1. Select any 5 capitals of states in India and enter them in a file named capitals1. Choose 5 more capitals and enter them in a file named capitals2. Choose 5 more capitals and enter them in a file named capitals3. Concatenate all 3 files and redirect the output to a file named capitals.

```
tanmaypol@Tanmay-laptop:~$ cat>>capitals1.txt
Mumbai
Chennai
Chandigarh
Bhopal
Patna
tanmaypol@Tanmay-laptop:~$ cat capitals1.txt
Mumbai
Chennai
Chandigarh
Bhopal
Patna
tanmaypol@Tanmay-laptop:~$ cat>capitals2.txt
Gandhinagar
Amravati
Hyderabad
Dispur
Ranchi
tanmaypol@Tanmay-laptop:~$ cap capitals2.txt

Command 'cap' not found, but can be installed with:

sudo apt install capistrano

tanmaypol@Tanmay-laptop:~$ cat capitals2.txt
Gandhinagar
Amravati
Hyderabad
Dispur
Ranchi
tanmaypol@Tanmay-laptop:~$ cat>capitals3.txt
Kolkata
Aizawl
Lucknow
Jaipur
Shillong
tanmaypol@Tanmay-laptop:~$
tanmaypol@Tanmay-laptop:~$ cat capitals3.txt
Kolkata
Aizawl
Lucknow
Jaipur
Shillong
tanmaypol@Tanmay-laptop:~$
```

```
tanmaypol@Tanmay-laptop:~$ cat capitals1.txt capitals2.txt capitals3.txt > capitals.txt
tanmaypol@Tanmay-laptop:~$ cat capitals.txt
Mumbai
Chennai
Chandigarh
Bhopal
Patna
Gandhinagar
Amravati
Hyderabad
Dispur
Ranchi
Kolkata
Aizawl
Lucknow
Jaipur
Shillong
```

2. Concatenate the file capitals2 at the end of file capitals.

```
tanmaypol@Tanmay-laptop:~$ cat capitals2.txt>>capitals.txt
tanmaypol@Tanmay-laptop:~$ cat capitals.txt
Mumbai
Chennai
Chandigarh
Bhopal
Patna
Gandhinagar
Amravati
Hyderabad
Dispur
Ranchi
Kolkata
Aizawl
Lucknow
Jaipur
Shillong
Gandhinagar
Amravati
Hyderabad
Dispur
Ranchi
```

3. Redirect the file capitals as an input to the command "wc –l".

```
tanmaypol@Tanmay-laptop:~$ wc -l capitals.txt
20 capitals.txt
tanmaypol@Tanmay-laptop:~$
```

4. Give read and write permissions to all users for the file capitals.

```
tanmaypol@Tanmay-laptop:~$ ls -l capitals.txt
-rw-r--r-- 1 tanmaypol tanmaypol 170 Sep 15 21:52 capitals.txt
tanmaypol@Tanmay-laptop:~$ chmod a+rw capitals.txt
tanmaypol@Tanmay-laptop:~$ la -l capitals.txt
-rw-rw-rw- 1 tanmaypol tanmaypol 170 Sep 15 21:52 capitals.txt
```

5. Give read permissions only to the owner of the file capitals. Open the file, make some changes and try to save it. What happens ?

```
tanmaypol@Tanmay-laptop:~$ ls
arr.sh              capitals.txt    capitals3.txt  medir     mydir       oe.sh          pn.sh
caloperations       capitals1.txt   gn.sh          minedir   mynewdate   ourdate        pn.sh.save
caloperations.sh    capitals2.txt   list                     mydate.txt  mynewdir       outputfile.txt
tanmaypol@Tanmay-laptop:~$ chmod a-rw capitals.txt
tanmaypol@Tanmay-laptop:~$ chmod u+r capitals.txt
tanmaypol@Tanmay-laptop:~$ ls -l capitals.txt
-r-------- 1 tanmaypol tanmaypol 170 Sep 15 21:52 capitals.txt
```

```
~

~
"capitals.txt" [readonly] 20L, 170C
```

