 48 Oct  1 19:29 VP_Product
drwxr-xr--. 3 Neymar Football 24 Oct  1 19:31 VP_Sales
```

    b. Cat existingfile non-existentfile

```
[siddharrth@linux ~]$ cat error.log
ls: cannot access 'dir1': No such file or directory
```

7. Run a cmd to get output and error and redirect both to combined.txt

    a. Use ls -l existingdir non-existentdir ❼ e.g. ls -l CEO dir1 > combined.txt 2>&1

```
[siddharrth@linux ~]$ ls -l CEO dir1 >combined.txt 2>&1
```

    b. Cat existingfile non-existentfile

```
[siddharrth@linux ~]$ cat combined.txt
ls: cannot access 'dir1': No such file or directory
CEO:
total 4
-rw-r--r--. 1 Neymar Football 18 Oct  3 16:35 try
drwxr-xr-x. 4 Neymar Football 41 Oct  1 19:34 VP_Engineering
drwxr-xr-x. 3 Neymar Football 21 Oct  1 19:32 VP_People
drwxr-xr-x. 4 Neymar Football 48 Oct  1 19:29 VP_Product
drwxr-xr--. 3 Neymar Football 24 Oct  1 19:31 VP_Sales
```

Redirecting standard i/p

8. Create a file with numbers. Read the file using cat cmd .

```
[siddharrth@linux ~]$ cat numbers
1
2
3
4
5
6
7
8
9
```

9. Read the same file using cat and i/p redirect e.g cat < file.txt

```
[siddharrth@linux ~]$ cat < numbers
1
2
3
4
5
6
7
8
9
```

10. Read the file /etc/passwd file and display only last 4 lines using i/p redirect and o/p to a file **Filters or text processor cmds.**

    1. Tee

      a. To output.txt echo "Hello world" using tee cmd

```
[siddharrth@linux ~]$ echo "Hello world" | tee filter.txt
Hello world
```

      b. Run the cmd uname -a and append it to output.txt using tee -a cmd

```
[siddharrth@linux ~]$ uname -a |tee -a filter.txt
Linux linux 5.14.0-516.el9.x86_64 #1 SMP PREEMPT_DYNAMIC Tue Oct 8 13:25:38 UTC 2024 x86_64 x
86_64 x86_64 GNU/Linux
```

      c. Run tac filename | tee Newfile | tac and observe. (tac is opposite of cat)

```
[siddharrth@linux ~]$ tac filter.txt | tee newfilter | tac
Hello world
Linux linux 5.14.0-516.el9.x86_64 #1 SMP PREEMPT_DYNAMIC Tue Oct 8 13:25:38 UTC 2024 x86_64 x
86_64 x86_64 GNU/Linux
```

    2. Grep

      a. Create a text file named sample.txt with the following content

            Hello World

            Welcome to the world of Linux

            Learning commands is fun

```
[siddharrth@linux ~]$ vi sample.txt
[siddharrth@linux ~]$ cat sample.txt
Hello world
welcome to the World of linux
Learning commands is fun
```

      b. Use grep cmd to find word '**world**'

```
[siddharrth@linux ~]$ grep "world" sample.txt
Hello world
```

      c. Use grep cmd to find word '**world**' case-insensitive

```
[siddharrth@linux ~]$ grep "World" sample.txt
welcome to the World of linux
```

      d. Use grep to count how many lines contain the word "Linux" in sample.txt (use grep -c "keyword" filename)

```
[siddharrth@linux ~]$ grep -c "linux" sample.txt
1
```

e. Use grep to display lines from sample.txt that do **not** contain the word "**fun**" (option -v)

```
[siddharrth@linux ~]$ grep -v "fun" sample.txt
Hello world
welcome to the World of linux
```

f. Use egrep (extended grep) to find world and fun from sample.txt

```
[siddharrth@linux ~]$ egrep "world|fun" sample.txt
Hello world
Learning commands is fun
```

g. Use ls -l | grep "keyword"

```
[siddharrth@linux ~]$ ls -l | grep "Test"
drwxrwxr--+ 2 siddharrth Marvel        6 Oct 21 21:47 TestaclDir
-rw-r--r--. 1 siddharrth Marvel        0 Oct 21 21:49 TestaclFile
```

h. Cat /etc/passwd | grep "yourname"

```
[siddharrth@linux ~]$ cat /etc/passwd | grep "siddharrth"
siddharrth:x:1000:1000:Siddharrth:/home/siddharrth:/bin/bash
```

i. Create a directory named test_dir and place sample.txt and more_sample.txt inside it. Use grep to search for the word "World" recursively in the directory using grep -r "World" test_dir/

