

OS LAB 1

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Task 1:

Five basic LINUX commands

Ls: all the directories

```
siddharth@SIDS-LAPTOP:/mnt/d$ ls
ls: cannot access 'pagefile.sys': Permission denied
RECYCLE.BIN      Program Files (x86)  anaconda          dartProjects      music             siddharth
Codeblock        Py-DS-ML-Bootcamp-master  anacondasetup    desktop.ini       node             sin
DeliveryOptimization  Recovery            android studio main  Flutter          okthen.code-workspace  sql
Epic Games        SQL2019            android studios    Flutter-two       pagefile.sys     teams
GTAIV            'System Volume Information'  antivirus          hackathon         project          torrent
Games            University of Victoria  boarding pass to mars  hadoop-3.3.0.tar.gz  random images i dont even care about  visual studios
Launcher         WindowsApps          browser           intelliJ          reeeeeeeshma
MSOQLache        Winrar              certificate        lightroom         scilab-6.0.2
MapData          WpSystem            comic             Imms
'Program Files'  adobe               cprogramming      Immsr            sen4
                 sen3
```

df:used to display the amount of available disk space

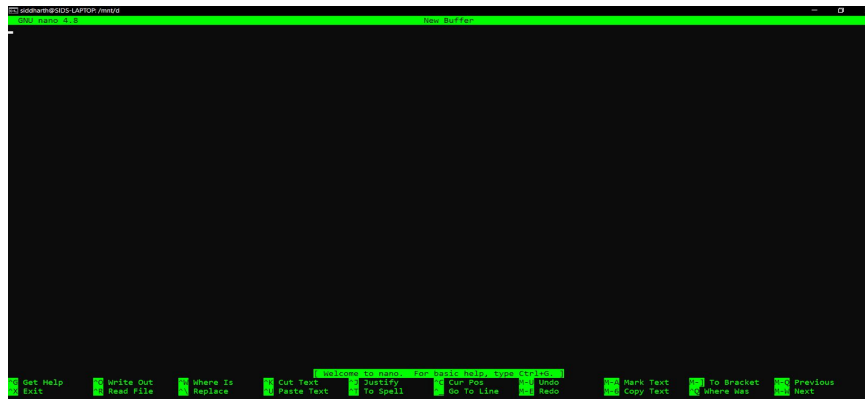
```
siddharth@SIDS-LAPTOP:/mnt/d$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
rootfs          123930948    90472356  33458592   74% /
none            123930948    90472356  33458592   74% /dev
none            123930948    90472356  33458592   74% /run
none            123930948    90472356  33458592   74% /run/lock
none            123930948    90472356  33458592   74% /run/shm
none            123930948    90472356  33458592   74% /run/user
cgroup          123930948    90472356  33458592   74% /sys/fs/cgroup
C:\             123930948    90472356  33458592   74% /mnt/c
D:\             976760828    400246260  576514568  41% /mnt/d
```

DATE : gives date and time

```
siddharth@SIDS-LAPTOP:/mnt/d$ date
Sat Sep  5 18:51:38 IST 2020
```

Nano :GNU nano is an easy to use command line text editor for **Unix**

```
siddharth@SIDS-LAPTOP:/mnt/d$ sudo nano
```



touch:to create a file

```
siddharth@SIDS-LAPTOP:/mnt/d$ touch sid.txt
```



Week 1: OS lab reverse the matrix using make file

Client.c

```
#include <stdio.h>
#include "Header.h"

int main(int arr, char *arrv[])
{
    puts("ENTER SIZE OF AN ARRAY");
    int d;
    scanf("%d", &d);
    puts("ENTER ELEMENTS OF AN ARRAY");
    int a[4];
    for (int i = 0; i < d; i++)
        scanf("%d", &a[i]);
    puts("Input array is");
    print_array(d, a);
    reverse_array(d, a);
    puts("Reversed array is");
    print_array(d, a);
    return 0;
}
```

Header.h

```
void reverse_array(int size, int array[size]);  
void print_array(int size, int array[size]);
```

makefile.mk

```
a.out: Client.o Server.o  
    gcc Client.o Server.o -o a.out  
Server.o: Server.c  
    gcc -c Server.c  
Client.o: Client.c  
    gcc -c Client.c
```

Server.c

```
#include <stdio.h>  
  
void reverse_array(int size, int array[size])  
{  
    for (int i = 0; i < size / 2; i++)  
    {  
        int temp = array[i];  
        array[i] = array[size - i - 1];  
        array[size - i - 1] = temp;  
    }  
}  
  
void print_array(int size, int array[size])  
{  
    for (int i = 0; i < size; i++)  
        printf("%d", array[i]);  
    puts("");  
}
```

OUTPUT:

```
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysstem/lab$ make -f makefile.mk
gcc -c Client.c
gcc -c Server.c
gcc Client.o Server.o -o a.out
siddharth@SIDS-LAPTOP:/mnt/d/sem5/operatingsysstem/lab$ ./a.out
ENTER SIZE OF AN ARRAY
5
ENTER ELEMENTS OF AN ARRAY
1
3
4
5
6
Input array is
13456
Reversed array is
65431
```

Q Why do we use Makefile?

A makefile is a file (by default named "Makefile") containing a set of directives used by a make build automation tool to generate a target/goal. Compilation is done with a single command. Easy to manage a large number of dependencies.

Q Is Makefile a shell script?

No, makefile isn't a shell script.

a shell script is an arbitrary collection of unix shell commands. put a command in a file and it is a shell script

Q What does "clean" do in a makefile?

Make clean removes all the object files that had been created in the meantime. Normally, it's no big deal to partially recompile, i.e. only to recompile the files you changed and finally link the newly created object files with the pre-existing ones.

How does make learn about the last modified files to be compiled?

Check the file time-stamp.

If a dependency is newer than the target, the target gets rebuilt.

What does Cflags in Makefile mean?

either the name of environment variables or of Makefile variables that can be set to specify additional switches to be passed to a compiler.

Cflag is the name of the environment variable that is commonly used to add arguments to the compiler.

Why do we use -f option with make command?

-f is used to use the mentioned file as a Makefile. If not used, the standard version of make will look first for a file called Makefile in the current directory.