6. Create an alias to concatenate the 3 files capitals1, capitals2, capitals3
   and redirect the output to a file named capitals. Activate the alias and
   make it run.

```
tanmaypol@Tanmay-laptop:~$ alias concate='cat capitals1.txt capitals2.txt capitals3.
txt >> capitals.txt'
tanmaypol@Tanmay-laptop:~$ concate
tanmaypol@Tanmay-laptop:~$ cat capitals.txt
Mumbai
Chennai
Chandigarh
Bhopal
Patna
Gandhinagar
Amravati
Hyderabad
Dispur
Ranchi
Kolkata
Aizawl
Lucknow
Jaipur
Shillong
Gandhinagar
Amravati
Hyderabad
Dispur
Ranchi
Mumbai
Chennai
Chandigarh
Bhopal
Patna
Gandhinagar
Amravati
Hyderabad
Dispur
Ranchi
Kolkata
Aizawl
Lucknow
Jaipur
Shillong
```

7. What are the environment variables PATH, HOME and TERM set to on your terminal ?

PATH=

/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/usr/lib/wsl/lib:/mnt/c/Program Files (x86)/Common Files/Oracle/Java/javapath:/mnt/c/Users/Dell_owner/Desktop/Softwares/bin:/mnt/c/WINDOWS/system32:/mnt/c/WINDOWS:/mnt/c/WINDOWS/System32/Wbem:/mnt/c/WINDOWS/System32/WindowsPowerShell/v1.0/:/mnt/c/WINDOWS/System32/OpenSSH/:/mnt/c/Program Files (x86)/mingw-w64/i686-8.1.0-posix-dwarf-rt_v6-rev0/mingw32/bin:/mnt/c/Program Files/Git/cmd:/mnt/c/Program Files (x86)/GnuWin32/bin:/mnt/c/Users/Dell_owner/AppData/Local/Programs/Python/Python36/Scripts/:/mnt/c/Users/Dell_owner/AppData/Local/Programs/Python/Python36/:/mnt/c/Users/Dell_owner/AppData/Local/Programs/Python/Python39/Scripts/:/mnt/c/Users/Dell_owner/AppData/Local/Programs/Python/Python39/:/mnt/c/Users/Dell_owner/AppData/Local/Microsoft/WindowsApps:/mnt/c/Users/Dell_owner/AppData/Local/Programs/Microsoft VS Code/bin:/mnt/c/Program Files/Java/jdk1.8.0_321/bin:/mnt/c/src/flutter/flutter/bin:/snap/bin

