Linux Internals
Assignment 1
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Program 1
Write a program using file operations that demonstrates copying of data from input file and write into output file, untill reaches end of file data.

Code:

```
#include<stdio.h>
#include<fcntl.h>
#include<unistd.h>

int main()
{
	int fd,fd1;
	char buff[20];
	fd=open("file.txt",O_RDONLY,777);
	read(fd,buff,20);
	fd1=open("file2.txt",O_CREAT | O_RDWR,777);
	write(fd1,buff,20);
	close(fd);
	close(fd1);
	return 0;
}
```

Output:

```
pavan@pavan-VirtualBox:~/Training/Linux_internals_tools/Day2/Assig$ gedit prog1.c
pavan@pavan-VirtualBox:~/Training/Linux_internals_tools/Day2/Assig$ ./p1
pavan@pavan-VirtualBox:~/Training/Linux_internals_tools/Day2/Assig$ cat file.txt
My name is pavan,byee
pavan@pavan-VirtualBox:~/Training/Linux_internals_tools/Day2/Assig$ cat file2.txt
hello, how are you?
my name is pavan.
```

Program 2
Write a program that demonstrates repositioning of file offset using SEEK_SET, SEEK_END and SEEK_END.

Code:

```
#include<stdio.h>
#include<fcntl.h>
#include<unistd.h>

int main()
{
	int fd,pos,pos1,pos2;
```

```
        char buff1[100]="My name is pavan,byee";
        char buff2[100];
        fd=open("seek.txt",O_CREAT | O_RDWR,777);
        printf("fd = %d\n",fd);
        if(fd>0)
        {
                write(fd,buff1,100);
        }
        else
        {
                printf("error not created seek.txt\n");
        }
        pos=lseek(fd,3,SEEK_SET);
        printf("Position using SEEK_SET -- %d\n",pos);
        pos2=lseek(fd,17,SEEK_CUR);
        printf("Position using SEEK_CUR -- %d\n",pos2);
        pos1=lseek(fd,0,SEEK_END);
        printf("Position using SEEK_END -- %d\n",pos1);
        close(fd);
        return 0;
}
```

Output:

```
pavan@pavan-VirtualBox:~/Training/Linux_internals_tools/Day2/Assig$ ./p2
fd = 3
Position using SEEK_SET -- 3
Position using SEEK_CUR -- 20
Position using SEEK_END -- 100
```

Program 3
Write program that returns “ls -l ” kind of structure of information from an existing file or opend file.

Code:

```
        //  ls -l kind of information through an pg using stat();
#include<stdio.h>
#include<fcntl.h>
#include<unistd.h>
#include<sys/stat.h>
#include<sys/types.h>
int main( )
{
        struct stat st;// st.st_size   st.st_ino  st_blksize
        int fd;
        stat("seek.txt", &st);
        printf("File size =%lu\n",(st.st_size));// ls  -l  p3.c

        printf("File inode =%lu \n", st.st_ino);// ls -i P3.c
```

```
        printf("size disc of blocks =%lu \n",st.st_blksize);//stat -fc %s  P3.c
        printf("\n\n");
        close(fd);
        return 0;
}
```

Output:

```
pavan@pavan-VirtualBox:~/Training/Linux_internals_tools/Day2/Assig$ ./p3
File size =100
File inode =131939
size disc of blocks =4096
```

Program 4
Write a program that implements all file operations(open/creat/write/read/lseek/close).

Code:

```
#include<stdio.h>
#include<fcntl.h>
#include<unistd.h>

int main()
{
        int fd;
        char buff1[100]="My name is pavan,byee";
        char buff2[100];
        fd=open("file.txt",O_CREAT | O_RDWR,777);
        printf("fd = %d\n",fd);
        if(fd>0)
        {
                write(fd,buff1,100);
        }
        else
        {
                printf("error not created file.txt\n");
        }
        lseek(fd,3,SEEK_SET);
        read(fd,buff2,100);
        printf("Data is written in file.txt is ---  %s\n",buff2);
        close(fd);
        return 0;
}
```

Output:

```
pavan@pavan-VirtualBox:~/Training/Linux_internals_tools/Day2/Assig$ ./p4
fd = 3
Data is written in file.txt is ---  name is pavan,byee
```

Program 5
Write a program that creates a file with a 4K bytes free space. (Such files are called files with holes.)

Code:

```
#include<stdio.h>
#include<fcntl.h>
#include<unistd.h>
#include<sys/stat.h>
#include<sys/types.h>

int main()
{
        int fd;
        char buff[]="Hello";
        char buff1[]="Hi";
        fd=creat("prog5.txt",777);
        write(fd,buff,6);
        lseek(fd,4096,SEEK_SET);
        write(fd,buff1,3);
        return 0;
}
```

Output:

```
pavan@pavan-VirtualBox:~/Training/Linux_internals_tools/Day2/Assig$ gcc -o p5 prog5.c
pavan@pavan-VirtualBox:~/Training/Linux_internals_tools/Day2/Assig$ ./p5
 It is showing file size of 4Kb(4096 bytes)
```