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Assignment - 1

MCA391 - OPERATING SYSTEM Laboratory (UNIX)

TOPIC: BASIC UNIX COMMANDS & FILE SYSTEM COMMANDS

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1. Display the date using the "**date**" command.

Ans :
```
nandini@LAPTOP-F47RO73F:~$ date
Sun Jul 21 20:08:10 IST 2024
```

2. Check who are the users logged in using the "**who**" command.

Ans :
```
nandini@LAPTOP-F47RO73F:~$ who
nandini@LAPTOP-F47RO73F:~$ whoami
nandini
```

3. Check the running processes using the "**ps**" command.

Ans :
```
nandini@LAPTOP-F47RO73F:~$ ps
  PID TTY          TIME CMD
   10 tty1     00:00:00 bash
  475 tty1     00:00:00 ps
```

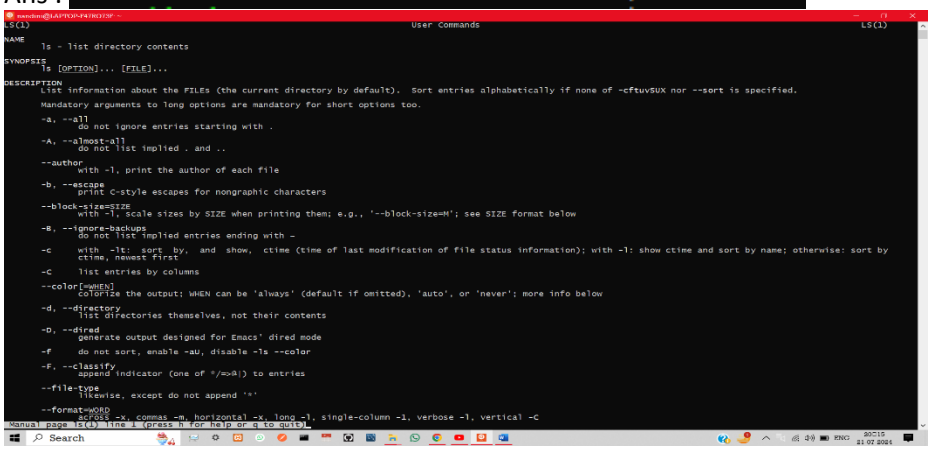
4. List the files with "**ls**" command with and without **-l** option.

