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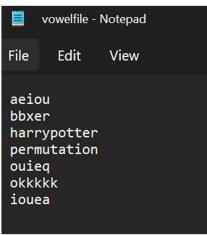
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1) Count the number of words in the file which contain all the letters a, e, i, o, u. These letters may occur more than once & other letters are also permitted.





vowelfile.txt

2) List 5 largest files in the /etc directory which contain the string '.conf', sorted by decreasing file size.

```
ruchpottah@LAPTOP-DS9NCF3C:/$ cd /etc
ruchpottah@LAPTOP-DS9NCF3C:/etc$ ls *.conf* -lS --block-size=K | grep '^-' | head -5
-rw-r--r-- 1 root root 15K Feb  1  2019 ltrace.conf
-rw-r--r-- 1 root root 11K Nov  7  2019 sensors3.conf
-rw-r--r-- 1 root root 7K Nov  2  20:03 overlayroot.conf
-rw-r--r-- 1 root root 7K Mar  25  03:11 ca-certificates.conf
-rw-r--r-- 1 root root 6K Mar  25  03:10 ca-certificates.conf.dpkg-old
ruchpottah@LAPTOP-DS9NCF3C:/etc$
```

3) Write a command to search contents of all files in current directory and display the total number of lines that contain the string 'LINUX' but not 'UNIX'.

```
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ cat *.txt | grep "LINUX" | grep -v "UNIX" -n 2:This line has LINUX 4:LINUX 8:LINUX 8:LINUX 8:LINUX 7:LINUX 8:LINUX 8:LINUX 8:LINUX 7:LINUX 8:LINUX 8:LI
```

4) What is the difference between \$* and \$@? How do you find whether your system is 32 bit or 64 bit?

\$* and \$@ can be used with or without double quotes. When used with double quotes, "\$*", it expands to all the positional parameters as a single word delimited by the first character of the internal field separator variable. Say, "\$1 \$2 \$3 \$4" (here, the internal field separator is a space). When used with double quotes, "\$@", it expands all the positional parameters as different words. For example, "\$1" "\$2" "\$3" "\$4". However, both \$* and \$@ act in the same manner when no double quotes are used. [* and @ are special parameters which hold the positional parameters (command line arguments passed to a shell script) starting from the first.]

ruchpottah@LAPTOP-DS9NCF3C:~\$ getconf LONG_BIT

ruchpottah@LAPTOP-DS9NCF3C:~\$

5) How can you find out how long the system has been running? How to check the status of the password for the user named ITW1?

```
ruchpottah@LAPTOP-DS9NCF3C:~$ uptime
11:07:19 up 1:39, 0 users, load average: 0.00, 0.00, 0.00
ruchpottah@LAPTOP-DS9NCF3C:~$ uptime -p
up 1 hour, 39 minutes
ruchpottah@LAPTOP-DS9NCF3C:~$
```

```
ruchpottah@LAPTOP-DS9NCF3C:~$ sudo chage -l ITW1
Last password change
                                                         : May 03, 2022
Password expires
                                                         : never
Password inactive
                                                         : never
Account expires
                                                         : never
Minimum number of days between password change
                                                         : 0
Maximum number of days between password change
                                                         : 99999
Number of days of warning before password expires
                                                         : 7
ruchpottah@LAPTOP-DS9NCF3C:~$ sudo passwd -S ITW1
ITW1 P 05/03/2022 0 99999 7 -1
ruchpottah@LAPTOP-DS9NCF3C:~$ sudo passwd -S ITW1 | cut -d " " -f2
ruchpottah@LAPTOP-DS9NCF3C:~$
```

