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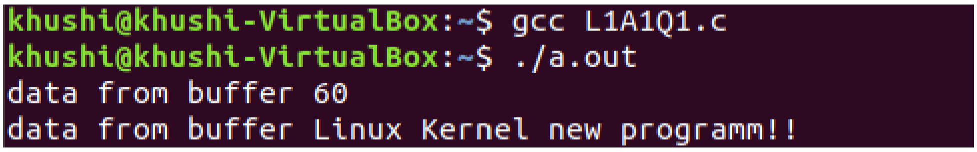
Subject : Linux Internals Assignment - 1

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<sys/types.h>
#include<sys/stat.h>
#include<unistd.h>
int main()
{
        int fd,len;
        int x;
        char read_buf[60];
        char write_buf[60]="Linux Kernel new programm!!";

        fd = open ("abc.txt",O_CREAT |O_RDWR,0777); //open and read write

        len = write(fd,write_buf,60);
        printf("data from buffer %d\n",len);

        lseek(fd,0,SEEK_SET); //To reposition of pointer
        if(fd<0)
        printf("File does not exist");

        read(fd,read_buf,len);//read from buffeer
        printf("data from buffer %s\n",read_buf);

        close(fd);
        return 0;
}
```

Output:



```
khushi@khushi-VirtualBox:~$ gcc L1A1Q1.c
khushi@khushi-VirtualBox:~$ ./a.out
data from buffer 60
data from buffer Linux Kernel new programm!!
```

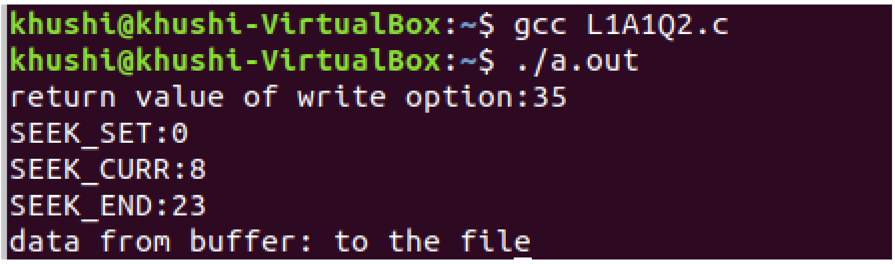
2.Write a program that demonstrates repositioning of file offset using SEEK_SET, SEEK_END and SEEK_END.

Code:

```
#include<sys/types.h>

#include<sys/stat.h>

#include<unistd.h>


int main(){
```

```
int fd,len;

char writebuf[35]="Hello to the seeking into the file";

char readbuf[35];


fd=open("fie_2.txt",O_CREAT|O_RDWR,777);

len = write(fd,writebuf,35);

printf("return value of write option:%d\n",len);


printf("SEEK_SET:%ld\n",lseek(fd,0,SEEK_SET));

lseek(fd,8,SEEK_SET);


printf("SEEK_CURR:%ld\n",lseek(fd,0,SEEK_CUR));


printf("SEEK_END:%ld\n",lseek(fd,-12,SEEK_END));

read(fd,readbuf,len);


printf("data from buffer: %s\n",readbuf);

close(fd);

return 0;

}
```

Output:



```
khushi@khushi-VirtualBox:~$ gcc L1A1Q2.c
khushi@khushi-VirtualBox:~$ ./a.out
return value of write option:35
SEEK_SET:0
SEEK_CURR:8
SEEK_END:23
data from buffer: to the file
```

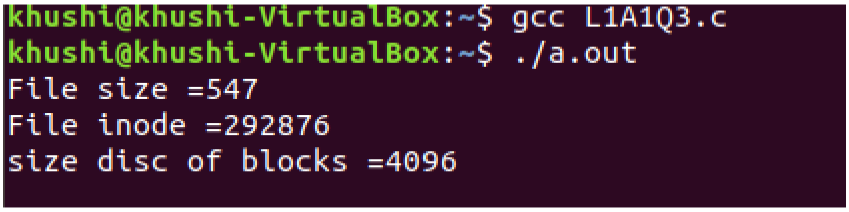
3.Write program that returns “ls -l ” kind of structure of information from an existing file or opend file.

Code:

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

```
#include<sys/stat.h>
#include<sys/types.h>
int main()
{
	struct stat std;
	int fd;

	stat("L1A1Q1.c", &std);
	printf("File size =%lu\n",(std.st_size));

	printf("File inode =%lu \n", std.st_ino);

	printf("size disc of blocks =%lu \n",std.st_blksize);

	printf("\n \n");
	close(fd);
	return 0;
}
```

Output:



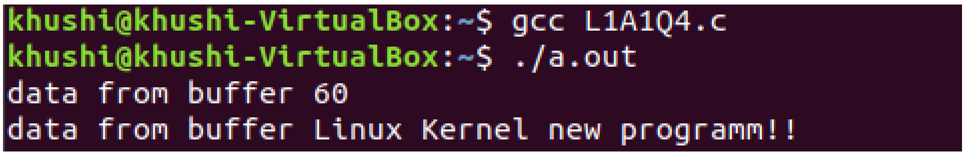
```
khushi@khushi-VirtualBox:~$ gcc L1A1Q3.c
khushi@khushi-VirtualBox:~$ ./a.out
File size =547
File inode =292876
size disc of blocks =4096
```

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

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

int main()
{

	int fd,len;
	int x;

	char read_buf[60];
	char write_buf[60]="Linux Kernel new programm!!";

	fd = open ("data.txt",O_CREAT |O_RDWR,0777); //open and read write

	len = write(fd,write_buf,60);
	printf("data from buffer %d\n",len);

	lseek(fd,0,SEEK_SET); //To reposition of pointer

	if(fd<0)
```

```
        printf("File does not exist");

        read(fd,read_buf,len);//read from buffeer
        printf("data from buffer %s\n",read_buf);

        close(fd);
        return 0;
}
```