```
[siddharrth@linux ~]$ grep -r "World" test_dir/
test_dir/sample.txt:welcome to the World of linux
[siddharrth@linux ~]$
```

j. Try out the options grep -An , grep -Bn and grep -Cn

```
[siddharrth@linux ~]$ grep -A1 "World" sample.txt
welcome to the World of linux
Learning commands is fun
[siddharrth@linux ~]$ grep -B1 "World" sample.txt
Hello world
welcome to the World of linux
[siddharrth@linux ~]$ grep -C1 "World" sample.txt
Hello world
welcome to the World of linux
Learning commands is fun
```

1

SHEET -5 – I/O REDIRECT,FILTERS(TEE,GREP,WC)

3. Sort

i. Create a file with some contents and perform the following

```
[siddharrth@linux ~]$ cat sample.txt
Hello world
welcome to the World of linux
Learning commands is fun
Hi this siddharrth
Now trying out sort filter
here the example
```

ii. Sort Filename , sort -r Filename ,sort -f filename (-f = ignore case)

```
[siddharrth@linux ~]$ sort sample.txt
Hello world
here the example
Hi this siddharrth
Learning commands is fun
Now trying out sort filter
welcome to the World of linux
[siddharrth@linux ~]$ sort -r sample.txt
welcome to the World of linux
Now trying out sort filter
Learning commands is fun
Hi this siddharrth
here the example
Hello world
[siddharrth@linux ~]$ sort -f sample.txt
Hello world
here the example
Hi this siddharrth
Learning commands is fun
Now trying out sort filter
welcome to the World of linux
```

iii. Sort -k1 Filename (display column 1)

```
[siddharrth@linux ~]$ sort -k1 sample.txt
Hello world
here the example
Hi this siddharrth
Learning commands is fun
Now trying out sort filter
welcome to the World of linux
```

iv. Sort -nk3 Filename (sort numeric data and display col 3)

```
[siddharrth@linux ~]$ sort -nk5 sample.txt
Hello world 10
here the example 30
Hi this siddharrth 8
Now trying out sort filter 1
welcome to the World of linux 28
Learning commands is fun 5
```

v. Sort -u Filename (sort and uniq)

```
[siddharrth@linux ~]$ sort -u sample.txt
Hello world 10
here the example 30
Hi this siddharrth 8
Learning commands is fun 5
Now trying out sort filter 1
welcome to the World of linux 28
```

vi.   Ls -l | sort -k9 | uniq

```
[siddharrth@linux ~]$ ls -l | sort -k9 | uniq
total 288
-r-xr-xr-x. 1 siddharrth siddharrth      0 Oct  8 15:06 abc1-xyz
-rwxrwxrwx. 1 siddharrth siddharrth      0 Oct  8 15:06 abc2-xyz
------xr--. 1 siddharrth siddharrth      0 Oct  8 15:06 abc3-xyz
-r-x----x. 1 siddharrth siddharrth      0 Oct  8 15:06 abc4-xyz
-r-xr-xr-x. 1 siddharrth siddharrth      0 Oct  8 15:06 abc5-xyz
-r-xr-xr-x. 1 siddharrth siddharrth      0 Oct  8 15:06 abc6-xyz
drwxr-xr-x. 6 Neymar     Football      90 Oct  3 16:35 CEO
-rw-r--r--. 1 siddharrth siddharrth    344 Oct 22 19:00 combined.txt
-rw-r--r--. 1 Dravid     Criket        30 Oct 11 15:16 cricket
drwxr-xr-x. 2 siddharrth siddharrth     6 Sep 30 16:12 Desktop
drwxr-xr-x. 2 siddharrth siddharrth     6 Sep 30 16:12 Documents
drwxr-xr-x. 2 siddharrth siddharrth     6 Sep 30 16:12 Downloads
-rw-r--r--. 1 siddharrth siddharrth    52 Oct 22 18:58 error.log
-rw-rw-r--+ 1 siddharrth siddharrth  1126 Oct  2 17:12 fileinfo
-rw-r--r--. 1 siddharrth siddharrth   128 Oct 22 19:23 filter.txt
-rw-r--r--. 1 Neymar     Marvel        28 Oct 11 15:22 footballers
-rw-rwx---+ 1 siddharrth siddharrth    10 Oct 22 18:11 groot
-rw-r--r--. 1 root       root       49124 Jan  6  2024 httpd-2.4.57-6.el9.x86_64.r
drwxrwxr-x. 4 siddharrth siddharrth  4096 Oct  7 16:02 linux
drwxr-xr-x. 2 siddharrth siddharrth     6 Oct 22 19:52 more_sample.txt
drwxr-xr-x. 2 siddharrth siddharrth     6 Sep 30 16:12 Music
-rw-r--r--. 1 siddharrth siddharrth   128 Oct 22 19:24 newfilter
-rw-r--r--. 1 siddharrth siddharrth    23 Oct  3 12:46 new locate
```

vii.   Use cat file1 file2 | sort (enter some relevant text in file1 and file2)

