LINUX Assignment Questions - 2018

Question 8:- Commands used for finding memory usages?

There are several commands that are used for finding the memory usage:-

(1.) free command :-

free command is used to check memory usage on linux. It is one of the most simple and easy to use command in linux. It shows the memory that has been used or either free. It actually shows the memory that is either used or free or total memory as in the form of memory, swap and cache/buffers.

Some of the options used with this command are:-

→ -m : displays memory in terms of MBs.
→ -k : displays memory in terms of KBs.
→ -g : displays memory in terms of GBs.

(2.) /Proc/meminfo command :-

This command is also used to check memory usage.. This command actually read the /proc/meminfo file. This /proc/meminfo file doesnot contain real files. These are the virtual files that contain dynamic information about the kernal and the system.

By default, the memory usage is shown in KB's.

Some of the options used with this command are:-

→ -n : To show uses with serial numbering.
→ -b : It displays the non-empty output lines of memory usage.

(3.) vmstat command :-

This command is also used to check memory usage. This command shows memory usages as much like proc command. It shows the memory usage as the procs file memory usage, total memory usage, swap, system, cpu, etc.

Some of its options are:-

→ -D : To show disk partition, merged reads/writes, etc.
→ -S : shows total memory, free memory, etc.

(4) top command :-

This command is generally used to check memory and cpu usage as per process. It also reports the total RAM and total memory usage. From the output it provides, KiB Mem and KiB Swap lines on the header indicates total, used and free memory. The buffer and cache information is also present in the output as like in the free command.

(5) htop command

htop command shows memory usage along with various other details as similar to htop command. The header on the top of the output shows the CPU usage along with RAM and swap usage within the corresponding figures.

(6) demidecode command :-

This command is used to find out hardware information about the installed RAM, BIOS information, System information, Base board information, chassis information, Processor information, etc.

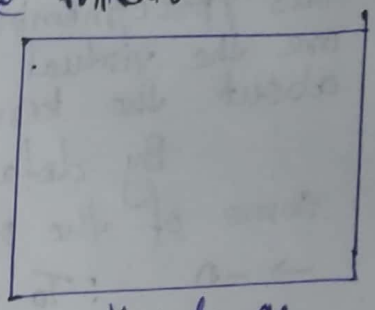
Question (5) Create a directory and move in the directory. Create another directory inside this directory and move in it. Write a single command to come out in original directory.

Solution :- To create a directory we use mkdir command as follows —

$ mkdir directory1 ↵

and to move in it, we use cd (change directory) command as —

$ cd directory1 ↵

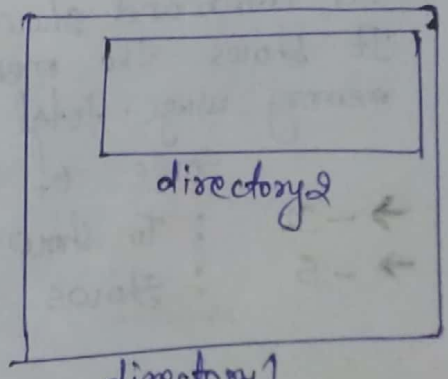


To make another directory inside this directory1, we use mkdir command as —

$ mkdir directory2 ↵

To move in this directory we use cd command

$ cd directory2 ↵



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Now to move out in the original director we can use this too commands as written in below :-

$ cd ../..↵ and $ cd↵

Question 6. Why is linux more secured than other operating system? find certain parameters comparing with other operating system.

Solution :-

As linux is an open operating system, the codes which can be read by everyone but still accepted as the more secure in comparising with other operating system. Although one hundred percent protected from hackers operating system doesn't exist. But in comparision to other operating system over some parameters, Linux is more secured than others. These parameters are :-

(a) Poivilege of Accounts :-

In other OS like windows, users by default have access to almost everything in the system because they are given administrator rights. If any virus will be able to penetrate their system, they can quickly gain access to important part of the system.

On the other hand in linux, users have a local lower access rights and a virus can effect only local files or folders. the system will be safe.

(b) The separateness of environment :-

Linux works in many environment and distros such as ubuntu, Linux Mint, Arch, Gentoo, etc. Various email clients the environment console and system packages also make the system extremely fragmented and difficult for any virus.

(c) Less Users :-

The no. of users using Linux is much less in comparison with windows and MacOS. As the no. of user is less, less virus will strive to hit their computers to gain access to important data.

(d) IP tables :- An even higher level of security on linux machine is implemented using IPtables. This firewall that allows us to create a more secure environment for the execution of any command or access the network.

Question (9.) (i.) which command must be used to search the command without knowing its exact name?

Soln :- A simple way to find out the command without knowing its exact name is to type a most appropriate word relating the command. In this condition, the most relating command in terms of word will appear out.

Help command is also helpful in this situation. the help command shows a short list of the command built into the Bash Shell itself.

(ii.) What is umask?

Soln :- When user create a file or directory under Linux or Unix, he/she creates it with a default set of permissions. In most case the system defaults may be open or relaxed for file sharing purpose.

The User file-creation mode (umask) is used to determine the file permission for newly created files. It can be used to control the default file permission for new files. It is a four-digit octal number. A umask can be set or expressed using its symbolic values & octal values.

(iii.) Write the syntax for the command to delete a non-empty directory and simultaneously all the files in the directory must be deleted and write the syntax for moving files from anywhere to everywhere.