Ans :
```
nandini@LAPTOP-F47RO73F:~$ ls
0         Monalisa.txt  assignment     classTEST3.sh  classwork3.sh  classwork7.sh  first          palindrome.sh     saha.txt    who.sh
BCAALPHA  NAN           class          classwork      classwork4.sh  command.sh     hello_world.py palindrome2.sh    sorting.sh
BCABETA   Nandini.txt   classTEST1.sh  classwork1.sh  classwork5.sh  data           loggedin.sh    palindromeNum.sh  users.sh
Cprog.sh  abc.txt       classTEST2.sh  classwork2.sh  classwork6.sh  fileType.sh    monalisa.txt   prime.sh          wfile
```

```
nandini@LAPTOP-F47RO73F:~$ ls -l
total 8
-rw-r--r-- 1 nandini nandini     0 Oct 26  2021 0
drwxr-xr-x 1 nandini nandini 4096 Sep 27  2021 BCAALPHA
drwxr-xr-x 1 nandini nandini 4096 May 24  2023 BCABETA
-rw-r--r-- 1 nandini nandini   89 Sep 27  2021 Cprog.sh
-rw-r--r-- 1 nandini nandini    0 Nov  9  2021 Monalisa.txt
-rw-r--r-- 1 nandini nandini   88 Sep 27  2021 NAN
-rwxrwxrwx 1 nandini nandini    2 Dec  9  2021 Nandini.txt
-rw-r--r-- 1 nandini nandini    7 Sep 21  2021 abc.txt
-rwxr-xr-x 1 nandini nandini  199 Dec 18  2021 assignment
-rwxr-xr-x 1 nandini nandini   20 Nov  9  2021 class
-rwxr-xr-x 1 nandini nandini  194 Nov 18  2021 classTEST1.sh
-rwxr-xr-x 1 nandini nandini  349 Nov 18  2021 classTEST2.sh
-rwxr-xr-x 1 nandini nandini  146 Nov 18  2021 classTEST3.sh
-rwxr-xr-x 1 nandini nandini  126 Nov  1  2021 classwork
-rwxr-xr-x 1 nandini nandini  120 Nov  1  2021 classwork1.sh
-rwxr-xr-x 1 nandini nandini  292 Nov  1  2021 classwork2.sh
-rwxr-xr-x 1 nandini nandini  757 Nov  2  2021 classwork3.sh
-rwxr-xr-x 1 nandini nandini  290 Nov  9  2021 classwork4.sh
-rwxr-xr-x 1 nandini nandini  132 Nov  9  2021 classwork5.sh
-rwxr-xr-x 1 nandini nandini  256 Nov  9  2021 classwork6.sh
-rwxr-xr-x 1 nandini nandini  244 Nov  9  2021 classwork7.sh
-rwxr-xr-x 1 nandini nandini   90 Jan 25  2022 command.sh
-rw-r--r-- 1 nandini nandini   10 May 24  2023 data
-rwxrwxrwx 1 nandini nandini  616 May 24  2023 fileType.sh
-rwxr-xr-x 1 nandini nandini   71 Nov  1  2021 first
-rwxr-xr-x 1 nandini nandini   49 Feb 21  2023 hello_world.py
-rwxrwxrwx 1 nandini nandini  189 May 24  2023 loggedin.sh
-rwxr-xr-x 1 nandini nandini    1 Nov  9  2021 monalisa.txt
-rwxrwxrwx 1 nandini nandini  238 May 24  2023 palindrome.sh
-rwxrwxrwx 1 nandini nandini  215 May 24  2023 palindrome2.sh
-rwxrwxrwx 1 nandini nandini  326 May 24  2023 palindromeNum.sh
-rwxrwxrwx 1 nandini nandini  316 May 24  2023 prime.sh
-rwxr-xr-x 1 nandini nandini   13 Sep 21  2021 saha.txt
-rwxrwxrwx 1 nandini nandini  179 May 24  2023 sorting.sh
-rwxrwxrwx 1 nandini nandini  174 May 24  2023 users.sh
-rw-r--r-- 1 nandini nandini    0 May 24  2023 wfile
-rw-r--r-- 1 nandini nandini    8 May 24  2023 who.sh
```

5. Check the *manual of* **ls** command.

Ans : nandini@LAPTOP-F47RO73F:~$ man ls



6. Show the commands used to display (i) filenames (ii) processes (iii)users.

Ans :

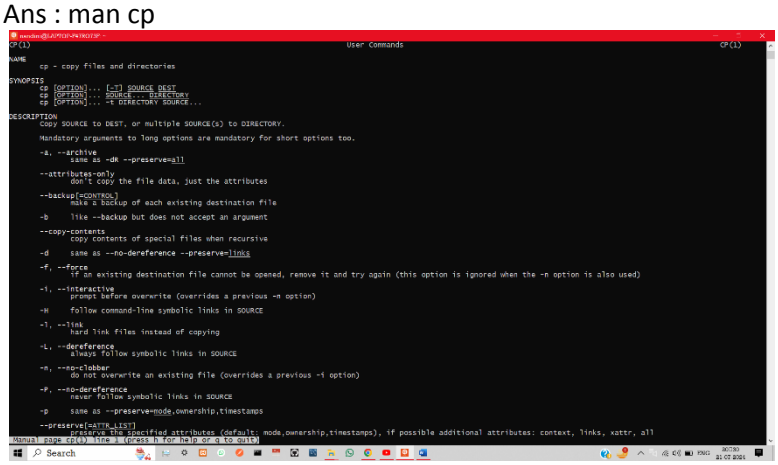
```
nandini@LAPTOP-F47RO73F:~$ ls
0          Monalisa.txt  assignment    classTEST3.sh  classwork3.sh  classwork7.sh  first           palindrome.sh    saha.txt    who.sh
BCAALPHA   NAN           class         classwork      classwork4.sh  command.sh     hello_world.py  palindrome2.sh   sorting.sh
BCABETA    Nandini.txt   classTEST1.sh classwork1.sh  classwork5.sh  data           loggedin.sh     palindromeNum.sh users.sh
Cprog.sh   abc.txt       classTEST2.sh classwork2.sh  classwork6.sh  fileType.sh    monalisa.txt    prime.sh         wfile
```

```
nandini@LAPTOP-F47RO73F:~$ ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.0  0.0   8952   328 ?        Ssl  19:58   0:00 /init
root           9  0.0  0.0   8952   228 tty1     Ss   19:58   0:00 /init
```

```
nandini@LAPTOP-F47RO73F:~$ whoami
nandini
nandini@LAPTOP-F47RO73F:~$ w
 20:28:42 up 30 min,  0 users,  load average: 0.52, 0.58, 0.59
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
```

