UTILIZATION OF COMMANDS TO COMMUNICATE WITH AND INSTRUCT THE LINUX OPERATING SYSTEM

```
analyst@210d2bf1aae7:~$ pwd
/home/analyst
analyst@210d2bf1aae7:~$ mkdir /home/analyst/logs
analyst@210d2bf1aae7:~$ ls
log  logs  notes  reports  temp
analyst@210d2bf1aae7:~$
```

Printing the working directory to the screen with the **pwd** command and creating a logs directory with the **mkdir /home/analyst/logs** command.

```
analyst@210d2bf1aae7:~/notes$ touch tasks.txt
analyst@210d2bf1aae7:~/notes$ ls
tasks.txt
```

Creating a new file tasks.txt in the notes directory with the **touch tasks.txt** command.

```
analyst@210d2bf1aae7:~$ cd /home/analyst/notes
analyst@210d2bf1aae7:~/notes$ mv Q3patches.txt /home/analyst/reports
analyst@210d2bf1aae7:~/notes$ pwd
/home/analyst/notes
analyst@210d2bf1aae7:~/notes$ ls /home/analyst/reports
Q1patches.txt  Q2patches.txt  Q3patches.txt
analyst@210d2bf1aae7:~/notes$
```

Moving a file Q3patches.txt to the reports directory with the **mv Q3patches.txt /home/analyst/reports** command.

```
analyst@1a8f27fa8266:~/reports/users$ grep "Human Resources" Q4_added_users.txt
1151        sshah     Human Resources
1145        msosa     Human Resources
analyst@1a8f27fa8266:~/reports/users$
```

Specifically listing users added to the Human Resources department in the Q4_added_users.txt file by including a "Human Resources" string in the **grep "Human Resources" Q4_added_users.txt** command.

```
analyst@988fbff26a98:~$ pwd
/home/analyst
analyst@988fbff26a98:~$ ls
logs  projects  reports  temp
analyst@988fbff26a98:~$ cd reports
analyst@988fbff26a98:~/reports$ cd /home/analyst/reports
analyst@988fbff26a98:~/reports$ ls
users
analyst@988fbff26a98:~/reports$ cd /home/analyst/reports/users
analyst@988fbff26a98:~/reports/users$ ls
Q1_added_users.txt  Q1_deleted_users.txt
analyst@988fbff26a98:~/reports/users$ cat Q1_added_users.txt
employee_id  username  department
1001         bmoreno   Marketing
1026         apatel    Human Resources
1041         cgriffin  Sales
1104         mreed     Information Technology
1177         aezra     Human Resources
1188         noshiro   Finance
analyst@988fbff26a98:~/reports/users$ cd /home/analyst/logs
analyst@988fbff26a98:~/logs$ ls
server_logs.txt
analyst@988fbff26a98:~/logs$ head server_logs/txt
head: cannot open 'server_logs/txt' for reading: No such file or directory
analyst@988fbff26a98:~/logs$ head server_logs.txt
2022-09-28 13:55:55 info     User logged on successfully
2022-09-28 13:56:22 error    The password is incorrect
2022-09-28 13:56:48 warning The file storage is 75% full
2022-09-28 15:55:55 info     User logged on successfully
2022-09-28 15:56:22 error    The username is incorrect
2022-09-28 15:56:48 warning The file storage is 90% full
2022-09-28 16:55:55 info     User navigated to settings page
2022-09-28 16:56:22 error    The password is incorrect
2022-09-28 16:56:48 warning The current user's password expires in 15 days
2022-09-29 13:55:55 info     User logged on successfully
analyst@988fbff26a98:~/logs$ []
```

Listing directories and files with the **ls** command, accessing them with the **cd** command, displaying contents of a file with the **cat** command and displaying the beginning of a file (first 10 lines) with the **head** command.

```
  GNU nano 3.2                          tasks.txt                          Modified ▲
1. Managed file structure in /home/█









^G Get Help    ^O Write Out    ^W Where Is    ^K Cut Text    ^J Justify    ^C Cur Pos     M-U Undo
^X Exit        ^R Read File    ^\ Replace     ^U Uncut Text  ^T To Spell   ^  Go To Line  M-E Redo
```

Accessing the Linux Nano Text Editor to edit the tasks.txt file with the **nano tasks.txt** command.

```
researcher2@c10a9a2d356e:~/projects$ ls -a
.   ..   .project_x.txt   drafts   project_k.txt   project_m.txt   project_r.txt   project_t.txt
researcher2@c10a9a2d356e:~/projects$
```

Listing hidden and unhidden files in the projects directory with the **ls -a** command.

```
analyst@210d2bf1aae7:~/notes$ rm tempnotes.txt
analyst@210d2bf1aae7:~/notes$ ls /home/analyst/notes
analyst@210d2bf1aae7:~/notes$
```

Removing the tempnotes.txt file from the notes directory with the **rm tempnotes.txt** command.

```
researcher2@c10a9a2d356e:~$ pwd
/home/researcher2
researcher2@c10a9a2d356e:~$ ls
projects
researcher2@c10a9a2d356e:~$ cd /home/researcher2/projects
researcher2@c10a9a2d356e:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Sep  7 11:30 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Sep  7 11:30 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep  7 11:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_t.txt
researcher2@c10a9a2d356e:~/projects$
```