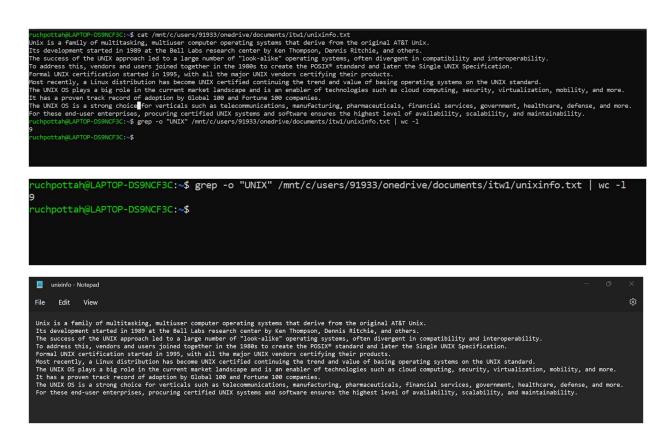
6) From your home directory, create a directory named "Test". Create a new file in Test directory named 'new.txt' and write some text in it. Then, move the file from there to "/usr/lib/". Then, display the content of that file on the terminal and then delete the file "new.txt" and the folder "Test".

```
ruchpottah@LAPTOP-DS9NCF3C:~$ mkdir Test
ruchpottah@LAPTOP-DS9NCF3C:~$ cd Test
ruchpottah@LAPTOP-DS9NCF3C:~/Test$ cat > new.txt
Hello Hello Hello.
This is the text file.
ruchpottah@LAPTOP-DS9NCF3C:~/Test$ sudo mv new.txt /usr/lib
ruchpottah@LAPTOP-DS9NCF3C:~/Test$ cat new.txt
cat: new.txt: No such file or directory
ruchpottah@LAPTOP-DS9NCF3C:~/Test$ cd /usr/lib
ruchpottah@LAPTOP-DS9NCF3C:/usr/lib$ cat new.txt
Hello Hello Hello.
This is the text file.
ruchpottah@LAPTOP-DS9NCF3C:/usr/lib$ sudo rm new.txt
ruchpottah@LAPTOP-DS9NCF3C:/usr/lib$ cat new.txt
cat: new.txt: No such file or directory
ruchpottah@LAPTOP-DS9NCF3C:/usr/lib$ cd ~
ruchpottah@LAPTOP-DS9NCF3C:~$ sudo rmdir Test
ruchpottah@LAPTOP-DS9NCF3C:~$ cd Test
-bash: cd: Test: No such file or directory
ruchpottah@LAPTOP-DS9NCF3C:~$
```

7) How will you display Today's date in the format of dd/mm/yyyy? In a file word UNIX is appearing many times. How you count the number?

```
ruchpottah@LAPTOP-DS9NCF3C:/$ date +%d/%m/%Y
03/05/2022
ruchpottah@LAPTOP-DS9NCF3C:/$
```

[This command was run on May 3, 2022]

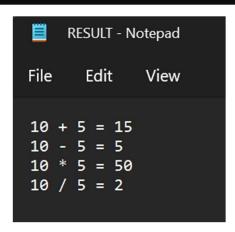


unixinfo.txt

8) Read two numbers and perform addition, subtraction, multiplication and division. Also save the output of the operations in RESULT.txt.

```
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ read a b

10 5
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ echo "$a + $b = $(ans=`echo "$a+$b" | bc` ;echo $ans)" >> RESULT.txt
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ echo "$a - $b = $(ans=`echo "$a-$b" | bc` ;echo $ans)" >> RESULT.txt
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ echo "$a * $b = $(ans=`echo "$a*$b" | bc` ;echo $ans)" >> RESULT.txt
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ echo "$a / $b = $(ans=`echo "$a*$b" | bc` ;echo $ans)" >> RESULT.txt
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ cat RESULT.txt
10 + 5 = 15
10 - 5 = 5
10 * 5 = 50
10 / 5 = 2
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$
```



RESULT.txt

9. Write a command that will allow a UNIX system to shut down in 15 minutes, after which it will perform a reboot.

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Desktop$ sudo shutdown -r +15
[sudo] password for ruchpottah:
Sorry, try again.
[sudo] password for ruchpottah:
Reboot scheduled for Tue 2022-05-03 20:16:46 IST, use 'shutdown -c' to cancel.
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Desktop$
```

10) Write a command that will find all text files in a directory such that it does not contain the word "unix" in any form (that is, it must include the words Unix, UNIX, or uNIx).