```
[siddharrth@linux ~]$ echo "hi hello" > file1
[siddharrth@linux ~]$ echo "Amazon" > file2
[siddharrth@linux ~]$ cat file1 file2 |sort
Amazon
hi hello
```

4. Uniq

i.   Create a file with some duplicate contents and perform the following

```
[siddharrth@linux ~]$ cat sample.txt
Hello world
welcome to the World of linux
Learning commands is fun
Hi this siddharrth
Now trying out sort filter
here the example
```

ii.   Uniq filename

```
[siddharrth@linux ~]$ uniq sample.txt
Hello world 10
welcome to the World of linux 28
Learning commands is fun 5
Hi this siddharrth 8
Now trying out sort filter 1
here the example 30
```

iii.   Uniq -c filename

```
[siddharrth@linux ~]$ uniq -c sample.txt
      1 Hello world 10
      1 welcome to the World of linux 28
      1 Learning commands is fun 5
      1 Hi this siddharrth 8
      1 Now trying out sort filter 1
      1 here the example 30
```

iv.   Use it with sort cmd and redirect the o/p to a file. (sort filename | uniq > filename)

```
[siddharrth@linux ~]$ sort output.txt | uniq >output.txt
```

5. WC

i.   Find the no of lines ,no of words and no. of chars in a file of your choice using wc cmd using wc filename ,wc -l ,wc -w ,wc -m

```
[siddharrth@linux ~]$ wc sample.txt
  6  29 145 sample.txt
[siddharrth@linux ~]$ wc -l sample.txt
6 sample.txt
[siddharrth@linux ~]$ wc -w sample.txt
29 sample.txt
[siddharrth@linux ~]$ wc -m sample.txt
145 sample.txt
```

6. Cut

i.   Create a text file named data.txt with the following content

        John,25,Engineer

        Alice,30,Designer

        Bob,22,Developer

        Charlie,28,Manager

```
[siddharrth@linux ~]$ cat data.txt
john,25,Engineer
Alice,30,Designer
Bob,22,Developer
Charlie,28,Manager
```

ii.   Use cut to extract and display the first field.use -d and -f option

```
[siddharrth@linux ~]$ cut -d, -f1 data.txt
john
Alice
Bob
Charlie
```

iii.   Use cut to extract and display the names and ages (first and second fields)

```
[siddharrth@linux ~]$ cut -d, -f1,2 data.txt
john,25
Alice,30
Bob,22
Charlie,28
```

iv.   Use cut to display the first 5 characters of each line in data.txt

```
[siddharrth@linux ~]$ cut -c4 data.txt
n

c

,

r
```

v.   Use cut to extract the username in /etc/passwd file

```
[siddharrth@linux ~]$ cut -d: -f1 /etc/passwd | tail -3
nginx
sachin
sourav
```

7. Awk

i.   awk '{print $1}' file = List 1st field from a file

```
[siddharrth@linux ~]$ awk '{print$1}' sample.txt
Hello
welcome
Learning
Hi
Now
here
```

ii.   ls –l | awk '{print $1,$3}' = List 1 and 3rd field of ls –l output

```
[siddharrth@linux ~]$ awk '{print$1,$3}' sample.txt
Hello 10
welcome the
Learning is
Hi siddharrth
Now out
here example
```

iii.   ls –l | awk '{print $NF}' = Last field of the output

```
[siddharrth@linux ~]$ ls -l | awk '{print$NF}' | tail -5
texteditor.txt
touch
try
Videos
vsftpd-3.0.3-49.el9.x86_64.rpm
```

iv.   awk '/keyword/ {print}' file = Search for a specific word

```
[siddharrth@linux ~]$ awk '/world/ {print}' sample.txt
Hello world 10
```

v.   echo "Hello Tom" | awk '{$2="Adam"; print $0}' = Replace Tom with Adam

```
[siddharrth@linux ~]$ echo "hello Tom" | awk '{$2="Adam";print$0}'
hello Adam
```