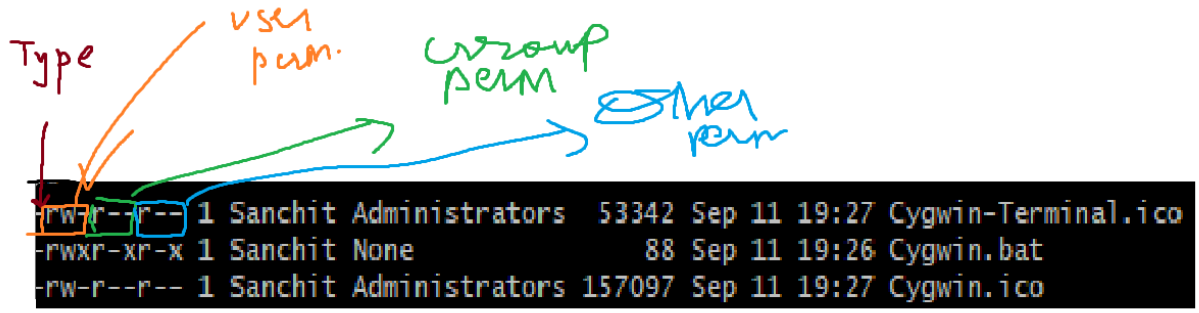
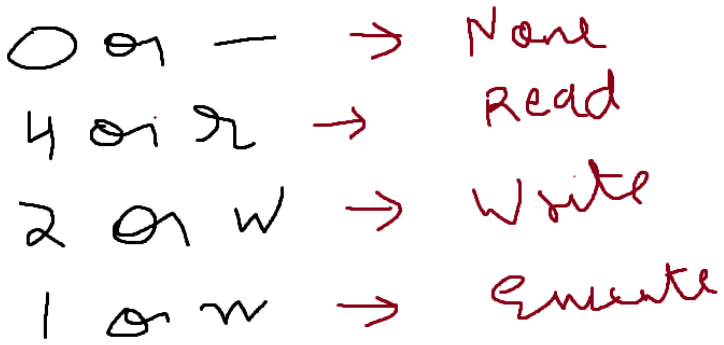
UNIX AND SHELL PROGRAMMING