```
PTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ ls -r -l | grep
rwxrwxrwx 1 ruchpottah ruchpottah
                                     62 May 5 06:16 vowelfile.txt
                                  1338 May
rwxrwxrwx 1 ruchpottah ruchpottah
                                            3 15:11 unixinfo2.txt
rwxrwxrwx 1 ruchpottah ruchpottah
                                  1334 May
                                            4 19:02 unixinfo.txt
rwxrwxrwx 1 ruchpottah ruchpottah
                                   331 May
                                            5 07:15 thisfile.conf
                                   293 May
                                            1 03:55 target.txt
rwxrwxrwx 1 ruchpottah ruchpottah
rwxrwxrwx 1 ruchpottah ruchpottah
                                  1076 May
                                            3 15:27 randomfile2.txt
rwxrwxrwx 1 ruchpottah ruchpottah
                                  1076 May
                                            3 15:13 random.txt
                                   286 Apr 30 14:12 processes.txt
rwxrwxrwx 1 ruchpottah ruchpottah
                                   286 Apr 30 14:11 list.txt
rwxrwxrwx 1 ruchpottah ruchpottah
rwxrwxrwx 1 ruchpottah ruchpottah
                                    66 May
                                            4 07:05 linuxunix2.txt
rwxrwxrwx 1 ruchpottah ruchpottah
                                    96 May
                                            4 06:01 linuxunix.txt
                                   293 May 1 03:27 givenfile.txt
rwxrwxrwx 1 ruchpottah ruchpottah
                                     3 Apr 30 07:58 count.txt
rwxrwxrwx 1 ruchpottah ruchpottah
rwxrwxrwx 1 ruchpottah ruchpottah
                                   586 May
                                            1 03:57 concat.txt
                                    1 May
rwxrwxrwx 1 ruchpottah ruchpottah
                                            3 15:55 calc
                                  3028 May
rwxrwxrwx 1 ruchpottah ruchpottah
                                            4 00:26 addusercopy.conf
                                            5 06:36 adduserc.conf
rwxrwxrwx 1 ruchpottah ruchpottah
                                  3028 May
                                   331 May
                                            5 07:14 adduser.conf
rwxrwxrwx 1 ruchpottah ruchpottah
                                    69 May
                                            3 15:54 add
rwxrwxrwx 1 ruchpottah ruchpottah
                                    77 May
                                            1 04:10 OUT.txt
rwxrwxrwx 1 ruchpottah ruchpottah
rwxrwxrwx 1 ruchpottah ruchpottah
                                   102 May
                                            1 04:09 IN.txt
rwxrwxrwx 1 ruchpottah ruchpottah 10528 May
                                            3 10:06 Book1.xlsx
```