Soln :- To delete a folder, we use rm (remove) command with the option followed by the file name.

for eg:- $ rm -rfv {file name/Directory name}

If "Permission denied" is coming as the error message then we have to run this command as a root user using sudo command.

rm command has following options:-

→ -f : force file delete operation

→ -v : Be verbose when deleting files, showing them as they are removed.

→ -r :- Attempt to remove the file hierarchy in each file.

Question(8) If you forgot password how will you reset it?

Soln:- These are the following procedures to reset my password if I forgot :-

STEP 1:- first of all, restart the computer.

STEP 2:- Press ESC button during bootup to show the Boot Menu.

STEP 3:- from the boot menu, select the Recovery mode.

STEP 4:- After selecting the recovery mode, some option will arrive on the screen. From that option, we have to choose "Root Shell Prompt Option."

STEP 5. In case of forgetting username also and we want to show all the users, we type ls/home in Root Shell prompt. This will list up all the users account on the screen.

STEP 6:- To reset the password, type passwd username where username is that username whose password we want to reset.

STEP 7:- After entering, a prompt will appear for new password. After typing password press enter. the make it confirm after re-entering password. and then press enter.

Step 8:- Then after, our password will be reset. Type Exit to return to recovery menu and select Resume Normal Boot to start the system.

Question(Q:) Write a program to implement binary search using shell script? Write a program that takes arguments as command line and perform basic arithmetic operations?

Sol:-

Binary Search

```
#include<stdio.h>
#include<conio.h>
#define MAX 10
void BINARY_SEARCH(int, int *, int);
void main()
{
int a[MAX] = {1,9,17,2,13,15,19,18,22,0};
int n;
clrscr();
printf("\n Enter the number to be searched :-> ");
scanf("%d", &n);
BINARY_SEARCH(n, a, MAX);
getch();
}

void BINARY_SEARCH( int DATA, int *LIST, int M)
{
int lb=0, ub= M-1, mid, f=0;
    for(mid= (lb+ub)/2 ; lb<=ub ; mid=(lb+ub)/2)
    {
        if(DATA== LIST[mid])
        {
            f=1;
            break;
        }
        else if(DATA< LIST[mid])
        {
        ub=mid-1;
        }
        else
        lb= mid+1;

    }
```

```
        if (f==0)
        printf("Data is not present in the list");
        else
        printf("\n %d data is present at %dth position",
                                DATA, mid+1);
    }
```

Program for arithmetic operations using command line arguments :-

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
int main(int argc, char* argv[])
{
 int a, b, result;
 char op[10];
      if(argv<4)
      {
        printf("some parameters are missing\n");
        printf("use prg-name opr value1 value2\n");
        return 0;
      }
     strcpy(opr, argv[1]);
     a = atoi(argv[2]);
     b = atoi(argv[3]);
     switch(op[0])
      {
            case '+':
            result = a+b;
            break;
           case '-':
           result = a-b;
           break;
           case '*':
           result = a*b;
           break;
           case '/':
           default:
           printf("Invalid Operator....\n");
           return 0;
```

Scanned by CamScanner

```
    }
printf("Result is %d %c %d = %d \n", a, op[0], b,
                                    result);
return 0;
}
```

Question 1. How to perform calculation directly from terminal? Which command is used? How to set limit of numbers to display after particular content (say pi)?

Soln:- We can perform several calculations in terminal or we could say that we can use terminal ~~to do server~~ as a mathematical calculators using command line.

The first command for performing mathematical calculations on the command line is the expr (expression) command. It can manage addition, subtraction, division, multiplication. It can be used to compare numbers also.

for eg:-
```
$ expr 41 + 23 ↵
64
$ expr 122 - 99 ↵
23
$ expr 121 / 11 ↵
11
$ expr 3 * 2 ↵
syntax error
$ expr 20 % 3 ↵
2
$ expr 11 \> 9 ↵
1
$ expr 10 \> 15 ↵
0
```

In case of multiplication, we use backslash to keep the shell from interpreting the asterisk as a reference to all files in the current directory and in case of ~~open~~ close angle bracket, we used ~~bta~~ backslash to keep the shell from

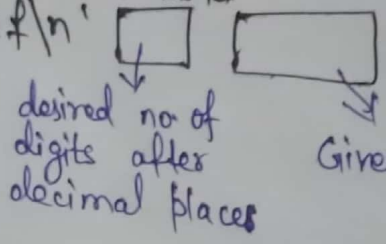
interpreting the ~~angle~~ closed angle bracket from being used to redirect the command's output.

```
$ expr 5 = 5
1
$ expr 4 = 5
0
```

There are so many ~~common~~ other commands too to perform several kinds of mathematical calculations or operations.

There are different commands ~~line~~ that sets the limit of a numbers to display certain no. of digits or we could say to format out the numbers according to the desired decimal places of the user. such as – printf command.

```
$ printf '%.*f\n'
```




```
$ printf '%.*f\n' 0  7.8910
8
$ printf '%.*f\n' 2  6.666
6.67
```

Question 4. Write a command to find a file with particular extension and contains particular word in the file.

solution :-

To find out a file with particular extension, we use grep command with some particular word containing in the file. eg :-

```
$ grep -R "uday" /New Folder/*
```

If any of the file contain uday in his name then it will be displayed and if and only if the file will be in New Folder or its subfolder.

Mahabir can also use command like find and locate.

eg:- # find . ! -type f \(-name "*.sh"\)

locate [FILE NAME]

To run locate command, the database must be updated before.