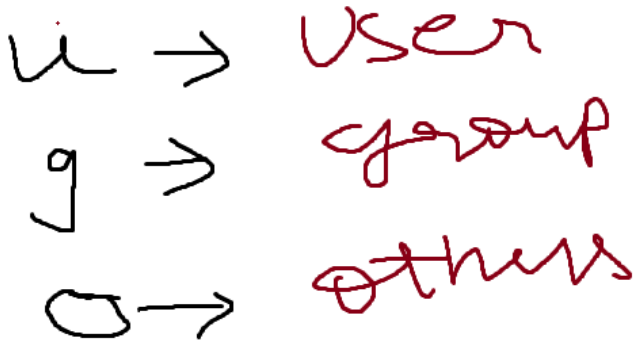
Quiz 2

FILE SECURITY

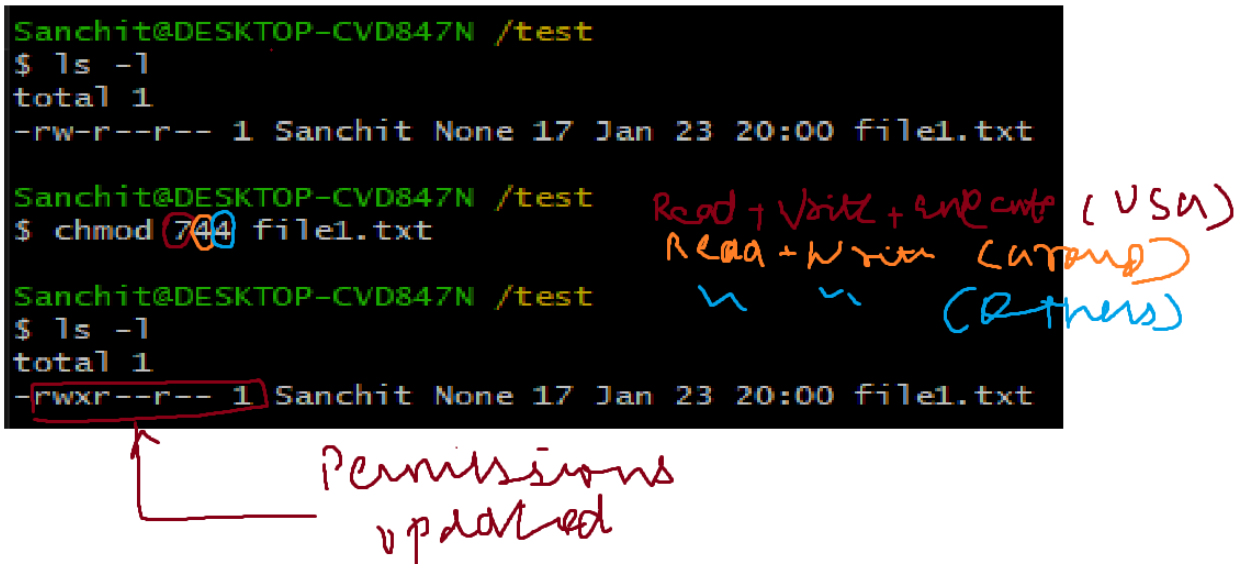
1) chmod







Also a-> all



2) chown
   Changes file owner and group

   - -R, --recursive
     operate on files and directories recursively

   - -v, --verbose
     output a diagnostic for every file processed
   - -H
     if a command line argument is a symbolic link to a directory, traverse it
   - -L
     traverse every symbolic link to a directory encountered
   - -P
     do not traverse any symbolic links (default)

EXAMPLES

chown root /u
Change the owner of /u to "root".

chown root:staff /u
Likewise, but also change its group to "staff".

chown -hR root /u
Change the owner of /u and subfiles to "root".

3) chgrp

Changes group ownership

SYNTAX : chgrp [*OPTION*]... *GROUP FILE…*

Change the group of each FILE to GROUP.

OPTIONS :

1) **-c, --changes**
   like verbose but report only when a change is made
2) **-R, --recursive**
   operate on files and directories recursively

EXAMPLES
chgrp staff /u
Change the group of /u to "staff".

setuid: The setuid bit simply indicates that when running the executable, it will set its permissions to that of the user who created it (owner), instead of setting it to the user who launched it.

To locate the setuid, look for an ‘s’ instead of an ‘x’ in the executable bit of the file permissions.

setgid: When used on a file, it executes with the privileges of the group of the user who owns it instead of executing with those of the group of the user who executed it.
When the bit is set for a directory, the set of files in that directory will have the same group as the group of the parent directory, and not that of the user who created those files.

To locate the setgid, look for an ‘s’ instead of an ‘x’ in the group section of the file permissions.

sticky bit: a bit set on directories that allows only the owner or root can delete files and subdirectories

Any user can add a file to the directory, but you can not overwrite another user’s file

HOW TO SET STICKY BIT

Symbolic Method :

-> chmod +t /tmp/files

For verifying do , **ls -ld /tmp/files**

For removing just do -t instead of +t

```
linuxopsys@linux:~$ ls -ld /tmp/files
drwxrwxr-t 2 linuxopsys linuxopsys 4096 Oct 29 22:21 /tmp/files
```

Numeric method :

-> sudo chmod 1777 /tmp/code

1) Loops

```
for item in [LIST]
do
```

```
  [COMMANDS]
done
```

Examples :

Loop over a string

```
for element in Hydrogen Helium Lithium Beryllium

do

 echo "Element: $element"

done
```

```
Element: Hydrogen
Element: Helium
Element: Lithium
Element: Beryllium
```

Loop over a range

```
for i in {0..3}

do

 echo "Number: $i"

done
```

```
Number: 0
Number: 1
Number: 2
Number: 3
```

```
for i in {0..20..5}
```

```
do

 echo "Number: $i"

done
```

```
Number: 0
Number: 5
Number: 10
Number: 15
Number: 20
```

```
for ((i = 0 ; i <= 1000 ; i++)); do

 echo "Counter: $i"

done
```

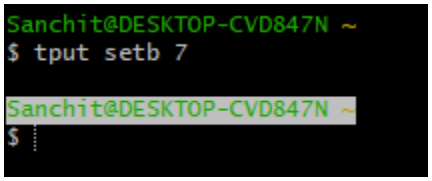
```
Number: 0
Number: 5
Number: 10
Number
: 15
Number: 20
Counter: 0
Counter: 1
Counter: 2
...
Counter: 998
Counter: 999
Counter: 1000
```

TPUT

A command used to manipulate our terminal. With it, we can change the color of text, apply effects, and generally brighten things up. More importantly, we can use tput to improve the human factors of our scripts. For example, we can use color and text effects to better present information to our users.