Accessing the projects directory permissions with the **ls -l** command.

```
researcher2@c10a9a2d356e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep  7 11:30 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep  7 12:17 ..
-rw--w---- 1 researcher2 research_team   46 Sep  7 11:30 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep  7 11:30 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_k.txt
-rw------- 1 researcher2 research_team   46 Sep  7 11:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_t.txt
researcher2@c10a9a2d356e:~/projects$
```

Accessing permissions for hidden and unhidden files in the projects directory with the **ls -la** command.

```
researcher2@c10a9a2d356e:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@c10a9a2d356e:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Sep  7 11:30 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_k.txt
-rw------- 1 researcher2 research_team   46 Sep  7 11:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_t.txt
researcher2@c10a9a2d356e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep  7 11:30 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep  7 12:17 ..
-r--r----- 1 researcher2 research_team   46 Sep  7 11:30 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep  7 11:30 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_k.txt
-rw------- 1 researcher2 research_team   46 Sep  7 11:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep  7 11:30 project_t.txt
researcher2@c10a9a2d356e:~/projects$
```

Removing write permissions from users & groups and adding read permissions for group owners on a hidden file (.project_x.txt) with the **chmod u-w,g-w,g+r .project_x.txt** command combination and displaying the result of the command with **ls -la**.

```
analyst@1594ca6eccfb:~/logs$ ls /home/analyst/reports/users
Q1_access.txt         Q2_access.txt         Q3_access.txt         Q4_access.txt
Q1_added_users.txt    Q2_added_users.txt    Q3_added_users.txt    Q4_added_users.txt
Q1_deleted_users.txt  Q2_deleted_users.txt  Q3_deleted_users.txt  Q4_deleted_users.txt
analyst@1594ca6eccfb:~/logs$ ls /home/analyst/reports/users | grep Q1
Q1_access.txt
Q1_added_users.txt
Q1_deleted_users.txt
analyst@1594ca6eccfb:~/logs$
```

Listing only files with Q1 in the user directory by using a combination of the **ls,** pipe **|** and **grep** commands.

Note: Piping (**|**) sends the standard output of one command as standard input to another command for further processing.

In this case, piping is sending the output of **grep Q1** which is a command to specifically display file content with Q1 as an input to **ls /home/analyst/reports/users**. The combination of these two commands through piping resulted in listing only file contents with Q1.

```
analyst@1594ca6eccfb:~/logs$ pwd
/home/analyst/logs
analyst@1594ca6eccfb:~/logs$ ls /home/analyst/logs
server_logs.txt
analyst@1594ca6eccfb:~/logs$ grep error server_logs.txt
2022-09-28 13:56:22 error    The password is incorrect
2022-09-28 15:56:22 error    The username is incorrect
2022-09-28 16:56:22 error    The password is incorrect
2022-09-29 13:56:22 error    An unexpected error occurred
2022-09-29 15:56:22 error    Unauthorized access
2022-09-29 16:56:22 error    Unauthorized access
analyst@1594ca6eccfb:~/logs$
```

Using the **grep** command to filter the content of the server_logs.txt file to only display error logs.

```
analyst@0622f3126022:~$ sudo useradd researcher9
analyst@0622f3126022:~$
```

Adding a new user researcher9 through the usage of the **sudo** command.

```
analyst@0622f3126022:~$ sudo usermod -a -G sales_team researcher9
analyst@0622f3126022:~$ █
```

Adding an existing user researcher9 to a secondary group with the **sudo usermod -a -G sales_team researcher** command.

```
analyst@0622f3126022:~$ sudo chown researcher9 /home/researcher2/projects/project_r.txt
analyst@0622f3126022:~$
```

Assigning ownership over the projects_r.txt file to researcher2 with the **chown** command.

```
analyst@0622f3126022:~$ sudo userdel researcher9
userdel: group researcher9 not removed because it is not the primary group of user researcher9.
analyst@0622f3126022:~$ sudo groupdel researcher9
analyst@0622f3126022:~$ █
```

Deleting user and user groups with the **userdel** and **groupdel** commands.

```
analyst@0622f3126022:~$ sudo usermod -g research_team researcher9
analyst@0622f3126022:~$
```

Modification of the user primary group with the **usermod** command.

```
analyst@97aed243c78b:~$ man cat
CAT(1)                                User Commands                                CAT(1)

NAME
       cat - concatenate files and print on the standard output

SYNOPSIS
       cat [OPTION]... [FILE]...

DESCRIPTION
       Concatenate FILE(s) to standard output.

       With no FILE, or when FILE is -, read standard input.

       -A, --show-all
              equivalent to -vET

       -b, --number-nonblank
              number nonempty output lines, overrides -n

       -e     equivalent to -vE

       -E, --show-ends
              display $ at end of each line

       -n, --number
              number all output lines

       -s, --squeeze-blank
              suppress repeated empty output lines

       -t     equivalent to -vT

       -T, --show-tabs
              display TAB characters as ^I

       -u     (ignored)
```

Using the **man** command to learn more about a particular command.

```
analyst@97aed243c78b:~$ apropos -a create new group
groupadd (8)            - create a new group
analyst@97aed243c78b:~$
```

Using the **apropos** command find the right command used to create a new group.