```
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ grep -r -i -L "unix"
.sums.sh.swp
add
adduser.conf
adduser.conf
adduserc.conf
Book1.xlsx
calc
concat.txt
count.txt
givenfile.txt
IN.txt
list.txt
OUT.txt
processes.txt
target.txt
thisfile.conf
vowelfile.txt
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$
```

12) Write a command that will display files in the current directory, in a colored, long format.

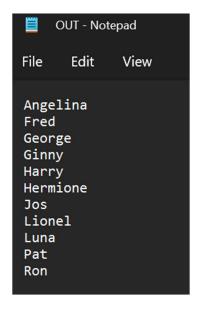
```
uchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ ls -l --color=always | grep '^-'
rwxrwxrwx 1 ruchpottah ruchpottah 10528 May
                                              3 10:06 Book1.xlsx
rwxrwxrwx 1 ruchpottah ruchpottah
                                     102 May
                                              1 04:09 IN.txt
                                      77 May
                                              1 04:10 OUT.txt
rwxrwxrwx 1
            ruchpottah ruchpottah
                                      69 May
                                              3 15:54 add
rwxrwxrwx 1 ruchpottah ruchpottah
                                    331 May
                                              5 07:14 adduser.conf
rwxrwxrwx 1
            ruchpottah ruchpottah
                                    3028 May
rwxrwxrwx 1 ruchpottah ruchpottah
                                              5 06:36 adduserc.conf
                                    3028 May
                                              4 00:26 addusercopy.conf
rwxrwxrwx 1
            ruchpottah ruchpottah
                                              3 15:55 calc
rwxrwxrwx 1
            ruchpottah ruchpottah
                                      1 May
                                     586 May
            ruchpottah ruchpottah
                                              1 03:57 concat.txt
            ruchpottah ruchpottah
                                      3 Apr 30 07:58 count.txt
                                             1 03:27 givenfile.txt
4 06:01 linuxunix.txt
4 07:05 linuxunix2.txt
            ruchpottah ruchpottah
                                     293 May
rwxrwxrwx 1
                                      96 May
rwxrwxrwx
            ruchpottah ruchpottah
                                      66 May
rwxrwxrwx 1
            ruchpottah ruchpottah
            ruchpottah ruchpottah
                                     286 Apr 30 14:11 list.txt
rwxrwxrwx 1
                                     286 Apr 30 14:12 processes.txt
rwxrwxrwx 1 ruchpottah ruchpottah
                                    1076 May
                                             3 15:13 random.txt
rwxrwxrwx 1
            ruchpottah ruchpottah
                                    1076 May
                                              3 15:27 randomfile2.txt
rwxrwxrwx 1
            ruchpottah ruchpottah
                                              1 03:55 target.txt
                                     293 May
rwxrwxrwx 1
            ruchpottah ruchpottah
                                              5 07:15 thisfile.conf
rwxrwxrwx 1 ruchpottah ruchpottah
                                     331 May
rwxrwxrwx 1 ruchpottah ruchpottah
                                   1334 May
                                              4 19:02 unixinfo.txt
rwxrwxrwx 1 ruchpottah ruchpottah
                                    1338 May
                                              3 15:11 unixinfo2.txt
                                      62 May 5 06:16 vowelfile.txt
rwxrwxrwx 1 ruchpottah ruchpottah
uchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$
```

13) What is the behavioral difference between "cmp" and "diff" commands? Justify with an example.

The behavioral differences between "cmp" and "diff" commands are listed as under: -

стр	diff
It performs byte by byte comparison for two files and displays the first mismatch type.	It performs line by line comparison for files and indicates the changes to be done to make the files identical.
It returns the first byte and the line no. of the file to make the changes in order to make them equal.	It returns the text of the files which are different from each other.
Directory names cannot be used.	Directory names can be used.





IN.txt

OUT.txt

ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1\$ cmp in.txt out.txt
in.txt out.txt differ: byte 1, line 1
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1\$

Result on using "cmp" command: the first different byte and line is displayed.

```
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ diff in.txt out.txt
1,4c1
< Harry
< Hermione
 Ron
 Ginny
> Angelina
7,8d3
 Angelina
 Harry
10,13c5,6
Pat
  Fred
  Pat
Luna
> Harry
> Hermione
15a9,11
 Luna
> Pat
> Ron
 ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$
```

Result on using "diff" command: details regarding the changes needed to be made to the files are displayed.

14) Write a grep command to remove all commented and empty lines in a file.