Output:



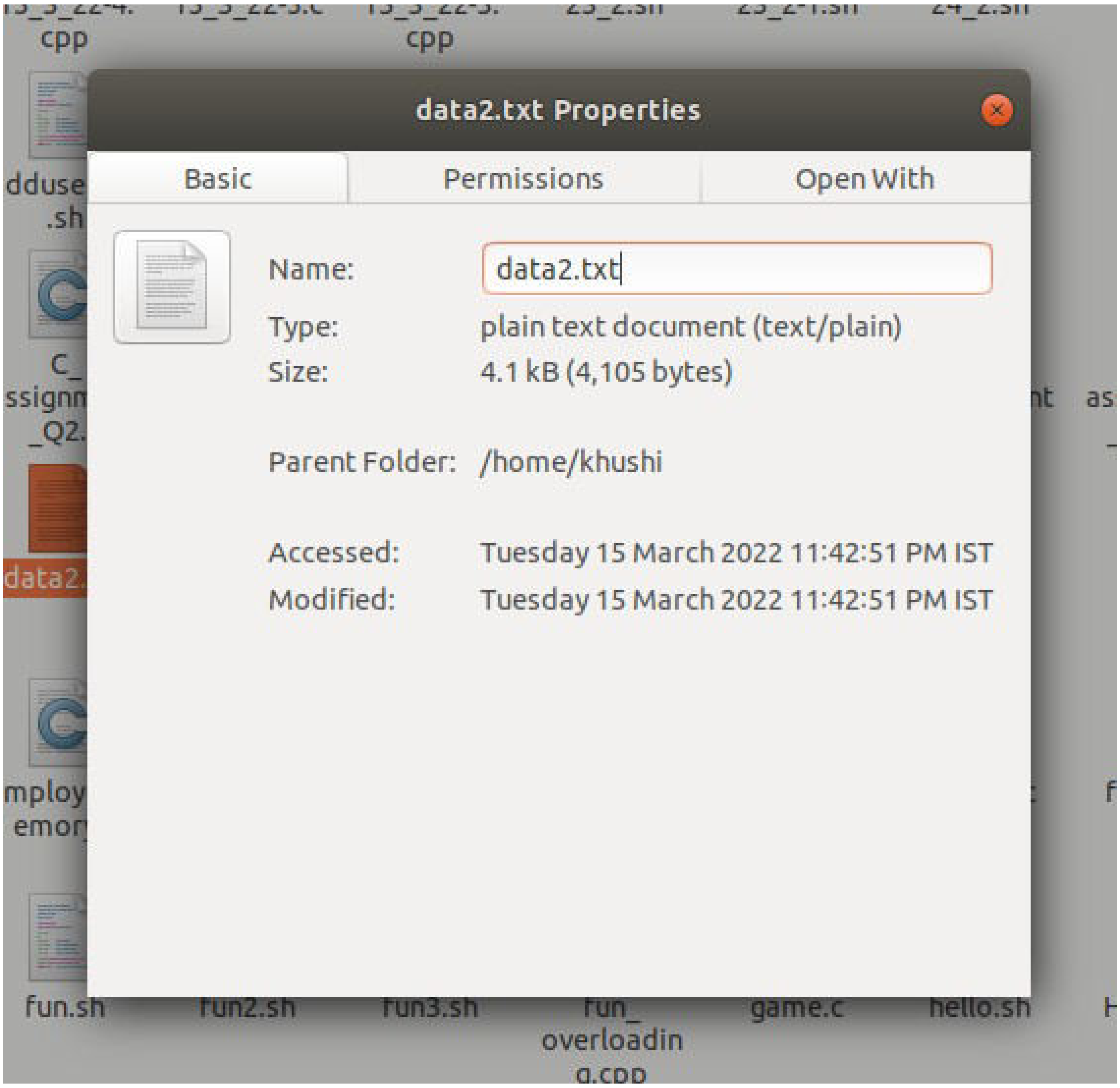
```
khushi@khushi-VirtualBox:~$ gcc L1A1Q4.c
khushi@khushi-VirtualBox:~$ ./a.out
data from buffer 60
data from buffer Linux Kernel new programm!!
```

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<stdlib.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <fcntl.h>
#include <unistd.h>
char buf1[]="LAB ";
char buf2[]="OS Linux";

int main()
{
        int fd;
        if ((fd=creat("data2.txt", 0666)) < 0)
        {
        printf("Creation error");
        exit(1);
        }

        if (write(fd, buf1, sizeof(buf1)) < 0){
        printf("Writing error");
        exit(2);
        }

        if (lseek(fd, 4096, SEEK_SET) < 0){
        printf("Positioning error");
        exit(3);
        }

        if (write(fd, buf2, sizeof(buf2)) < 0){
        printf("Writing error");
        exit(2);
        }
}
```

Output:



Name: data2.txt

Type: plain text document (text/plain)

Size: 4.1 kB (4,105 bytes)

Parent Folder: /home/khushi

Accessed: Tuesday 15 March 2022 11:42:51 PM IST

Modified: Tuesday 15 March 2022 11:42:51 PM IST