HOME=
/home/tanmaypol

TERM=
xterm-256color

```
tanmaypol@Tanmay-laptop:~$ printenv
SHELL=/bin/bash
WSL2_GUI_APPS_ENABLED=1
WSL_DISTRO_NAME=Ubuntu-20.04
NAME=Tanmay-laptop
PWD=/home/tanmaypol
LOGNAME=tanmaypol
HOME=/home/tanmaypol
LANG=C.UTF-8
WSL_INTEROP=/run/WSL/276_interop
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=00:su=37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*
.tar=01;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;31:*.lha=01;31:*.lz4=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.txz=01;31:*.tzo=01;31:*.t7z=01;31:*.zip=01;31:*.z=
01;31:*.dz=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=01;31:*.zst=01;31:*.tzst=01;31:*.bz2=01;31:*.bz=01;31:*.tbz=01;31:*.tbz2=01;31:*.tz=01;31:*.deb=01;31:*.
rpm=01;31:*.jar=01;31:*.war=01;31:*.ear=01;31:*.sar=01;31:*.rar=01;31:*.alz=01;31:*.ace=01;31:*.zoo=01;31:*.cpio=01;31:*.7z=01;31:*.rz=01;31:*.cab=01;31:*.wim=01;31:*.swm=0
1;31:*.dwm=01;31:*.esd=01;31:*.jpg=01;35:*.jpeg=01;35:*.mjpg=01;35:*.mjpeg=01;35:*.gif=01;35:*.bmp=01;35:*.pbm=01;35:*.pgm=01;35:*.ppm=01;35:*.tga=01;35:*.xbm=01;35:*.xpm=0
1;35:*.tif=01;35:*.tiff=01;35:*.png=01;35:*.svg=01;35:*.svgz=01;35:*.mng=01;35:*.pcx=01;35:*.mov=01;35:*.mpg=01;35:*.mpeg=01;35:*.m2v=01;35:*.mkv=01;35:*.webm=01;35:*.ogm=0
1;35:*.mp4=01;35:*.m4v=01;35:*.mp4v=01;35:*.vob=01;35:*.qt=01;35:*.nuv=01;35:*.wmv=01;35:*.asf=01;35:*.rm=01;35:*.rmvb=01;35:*.flc=01;35:*.avi=01;35:*.fli=01;35:*.flv=01;35
:*.gl=01;35:*.dl=01;35:*.xcf=01;35:*.xwd=01;35:*.yuv=01;35:*.cgm=01;35:*.emf=01;35:*.ogv=01;35:*.ogx=01;35:*.aac=00;36:*.au=00;36:*.flac=00;36:*.m4a=00;36:*.mid=00;36:*.mid
i=00;36:*.mka=00;36:*.mp3=00;36:*.mpc=00;36:*.ogg=00;36:*.ra=00;36:*.wav=00;36:*.oga=00;36:*.opus=00;36:*.spx=00;36:*.xspf=00;36:
WAYLAND_DISPLAY=wayland-0
LESSCLOSE=/usr/bin/lesspipe %s %s
TERM=xterm-256color
LESSOPEN=| /usr/bin/lesspipe %s
USER=tanmaypol
DISPLAY=:0
SHLVL=1
XDG_RUNTIME_DIR=/mnt/wslg/runtime-dir
WSLENV=
XDG_DATA_DIRS=/usr/local/share:/usr/share:/var/lib/snapd/desktop
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/usr/lib/wsl/lib:/mnt/c/Program Files (x86)/Common Files/Oracle/Java/javapath:
/mnt/c/Users/Dell_owner/Desktop/Softwares/bin:/mnt/c/WINDOWS/system32:/mnt/c/WINDOWS:/mnt/c/WINDOWS/System32/Wbem:/mnt/c/WINDOWS/System32/WindowsPowerShell/v1.0/:/mnt/c/WIN
DOWS/System32/OpenSSH/:/mnt/c/Program Files (x86)/mingw-w64/i686-8.1.0-posix-dwarf-rt_v6-rev0/mingw32/bin:/mnt/c/Program Files/Git/cmd:/mnt/c/Program Files (x86)/GnuWin32/b
in:/mnt/c/Users/Dell_owner/AppData/Local/Programs/Python/Python36/Scripts/:/mnt/c/Users/Dell_owner/AppData/Local/Programs/Python/Python36/:/mnt/c/Users/Dell_owner/AppData/L
ocal/Programs/Python/Python39/Scripts/:/mnt/c/Users/Dell_owner/AppData/Local/Programs/Python/Python39/:/mnt/c/Users/Dell_owner/AppData/Local/Microsoft/WindowsApps:/mnt/c/Us
ers/Dell_owner/AppData/Local/Programs/Microsoft VS Code/bin:/mnt/c/Program Files/Java/jdk1.8.0_321/bin:/mnt/c/src/flutter/flutter/bin:/snap/bin
HOSTTYPE=x86_64
PULSE_SERVER=/mnt/wslg/PulseServer
_=/usr/bin/printenv
```

8. Find out the number of times the string "the" appears in the file mydate.

```
tanmaypol@Tanmay-laptop:~$ grep -o -i the mynewdate | wc -l
31
tanmaypol@Tanmay-laptop:~$
```