```
3/onedrive/documents/itwl$ cat thisfile.conf
  /etc/adduser.conf: 'adduser' configuration.
See adduser(8) and adduser.conf(5) for full documentation.
  The DSHELL variable specifies the default login shell on your
 SHELL=/bin/bash
  The DHOME variable specifies the directory containing users' home
If GROUPHOMES is "yes", then the home directories will be created as
# If LETTERHOMES is "yes", then the created home directories will have
# an extra directory - the first letter of the user name. For example:
# /home/u/wser.
LETTERHOMES-no
# The SKEL variable specifies the directory containing "skeletal" user 
# files; in other words, files such as a sample .profile that will be 
# copied to the new user's home directory when it is created. 
SKEL-/etc/skel
# FIRST_SYSTEM_[GU]ID to LAST_SYSTEM_[GU]ID inclusive is the range for UIDs 
# for dynamically allocated administrative and system accounts/groups. 
# Please note that system software, such as the users allocated by the base-passwd 
# package, may assume that UIDs less than 100 are unallocated. 
FIRST_SYSTEM_UID-100
FIRST_SYSTEM_GID=100
LAST_SYSTEM_GID=999
 FIRST_[GU]ID to LAST_[GU]ID inclusive is the range of UIDs of dynamically
 IRST_UID=1000
AST_UID=59999
FIRST GID-1000
 The USERGROUPS variable can be either "yes" or "no". If "yes" each created user will be given their own group to use as a default. If "no", each created user will be placed in the group whose gid is USERS_GID (see below).
ISERGROUPS-yes
 If USERGROUPS is "no", then USERS_GID should be the GID of the group towers' (or the equivalent group) on your system.

SERS_GID-100
# If DIR_MODE is set, directories will be created with the specified # mode. Otherwise the default mode 8755 will be used.
 If SEIGID HOME is "yes" home directories for users with their own a group the setgid bit will be set. This was the default for your science of 3.13 of adduser. Because it has some bad side effects we no longer do this per default. If you want it nevertheless you can still set it here.
# If QUOTAUSER is set, a default quota will be set from that user with # 'edgucta -p QUOTAUSER newuser'
QUOTAUSER-""
# If SKEL_IGNORE_REGEX is set, adduser will ignore files matching this 
# regular expression when creating a new home directory 
SKEL_IGNORE_REGEX-"dpkg-(old|new|dist|save)"
 Set this if you want the --add_extra_groups option to adduser to add
  new users to other groups.

This is the list of groups that new non-system users will be added to
 Default:
EXTRA GROUPS-"dialout cdrom floppy audio video plugdev users"
# If ADD_EXTRA_GROUPS is set to something non-zero, the EXTRA_GROUPS
# option above will be default behavior for adding new, non-system users
MADD_EXTRA_GROUPS-1
 theck user and group names also against this regular expression. 
 NAME_{REGEX=^n[a-z][-a-z\theta-9_]^*\
 use extrausers by default
USE_EXTRAUSERS+1
                                 OSSWCF3C:/mnt/c/users/91933/onedrive/documents/itw1$
```

```
ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ grep -Ev "^#|^$" thisfile.conf > filenow.conf
DSHELL=/bin/bash
DHOME=/home
GROUPHOMES=no
LETTERHOMES=no
SKEL=/etc/skel
FIRST_SYSTEM_UID=100
LAST_SYSTEM_UID=999
FIRST_SYSTEM_GID=100
LAST_SYSTEM_GID=999
FIRST_UID=1000
LAST_UID=59999
FIRST_GID=1000
LAST_GID=59999
USERGROUPS=yes
USERS_GID=100
DIR_MODE=0755
SETGID_HOME=no
QUOTAUSER=""
SKEL_IGNORE_REGEX="dpkg-(old|new|dist|save)"
 ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$
 ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ cp filenow.conf thisfile.conf ruchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ cat thisfile.conf
DSHELL=/bin/bash
DHOME=/home
 GROUPHOMES=no
LETTERHOMES=no
SKEL=/etc/skel
 IRST_SYSTEM_UID=100
LAST_SYSTEM_UID=999
 IRST_SYSTEM_GID=100
LAST_SYSTEM_GID=999
FIRST UID=1000
LAST UID=59999
 IRST_GID=1000
LAST_GID=59999
USERGROUPS=yes
USERS_GID=100
DIR_MODE=0755
SETGID_HOME=no
QUOTAUSER=""
SKEL_IGNORE_REGEX="dpkg-(old|new|dist|save)"
 uchpottah@LAPTOP-DS9NCF3C:/mnt/c/users/91933/onedrive/documents/itw1$ __
```