7. Check and state the difference between man and whatis command by checking **man cp** & **whatis cp**.

Ans : man cp



Whatis cp

```
nandini@LAPTOP-F47RO73F:~$ whatis cp
cp (1)               - copy files and directories
```

Summary of Differences:

- **Detail Level**:
  - man: Provides a detailed manual page with extensive information about the command, its options, and usage.
  - whatis: Provides a brief, one-line summary of what the command does.
- **Usage Context**:
  - man: Useful when you need in-depth information and guidance on how to use a command, including all available options.
  - whatis: Useful when you need a quick summary to understand what a command does.

8. What is the primary difference between **printf** and **echo** command. Check and print.

Ans : **echo Command**:

- echo is simpler and primarily used to display a line of text.
- It automatically adds a newline character at the end of the output.
- It has limited formatting capabilities.

```
nandini@LAPTOP-F47RO73F:~$ echo "Hi, I am Monalisa."
Hi, I am Monalisa.
```

printf Command:

- printf is more powerful and is used for formatted output.
- It does not automatically add a newline character; you need to specify it.
- It allows for complex formatting, similar to the printf function in C.

```
nandini@LAPTOP-F47RO73F:~$ printf "Hello, World\!\n"
Hello, World\!
```

Example with more formatting :

```
nandini@LAPTOP-F47RO73F:~$ printf "Name: %s, Age: %d\n" "Alice" 30
Name: Alice, Age: 30
```

Summary of Differences:

- **Newline Handling**:
  - echo adds a newline by default.
  - printf does not add a newline unless specified.
- **Formatting Capabilities**:
  - echo has limited formatting capabilities.
  - printf supports complex formatting similar to the printf function in C.
- **Use Cases**:
  - echo is suitable for simple text output.
  - printf is preferred when precise formatting is required.

9. In the home directory, create a directory *MCA2022*. Inside the *MCA2022,* create another directory <*FistName_Section_ClassRoll*> and get into the directory [**~ /MCA2022/Ankur_A_00$**].

Ans :

```
nandini@LAPTOP-F47RO73F:~$ mkdir ~/MCA2022
nandini@LAPTOP-F47RO73F:~$ mkdir ~/MCA2022/Monalisa_B_02
nandini@LAPTOP-F47RO73F:~$ cd ~/MCA2022/Monalisa_B_02
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02$
```

10. Go to the subdirectory and create another subdirectory "**Unix_File_System**" within it.

Ans :

```
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02$ mkdir Unix_File_System
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02$ ls
Unix_File_System
```

11. Create the subdirectories TestA, TestB, TestC and corresponding sub-subdirectories TestA-1, TestA-2, TestB-1, TestB-2, TestB-3, TestC-1, TestB-2-i in a single command.

Ans :

```
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02$ mkdir -p ~/MCA2022/Monalisa_B_02/Unix_File_System/{TestA/{TestA-1,TestA-2},TestB/{TestB-1,TestB-2,TestB-3,TestB-2-i},TestC/
TestC-1}
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02$ ls
Unix_File_System
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02$ cd Unix_File_System
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System$ ls
TestA  TestB  TestC
```

```
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System$ cd TestA
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System/TestA$ ls
TestA-1  TestA-2
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System/TestA$ cd ..
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System$ cd TestB
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System/TestB$ ls
TestB-1  TestB-2  TestB-2-i  TestB-3
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System/TestB$ cd ..
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System$ cd TestC
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System/TestC$ ls
TestC-1
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System/TestC$ cd ..
```

12. Show the absolute path of TestB-2-i.

Ans :

```
nandini@LAPTOP-F47RO73F:~/MCA2022/Monalisa_B_02/Unix_File_System$ realpath TestB/TestB-2-i
/home/nandini/MCA2022/Monalisa_B_02/Unix_File_System/TestB/TestB-2-i
```

Date : 21-07-2024