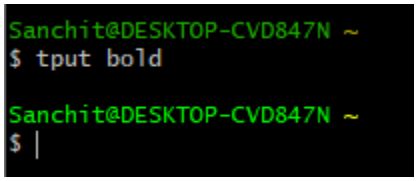
TPUT COLOR CAPABILITIES :

- **tput setb [1-7] –** Sets a background color

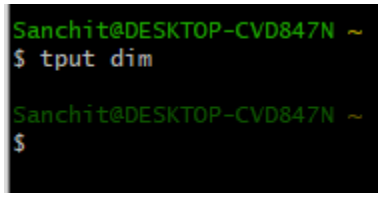


TPUT TEXT MODE CAPABILITIES :

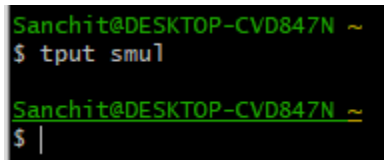
- **tput bold –** Set bold mode



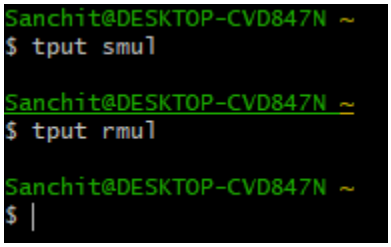
- **tput dim –** turn on half-bright mode



- **tput smul –** begin underline mode



- **tput rmul –** exit underline mode



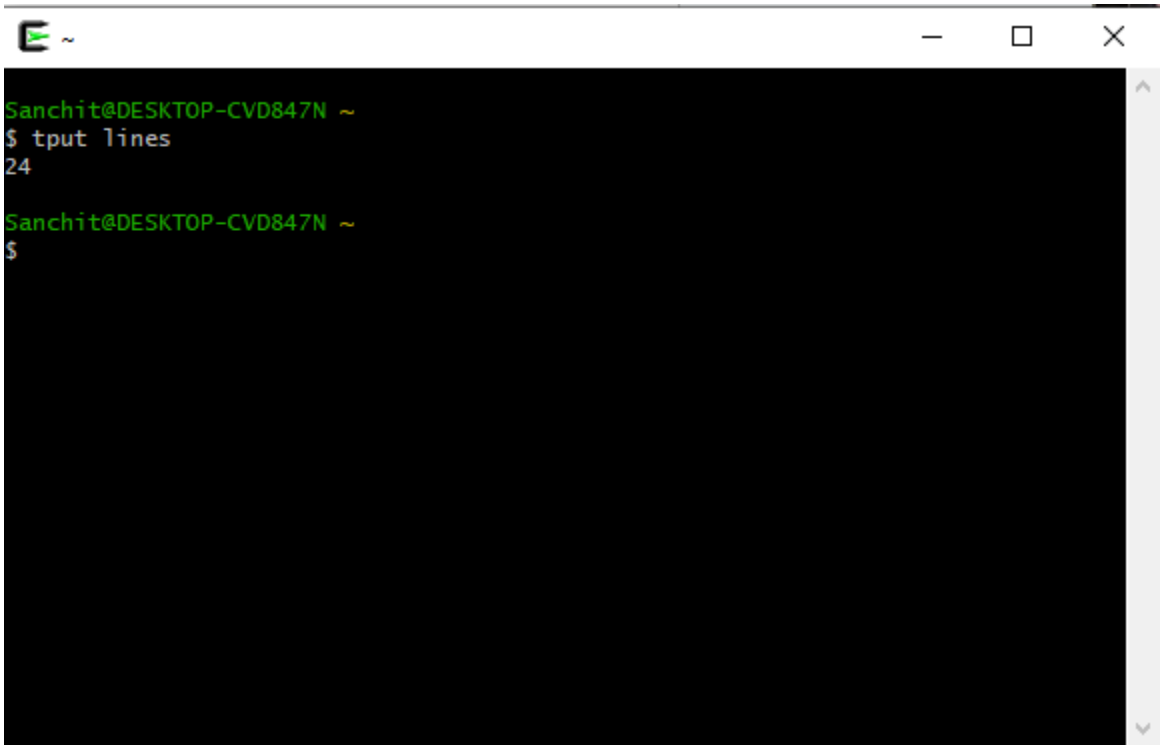
- **tput sgr0** – Turn off all attributes

```
Sanchit@DESKTOP-CVD847N ~
$ tput bold

Sanchit@DESKTOP-CVD847N ~
$ tput sgr0

Sanchit@DESKTOP-CVD847N ~
$
```

- tput lines : shows the number of lines



- **tput colors :** Shows the number of colors available

```
Sanchit@DESKTOP-CVD847N ~
$ tput colors
8
```

- **tput cols :** Shows the number of columns

```
Sanchit@DESKTOP-CVD847N ~
$ tput cols
81
```

- **tput blink :** cursor starts blinking
- **tput civis :** Makes the cursor visible again
- **tput cnorm :** Deletes 10 lines below and including the one on which the cursor is positioned
- **tput dl :** Produces different kinds of output for each of the three types of terminal capabilities: string, numeric, and Boolean.