9. Find out the line numbers on which the string "date" exists in mydate.

```
tanmaypol@Tanmay-laptop:~$ grep -o -i date mynewdate |wc -l
42
tanmaypol@Tanmay-laptop:~$ cat >> mynewdate
date
date 2
tanmaypol@Tanmay-laptop:~$ grep -o -i date mydate | wc -l
grep: mydate: No such file or directory
0
tanmaypol@Tanmay-laptop:~$ grep -o -i date mynewdate |wc -l
44
tanmaypol@Tanmay-laptop:~$
```

10. Print all lines of mydate except those that have the letter "i" in them.

```
tanmaypol@Tanmay-laptop:~$ grep -v "i" mynewdate
DATE(1)                          User Commands                          DATE(1)

NAME

SYNOPSIS
       date [OPTION]... [+FORMAT]

DESCRIPTION


       -d, --date=STRING

       --debug
             stderr



             02:34:56 -0600

       --rfc-3339=FMT
             2006-08-14 02:34:56-06:00

       -r, --reference=FILE

       -s, --set=STRING



       FORMAT controls the output.  Interpreted sequences are:



       %A     locale's full weekday name (e.g., Sunday)


       %B     locale's full month name (e.g., January)



       %d     day of month (e.g., 01)

       %D     date; same as %m/%d/%y

       %e     day of month, space padded; same as %_d

       %F     full date; same as %Y-%m-%d



       %h     same as %b

       %H     hour (00..23)
```

```
        %S      second (00..60)

        %t      a tab




        %Y      year




        flags may follow '%':




EXAMPLES
              $ date --date='@2147483647'




DATE STRING
        as "Sun, 29 Feb 2004 16:21:42 -0800"  or  "2004-02-29  16:21:42"  or  even

AUTHOR

REPORTING BUGS

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SEE ALSO

date
date 2
```

11. Create the file monotonic as follows:

^a?b?b?c?…………..x?y?z$

Run the egrep command for monotonic against /usr/dict/words and search for all 4 letter words.

12. List 5 states in north east India in a file mystates. List their corresponding capitals in a file mycapitals. Use the paste command to join the 2 files.

```
tanmaypol@Tanmay-laptop:~$ vi mystates
tanmaypol@Tanmay-laptop:~$ cat mystates
Manipar
Meghayala
Arunachal Pradesh
Mizoram
Nagaland
Manipar

tanmaypol@Tanmay-laptop:~$ touch mycapitals
tanmaypol@Tanmay-laptop:~$ vi mycapitals
tanmaypol@Tanmay-laptop:~$ paste mystates mycapitals
Manipar          Imphal
Meghayala        Shillong
Arunachal Pradesh        Itanagar
Mizoram Aizawl
Nagaland         Kohima
Manipar

tanmaypol@Tanmay-laptop:~$
```

13. Use the cut command to print the 1ˢᵗ and 3ʳᵈ columns of the /etc/passwd file for all students in this class.

```
tanmaypol@Tanmay-laptop:~$ cut -c 1,3 /etc/passwd
ro
de
bn
ss
sn
gm
mn
l:
mi
nw
uc
po
ww
bc
ls
ic
ga
nb
ss
ss
ss
ms
ss
_p
ts
ui
tp
sh
ln
pl
tn
```

```
tanmaypol@Tanmay-laptop:~$ cut -d ':' -f1,3 /etc/passwd
root:0
daemon:1
bin:2
sys:3
sync:4
games:5
man:6
lp:7
mail:8
news:9
uucp:10
proxy:13
www-data:33
backup:34
list:38
irc:39
gnats:41
nobody:65534
systemd-network:100
systemd-resolve:101
systemd-timesync:102
messagebus:103
syslog:104
_apt:105
tss:106
uuidd:107
tcpdump:108
sshd:109
landscape:110
pollinate:111
tanmaypol:1000
```

14. Count the number of people logged in and also trap the users in a file using the tee command.

```
tanmaypol@Tanmay-laptop:~$ cut -c 1,3 /etc/passwd | wc -l | tee ppl.txt
31
tanmaypol@Tanmay-laptop:~$ cat ppl.txt
31
```